

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

ORIGINAL APPLICATION NO. 111 OF 2020

IN THE MATTER OF

Tribunal on its own motion, a SUO MOTO

... APPLICANT(S)

VERSUS

The Principal Secretary to Government,
Public Works Department, Chennai & Ors.

...RESPONDENTS

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Place: Bengaluru

Date: 02.06.2021

S Suresh

DEPONENT

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**PROGRESS REPORT OF JOINT COMMITTEE ON-
“FROTHING OF CHEMICAL FOAM IN RIVER
THENPENNAI”**

**in Compliance to
Directions of the Hon’ble Tribunal (SZ), Chennai
(in the matter of O. A. No. 111/2020)**



June, 2021

**CENTRAL POLLUTION CONTROL BOARD
Ministry of Environment, Forest and Climate Change
Govt. of India**

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CHAPTER I

BACKGROUND

In the matter of O.A No. 111 of 2020 regarding “Frothing of Chemical Foam in the River Thenpennai”, Hon’ble NGT, Southern Zone, Chennai vide its order dated 20.07.2020 constituted a joint committee comprising of Representatives of District Collectorate, Krishnagiri, Tamilnadu Pollution Control Board, District Collectorate, Bangalore (Urban), Superintending Engr. of PWD & WRDO and Senior Official, CPCB, RD, Bangalore. The joint committee investigated the matter in the light of directions of Hon’ble NGT in O.A No. 125/2017 and Hon’ble Supreme Court in O.S No. 02 of 2015. The causes and sources of pollution have been assessed by the joint committee based on the samples collected from 12 locations in River Thenpennai. It has been ascertained that, the water quality of River Thenpennai falls under the Category E (Irrigation, Industrial Cooling, Controlled Waste Disposal) of the Designated Best Use Criteria notified under the Environment (Protection) Rules, 1986. Therefore, an Action Plan (Long term and short term with timelines) for restoring the quality of River Thenpennai has been devised by the joint committee for compliance by the concerned departments in Government of Karnataka. The joint committee submitted final report on ‘Frothing of Chemical Foam in River Thenpennai’ in November, 2020.

In the matter, Hon’ble NGT in its recent order dated 18.02.2021 issued directions that *“It is seen from the report that there is no source of pollution from Tamil Nadu area and also source of pollution was from the Karnataka region and certain action plans have been prepared by the Karnataka State for the purpose of remedying the situation on the basis of the directions given by this Tribunal in this case and also by the Principal Bench in O.A No. 125 of 2017 and the case pending before the Hon’ble Supreme Court as C.S 2 of 2015. Though certain time line has been provided in the action plan, it is not clear as to whether anything has transpired at the ground level for the implementation of the action plan that has been submitted by the respective departments before the committee. So the respective departments who have given the action plan before the committee are directed to submit separate status report regarding the action taken by them on the basis of the action taken report. The committee is also directed to supervise*

*the implementation of the action plan that has been submitted by the State of Karnataka and other departments and submit a further progress report regarding the same and also the improvement of the water quality on account of the short term measures that has been taken by the departments before this Tribunal on or before 8.4.2021...”. Copy of the Hon’ble NGT Order dated 18.02.2021 is appended as **Annexure I**.*

CHAPTER II

MEETINGS AND DISCUSSIONS

In compliance with the NGT Order dated 18.02.2021, CPCB, member of the joint committee sent various communications dated 19.02.2021, 26.02.2021 and 24.03.2021 to the concerned departments in Government of Karnataka and informed that the long term and short term action plan prepared by the joint committee for execution by the concerned agencies be complied as per the specified timelines.

With regard to action points related to Bangalore Development Authority (BDA) and Bruhat Bengaluru Mahanagara Palike (BBMP), the departments were requested to send nomination of a nodal officer to provide the progress report in compliance with the stipulated timelines vide letter dated 03.03.2021. Copy of the communications and letters dated 19.02.2021, 26.02.2021, 24.03.2021 and 03.03.2021 are appended as **Annexure II**.

Thereafter, the Joint Committee conducted a meeting on 10th March, 2021 through video conferencing with the members of the joint committee and concerned departments. In the said meeting, it was informed that a format (appended as **Annexure III**) along with Hon'ble NGT order dated 18.02.2021 have been circulated among the members of the committee and concerned agencies/authorities/departments vide aforesaid communications for providing individual Action Taken Report on the Action Plan of the Joint Committee Report and compliance thereof.

In the meeting, CPCB briefed the directions of NGT Order dated 18.02.2021 and emphasized that "*the respective departments who have given the action plan before the committee are directed to submit separate status report regarding the action taken by them on the basis of the action taken report*" as directed by Hon'ble NGT vide order dated 18.02.2021. In view of above, the concerned departments were asked to provide signed copy of individual progress reports to CPCB (nodal agency) for filing the Progress Report before Hon'ble Tribunal in the matter before next date of hearing (i.e. 08.04.2021).

Upon detailed deliberation, the following points were discussed in the meeting, which were agreed upon by the concerned departments for necessary compliance;

- (i) As both the NGT matters (O.A No. 125/2017 and 111/2020) are separately dealt in the Hon'ble NGT, Principal Bench, New Delhi and Southern Zone, Chennai, respectively, the action plan related to random verification of industries located near the river bed, environmental compensation and performance evaluation of STPs have to be exclusively addressed by BWSSB, TNPCB and KSPCB to comply with Hon'ble NGT Order dated 18.02.2021.
- (ii) KSPCB and TNPCB to provide water quality analysis reports of the Interstate monitoring locations (i.e. Mugalur bridge and Sokkarasanapalli) for last two months for finding any improvement in the quality of water in River Thenpennai (in compliance to directions of Hon'ble NGT Order dated 18.02.2021 with regard to "*improvement of the water quality on account of the short term measures that has been taken by the departments before this Tribunal*").

Further, a meeting through video conferencing was organized with BDA, BBMP, BWSSB and KSPCB at CPCB, Bengaluru, on 16.03.2021 to discuss the action points with regard to measurement of flow of tanks/lakes flowing into River Thenpennai, rejuvenation of lakes and Water quality to be maintained as pristine. It was discussed that the action taken report and progress made with regard to the aforesaid action points would be provided to CPCB for filing the progress report.

In the matter, Karnataka State Pollution Control Board (KSPCB) has nominated Sh Syed Khaja Mohiddin, Senior Environmental Officer as nodal officer for the Joint Committee in place of Sh M K Prabhudev, Chief Environmental Officer for compliance, thereof. Copy of KSPCB letter no. KSPCB/CEO-2/OA No. 111/2020/2020-21/5603 dated 09th March 2021 is appended as **Annexure IV**.

In the absence of compliance status report and Action taken report from the concerned departments (viz., KSPCB, BDA, BWSSB, BBMP), the joint committee was not be able to file the progress report on the basis of the Action Taken Report on or before 08.04.2021. Therefore, the Joint Committee constituted in O.A No. 111 of 2020 has decided seeking an additional time of four weeks for complying with the orders of the Hon'ble NGT (SZ), Chennai dated 18.02.2021. In view of above, Hon'ble NGT has reposted the matter to a later date i.e 27.04.2021.

Due to prevailing COVID-19 pandemic situation and in the light of sudden and exponential surge in COVID-19 cases, the Competent Authority,

Hon'ble NGT, New Delhi vide Office Order No. NGT/PB/313/Admin/2014/Vol (III)/152 dated 15th April 2021 has pleased to modify the Calendar with respect to summer vacations to be observed in all the Benches of National Green Tribunal. All the matters scheduled to be listed from 19.04.2021 to 18.05.2021 of NGT (Principal Benches) and Zonal Benches has been adjourned/re-scheduled. In the said order, the case no. O.A No. 111 of 2020, which was earlier scheduled on 27.04.2021 is adjourned to 08.06.2021.

Amidst the COVID-19 pandemic the joint committee has convened a video conferencing on 24.05.2021 with the concerned departments to update any further progress and compliance made with regard to the Action Plan submitted before Hon'ble Tribunal.

CHAPTER III

STATUS OF COMPLIANCE AND PROGRESS MADE

The joint committee devised Action Plan comprising of 17 action points which includes (i) Estimation of flow of water in River Thenpennai; (ii) Study of Performance evaluation of Sewage Treatment Plants in Bangalore by engaging a CSIR institute; (iii) Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode; (iv) Rejuvenation of lakes to remediate the pollution caused in River Thenpennai; (v) Environmental Compensation be imposed by SPCBs after evaluating performance of STPs and identification of defaulters upon Random Verification; (vi) Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai up till Kelavarapalli; (vii) Regular Water Quality Monitoring at important locations.

The department-wise action points and its status of compliance are given as **Table 1**. The number of action points pertaining to the concerned departments are enumerated as (i) BWSSB – 08; (ii) Minor Irrigation – 03; (iii) KSPCB – 06; (iv) TNPCB – 06; (v) BDA – 03; (vi) BBMP – 01; (vii) CPCB – 01.

Table 1. Status of Compliance and Progress with reference to the Action Points of the Joint Committee

Action Points	Agency Responsible (Timeline)	Status of Compliance (Complied / Not Complied / Partially Complied/ Under Progress)	Proposed Timelines (Yes /No)	Remarks
I. Estimation of flow of water in River Thenpennai				
1. BWSSB to measure the flow and discharge of all the tanks / lakes located in Koramangla & Challaghatta, Hebbal Valleys	BWSSB and Minor Irrigation (Three months)	BWSSB – Partially Complied;	No. timelines not provided for measurement of flow in lakes/tanks by the concerned	BWSSB has provided the details of flow of sewage into STPs located in K&C valley and assessed the flow of treated water

<p>flowing in to River Thenpennai viz., Agara, Bellandur, Varthur, Channasandra, Yellamalappa Chetty, samethanahalli weir, Mugalur etc. Flow details of tanks in the upstream (Hoskote taluk, Bangalore rural, chikkaballapur) may also be included if overflow is detected.</p>			<p>department.</p>	<p>that is being sent for Ground water recharge through Minor irrigation.</p>
<p>2. Flow or discharge of each of the tanks that are recharged by treated wastewater by BWSSB i.e. 126 tanks in Kolar District and 65 tanks in Chikkaballapur district.</p>	<p>Minor Irrigation (Three months)</p>	<p>Minor Irrigation – Partially Complied.</p>		<p>Minor irrigation department has taken up works that comprises lifting of treated wastewater to fill 191 tanks in kolar and chikkaballapur districts for ground water recharging purpose only. The flow and discharge are not measured by at each tank by the department. However at present under these projects 102 tanks has been filled in both Kolar and Chikkaballapur districts by</p>

<p>3. Measurement of flow of all the major drains (i.e. storm water drains) joining the river for estimate of flow of River Thenpennai and maintenance of all records.</p>	<p>BWSSB and Minor Irrigation (Three months)</p>	<p>Not Applicable</p>		<p>pumping 7.85 TMC of treated water available from BWSSB STP. Regarding flow measurements, Minor irrigation department has not installed any flow measuring devices for any minor irrigation tanks.</p> <p>The concerned department responsible for measurement of flow in storm water drains could not be ascertained or entrusted by the Joint committee in this regard. It was informed that both the departments (BWSSB & MI) do not cover the activity of storm water drain flow measurement under the ambit/scope.</p>
<p>II. Study of Performance evaluation of Sewage Treatment Plants in Bangalore by engaging a CSIR institute</p>				
<p>(i) BWSSB may engage a CSIR Institute like CLRI or NEERI or others for evaluating</p>	<p>BWSSB and KSPCB (Six months)</p>	<p>BWSSB - Partially Complied. KSPCB – Partially</p>	<p>Timeline – Not provided.</p>	<p>(i) BWSSB has signed an agreement with M/s Society for Innovation and Development,</p>

<p>performance of STPs located in K&C and Hebbal valleys. (viz., there are 32 STPs in Bangalore including 21 STPs in Koramangla & Challaghatta and Hebbal Valleys). The same may be supervised by KSPCB. The final report may be submitted to KSPCB for review.</p>		Complied.		<p>IISC, Bangalore for BNR Removal Studies of STPs. The outcome of the study would be made available to the Hon'ble NGT.</p> <p>(ii) KSPCB would review the findings of the study before furnishing to the Joint Committee and Hon'ble NGT.</p>
<p>(ii) Completion of sewerage network for the villages in Koramangla & Challaghatta and Hebbal Valleys (of 110 villages identified by BBMP) for tapping the sewage generated, as already submitted to Hon'ble Tribunal, Principal Bench, Delhi in the matter of O.A no. 125/2017. (Next date of hearing: 15.01.2021)</p>	<p>BWSSB (as per the timeline fixed in O.A No. 125/2017)</p>	<p>BWSSB – Partially complied</p>	<p>Time line – 110 villages network will be completed in the year 2024.</p>	<p>--</p>
<p>(iii) Strengthening of STP conveyance system to improve sewage getting completely tapped</p>	<p>BWSSB (on a regular basis)</p>	<p>BWSSB – Partially complied</p>	<p>Time line - Ongoing and continuous</p>	<p>Maintenance of sewer lines is also done regularly based on the</p>

<p>and treated, in order to avoid discharge into River Thenpennai.</p> <p>(iv) The outcome of the performance study of STPs may be submitted as Status of Compliance of the State Functionaries of Karnataka to the Monitoring Committee constituted in the matter of O.A 125/2017, for review and reporting.</p>	<p>KSPCB and BWSSB (after completion of the study)</p>	<p>KSPCB and BWSSB – To be complied once the performance study report of STPs is completed.</p>	<p>Timeline – after completion of the study</p>	<p>complaints and extensive, massive desilting of sewer lines will also be taken periodically to ensure proper flow of sewage.</p> <p>The final outcome of the performance study would be reviewed by KSPCB, before furnishing to the Joint Committee and Hon'ble NGT.</p>
<p>III. Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode.</p>				
<p>i. Among the industries those that are Red/Orange category (small, medium and large) with treated effluent discharge option as surface water/sewer drain/others (which includes industries having ZLD) in River basin of Thenpennai be monitored for</p>	<p>TNPCB & KSPCB (six months)</p>	<p>TNPCB - Complied</p> <p>KSPCB – Not Complied</p>	<p>Timeline – On a continuous basis</p>	<p>TNPCB has provided analysis report of M/s Premier SPG & WVG Mills Ltd., Belathur, Hosur upto March, 2021. However, TNPCB needs to cover few more industries randomly in the river basin for compliance verification.</p>

<p>Thenpennai</p> <p>(ii) Preparation of Detailed Project Report (DPR) for development of Biodiversity parks in Bellandur and Varthur</p> <p>(iii) Award of Project</p> <p>(iv) Completion of the Project</p>			<p>demarcating area between maximum flood level and the lake periphery instead of doing so along the periphery of the lake boundary i.e. ensuring that area of lakes is not used in the process. The proposal of the BDA appears to be to develop the bio-diversity park within the boundary of the lake and the full tank level adversely affects the lake.”</p> <p>iv. There is no space available for development of biodiversity parks near Bellandur & Varthur lake. However development of wetland has already been considered and work order has been issued to the agencies. Meanwhile agencies have taken up de silting of designated area</p>
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				of wetland for construction of wetland in Bellandur & Varthur lakes.
V. Environmental Compensation be imposed by SPCBs after evaluating performance of STPs and identification of defaulters upon Random Verification				
1. EC be calculated and imposed based on the Performance Evaluation of STPs and Random Verification of Grossly Polluting Industries.	BWSSB and KSPCB (Six months)	BWSSB – To be calculated once the performance study is completed; KSPCB – To be complied	Timeline – Not provided by the concerned departments.	To be assessed by the concerned departments in Karnataka and Tamilnadu.
2. EC be calculated and imposed based on Random Verification of Grossly Polluting Industries.	TNPCB (Six months)	TNPCB – To be calculated once the random verification is carried out for remaining zones in the river basin		
3. Calculation of EC by the three member Committee comprising of CPCB, TNPCB and KSPCB, after submission of Reports by the concerned authorities (BWSSB, KSPCB, TNPCB).	CPCB (Six months on receipt of the Study Report and recommendations/criteria for imposing EC from KSPCB and TNPCB)	CPCB – To be complied once the Reports and Recommendations from KSPCB and TNPCB are received.		
VI. Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai up till Kelavarapalli				
1. Feasibility study for providing Sewage Treatment options (such as oxidations ponds/diversion channels or wetlands etc.)	Feasibility study by TNPCB in consultation with local authority for implementation (TNPCB - six months)	TNPCB – Complied	Timeline – Before 31.10.2021	Construction of diversion channel with wet land system for the treatment of sewage generated

<p>by TNPCB followed by implementation by Local authority of the district.</p> <p>2. Solid Waste Management Plan be devised and executed by concerned Block Development Officer, Hosur taluk to ensure the solid wastes are not disposed on the riverside and managed as per Solid Waste Management Rules, 2016.</p>	<p>Concerned Block Development Officer to submit to TNPCB (six months)</p>	<p>BDO – Under Progress</p>	<p>Timeline – Before 31.10.2021</p>	<p>from the villages by the local body of Hosur Panchayat Union is under progress.</p> <p>i. The local body of Hosur Panchayat Union has constructed the Micro Compost Centre for treatment of segregated biodegradable municipal solid wastes.</p> <p>ii. Under Central Government scheme of National urban Mission project a Plastic shredding unit is proposed at a cost of Rs. 20 Lakhs to handle the plastic wastes in Bagalur.</p> <p>iii. In Sokkarasanapalli, the non-biodegradable wastes are burnt through the Solid waste Disposal Incinerator established at estimate cost of Rs.18.00 Lakhs by CSR fund of M/s. Excide</p>
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				factory.
VII. Regular Water Quality Monitoring at important locations				
1. The trend of water quality and its improvement at major confluence points may be monitored for the year 2021-22 on a monthly basis and a report be submitted to CPCB to ensure the quality of water flowing in River Thenpennai.	TNPCB & KSPCB (to monitor on yearly basis)	TNPCB – Complied; KSPCB – Complied	Analysis of water quality to be carried out on a continuous basis.	Water quality analysis of River Thenpennai at the interstate locations namely Mugalur Bridge in Karnataka and Sokkarasanapalli in Tamilnadu was provided by KSPCB and TNPCB. The same has to be carried out for the parameters to classify as per the as per Designated Best Use Criteria. In mugalur, the water quality analysis results (as on January 2021) reveal that the water quality falls under Class E as per Designated Best Use Criteria. The aforesaid results show that there has been no improvement in the water quality flowing into the River, despite of the aforesaid efforts by departments such as BWSSB in tapping the

<p>2. Responsibility as a Custodian of Rivers/tanks in Karnataka vests with State Functionaries namely, BWSSB, BBMP, BDA, Lake Development Authority, Minor Irrigation Department. Therefore, Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its</p>	<p>BWSSB, BBMP, BDA, Minor Irrigation Department (every year)</p>	<p>BWSSB – Partially Complied; BBMP – Not Complied; BDA –Partially Complied; Minor Irrigation – Partially Complied.</p>	<p>Timeline – to be provided by the concerned departments in Government of Karnataka</p>	<p>untreated sewage and enhancement of sewage treatment capacity (as claimed), which otherwise would have been discharged into River Thenpennai. In case of sokkarasanapalli, the parameters namely, turbidity, EC, SAR, Boron and Free ammonia has not been calculated to ascertain the classification of the water as per Designated Best Use Criteria.</p> <p>In one instance, BWSSB has requested the professors of IISc who are entrusted with the studies of Environmental Impact due to augmentation of treated water from K&C Valley STP's into Kolar District Lakes to share the results of the samples</p>
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<p>characteristics in the respective jurisdictions.</p>				<p>collected and as reported by them the Biological Nutrients in the ultimate discharge point of Lakshmi Sagar Lake are well within the NGT stipulations.</p>
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3.1 Department-wise Compliance Status

A. Bangalore Water Supply and Sewerage Board (BWSSB)

I. With regard to **enhancement of capacity of sewage treatment capacity** in Bangalore, the status of commissioning and operation of new STPs are provided as below;

(i) One 150 MLD Capacity new Sewage Treatment Plant based on activated sludge process with BNR with Power generation was to be completed by 30.07.2020. The overall progress as on 31.03.2021 is 93% against the planned target of 100.00%. As per the commitment to NGT, intake of sewage was taken on 22.03.2021 (before March 2021) and treatment is in progress. Presently, about 100MLD of sewage is being augmented, it requires minimum of 45 days for developing MLSS and to achieve the effluent standards. By the end of April 2021, the results will be achieved. The balance liquid stream will be completed by May 2021 and the work will be completed in all respects including sludge line by July 2021.

(ii) Construction of 210 MLD capacity ISPS at Koramangala Sports Complex including O&M for 7 years was completed on 29.01.2020.

(iii) The Sarakki STP of capacity 5.0 MLD at Sarakki lake was completed and commissioned on 08.11.2019. Presently the treated water is let into Sarakki Lake.

(iv) The Chikkabeguru STP of capacity 5.0 MLD was completed in September, 2020. Presently the treated water is let into Chikkabegur Lake.

(v) The Hulimavu STP of capacity 10 MLD was completed and commissioned on 31.03.2020. Presently the treated water is let into Hulimavu Lake.

(vi) Augmenting sewage from Iblur side and conveying to Bellandur Amanikere STP (Laying of sewer sub main) was completed and commissioned on 23.12.2020.

(vii) The Agaram STP of capacity 35 MLD was completed and commissioned on 31.03.2020. Presently the treated water is let into Agaram Lake.

(viii) A waste water wet well of 32.5 MLD Capacity near the premises of 90MLD Bellanduru Amanikhane STP to augment sewage from the adjoining areas of Bellanduru Amanikhane STP. The overall progress as on 31.03.2021 is 70% against the planned target of 100.00%. However, the temporary arrangement made for pumping sewage to Bellanduru Amanikhane STP. (Proposed Timeline: 31.05.2021)

Though the progress is not achieved due to COVID-19, intermediate arrangements have been made and presently sewage is augmented to Bellanduru STP, however the work will be completed before 31.05.2021.

(ix) With regard to up gradation of 4 MLD STP at Madivala, the overall progress as on 31.03.2021 is 38.00% as against 100% and the work will be completed by December 2021. However, it is ensured that during this rehabilitation work the sewage which was earlier augmented to this STP is now diverted to Agaram ISPS by linking this network to ISPS through 900 mm dia sewer link line. At present, there is no sewage entry into the Madivala lake. This STP was taken up by Karnataka Lake Conservation and Development Authority with funds from KSPCB. Due to poor progress on this work has been handed over to BWSSB. From then onwards BWSSB has taken up upgradation of this STP. Maintenance of sewer lines is also done regularly based on the complaints and extensive, massive desilting of sewer lines will also be taken periodically to ensure proper flow of sewage. (Proposed timeline: 31.12.2021).

II. With regard to **Estimation of flow of Water in River Thenpennai**, it is submitted that,

(x) The flow in the SWD's was measured in the month of April-2019 and the details of flow are, (a) HAL - 48.60; (b) Agaram & Koramangala (Y-Junction) - 179.50; Total-228.10 MLD.

(xi) The flow details of STP's at K&C Valley, Bellandur on the day of measurement were, (a) 218 MLD-170 MLD (b) 60 MLD-22 MLD; (c) 30 MLD-26MLD (d) 90 MLD-30 MLD; (e) Total-248 MLD.

(xii) After carrying out major interlinking/new pipeline works on the upstream side, the flow was measured in the 1st week of March-2020, the details are, (a) HAL-31.4 MLD; (b) Agaram & Koramangala (Y-Junction) - 114.26; (c) Total-145.66 MLD.

(xiii) The flow details of STP's at K&C Valley, Bellandur on the day of measurement were, (a) 218 MLD-180 MLD; (b) 60 MLD-51 MLD; (c) 30 MLD-30 MLD; (d) 90 MLD-70 MLD; (e) Total-331 MLD.

(xiv) At present the flow details of STP at K&C valley measurement were, (a) 218 MLD-194 MLD; (b) 60 MLD-60MLD; (c) 30 MLD- 30MLD; (d) 90 MLD -93 MLD; (e) 50 MLD-42MLD; (f) 2MLD-1.50MLD; (g) 1.50MLD-1.50MLD; (h) 4MLD-2MLD; (i) 5MLD-4.50MLD; (j) 10MLD-5MLD; (k) 5MLD-3MLD; (l) 35MLD-18MLD; (m) 150 MLD-83 MLD; (n) Total=542.50 MLD.

As can be seen from the above it is clear where the flow in the SWD to an extent of 294.50 MLD has been reduced and are being augmented to STP's. The combined treatment capacity of the above plants will be 664.50 MLD against a measured flow of 583 MLD. Presently 542.50 MLD of sewage is being treated. The total treated sewage will be 542.50 MLD (93%) as against the measured flow of 583 MLD. The balance quantity will be augmented in phased manner (110 villages network will be completed in the year 2024). The details of the flow measurements at Bellandhur and Varthur lakes are given in **Annexure V** (pg no. 162)

III. With regard to **Study of Performance evaluation of Sewage Treatment Plants in Bangalore by engaging a CSIR institute**

(xv) With regard to proposal for upgradation of all existing STPs with facilities to removal of Biological Nutrient Removal at 248 MLD STP at K&C Valley. It is informed that the operating STPs of 90 MLD STP at Bellandur Amanikere, 60 MLD STP at K&C Valley, 5 MLD STP at Sarakki and under construction STP's of 150 MLD at K&C Valley, 5 MLD at

Chikkabegur, 10 MLD Hulimavu and 35 MLD STP at Agaram are with Biological Nutrient Removal process.

The working STPs at Cubbon Park and Lalbagh are Tertiary Treatment Plants. For the 248 MLD (KC Valley), upgradation the DPR and the estimate is ready and had been sent to Government for approval.

Further, for not having received responses for the tenders, based on the concept note developed by Professors of IISc and in consultation with the consultants M/s CH2M Hill India Pvt. Ltd., modifications in process were made to achieve removal of nutrients in the other two STP's i.e. 30 MLD STP & 218 MLD STP. Based on the directions of the Hon'ble NGT committee, samples were collected jointly by CPCB, KSPCB and IISc, wherein it is clear that due to the modification made in the process the Biological Nitrates have been removed and the same is complying with the NGT requirements.

Also, it is to submit that the treated effluent from all the 3 above STP's and one more 90 MLD STP at Bellandur Amanikere are eventually transmitted to the Minor Irrigation Jack Well situated near Bellandur Amanikere from where the effluent is finally discharged into Lakshmi Sagar Lake of Kolar District.

After these modifications BWSSB has got tested the effluent from the MI Jack Well 2 near Bellandur Amanikere and has ascertained the reduction in Biological Nutrients. As per the test reports, the Total Nitrogen is 6.4 mg/ltr and the Total Phosphates is 0.85 mg/ltr which is within the ranges as suggested by Hon'ble NGT.

To further ascertain the status of Biological Nutrients values in the treated effluent discharged at Lakshmi Sagar Lake, BWSSB has requested the professors of IISc who are entrusted with the studies of Environmental Impact due to augmentation of treated water from K&C Valley STP's into Kolar District Lakes to share the results of the samples collected and as reported by them the Biological Nutrients in the ultimate discharge point of Lakshmi Sagar Lake are well within the NGT stipulations.

The Final DPR for the 248 MLD (KC Valley) has been submitted to Govt for approval. Copy of the Agreement dated 07.12.2020 with M/s Society for Innovation and Development, Indian Institute of Science and work order dated 10.12.2020 is appended as **Annexure V** (pg no 163 - 170).

(xvi) Interim remediation - The peripheral diversion channels have been constructed by the BDA in both the lakes and sewage water is flowing through this channel. Entry of sewage water into these lakes has been stopped. Further, the BWSSB have installed aerating systems and was completed by 31.01.2020 at 1) HAL side and Kempapura inlet, 2) Agaram inlet, 3) Koramangala inlet, 4) Iblur inlet coming under Bellandur Lake, 5) Northern and 6) Southern side of Varthur lake for inline treatment of sewage. Further, in addition the BWSSB is also installing artificial floating islands.

In order to comply with the time line of 01.02.2020 fixed in the orders of the NGT, the aerating systems in the 06 locations were installed before 31.01.2020 and same have been observed by the NGT Committee during their inspection of the said location on 21.01.2020.

Subsequently, in order to enhance the interim remediation artificial floating islands have also been installed. Same have been observed by the NGT Committee during their inspection on 25.02.2020.

IV. With regard to Completion of sewerage network for the villages in Koramangla & Challaghatta and Hebbal Valleys (of 110 villages identified by BBMP) for tapping the sewage generated, as already submitted to Hon'ble Tribunal, Principal Bench, Delhi in the matter of O.A no. 125/2017; and Strengthening of STP conveyance system to improve sewage getting completely tapped and treated, in order to avoid discharge into River Thenpennai.

(xvii) To properly design UGD network so as to feed the existing STPs to their full capacity and also to the STPs under construction treated water should be reused.

1. HAL SWD (Challaghatta Valley) – Totally 23 works are to be taken up for augmenting this flow, out of which 23 works were completed on 23.12.2020
2. Koramangala and Agaram Valley - Totally 48 works are to be taken up for augmenting this flow, out of which 48 works are completed on 23.12.2020
3. Iblur Catchment area - Completed and Commissioned on 23.12.2020.

4. Kempapura Catchment area - BWSSB has taken up work of laying 300 mm dia RCC NP3 sewer line for a length of 1000 RMT to convey the sewage generated in this area Bellanduru Amanekhan STP. The work is completed and commissioned in the month of May 2020.

(xviii) A proper mechanism should be developed/placed to identify the blockages in the existing UGDs and to attend them mechanically. BWSSB has 175 Jetting cum suction machines and 40 de-silting machines to clean the UGD lateral network. BWSSB is clearing the manholes once in a year. 06 High Pressure desilting machines and one recycler machine are engaged in cleaning of sub-mains and main sewers. Maintenance of sewer lines is also done regularly based on the complaints and extensive, massive desilting of sewer lines will also be taken periodically to ensure proper flow of sewage.

(xix) Laying of 1800 mm diameter raising main from 210 MLD ISPS to 150 MLD STP – S2D(a) of length 5.315 Km was completed on 07.01.2020. The Pumping main was commissioned on 22.03.2021.

(xx) As per the Hon'ble NGT order, BWSSB may further ensure that treated water is not discharged into the UGD network. Further, the list provided by KSPCB for 496 buildings having STPs has been inspected by BWSSB engineers and out of 496 buildings, 109 buildings UGD connections are disconnected, there is no BWSSB UGD network near 378 buildings, 2 buildings are beyond the 110 village limits of BBMP, 5 buildings addresses are repeated in the list, earlier for 1 building which address was not traceable has been identified – it is individual building for which STP is not applicable and 1 building does not have STP.

BWSSB is identifying the sources of discharge of sewage and will disconnect water supply and UGD connections of the defaulting establishments and also send a complaint to KSPCB. If the defaulting establishment is using ground water then the complaint has also to be booked with KSPCB for its action.

Further, the treated water was allowed as per the conditions stipulated in the order of the consent issued by KSPCB. Under the circumstances, BWSSB request not to take any action against its officials. The detailed report was submitted while furnishing compliance on 31.12.2020.

V. With regard to **Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions.**

(xxi) Also, it is to submit that the treated effluent from all the 3 above STP's and one more 90 MLD STP at Bellandur Amanikere are eventually transmitted to the Minor Irrigation Jack Well situated near Bellandur Amanikere from where the effluent is finally discharged into Lakshmi Sagar Lake of Kolar District.

After these modifications BWSSB has got tested the effluent from the MI Jack Well 2 near Bellandur Amanikere and has ascertained the reduction in Biological Nutrients. As per the test reports, the Total Nitrogen is 6.4 mg/ltr and the Total Phosphates is 0.85 mg/ltr which is within the ranges as suggested by Hon'ble NGT.

To further ascertain the status of Biological Nutrients values in the treated effluent discharged at Lakshmi Sagar Lake, BWSSB has requested the professors of IISc who are entrusted with the studies of Environmental Impact due to augmentation of treated water from K&C Valley STP's into Kolar District Lakes to share the results of the samples collected and as reported by them the Biological Nutrients in the ultimate discharge point of Lakshmi Sagar Lake are well within the NGT stipulations.

Copy of the Action Taken Report and Progress made on the Action points of the Joint Committee is appended as **Annexure V**.

B. KSPCB

Water quality analysis of River Thenpennai at the interstate locations namely Mugalur Bridge in Karnataka was provided by KSPCB. The same has to be carried out for the parameters to classify as per the Designated Best Use Criteria. In mugalur, the water quality analysis results (as on January 2021) reveal that the water quality falls under Class E as per Designated Best Use Criteria. The aforesaid results show that there has been no improvement in the water quality flowing into the River, despite of the aforesaid efforts by departments such as BWSSB in tapping the untreated sewage and enhancement of sewage treatment capacity (as claimed by BWSSB), which otherwise would have been discharged into River

Thenpennai. Copy of Water Quality Analysis results of mugalur is appended as **Annexure VI** (pg no 179 - 198).

Further, KSPCB proposed to install online monitoring to monitor the key parameters at the river Thenpennai at the State border before it leaves Karnataka. These results will be synced with the Integrated Command Control Centre of KSPCB and made available online in the public domain. Periodically the result will be monitored and the graph will be plotted. This would help the KSPCB and CPCB to assess water quality and initiate action whenever there are violations.

Regarding random verifications of industries discharging effluents into the storm water drains, KSPCB has been carrying out inspections to identify such industries. Few industries have already been issued with closure orders. KSPCB will continue to inspect a minimum of 60 industries to ensure that they do not discharge the effluent in to the storm water drain. On identifying such instances, action will be initiated under section 33A of Water Act.

After the waste water is treated by the primary STP's situated in the area falling under the jurisdiction of Bruhat Bengaluru Mahanagar Palike (BBMP), the water flows further downstream crossing various villages/hamlets situated in karnataka before entering Tamilnadu. It is opined that, a separate STP could be installed at a suitable location in Karnataka border, wherein waste water treated by the primary STP's will be treated once again before it flows to Tamilnadu.

Copy of the Action Taken Report and Progress made on the Action points of the Joint Committee is appended as **Annexure VI**.

C. TNPCB

The Progress made with regard to action points pertaining to Tamilnadu as on 21st May 2021 is given below;

I. Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode

- i. There is no discharge of industrial effluent into river Thenpennai in the area under investigation i.e., from Chokkarasanapalli Village to

Kelavarapalli Dam stretch. The industries located in Thenpennai river basin are closely monitored by the TNPCB to ensure to achieve the zero liquid discharge.

II. Environmental Compensation be imposed by SPCBs after evaluating performance of STPs and identification of defaulters upon Random Verification

No violating/defaulting industries are identified.

III. Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai up till Kelavarapalli

i. **Sewage Management** - Construction of diversion channel with wet land system at a cost of Rs. 25 Lakh has been provided (about 90% civil works completed) for the treatment of sewage generated from the Bagalur by the local body of Hosur Panchayat Union.

ii. Construction of diversion channel with wet land system at a cost of Rs. 24 Lakh has been provided (about 90% civil works completed) for the treatment of sewage generated from the Belathur village by the local body of Hosur Panchayat Union.

The wet land for the stream #1 in Bagalur and Belanthur will be completed on 30.06.2021. For the remaining four stretches and remaining stretches of Bagalur and Belanthur, construction of wetland system will be executed after approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed before 31.10.2021. Additional time requested by the local body due to COVID Pandemic situation.

iii. Chennasandiram - The sewage generated from part of the 70 houses is being treated through the septic tank followed by the soak pit.

iv. Kanimangalam - The sewage generated from part of 125 houses is being treated through the septic tank followed by the soak pit.

Construction of diversion channel with wet land system for the treatment of sewage generated from the Sokkarasanapalli village, Chennasandiram village and Kanimangalam village will be carried by the Hosur Panchayat Union after obtaining necessary approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed within 05 months.

v. Guliganapalli (Kodiyalam) village - The sewage generated from 40 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

vi. Sathiyamangalam, Muneeswar Nagar - The sewage generated from Thummanapalli village Panchayat [280 houses in Sathiyamangalam and 98 houses in Muneeswar Nagar] is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

vii. Lingapuram - The sewage generated from 190 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

viii. Baduthepalli - The sewage generated from 220 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

ix. Kempasandiram - The sewage generated from 25 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

x. Chennasandiram - The sewage generated from 70 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

xi. Singasadanapalli - The sewage generated from 121 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

xii. Kanimangalam - The sewage generated from 125 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.

xiii. **Solid Waste Management:** Bagalur and Belathur villages - The local body of Hosur Panchayat Union has removed the solid waste dumped in the banks of River Thenpennai.

The average collection of solid waste in the Bagalur & Belathur Panchayat is about 2.0 MT. The Municipal Solid Waste is being collected through door to door collection by engaging 19 Thooimai Kavalars and deploying with five tri-cycles and three electronic bikes.

The local body of Hosur Panchayat Union has constructed the Micro Compost Centre with a maximum capacity to process 3.0 MT of segregated biodegradable municipal solid wastes in Bagalur and Belathur at a cost of Rs. 20 Lakh & Rs. 24 lakh respectively.

Under Central Government scheme of National urban Mission project a Plastic shredding unit is proposed at a cost of Rs. 20 Lakhs to handle the plastic wastes in Bagalur and the shredded plastics will be used for road laying works. The work will be completed before 31.10.2021. The MCC centre at Bagalur and Belathur is proposed to commission on 30.06.2021 & 30.07.2021 respectively.

Additional time requested by the local body due to COVID Pandemic situation.

xiv. Sokkarasanapalli village - The solid wastes generated from the Sokkarasanapalli village are being collected and brought to the segregation shed and segregated as bio-degradable and non- biodegradable wastes. The non-biodegradable wastes are burnt through the Solid waste Disposal Incinerator established at Estimate Cost of Rs.18.00 Lakhs by CSR fund of M/s. Excide factory.

xv. Guliganapalli, Sathiyamangalam, Muneeswar Nagar, Lingapuram, Baduthepalli, Kempasandiram, Chennasandiram, Singasadanapalli, Kanimangalam, Kallipuram and Oddapalli Thinna villages - The solid wastes generated from the households are being collected through Thooimai Kavalars and brought to the segregation shed and segregated as bio-degradable and non- biodegradable wastes for further treatment and dispose.

The progress made in construction of sewage management and solid waste management plans are given as **Figure 1**;



a. Diversion channel with wet land system for the treatment of sewage Bagalur Village



b. Diversion channel with wet land system for the treatment of sewage Belathur Village



c. MCC work under progress in Bagalur

	
<p>d. MCC work under progress in Belathur</p>	<p>e. Solid wastes dumped in the river bed area have completely been removed by the local bodies.</p>
	
<p>f. Solid waste Disposal Incinerator at Sevaganapalli Panchayat</p>	<p>g. Solid wastes dumped in the river bed area have completely been removed by the local bodies.</p>

Figure 1. Progress made with regard to Sewage Management and Solid Waste Management in Tamilnadu

IV. With regard to the action point on **trend of water quality and its improvement at major confluence points** be monitored for the year 2021-22 on a monthly basis and a report be submitted to CPCB to ensure the quality of water flowing in River Thenpennai, the details of water quality of

River Thenpennai monitored at interstate border i.e. at Chokkarasanapalli Village and report of analysis for the period from September 2017 to April 2021 is appended in **Annexure VII** (pg no 211-214).

Copy of the Action Taken Report and Progress made on the Action points of the Joint Committee is appended as **Annexure VII**.

D. Bangalore Development Authority (BDA)

- I. With regard to **development of Biodiversity parks** the status of compliance and progress made is given as;

Bangalore Development Authority has the jurisdiction of Bellandur & Varthur lakes. It has undertaken the desilting work in these two lakes. As per the action plan submitted by BDA for rejuvenation of Bellandur and Varthur lake, development of wetland provision is made in the DPR. However, provision for development of biodiversity park was included pursuant to the Hon'ble NGT direction on 11.12.2019 indicating "Steps may be explored for development of wet lands and biodiversity parks apart from other remedial action for reducing the pollution load on the recipient water bodies".

Accordingly, for development of biodiversity parks in Bellandur & varthur lakes, the following available area within the lake periphery was prepared under the advice of NGT appointed Monitoring committee.

The Hon'ble NGT appointed Monitoring Committee submitted the following area details on formation of Biodiversity parks before the Hon'ble NGT.

An area of 52.24 acres (East of bund 5.8 acres near suncity 13.85 acres near Y-junction North west corner 11.77 acres Ambedkar nagar and nearby area 14.87 acres) in Bellanduru lake: 16.6 acres (near main let 6.9 acres: Siddapura west side 2.46 acres and near Balagere 7.24 acres) in Varthur lake for biodiversity parks. The suggested areas are out of the periphery of the lakes. In such areas (biodiversity parks) silt of appropriate quantity from the lakes may be used for rising to appropriate heights. The biodiversity parks may be raised with help of an expert committee in the field. The biodiversity parks will act as carbon sink, lung space and habitat to avian and other fauna and flora. The committee suggested that no other structures should be allowed in the lake areas than as suggested by the NGT in para 28(xii).

The Hon'ble NGT in its order dated 4/13.08.2020 has rejected the proposals with the following observation. "BDA has wrongly understood that biodiversity parks are to be setup within the lake boundary. Such parks are to be setup along the periphery of the lake boundary." Copy of Hon'ble NGT Order dated 13.08.2020 is appended as **Annexure VIII** (pg no. 257 – 279).

Once again to insist upon the Hon'ble NGT for formation of biodiversity park and islands within the lake on similar lines done in other lakes of Bangalore, vide IA No.392/2020 and 395/2020 in Original Application No.125/2017. Hon'ble NGT rejected the proposal in its order dated 15.12.2020, highlighting the submission learned Amicus Curiae to the Hon'ble NGT as below;

"The BDA has wrongly understood that biodiversity parks are to be set up within the lake boundary. Such parks are to be set up along the periphery of lake boundary".

To carry out the biodiversity parks along the periphery of lake boundary in Bellandur & Varthur lake, no Government land is available along the periphery of the lake, as per the information given by the Additional Director of Land Records, (Bangalore east) dated 06.11.2020.

Once again on the advice of Hon'ble NGT appointed Monitoring Committee to identify and carryout survey, the area between tank full level and tank boundary where water does not spread throughout the year. Such area has been identified and marked on the lake map with levels. The new proposal with 99 acres 07 guntas in Bellandur lake and 31 acres 15 guntas in Varthur lake were indentified and submitted to Hon'ble NGT appointed Monitoring committee. The Monitoring Committee submitted the proposal before the Hon'ble NGT for consideration. Hon'ble NGT in its order dated 12.03.2021 (Copy of Hon'ble NGT Order dated 12.03.2021 is appended as **Annexure VIII** (pg no. 280 - 337) placed the observation & comments of Amicus Curiae as stated below:

"Progress against item No.20 with reference to setting up of bio-diversity park is not satisfactory. It is pointed out that the BDA has again taken a wrong stand for demarcating area between maximum flood level and the lake periphery instead of doing so along the periphery of the lake boundary i.e. ensuring that area of lakes is not used in the process. The proposal of the BDA appears to be to develop the bio-diversity park within the boundary of the lake

and the full tank level adversely affects the lake.”

Hence, there is no space available for development of biodiversity parks near Bellandur & Varthur lake. However, development of wetland has already been considered and work order has been issued to the agencies. Meanwhile agencies have taken up de silting of designated area of wetland for construction of wetland in Bellandur & Varthur lakes.

It is beyond Bangalore Development Authority jurisdiction and hence agency for development of Bio diversity park, wetland in River basin of Thenpennai or Dakshina Pinakini decision is to be taken at Government level, Government of Karnataka.

Bellandur lake:- For desilting Work order was issued on 23.11.2020 to M/s RMN infrastructure pvt ltd and after preliminary preparation like removal of seepage water from the lake bed and recording of pre levels by total station survey, agency has began desilting of lake from 04.12.2020. Karnataka state Pollution Board (KSPCB) has done the analysis of silt samples and the report was received on 06.03.2021. As per the analysis report desilted material is being transported to the designated quarry at Vittasandra and Mailasandra.

Wetland:- Formation of wetland item has been included in the DPR for rejuvenation of Bellandur lake at 3 major inlets viz.

1. Main Inlet (Y junction) proposed wetland area of 1,71,000 Sqm.
2. Iblur inlet proposed wetland area of 30750.00 Sqm.
3. HAL inlet proposed wetland area of 30,000 Sqm.

As per the work order issued on 23.11.2021 wetland at these above locations the agency will execute the wetland after desilting of the lake.

Varthur lake:- For desilting Work order was issued on 23.11.2020 to M/s Star Infratech pvt ltd and after preliminary preparation like removal of seepage water from the lake bed and recording of pre levels by total station survey, agency has began desilting of lake from 04.12.2020. Karnataka state Pollution Board (KSPCB) has done the analysis of silt samples and the report was received on 12.02.2021. As per the analysis report desilted material is being transported to the formers for their Agriculture purpose. As per the analysis of silt samples, the silt is suitable for Agriculture purpose.

Wetland:- Formation of wetland item has been included in the DPR for rejuvenation of Varthur lake at 1. Main Inlet in an wetland area of 163491 Sqm

As per the work order issued on 23.11.2020 wetland at these above locations the agency will execute the wetland after desilting of the lake.

II. With regard to **Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions.**

In a parallel case, the Hon'ble National Green Tribunal, Principal Bench, New Delhi, Original Application No.125/2017 has issued directions in its Order dated on 18.12.2019 and final order dated 12.03.2021 vide page no.04 (sub sl no.xi), directing the "State PCB may develop a robust water quality monitoring programme for monitoring of water quality of drains leading to the lakes and also undertake water quality monitoring at least 5 location for each lake". As per the directions of Hon'ble NGT, monitoring of water quality of drains leading to the lakes is to be carried out by the State PCB.

The Bellandur and Varthur lakes are only 2 lakes under the custodian of BDA which flow into river Thenpennai. These 2 lakes have been emptied for carrying out de-silting work. The water entering into the lake from the storm water drain has been diverted through diversion channel. Monitoring water quality in the lakes does not arise as there is no water in the lake, due to de-silting work under progress.

The responsibility of monitoring treated water at K & C Valley Sewage Treatment Plant (STP) is with BWSSB.

Copy of Action Taken Report and Progress made on the Action points of the Joint Committee is appended as **Annexure VIII**.

E. Minor Irrigation and Ground Water Development -

With regard to **measurement of flow of discharge of all the tanks/lakes** located in Koramangla & Challaghatta valleys flowing into River Thenpennai, it is to submit that informed that all tanks in Bangalore Urban district are in the control of BBMP. Minor irrigation department has not

installed any flow measuring devices for any Minor irrigation tanks. To address the details of flow or discharge of each of the tanks that are recharged by treated wastewater by BWSSB, it is to submit that since last three years, 6.69 TMC water was pumped to fill 78 tanks in Kolar and by pumping 1.16 TMC to fill 24 tanks in Chikkaballapur.

Whereas it is to submit that storm water drains and main river course are not in the jurisdiction of Minor Irrigation Department.

At present, 380 MLD of treated water is available for pumping from BWSSB treatment plants in KC valley and HN Valley for filling 102 tanks in Kolar and Chikkaballapur districts. After the total quantity of 650 MLD from BWSSB treatment plants are received then all the 191 tanks would be filled for ground water recharge.

Minor irrigation department has taken up works that comprises lifting of treated wastewater to fill 191 tanks in kolar and in chikkaballapur districts for ground water recharging purpose only. The flow and discharge are not measured by at each tank by the department. However, at present under these projects 102 tanks has been filled in both Kolar and Chikkaballapur districts by pumping 7.85 TMC of treated water available from BWSSB STP. Regarding flow measurements, Minor irrigation department has not installed any flow measuring devices for any minor irrigation tanks.

With regard to **Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions.**

It is to submit that water quality measurement is not covered under the ambit of Minor Irrigation and the quality of the water has to be monitored at the treated water discharge points by BWSSB. Therefore, the water quality is not measured by the Minor Irrigation department.

Copy of Action Taken Report and Progress made on the Action points of the Joint Committee is appended as **Annexure IX.**

F. Bruhat Bengaluru Mahanagra Palike (BBMP)

With regard to **Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions**, no information has been provided.

CHAPTER IV

OBSERVATIONS AND RECOMMENDATIONS

- i. With respect to flow measurements of major tanks, storm water drains and major confluence points on River Thenpennai, the same has not been carried out completely by BWSSB and Minor Irrigation. BWSSB and Minor Irrigation has informed the joint committee that flow measurements of tanks/lakes, storm water drains and major confluence points are not covered under the purview of their departments. Therefore, the joint committee requests Government of Karnataka to entrust the role and responsibilities to the concerned department(s) and the duties for the same may be earmarked by the Government of Karnataka.
- ii. With regard to Study of Performance evaluation of Sewage Treatment Plants in Bangalore, BWSSB may expedite the study awarded to IISC, Bangalore. The outcome of the study and the final report be shared with KSPCB for review before assessment of Environmental Compensation in case of non-compliances. The final report and outcome of the study has to be made online in public domain.
- iii. With regard to completion of sewerage network for the villages in Koramangla & Challaghatta and Hebbal Valleys (of 110 villages identified by BBMP) for tapping the sewage generated, and strengthening of STP conveyance system to improve sewage getting completely tapped and treated, BWSSB shall ensure no sewage is discharged into River Thenpennai through continuous monitoring on a regular basis and taking stringent actions on the defaulters.
- iv. With respect to Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions, the joint committee could not identify the departments in Karnataka responsible for maintaining/restoring the water quality in lakes/tanks. BWSSB, BBMP, BDA and Minor Irrigation have informed the joint committee that monitoring and restoration of water quality of tanks/lakes are not covered under their purview. Therefore, it is

submitted that the concerned department in Karnataka be identified by Government of Karnataka and ensure compliance accordingly.

- v. With respect to Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode, KSPCB and TNPCB may continue to do such random inspections regularly to curb the pollution caused to River Thenpennai and ensure no illegal activities are carried out thereof.

Regarding random verifications of industries discharging effluents into the storm water drains, KSPCB informed the committee that they would continue to inspect a minimum of 60 industries to ensure that the industries do not discharge the effluent into the storm water drain. On identifying such instances, action will be initiated under section 33A of Water Act.

- vi. With regard to Environmental Compensation be imposed by SPCBs after evaluating performance of STPs and identification of defaulters upon Random Verification, EC has to be imposed on any defaulters or violators causing pollution into the River Thenpennai by KSPCB and TNPCB for the year 2021-22.
- vii. With regard to Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai up till Kelavarapalli, Block Development Officer (monitored by TNPCB) may ensure the completion of the activities related to sewage and solid waste management as per timelines.
- viii. With regard to action point on monitoring trend of water quality and its improvement at major confluence points for the year 2021-22 on a monthly basis, water quality of major confluence points have to be monitored on a regular basis by KSPCB and TNPCB to ensure pollution is under check.

KSPCB has proposed to install online monitoring to monitor the key parameters at the river Thenpennai at the State border before it leaves Karnataka. These results will be synced with the Integrated Command Control Centre of KSPCB and made available online in the public domain. Periodically the result will be monitored and the graph will be plotted. This would help the KSPCB and CPCB to assess water quality and initiate action whenever there are violations

Feasibility for installation of Continuous Online Water Quality Monitoring Station be worked out at the inter-state river boundary by KSPCB in Karnataka to ensure that improved quality of water reaches Tamilnadu.

After the waste water is treated by the primary STP's situated in the area under the jurisdiction of Bruhat Bengaluru Mahanagar Palike (BBMP), the water flows along various villages situated on the down stream before entering Tamilnadu. Therefore, it is opined that, a separate STP could be installed at a suitable location in Karnataka border, wherein waste water treated by the primary STP's will be treated once again before it flows to Tamilnadu.

- ix. BBMP has not provided status of compliance and action taken report with respect to Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions.
- x. With respect to construction of wetlands by Bangalore Development Authority (BDA), the activity needs to be completed within the stipulated timelines and the outcomes are to be provided to the Joint Committee.
- xi. Due to unexpected surge in COVID-19 during April to May, 2021, the joint committee recommends that the timeline for compliance of the above recommendations may be provided as six months (till December 2021).

CHAPTER V

CONCLUDING REMARKS

While referring to the Department wise compliance status with observation is provided in Table 1 above, it is to submit that Bruhat Bengaluru Mahanagar Palike (BBMP) has not provided compliance status and action taken report in this regard.

It has been observed that, with regard to flow measurements of major tanks, storm water drains, major confluence points on River Thenpennai and maintenance of Water Quality of the water flowing into River Thenpennai to be pristine and testing its characteristics in the respective jurisdictions, the Government of Karnataka is required to intervene and clearly direct the concerned department i.e. RRC and the Karnataka Tank/Lake Conservation & Protection Authority who has been vested upon the responsibility and custodian role for lakes/tanks and rivers in Karnataka. It has been informed by BWSSB, BDA, BBMP and Minor irrigation that the activities involving flow measurements and water quality monitoring are not covered under the ambit of the above departments. Therefore, jurisdictions of the River and its tanks on the river bed be clearly earmarked by the Government of Karnataka with concerned department(s) including RRC and the Karnataka Tank/Lake Conservation & Protection Authority for the purpose of monitoring and protection of surface water (lakes/tanks/rivers).

Water quality analysis of River Thenpennai at the interstate locations namely Mugalur Bridge in Karnataka and Sokkarasanapalli in Tamilnadu was provided by KSPCB and TNPCB. The same has to be carried out for the parameters to classify as per the Designated Best Use Criteria. In mugalur, the water quality analysis results (as on January 2021) reveal that the water quality falls under Class E as per Designated Best Use Criteria. The aforesaid results show that there has been no improvement in the water quality flowing into the River, despite of the aforesaid efforts by departments such as BWSSB in tapping the untreated sewage and enhancement of sewage treatment capacity (as claimed by BWSSB), which otherwise would have been discharged into River Thenpennai. Therefore, the joint committee is of the view that feasibility for installation of Continuous Online Water Quality Monitoring Station be worked out at the inter-state river boundary by KSPCB in Karnataka to ensure that improved quality of water reaches Tamilnadu.

After the waste water is treated by the primary STP's situated in the area falling under the jurisdiction of Bruhat Bengaluru Mahanagar Palike (BBMP), the water flows further downstream crossing various villages/hamlets situated in Karnataka before entering Tamilnadu. It is opined that, a separate STP could be installed at a suitable location in Karnataka border, wherein waste water treated by the primary STP's will be treated once again before it flows to Tamilnadu.

In case of sokkarasanapalli, the parameters such as BOD, DO & Total Coliform are not complying with the standards notified under Environment (Protection) Rules, 1986. Besides, the parameters namely, turbidity, EC, SAR, Boron and Free ammonia may also be analysed to ascertain the classification of the water as per Designated Best Use Criteria.

The joint committee submits that, Hon'ble NGT vide orders dated 12.03.2021 in the matter of O.A No. 125/2017 regarding remedial action for restoration of Bellandur and Varthur Lakes at Bangalore, including preventing discharge and dumping of pollutants, removing encroachments from catchment area and other steps for restoration, before Principal Bench, New Delhi has issued landmark directions, which is reproduced as below; *".. there is need for further continuous action and effective monitoring at the highest level in the Government. Consistent with earlier order on the subject, such monitoring needs to be taken over by the Chief Secretary, Karnataka who may take stock of all the left-over issues, with the assistance of other identified authorities and experts (which may include Indian Institute of Science, Bengaluru). He may inter alia interact with the State Lake Conservation and Development Authority and Forest, Ecology and Environment Departments. First meeting may be held latest by March 31, 2021. Thereafter, review meetings may be held atleast once in a month to monitor further progress and completion of targets, already fixed or which may be further fixed. It will be open to all persons interested in restoration and maintenance of the lakes in question to give their suggestions and other assistance which may be duly considered by the Chief Secretary, Karnataka on its merits. All pending projects for setting up of STPs, fencing of lake, removal of encroachments, etc. may be given to preventing formation of foam and fire incidents. Directions in earlier orders and current order to duly carried out and overseen by the Chief Secretary, as already mentioned, atleast once a month. ... The application is disposed of accordingly."*

In view of the above directions, it is humbly submitted that, ongoing efforts, developments and progress in the past few months on the action plan submitted by Government of Karnataka and Tamilnadu in compliance to the

Hon'ble NGT order dated 18.02.2021 (please refer Chapter III of the Joint Committee Progress Report) be considered by Hon'ble Tribunal. Therefore, the joint committee submits that, Hon'ble Tribunal may consider issuing necessary directions to the concerned departments (BWSSB, BDA, BBMP, Minor Irrigation, RRC and the Karnataka Tank/Lake Conservation & Protection Authority, KSPCB and TNPCB) to accomplish the activities as tabulated in table 1 along with recommendations of the joint committee in Chapter IV within a period of six months timeline (due to unexpected surge in COVID19 in the country).

Further, it is humbly prayed that, Hon'ble Tribunal may consider issuing necessary directions to the Chief Secretary, Government of Karnataka to provide a consolidated progress report (based on the individual progress reports of the concerned departments in Karnataka viz., BWSSB, BDA, BBMP, Minor Irrigation and KSPCB) on a quarterly basis to the Hon'ble Tribunal, Southern Zone, Chennai regarding the progress made and action taken on the complete action plan, till the work is completed as per the timelines.



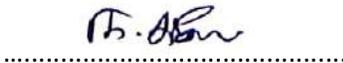
Sh. Gunasekaran

*Revenue Divisional Officer &
Sub Divisional Magistrate, Hosur*



Sh M G Shivanna

*Asst. Commissioner
Bangalore(South)*



Sh. N Suresh

SE, PWD, Tiruvannamalai



Sh B H Manjunath

SE, PWD, Bangalore

.....
Sh N Nagaraj
SE, Minor Irrigation Dept
Bangalore

.....
Dr M Senthil Kumar
DEE, TNPCB, Hosur

.....
Sh Syed Khaja Mohiddin
SEO, KSPCB
Bangalore

.....
Ms. P K Selvi
Sc D, CPCB
Bangalore

(Note: The Joint Committee members have given concurrence by email and e-signatures were obtained)

Item No.17

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI

Original Application No. 111 of 2020 (SZ)

(Through Video Conference)

IN THE MATTER OF:

Tribunal on its own motion Suo Motu
Initiated proceedings based on the news Item
Published in Tamil Newspaper
Dinamalar, Chennai Edition
Dt.13.07.2020 under the caption
“Frothing of Chemical Foam in the River Thenpennai”

The Principal Secretary to
Government,
Public Works Department,
Chennai & Ors.

...Respondent(s)

Date of hearing: 18.2.2021

CORAM:

HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER

HON'BLE MR. SAIBAL DASGUPTA, EXPERT MEMBER

For Applicant(s):

By Court.

For Respondent(s):

Dr. V.R.Thirunarayanan
for R1, R2, R4, R7
Sri. Darpan for R3
Sri. C.Kasirajan through
Ms. Kothai Muthu Meenal for R5
Sri. M.R. Gokul Krishnan for R6
Sri. Thirunavukarasu for CPCB

ORDER

As per order dated 20.7.2020, this Tribunal had Suo Motu registered the case on the basis of the newspaper report published in Dinamalar Chennai City Supplementary edition dated 13.07.2020 under the caption “தென் பெண்ணை ஆற்றில் தேங்கிய ரசாயண நுரை” .

2. We appointed a Joint Committee to go into the news paper report and submit a report and posted the case to 5.10.2020 and on 5.10.2020, this Tribunal had considered the interim report submitted by the Joint Committee which was extracted in para 4 of the order and then passed the following order:

“It is seen from the report that water analysis has not been completed and the environmental compensation has not been calculated for which they require six weeks time.

So considering the circumstances, we feel that some more time can be given to the committee to submit the report as directed by this Tribunal.

The committee is directed to submit the report on or before 26.11.2020 by e-filing along with necessary hardcopies to be produced as per Rules.

The concerned State departments are also directed to submit their independent response to the allegations made and the steps taken by them to avoid such things in future, before the next hearing date.

The Registry is directed to communicate this order to the members of the committee as well as to the official respondents by e-mail immediately so as to enable them to comply with the direction.

For consideration of further report and completion of pleadings, post on 26.11.2020.”

The case was posted to 26.11.2020 for filing the further report and completion of pleadings. On 16.12.2020, it was adjourned to 27.1.2021 and on 27.1.2021, it was adjourned to today by successive notifications.

3. When the matter came up for hearing today through Video Conference, Dr.V.R. Thirunarayanan represented respondents 1, 2, 4, and 7, Sri. Darpan represented 3rd respondent, Sri. C.Kasirajan through Ms.Kothai Muthu Meenal represented 5th respondent, Sri. Darpan represented Sri. M.R. Gokul Krishnan, counsel for the 6th respondent and Sri. Thirunavukarasu represented Central Pollution Control Board who has been designated as the nodal agency.

4. Tamil Nadu Pollution Control Board filed a report signed on 18.11.2020, received on 24.11.2020 which reads as follows:

1.0 Background:

*Hon'ble National Green Tribunal, Southern Zone, Chennai in the matter of O.A No. 111 of 2020; Tribunal on its own motion based on the News Item in Tamil Newspaper Dinamalar Chennai Edition dated 13.07.2020, "Frothing of Chemical Foam in the River Thenpennai" Vs The Principal Secretary to Government, Public Works Department, Chennai &Ors., passed orders dated 20.07.2020. Copy of Hon'ble NGT Orders dated 20/07/2020 is appended as **Annexure I**.*

Excerpts of the News Item in Tamil Newspaper Dinamalar Chennai Edition dated 13.07.2020, "Frothing of Chemical Foam in the River Thenpennai" is given below:

- (i) On 13th July, 2020 about 640 Cusecs water was discharged from Kelavarapalli Reservoir, Hosur and huge amount of chemical foam was found in Thenpennai River.
- (ii) The flow of water into the reservoir increased gradually from 320 cusecs (09th July, 2020) to 480 cusecs (11th July, 2020) due to heavy rainfall in the catchment area.
- (iii) In general, whenever the flow of water increases in Kelavarapalli reservoir the domestic sewage and industrial effluent from Karnataka mixes into the river in huge quantity.
- (iv) On the day of 13th July, 2020, a huge quantity of sewage/effluent were discharged into Thenpennai and therefore, chemical froth/foam were found floating on the surface of water flowing in Kelavarapalli and near thattakalapalli bridge.

Hon'ble Tribunal (SZ), Chennai vide its orders dated 20.07.2020 appointed a Joint Committee to inspect the area in question and submit status as well as action taken report, if there is any violation found. The Hon'ble Tribunal has also issued following directions to the committee.

- (i) To ascertain the water quality and also ascertain the sources of pollution and take action against the person who are responsible in accordance with law including imposing of environmental compensation.
- (ii) To submit a long term and short term action plan with shorter time lines to protect the water body against pollution. If there is any contamination caused, the committee is also directed to suggest ways and means to remedy the same.

Hon'ble Tribunal vide aforesaid orders directed the committee to submit the report within a period of two months i.e., on or before 05.10.2020.

The Joint Committee submitted interim report on 01.10.2020 and informed the Hon'ble NGT that the report of the joint committee requires six weeks time and the report would be submitted after incorporating the analysis results of samples collected in River Thenpennai along with action plan. In this regard, Hon'ble NGT accepted the interim report and vide order dated 05.10.2020 directed that, "... some more time can be given to the committee to submit the report as directed by this Tribunal...

The Committee is directed to submit the report on or before 26.11.2020..."

"To submit the report on or before 26.11.2020 by e-filing along with necessary hardcopies to be produced as per Rules.....".

"The concerned state departments are also to submit their independent response to the allegations made and the steps taken by them to avoid such things in future, before the next hearing date.....".

Copy of the Hon'ble NGT Order dated 05.10.2020 is appended as **Annexure II.**

2.0 Constitution of Joint Committee and Meetings

In compliance to the aforesaid orders dated 20/07/2020 of Hon'ble Tribunal (SZ), Chennai, a Joint Committee comprising of following members has been constituted by Central Pollution Control Board (Nodal Agency) vide its Office Memorandum No. Tech 39/Legal (NGT)/RDS/2020-21/466-474 dated 24.08.2020 and 16.09.2020. Copy of the said Office Memorandum is appended as **Annexure III& IV.**

1.	Sh. Gunasekaran Revenue Divisional Officer & Sub Divisional Magistrate Hosur Division, Tamilnadu	Member
2.	Sh. N Suresh	Member

	<i>Superintending Engineer, WRO Public Works Department Tiruvannamalai, Tamilnadu</i>	
3.	<i>Sh B H Manjunath* Superintending Engineer Public Works Department Bangalore Circle, Karnataka</i>	<i>Member</i>
4.	<i>Sh. N Nagaraj Superintending Engineer Minor Irrigation & Ground Water Development Circle, Jayanagar Bangalore, Karnataka</i>	<i>Member</i>
5.	<i>Dr M Senthil Kumar District Environmental Engineer Tamilnadu Pollution Control Board Hosur District, Tamilnadu</i>	<i>Member</i>
6.	<i>Sh. M K Prabhudev Chief Environmental Officer – 2 Karnataka Pollution Control Board Bangalore, Karnataka</i>	<i>Member</i>
7.	<i>ShShivanna M G Assistant Commissioner (South) Bangalore Urban Karnataka</i>	<i>Member</i>
8.	<i>Smt. Selvi P K Scientist D, Regional Directorate Central Pollution Control Board Bangalore</i>	<i>Nodal Officer & Member</i>

**Subsequent to transfer of Sh. K Durugappa, Superintending Engineer vide Government of Karnataka Order dated 28-08-2020, Sh B H Manjunath, Superintending Engineer, PWD, Bangalore has been nominated as a member of the above Joint Committee.*

Three meetings were organized by Central Pollution Control Board, Bangalore (Nodal Agency) with the members of Joint Committee on 20.08.2020, 04.09.2020 and 18.09.2020 and minutes were circulated for necessary actions. First and Second Meeting of the Joint Committee were conducted on 20.08.2020 & 04.09.2020 to discuss about the preliminary information to be collected before conducting Monitoring and Sampling of River Thenpennai. Therefore, the joint committee decided to collate following information from the concerned departments to carry out further investigations in the matter;

Sl.No	Information Required from concerned Departments / Organisations in Tamilnadu and Karnataka
A.	Minor irrigation and Water Resources Organisations
1.	Drainage River Map of Thenpennai.
2.	Details of Water Quality Monitoring locations (viz., drainage (flow), length, velocity etc.) in the entire stretch of river from origin till Kelavarapalli Reservoir.
3.	Designated use of water flowing in the river stretch
4.	Quantity of water discharged from the river stretch for irrigation and other purposes.
5.	Annual Rainfall and Rainfall details for August, September, October 2020
6.	Custodian of the river to preserve the quality of water to be pristine.

B.	State Pollution Control Boards
7.	Details of Water Quality Monitoring Locations and water quality data of the River in terms of DO, BOD, COD, TC, phosphates & others for the last three years.
8.	Major Sources of pollution (industrial and domestic) :- (a) Status of list of industries with its type/category/classification, Effluent generation, characteristics, treatment, discharge details etc. (b) Details of domestic effluent generation, treatment, discharge options etc.

	<p>(c) Status of Operation of Sewage Treatment Plants with its performance evaluation.</p> <p>(d) Information regarding open dumping of solid or biomedical or hazardous waste, open burning of waste and illegal encroachment or other activities along the river bed etc.</p>
C.	Public Works Department
9.	Status of sewage discharge and sewerage networking plan in the unsewered area.
10.	About Kelavarapalli dam and designated use of dam water.

Subsequently, it was discussed and decided to collect the following information from Bangalore Water Supply and Sewerage Board (BWSSB), Bangalore Development Authority (BDA) and Bangalore Bruhat Mahanagara Palike (BBMP) in the second meeting of the Joint Committee conducted on 04.09.2020;

- (a) Status of Sewage Treatment Plants (STPs) (existing & operational, under construction and proposed) in Koramangala & Challaghatta Valley and Hebbal Valley.
- (b) Drainage map / layout showing locations of STPs with capacity and sewerage networking in those valleys.
- (c) Details of flow of domestic sewage measured at inlet and outlet (after treatment) of each of the STPs.
- (d) Performance of STPs based on its operational capacity, Waste water generated vs actual quantity treated, gap analysis and treated waste water quality (w.r.t discharge standards of STP) in Real Time Monitoring stations installed etc.
- (e) Quantum of untreated sewage flowing in Koramangala & Challaghatta and Hebbal valley with its proposed Underground Drainage network plan and others.

(f) *Details of plan for diversion of treated wastewater to Kolar, Chikaballapur and other districts of Karnataka.*

(g) *Details of Rejuvenation of lakes and water bodies in Bengaluru etc.*

Third meeting of the Joint Committee was conducted on 18.09.2020 to discuss and review the status of Action taken on the defaulters followed by Action Plan for compliance etc.,

3.0 About River Thenpennai

Thenpennai River also known as South Pennar or Dakshina Pinakini is an interstate River. The River originates on the south eastern slopes of Chennakesava Hills, northwest of Nandidurg of Chikaballapur district in Karnataka State at an altitude of 1000m above mean sea level, which flows in the southern direction through Chikkaballapura, Bengaluru Rural and Bengaluru Urban districts in Karnataka state and descends to Tamilnadu near Hosur.

Thenpennai river basin is one of the largest rivers of the state of Tamil Nadu. The river has supported many a civilizations of peninsular India in supplying precious water for drinking, irrigation and industry to the people of the states of Karnataka, Tamil Nadu and Pondicherry. The total length of Ponnaiyar River is 432 km, of which 112 km lies in Karnataka state, 180 km in Dharmapuri and Krishnagiri, 34 km in Thiruvannamalai and 106 km in Cuddalore, Kallakurichi and Villupuram districts of Tamil Nadu before joining Bay of Bengal. En route, it branches into Chinnar, Markanda, Vaniar and Pamban rivers in Tamilnadu. With a total catchment of approximately 16,019 km², it is dry for the most part of the year but swells during the north east monsoon season.

In Karnataka, the river traverses through series of zilla panchayat tanks and also Minor Irrigation tanks namely Nandi tank, Kuppalli tank, Chadalapura tank, Kothanuru tank, Kolavanahalli tank, Cikkadigenahalli tank, Bommanahalli tank, Kanithahalli tank, Muthur tank, malluru tank, Amani Bhadrakere tank in Chikkaballapur district, Hosakote Doddakere tank in Bengaluru Rural district, and

Yelemallappa Chettykere tank in Bengaluru Urban District. Drainage basin of River Thenpennai or South Pennar flowing in Karnataka & Tamilnadu is given as **Figure 1**.

The stretch of the river is mostly dry to scanty from Origin (Nandi) towards Chikkaballapur, Kolar district, Bangalore Urban District and Hoskote Taluk of Bangalore Rural districts of Karnataka. Before descending the interstate border into Tamilnadu, overflow of water from Bellandur and Varthur lakes carrying domestic sewage of Koramangala & Challaghatta and Hebbal valleys of Bangalore adds to the flow in river Thenpennaithereby causes frothing of river stretch.

Preliminary Joint Committee Survey and Investigation

4.0 Preliminary Reconnaissance Survey and Observations

The Joint Committee conducted a preliminary survey during 28.08.2020 and 01.09.2020, in order to investigate the current scenario of River flowing in both the states (Karnataka and Tamilnadu). The findings of the preliminary reconnaissance survey of Chikkaballapur, Kolar districts, Bangalore Urban District and Hoskote Taluk in Bangalore rural districts in Karnataka.

Then, the joint committee conducted survey in the areas of River South Pennar drainage basin flowing down south covering Sokarasanapalli (KSPCB monitoring location), Singasadanapalli (Central Water Commission monitoring location), Kodyalam, Bagalur villages near Hosur and Kelavarapalli Reservoir in Krishnagiri District, Tamilnadu are given below.

Villages near Hosur, Krishnagiri District Tamilnadu:

- i. Details of the villages with Population density located on Thenpennai riverine namely, Singasadanapalli, Kodyalam, Kooliganapalli, Sokkarasanapalli, Bagalur, Lingapuram, Ottapallithinna, Kanimangalam, Paduthepalli, Nanjapuram, Sathyamangalam, Muneeswararnagar, Kembasandhiram, Chennasandiram, Kallipuram were provided as below.

Sl.No	Name of Village	Distance	Number	Population	Population

		from the River bed (m)	of houses		density (Sq. Km)
1.	Singasadanapalli	1000	120	660	242.50
2.	kodiyalam (kooliganapalli)	500	260	1106	217.03
3.	Sokkarasanapalli	500	250	855	348.97
4.	Bagalur	50	1500	11000	2534
5.	Lingapuram	100	300	2000	1666.67
6.	Ottapallithinna	400	35	130	97.01
7.	Kanimangalam	1000	110	310	94.80
8.	Paduthepalli	1000	120	390	127.03
9.	Nanjapuram	-	-	-	-
10.	Sathyamangalam, Muneeswararnagar	500	255	1390	260.787
11.	Kembasandhiram	500	25	550	705.12
12.	Chennasandiram	600	300	1417	885.62
13.	Kallipuram	-	-	-	-
Total			3275	19808	7179.5

- ii. Tamilnadu Pollution Control Board informed that there are no industrial discharges along the stretch of Thenpennai River in Tamilnadu and no underground sewerage lines or STPs operating near the Riverside. Further, Tamilnadu SPCB informed that following industries are located near the river stretch.

Sl.No	Name of the industry	Classification /Category	Discharge Options	Consent Issued Details	Remarks
1.	M/s Premier VVG & SPG Mills Pvt Ltd., Belathur, Bagalur.	Textile / Large /Red	Zero Liquid Discharge and there is no discharge of industrial	CTO issued on 15.11.1995 valid up to 31.03.1996	The unit is located at a distance of 900 meter from River Thenpennai.

			effluent / Sewage into River Thenpennai	RCO issued on 20.03.2017 valid upto 31.03.2022	Re-commissioning the dyeing and printing operation during first week of October 2020.
2.	M/s Exide Industries Ltd., Chichuruganapalli, Sevaganapalli	Integrated Battery manufacturing unit/ Large /Red	Zero Liquid Discharge and there is no discharge of industrial effluent / Sewage into River Thenpennai	CTO issued on 13.11.2013 valid up to 31.03.2014 RCO issued on 20.12.2017 valid upto 31.03.2022	4 km away from river and divided by undulated terrain.

3.	M/s Shahi Exports Pvt Ltd., Sevaganapalli.	Textile garment unit / Large / Green	STP and treated effluent utilized for green belt and there is no discharge of Sewage into River Thenpennai	CTO issued on 22.08.2011 valid up to 31.03.2012 RCO issued on 03.07.2020 valid upto 31.03.2022	No discharge outside remises.
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iii. Color of Water flowing in the River stretch was observed to be greyish in sokkarasanapalli, frothy/slight greyish in kodiyaalam, brownish to grey in Bagalur bridge and greenish in Kelavarapalli Reservoir.

iv. Solid waste dumping and mixing of domestic sewage into the river stretch flowing through Bagalur bridge was also observed and Tamil Nadu

Pollution Control Board was asked to take note of the scenario for appropriate actions.

v. The sewage generation from Bagalur village has been estimated as 0.8 MLD (approx.) and 0.01 MLD to 0.15 MLD (approx.) from rest of the villages in Tamilnadu. It was also informed that the sewage generated in the above hamlets percolates within the hamlet limits and therefore may not get discharged into River Thenpennai.

vi. Average rainfall of Kelavarapalli is about 533 mm.

Kelavarapalli Reservoir Project was built in 1978-1995 at Krishnagiri district, Tamilnadu and the Reservoir or Dam is situated at a distance of 8 km from Karnataka and 10 km away from Hosur, Tamilnadu across the River Thenpennai, which actually originates from the eastern slopes of Chennakesava Hills in Karnataka. The dam further leads water to the districts of Dharmapuri, Tiruvannamalai, Kallakuruchi, Villupuram and Cuddalore before joining Bay of Bengal.

Kelavarapalli Dam is situated at the latitude of 12°52'42"N and longitude of 78°46'06" E which is located in the Northwestern part of Tamil Nadu, bordering Karnataka and Andhra Pradesh states. The Dam is operational from 10th November 2002. Salient features of the dam include:

(a) Salient fe

- | | |
|--------------------------|--|
| 1. Type of dam | : Masonnry cum earthern Dam |
| 2. Length | : 665m |
| 3. Height | : 13.50m |
| 4. FRL Water spread Area | : 433.20 Hec. |
| 5. Volume | : 0.481 TMC |
| 6. Catchment area | : 2442.00 Sq.Km |
| 7. Gross Capacity | : 13.61 Mcum |
| 8. Maximum Water level | : 831.50 |
| 9. FRL | : 831.50 |
| 10. Water Supply Period | : 1 st Crop = July to December - 150 Days |

11. Spillway Type	: Ogee Crest Type
12. Spillway Nos	: 7 Nos
13. Spillway Size	: 12.20m x 6.10m
14. Crest Level	: 825.40
15. Design flood Discharge	: 88980 Cusecs
16. River Sluice	: 1 No (1.20m x1.82m)
17. Canal Sluice	: 2 Nos (0.90m x 1.50m)
18. Length of Canals	

Right main canal (RMC)= 21.99

Left Main canal (LMC)= 25.500 km

LMC Branch canal 5.40 km

LMC Branch canal II = 3.80 km

LMC Branch canal III = 2.78 km

LMC Branch canal IV = 4.96 km

LMC Branch canal V = 0.71 km

Distributaries I of B.C IV = 1.80 km

Distributaries II of B.C. IV = 2.00 km

Distributaries I of B.C V = 1.48 km

Distributaries II of B.C. V = 1.15 km

Total = 71.57km

19. Irrigation Area : 3676 Hec

20. Approved Estimate : Rs.551.50 Lakhs

21. Revised Estimate : Rs.606.70 Lakhs

(b) Present condition of Dam (as on 09.09.2020)

1. Water level : 12.30 m

2. Water storage level : 343.74 Mcuft

3. Water incoming : 400 cusecs

4. Water discharge : 400 cusecs

Kelavarapalli Dam SIPCOT Central Water Supply Scheme provided 14.00 MLD of water to Hosur Municipality Phase I during 2015-16. Water supply of Hosur Municipality is mainly being met out from the Government of Tamilnadu's Hoganekkal water supply Project which was executed & maintained by Tamilnadu Water Supply and Drainage Board (a statutory body under Tamilnadu Government)

and the other sources are from Kelavarapalli Dam, one from Perandapalli River and few local wells. At present the entire Municipality is receiving 30.39 MLD of water supply from all the above said sources. (Source: <https://www.twadboard.tn.gov.in/content/major-water-supply-schemes-1518>).

Since Ponnaiyar river is the sole water source in Krishnagiri, Tiruvannamalai and Cuddalore districts, it has been extensively dammed. As it enters Tamilnadu, the water is stored in the Kelavarapalli dam reservoir near Hosur. The surplus amount reaches the Krishnagiri dam, which is situated 60 km downstream.

4.2 Excerpts of Thenpennai River Monitoring in the matter of O.S No. 2 of 2015 before Hon'ble Supreme Court & in the matter of O.A No. 125/2017 before Hon'ble NGT:

A) In O.S No. 2 of 2015 before Hon'ble Supreme Court

In compliance to Hon'ble Supreme Court directions in the Original Suit No. 02 of 2015, a joint monitoring Report on River Cauvery and Thenpennaiyar was submitted by CPCB, KSPCB and TNPCB, wherein the monitoring team carried out sampling of water for the period September 2017 to May 2018. The committee filed the report before the Hon'ble Court in 2018 (the case is pending before Hon'ble Supreme Court). The findings of the Report is given as below:

1. In case of River Thenpennaiyar at Sokarasanapalli, the water quality falls below designated best use Class C during all nine monitoring and the critical parameters are BOD, DO and TC. The Total Coliform was always > 5000 MPN/1000 ml and DO was <1 except during January and February 2018 showing the DO as 2.4 and 3.8 mg/l respectively. BOD also exceeded the Sewage standards notified (i.e 20 mg/l) for all nine months showing the water is highly polluted.
2. The River Thenpennaiyar receives the outflow of treated and untreated sewage of Bellandur and varthur lake system. Comprehensive plan of restoration of these lakes along with identifying other sources of untreated sewage into the River only will help to restore the quality of the river. Government of Karnataka may prepare

such plan on priority considering the pollution issues of Bellandur and varthur lake system, which contributes to the pollution of Thenpennaiyar River.

B) In O.A No. 125/2017 before Hon'ble NGT

On the subject of remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore, including preventing discharge and dumping of pollutants, removing encroachments from catchment area and other steps for restoration, Hon'ble Tribunal, Principal Bench, New Delhi, in the matter of O.A No. 125/2017, constituted a monitoring committee headed by Justice ShSantosh Hegde, former Judge of the Hon'ble Supreme Court to oversee the execution of the action plan. In this regard, summary of Compliance Report to the observations of the Monitoring Committee in respect of BWSSB, BDA, UDD, Minor Irrigation and KSPCB was filed before Hon'ble NGT, Principal Bench on 04.08.2020, wherein Hon'ble Tribunal vide orders dated 13.08.2020 has directed that **"...the left-over work may be expeditiously completed which may be reviewed by the Monitoring Committee. The status of compliance as on 31.12.2020 may be compiled by the Monitoring Committee and report furnished to this Tribunal by 15.01.2021..."**.

4.3 Major Sources of Pollution

Major sources of pollution to River Thenpennai appear to be from untreated/partial treated sewage from Bangalore. Sewage generated from Bengaluru is the predominant reason for deterioration of lakes and water bodies in Bangalore, which is ultimately flowing into river Thenpennai.

There are various reasons such as ageing of sewers, encroachment of sewers, damages in the sewerage system, crown corrosion of sewers etc. for direct discharges of a part of wastewater from housing colonies and such discharge is flowing through Storm Water Drains and enters lakes in Bengaluru. Lakes in Bengaluru were created for rain water harvesting and once served as sources of water supply to the city. Lakes are under the custody of various departments namely Bangalore Bruhat Mahanagara Palike (BBMP), Bangalore Development Authority

(BDA), Karnataka Forest Department (KFD), Lake Development Authority (LDA), Minor Irrigation and Water Resources Department.

In recent years, few lakes have been converted into built-up area owing to industrialization and urbanisation. Among all the lakes, Bellandur and Varthur are highly polluted due to discharge of untreated and partially treated sewage from the city. Bellandur lake receives nearly 40 % of Bangalore's sewage and further drains into varthur lake, then flows into Thenpennai River towards south of Bangalore. Lakes are polluted due to inadequate drainage system leading to bypassing of sewage into lakes, entry of sewage from apartments/commercial establishments into storm water drains leading to lakes, insufficient sewage treatment plants, encroachment of lakes and Rajakaluves (storm water drains), dumping of municipal solid waste, construction and demolition wastes, illegal discharge of industrial effluents etc. The foremost reason for pollution of Bellandur Lake is sewage/ Sullage flowing in the storm water drains. One of the main reasons for development of foam in the waste weir is agitation of water falling over a height and due to surfactants present in sewage. Now after establishment of sluice gate and weir modification, foam formation reduced considerably. Additionally, fertilisers used by farmers of Karnataka as well as Tamilnadu may add to the pollution of river thenpennai.

SAMPLING AND ANALYSIS OF RIVER THENPENNAI

5.0 Sampling Locations

The Joint Committee identified the following sampling points for collecting surface water samples based on the reconnaissance survey conducted in Tamilnadu and Karnataka during 28th August and 01st September, 2020.

Sl.No	State	Sampling Points (no. of samples)	Geo-Coordinates	
1.	Karnataka	i. Agara drain ii. Y junction (Agara/Koramangla) iii. Bellandur diversion channel		

		iv. Varthur diversion channel		
		v. Channasandra bridge		
		vi. Samethanahalli weir		
2.	Inter State	vii. Mugalur bridge		
		viii. Sokkarasanapalli		
3.	Tamilnadu	ix. Bagalur bridge		
		x. Kodiyalam		
		xi. Kelavarapalli reservoir		
		xii. Kelavarapalli outfall		

Surface water samples of the above twelve locations were collected by Joint Committee on 09th and 10th September, 2020. Thenpennai River basin Map showing the sampling locations in Karnataka and Tamilnadu are given below as **Figure 4**.

Geographic profile and details of the sampling locations in the sequence of the flow of River Thenpennai in Krishnagiri District, Tamilnadu is provided below;

(i) Sokarasanapalli:

Sokarasanapalli is located at interstate border of Tamilnadu and Karnataka with a distance of 500 m from the river bed.

Sokarasanapalli is an interstate water quality monitoring location being sampled by Karnataka on a quarterly basis. The flow of water in sokkarasanapalli was observed as greyish and with growth of floating aquatic plants in a large area.

(ii) Kodiyalam: Kodiyalam is situated in north east direction of Hosur district, Tamilnadu. In kodiyalam, there is one anaicut which has two sluices constructed to distributewater flowing from sokkarasanapalli for agriculture purpose. Central Water Commission, Cauvery and Southern Rivers Division monitors flow of the river at this location. Water was found to be flowing in greyish color and frothy foam was floating on the river.

(iii) Bagalur bridge:

Bagalur bridge is situated in north eastern direction of Hosur district, Tamilnadu. Bagalur bridge was found with water flowing in brown to greyish color and solid waste was found dumped on either sides of the river bed. Cattles were also found grazing the grass near the solid waste dumped area which could cause lethal effects due to plastics and other inert materials dumped over.

(iv) Kelavarapalli dam:

Kelavarapalli dam is located in the Northwestern part of Tamil Nadu. 400 cusecs of water was found flowing through spillway shutters with reasonably clear water in green color on the day of visit. Also scanty pockets of froth was seen due to water flowing with force from high fall of the dam.

In the areas namely, Samethanahalli, Mugalur, Sokkarasanapalli, Kodiyalam, Bagalur, Kelavarapalli water was found being pumped and used for agriculture in the nearby areas.

5.1 Sampling Protocol

The surface water samples of the above identified 12 locations in River Thenpennai were collected during 09th and 10th September, 2020 and submitted to laboratory for analysis. The Joint Committee followed CPCB's Standard Operating Procedure for National Water Quality Monitoring Programme and Submission of data (August, 2017). The scope of the SOP is to standardise the process of sample collection, preservation, handling and analysis, preparation of data reports, etc.

5.2 Results and Discussion:

The River originates in Nandi Hills of Chikkaballapur district and the flow is mostly dry to scanty from Origin (Nandi) towards Chikkaballapur district, Kolar District, Bangalore Urban District and Hoskote taluk of Bangalore Rural district. Therefore, no samples could be collected till Hoskote tank.

Subsequently, it was informed by KSPCB that overflow of water from Bellandur and Varthur lakes carrying domestic sewage of Koramangala & Challaghatta and Hebbal valleys of Bangalore adds to the flow in river Thenpennai. Accordingly, samples were collected from the diversion channels of Bellandur and Varthur lakes, Agara drain, Y Junction to ascertain the sources of pollution flowing into River Thenpennai.

The joint committee discussed that the quality of water flowing in river Thenpennai could be assessed based on the water samples from the above four major drains/channels, river flowing in major confluence points and interstate monitoring locations identified in consultation with concerned State Pollution Control Boards such as Channasandra bridge, Samethanahalli, Mugalur bridge, Sokkarasanapalli, Bagalur bridge, Kodiyalam, Kelavarapalli.

The analysis results of the samples collected from all the above 12 locations were compared with Designated Best Use (DBU) criteria and Classification notified under Environment (Protection) Rules, 1986. The categorisation and classification of water flowing in River Thenpennai is given below at **Table 1**.

Table 1. Classification as per Designated Best Use Criteria of Samples collected in River Thenpennai

Sample Locations	Designated Best Use Criteria										Class
	pH	DO	SS	Turbidity (NTU)	FC (MPN/100ml)	BO	EC ($\mu\text{s/cm}$)	SA	Boron	Free Ammonia	
Sampling in diversion channel of Lakes / Tanks, Bengaluru – Outfall into River Thenpennai											
Agara Drain	6.92	3.8	21.5	18.9	500	16	810	1.6	0.016	Nil	E
Y junction	6.87	4.9	59	11.4	900	15	762	1.3	0.019	Nil	D
Bellandur diversion channel	6.89	5	45	10.4	1600	11	758	1.4	0.016	Nil	D
Varthur diversion channel	7.04	3.7	115	27.5	500	10	706	1.4	0.015	Nil	E
Sampling Locations in River Thenpennai											
Channasandra bridge	7.02	3.8	171	13.8	900	11	931	2	0.017	Nil	E
Samethanahalli	6.98	2.4	78	35	1600	10	825	1.8	0.015	Nil	E
Mugalur Bridge	6.79	2.4	574	450	500	21	628	1.5	0.017	Nil	E
Sokkarasapalli	6.83	3.5	806	630	900	23	648	1.6	0.015	Nil	E
Kodiyalam	6.82	1.6	1474	997	900	26	727	1.5	0.018	Nil	E
Bagalur bridge	6.92	2.2	1121	850	500	53	1111	2.2	0.019	Nil	E
Kelavarapalli Reservoir	7.35	4.7	50	12.4	500	11	1069	2.4	0.019	Nil	D
Kelavarapalli Outfall	7.19	5.2	10	7.5	900	10	1049	2.2	0.017	Nil	D
Designated Best Use Criteria	A - Drinking Water Source without conventional treatment but after disinfection B - Outdoor bathing (Organised) C - Drinking water source after conventional treatment and disinfection										

	<i>D – Propagation of Wild life and Fisheries E - Irrigation, Industrial Cooling, Controlled Waste disposal</i>
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<i>Classification of River Thenpennai</i>	<i>The analysis of Water Samples collected at 12 locations joining River Thenpennai shows that the Water Quality of the River falls under the Class E as per Designated Best Use Criteria notified under Environment (Protection) Rules, 1986.</i>
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Analysis of water quality in River Thenpennai reveal that Dissolved oxygen concentration was found be above > 4mg/l only in kelavarapalli reservoir, its outfall, Y junction, and Bellandur diversion channel. The water quality was found to be deteriorated in terms of presence of oxygen from channasandra bridge till Bagalur bridge of River Thenpennai and also in varthur diversion channel and Agara drain. Improved oxygen level found in kelavarapalli reservoir may be attributed to large area of the reservoir allowing the suspended solids to settle and the water flowing through sluices with a high rise fall. Further, greenish plants/algal growth in scanty pockets seen in Kelavarapalli and Sokkarasanapalli known as Eutrophication, arises from the oversupply of nutrients (N & P), which leads to overgrowth of plants and algae. Degradation of dead algae and plants by microbes consuming dissolved oxygen in the water may lead to the state of hypoxie.

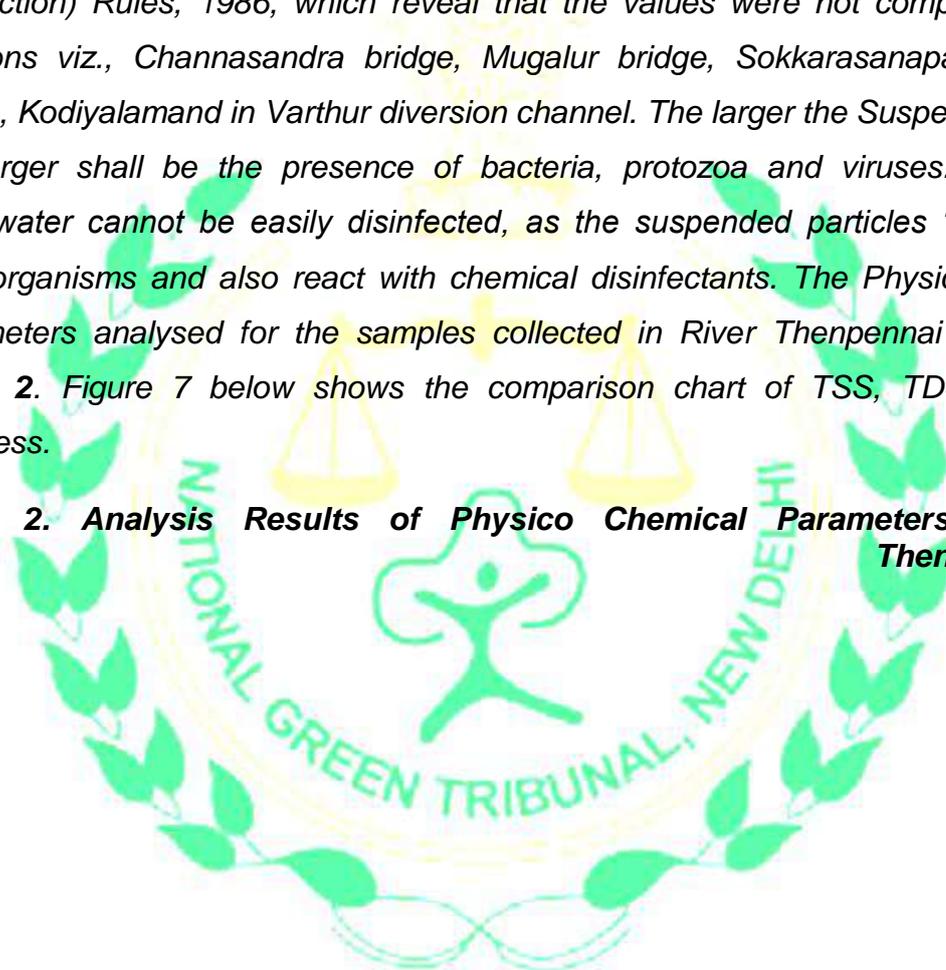
Further, BOD of the water was found to be not complying in all the sampled locations as per Designated Best Use Criteria notified under Environment (Protection) Rules, 1986. Wherein, BOD is found to be beyond the permissible limit in Bagalur bridge (53 mg/l) when compared with the General Standards for discharge of Environmental Pollutants Part-A: Effluents notified under The Environment (Protection) Rules, 1986, which is also shown in Figure 5 below.

The total and faecal coliform analysis indicates the ‘potability’ of water & its suitability for consumption/drinking. The count measures the concentration of total coliform bacteria associated with the possible presence of disease causing organisms. The Total Coliform was found to be non complying in all the sampling points of River Thenpennai. Analysis of Faecal coliform count in River Thenpennai shows that the

concentration of microbial count in the range of 500 to 1600 MPN/100 ml which may be attributed to discharge of untreated and partially treated sewage into the River.

Results of suspended solids in the Analysis of water quality in River Thenpennai were compared with the prescribed limits of General Standards for discharge of Environmental Pollutants Part-A: Effluents notified under The Environment (Protection) Rules, 1986, which reveal that the values were not complying in the locations viz., Channasandra bridge, Mugalur bridge, Sokkarasanapalli, Bagalur bridge, Kodyalamand in Varthur diversion channel. The larger the Suspended solids, the larger shall be the presence of bacteria, protozoa and viruses. High TSS wastewater cannot be easily disinfected, as the suspended particles "hide" these microorganisms and also react with chemical disinfectants. The Physico-Chemical Parameters analysed for the samples collected in River Thenpennai is given at **Table 2**. Figure 7 below shows the comparison chart of TSS, TDS and total hardness.

Table 2. Analysis Results of Physico Chemical Parameters in River Thenpennai.



Sample Locations	Physico-chemical Parameters (mg/l)																					
	TDS	COD	TC	Total Alk	Fluoride	Chloride	Sulphate	O-Phosphate	Total Phosphate	Anionic surfactant	Surface Active Agents	Ammoniacal Nitrogen	Total Hardness	Calcium	TKN	Nitrate-N	Nitrite-N	TOC	Na	K	Mg	Phenols
Bengaluru diversion channel of Lakes / Tanks – Outfall into River Thenpennai																						
Agara Lake	476	57	160	227	3.8	65	41	0.53	0.68	BDL	BDL	BDL	237	69	12.3	2	0.05	7.9	57	11	16	BDL
Y junction	410	53	90	216	0.19	65	62	0.47	0.61	BDL	BDL	BDL	216	62	12.6	2	0.23	6.5	44	11.8	15	BDL
Bellandur lake	414	45	160	216	0.25	75	22	0.84	1.01	BDL	BDL	1.6	192	62	11.5	2	0.12	7	45	10.5	9	BDL
Varthur lake	408	37	90	169	3.8	75	51	0.42	0.62	BDL	BDL	BDL	188	54	11	BDL	0.12	16	44	10.2	13	BDL
Sampling Locations in River Thenpennai																						
Channasandra bridge	536	41	90	216	3.8	126	49	1.06	1.38	BDL	BDL	BDL	209	69	17.3	5	0.36	11	66	12.2	9	BDL
Samethanahalli industrial zone	484	33	160	192	2.3	100	53	1.11	1.32	BDL	BDL	BDL	184	57	11.3	4	0.34	14	56	13	10	BDL

Mugalur Bridge	363	860	907	137	0.23	70	57	0.53	1.73	BDL	BDL	BDL	139	41	12.1	2	0.05	10.4	413	99	BDL
Sokkara sanapalli	363	900	907	157	0.2	70	21	0.63	0.8	0.34	0.45	BDL	145	41	14.8	BDL	0.01	104	490	10	BDL
Kodiyalam	404	980	160	196	0.35	100	55	0.6	1.7	BDL	BDL	BDL	180	44	19.5	2.2	0.11	997	495	17	BDL
Bagalur bridge	640	204	900	298	1.2	138	19	0.93	1.32	0.43	0.49	BDL	265	74	26.9	BDL	0.03	133	803	139	BDL
Kelavarapalli Reservoir	620	330	160	200	0.23	131	52	0.98	1.57	BDL	BDL	BDL	241	70	66	4.9	0.24	107	864	166	BDL
Kelavarapalli Outfall	612	411	160	235	0.3	150	33	1.97	2.23	BDL	BDL	BDL	265	65	71	2.7	0.25	101	813	125	BDL
Classification of River Thenpennai	The analysis of Water Samples collected at 12 locations joining River Thenpennai reveals that characteristics of water w.r.t Fluoride is not complying with the permissible limits prescribed under Drinking Water specification of Indian Standard IS 10500:2012 and General Standards for discharge of Environmental Pollutants Part-A: Effluents notified under The Environment (Protection) Rules, 1986 in the areas viz., Agara lake, Varthur lake, Channasandra bridge and Samethanahalli.																				

Figure. 7 Analysis results of Suspended Solids and Total Solids

Analysis results of heavy metals in River Thenpennai are given at **Table 3** below. Metals and heavy metals namely, Aluminium, Chromium, Manganese, Iron, Cobalt, Nickel, Copper, Zinc, Total Arsenic, Selenium, Cadmium, Mercury and Lead were analysed in all the 12 locations of River.

Table 3. Heavy Metal Concentrations of 12 locations in River Thenpennai

Sample Locations	Heavy Metals in mg/l												
	Al	Cr	Mn	Fe	Co	Ni	Cu	Zn	Total As	Se	Cd	Hg	Pb
Sampling in diversion channel of Lakes / Tanks, Bengaluru – Outfall into River Thenpennai													
Agara Drain	0.661	0.009	0.152	1.380	BLQ	BLQ	0.004	0.066	BLQ	BLQ	BLQ	0.001	BLQ
Y junction	0.640	0.003	0.221	1.405	BLQ	0.003	0.031	0.051	BLQ	BLQ	BLQ	0.005	0.006
Bellandur diversion channel	0.668	BLQ	0.182	1.174	0.001	0.003	0.010	0.046	BLQ	BLQ	BLQ	0.012	0.005
Varthur diversion channel	0.758	BLQ	0.225	1.637	BLQ	BLQ	0.013	0.042	0.001	BLQ	BLQ	0.005	0.005
Sampling Locations in River Thenpennai													
Channasandra bridge	0.174	BLQ	0.200	0.728	BLQ	BLQ	0.006	42.051	BLQ	BLQ	BLQ	0.003	BLQ
Samethanahalli weir	0.354	BLQ	0.110	0.990	BLQ	BLQ	BLQ	0.003	BLQ	BLQ	BLQ	0.006	BLQ
Mugalur Bridge	1.378	BLQ	0.219	3.148	BLQ	BLQ	0.024	0.042	BLQ	BLQ	BLQ	0.003	0.007
Sokkara sanapalli	1.798	BLQ	0.268	4.202	0.003	0.004	0.022	0.062	BLQ	BLQ	BLQ	BLQ	0.008
Kodiyalam	3.239	0.003	0.379	10.286	0.007	0.010	BLQ	0.172	BLQ	BLQ	0.004	BLQ	0.025
Bagalur bridge	1.510	BLQ	0.348	4.891	0.003	0.005	0.010	0.096	BLQ	BLQ	BLQ	BLQ	0.010
Kelavarapalli Reservoir	BLQ	BLQ	0.216	0.104	BLQ	BLQ	BLQ	21.483	BLQ	BLQ	BLQ	0.002	BLQ

Kelavar apalli Outfall	BL Q	BL Q	0.2 00	0.2 21	BL Q	BL Q	BLQ	BL Q	BLQ	BLQ	BLQ	0.00 2	BLQ
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A. Water Quality of tanks/diversion channels leading to River

B. Water Quality of River Thenpennai

Figure. 8 Analysis results of Metals and Heavy Metal

Heavy metal analysis of samples collected in River Thenpennai shows that non-permissible concentration of mercury was found in Bellandur lake (0.012 mg/l) followed by non-permissible levels of Zinc in channasandra bridge and kelavarapalli. Further, non-permissible levels of Iron were found in Mugalur bridge, Sokkarasanapalli, Bagalur and Kodiyalam. Nowadays, due to a variety of anthropogenic actions, the river water typically receives untreated sewage, domestic waste, industrial and agricultural effluents leading to polluted river stretch.

Analysis results reveal that concentration of fluoride has been found to be not complying in the locations namely, Agara drain, Varthur diversion channel, Channasandra bridge and Samethanahalli weir. The concentration of fluoride in the River Thenpennai in the above areas were reported to be in the range of 0.19 to 3.8 mg/l, which may be attributed to usage of groundwater as drinking water source along with water supplied by Bangalore Water Supply and Sewerage Board followed by untreated sewage discharge into the river. However, as reported by World Health Organisation in its report *Fluoride in Drinking Water*, Fluorides may also enter a river as a result of industrial discharges (Slooff et al., 1988). The maximum level of fluoride which the body may tolerate is 1.5 parts per million (ppm) which is often based on water fluoride content. The other sources for fluoride are infiltration of agricultural runoff containing chemical fertilisers, improper disposal of liquid waste from industries, alumina smelting, cement production and ceramic and brick firing. Analysis results of Fluorides, Phosphates and Nitrates are given as **Figure 9 and 10** respectively.

Figure. 9 Analysis results of Fluorides and Phosphates

Nitrogen and phosphorus in all forms are major rate limiting elements essential for the growth of algae and other vegetation in water bodies leading to a state called eutrophication. The greenish color water with large vegetation growth is common sight for not only lakes and ponds but also slow moving rivers. Eutrophication leads to many problems related to water quality: • Large Dissolved oxygen variation leads to fish kills • Filling the water body with dead algae and other vegetation. • Decomposition of dead algae and vegetation at the bottom causing oxygen depletion and further

release of nutrient. • Release of algal toxins and odors causing substances make the water unsuitable for human and animal consumption.

Figure. 10 Analysis results of Nitrates

The water quality was also analysed for the presence of pesticides namely, Anilopho, 2-4 D, Carbaryl, Beta Endosulfan, Aldrin, Dieldrin, Alpha HCH, Alpha Endosulfan, Beta HCH, Delta HCH, Endosulfan sulphate, Ethion, Gamma HCH, o,p' DDD, o,p' DDE, o,p' DDT, p,p' DDD, p,p' DDE, p,p' DDT, Methyl parathion, Malathion, Chlorpyriphos. However, no traces of pesticides was found in the samples collected in River Thenpennai and channels/drain/overflow of tanks leading to the River.

Analysis of water samples collected also reveal that no presence of Anionic Surfactants and Surface Active Agents in River Thenpennai except in Sokkarasanapalli and Bagalur bridge.

It is submitted that, there recorded an average rainfall of more than 100 mm on the previous night of sampling i.e 09.09.2020. Subsequent to the rainfall day, the locations namely, Agara drain, Y junction, Bellandur diversion channel, Varthur diversion channel, Channasandra bridge, Samethanahalli were inspected and samples were collected on 10.09.2020.

5.3 Findings and Observations :

1. The stretch of the river is mostly dry to scanty from Origin (Nandi) towards Chikkaballapur district, Kolar District, Bangalore Urban District and Hoskote taluk of Bangalore Rural district. Overflow of water from Bellandur and Varthur lakes carrying domestic sewage of Koramangala & Challaghatta and Hebbal valleys of Bangalore adds to the flow in river Thenpennai thereby causes frothing of river stretch.
2. The Joint committee has also observed that flow of Surface water in River Thenpennai carries about a portion of treated wastewater from STP*s*.e 300 MLD {750 (STP capacity) – 450 (Treated water diverted to Kolar & Chikkaballapur)} and untreated sewage i.e 258 MLD (i.e 866 MLD – 608 MLD) of Bangalore, as informed by BWSSB.
3. Solid Waste dumping was found in the locations including Agara drain, Bellandur diversion channel, Y Junction, Channasandra bridge, Mugalur bridge and bagalur bridge, which needs to be removed by the concerned agencies of the State Government. Tamilnadu Pollution Control Board has instructed the Block Development Officer for taking action for proper disposal of solid waste and domestic sewage in the area of investigation, which is provided in Section 6.0 of Chapter VI.

4. Frothy flow was found in locations namely, Samethanahalli, Mugalur, Kodyalam, Kelavarapalli which may be attributed to mix of industrial effluents and domestic sewage flowing from the areas. However, it is also noted that no presence of surface active agents and anionic surfactants were found in the samples collected during the monitoring except in Sokkarasanapalli and Bagalur bridge.
5. Analysis results of River Thenpennai reveals that the quality of the surface water flowing in River Thenpennai falls under Category E of the Designated Best Use Criteria notified under Environment (Protection) Rules, 1986, which is attributed to absence of sufficient dissolved oxygen and presence of suspended solids followed by faecal coliform in all the locations. There appears deteriorated Dissolved Oxygen in the river stretches from Channasandra bridge to Bagalur bridge.
6. Faecal coliform count in River Thenpennai were found to be in the concentration of 500 to 1600 MPN/100 ml which may be attributed to discharge of untreated and partially treated sewage with night soil contamination.
7. No traces of pesticides were found in the surface water samples collected.
8. It was observed that water flowing in samethanahalli, mugalur, sokkarasanapalli, kodyalam, bagalur, kelavarapalliis being pumped and used for agriculture in the nearby fields/farms, which may be checked for water quality, on a regular basis by concerned authorities to ensure the water quality, as it is also being used for edible food crops. Necessary steps may be taken by the agricultural departments of respective State Governments.
9. The surface water quality needs improvement in terms of dissolved oxygen, Total Coliform/Faecal Coliform, suspended solids, dissolved solids, nitrates, phosphates and heavy metals.
10. Therefore, the joint committee recommends development of Biodiversity park and wetland as per CPCB Guidelines titled 'Guidelines for setting up of Biodiversity parks in Floodplains of Rivers of India, including River Ganga', at suitable locations as a means of remedial measures.

In the matter of O.A No. 111 of 2020, Tamilnadu Pollution Control Board carried out inspections of unauthorized dyeing units on 14.09.2020 based on the telephonic message received from the public of Paduthepalli village, Hosur Taluk, Krishnagiri district. During the inspection, TNPCB made following observations;

- (i) Two unauthorized dyeing units carrying out dyeing of cotton fabric/hosieries were found operational, namely (a) M/s Veeraraj Dyeing, SF No. 156/1, Pauthepalli Village, Nanthimangalam Post, Hosur Taluk, Krishnagiri District, owned by SmtYellamma, w/o Sh Bowseruvappa and (b) M/s Moorthy dyeing, SF No. 209/3B2, Pauthepalli village,

Nanthimangalam post, Hosur taluk, Krishnagiri district, owned by Smt. Sikkathayamma, w/o ShKembaiyya.

- (ii) The above units have not obtained Consent to Operate from TNPCB and permission from other Government agencies/authorities. The units were found to be drawing water from agri borewell for the dyeing activity and discharging untreated dyeing effluent into the River Thenpennai through pipeline causing pollution of River.
- (iii) The above two units were found to be located within 5 km from the Riverbed of Thenpennai, against the regulations passed by G.O Ms. No. 127/E&F/EC Dept./ECIII/ dated 08.05.1998.
- (iv) No Effluent Treatment Plant was provided for the treatment of the trade effluent generated and the untreated dyeing colored effluent was being discharged directly into River Thenpennai through pipeline.
- (v) TNPCB sought permission from DC, Krishnagiri and Chairman of District Coordination Committee for Krishnagiri district to stop the illegal discharge of effluent into water bodies/land and to take stringent action against defaulting units as per the guidelines.
- (vi) Subsequent to the approval of the Chairman, DCC dated 15.09.2020, actions were taken to disconnect TNEB power supply followed by demolishing of machineries/shed installed by the unauthorized dyeing units on 17.09.2020 by the members of DCC with police protection, to prevent any such dyeing operations in the future. Photographs taken before and after demolishing the units are provided as Figure 11 below:

Samples at sokkarasanapalli village have been continued till date. From the said analysis reports, it has been revealed that parameters such as Dissolved oxygen, Biochemical oxygen demand and Total Coliform are exceeding the Class B of Designated Best Use (DBU) criteria and Classification notified under Environment (Protection) Rules, 1986.

It has also been submitted that, the industries generating trade effluent in Krishnagiri District are treating their trade effluent through Effluent Treatment Plants and the treated effluent are being either recycled back to their process or discharged on their own land for green belt development after satisfying the standards prescribed by the Board. There is no discharge of trade effluent into river thenpennai from Krishnagiri district. However, all the industries are being closely monitored by Tamilnadu Pollution Control Board. A note on the water quality analysis carried out by TNPCB is appended as **Annexure V**.

A. Action Taken by TNPCB with regard to Solid Waste Management and domestic sewage management

On the basis of field survey and investigation carried out by the joint committee in Bagalur bridge along River Thenpennai, the following instructions have been given to the Block Development Officer, Hosur Panchayat Union, Hosur, Krishnagiri District by TNPCB;

- (i) The Solid Waste and Biomedical waste generated from the areas viz., Bagalur covered under the local body jurisdiction shall be collected, segregated and disposed as per the provisions of Solid Waste Management Rules, 2016.
- (ii) The Solid Wastes dumped in the banks of River Thenpennai shall be cleared immediately around the river bed in Bagalur area and near Bagalur Bridge, and to dispose them in a proper scientific manner as per the provisions of Solid Waste Management Rules, 2016.

Similarly, TNPCB has given instructions to the Block Development officer of Hosur panchayat Union in Hosur, Krishnagiri District that the domestic sewage generated from the households, commercial establishments and other activities shall not be discharged into River Thenpennai, and the entire sewage shall be treated and disposed by providing suitable treatment system.

In this regard, the local body has also been instructed to submit action taken report w.r.t solid waste management and sewage management alongwith short term and long term action plan to avoid discharging of sewage into River from the inhabitants of Bagalur. **6.1 Long Term and Short Term Action Plan for improving the Water Quality of River Thenpennai**

The joint monitoring team comprising of CPCB, KSPCB and TNPCB have reported in the case of Original Suit No. 02 of 2015 that, "the River Thenpennaiyar receives the outflow of treated and untreated sewage of Bellandur and Varthur lake system. Comprehensive plan of restoration of these lakes along with identifying other sources of untreated sewage into the River only will help to restore the quality of the river. Government of Karnataka may prepare such plan on priority considering the pollution issues of Bellandur and Varthur lake system, which contributes to the Pollution of Thenpennaiyar River". Further, Hon'ble Tribunal, Principal Bench, New Delhi, in the matter of O.A No. 125/2017, constituted a monitoring committee headed by Justice ShSantosh Hegde, former Judge of the Hon'ble Supreme Court to oversee the execution of the action plan on remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore.

The joint committee with due cognizance of the water quality of River Thenpennai reported in section 5.2 above and the action plan already reported by the joint monitoring team comprising of CPCB, KSPCB and TNPCB and execution of the action plan on remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore by the monitoring committee in O.A no. 125/2017, the following long term and short term action plan has been prepared;

Action Points	Present Status	Proposed Action by the Joint Committee	Agency Responsible (Timeline)
Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode.	The information of grossly polluting industries located in the river basin along with the status of effluent management has been compiled by KSPCB.	Among the industries those that are Red/Orange category (small, medium and large) with treated effluent discharge option as surface water/sewer drain (which includes industries having ZLD) in River basin of Thenpennai be monitored for effluent characteristics by concerned SPCBs, so as to ascertain the quality of treated effluent discharge as per the Consent Conditions of SPCBs. The details of the compliance status and action taken report be placed in public domain (TNPCB and KSPCB website).	TNPCB & KSPCB (six months)
Sewage and	Among the	Feasibility study for providing	Feasibility

<p><i>Solid Waste Management in the villages (13) adjoining River Thenpennai up till Kelavarapalli</i></p>	<p><i>villages located near River Thenpennai, Bagalur is having population of about 11,000 and the domestic sewage generation is estimated to be 0.0715 MLD. Further, Solid Waste generation is estimated to be about 1.5 Tons/day.</i></p>	<p><i>Sewage Treatment options (such as oxidations ponds/diversion channels or wetlands etc.) by TNPCB followed by implementation by Local authority of the district.</i></p> <p><i>Solid Waste Management Plan be devised and executed by concerned Block Development Officer, Hosur Taluk to ensure the solid wastes are not disposed on the river side.</i></p>	<p><i>study by TNPCB in consultation with local authority for implementation (six months)</i></p> <p><i>Concerned Block Development Officer to submit to TNPCB (six months)</i></p>
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<p><i>Regular Water Quality Monitoring at important locations</i></p>	<p><i>Water Quality is being monitored by KSPCB by installing real time monitoring stations in Bellandur and Varthur. Further, Mugalur bridge and sokkarasanapalli is being monitored under National Water Quality Monitoring Programme.</i></p>	<p><i>The trend of water quality and its improvement may be monitored for the year 2021-22 on a monthly basis and a report be submitted to CPCB to ensure the quality of water flowing in River Thenpennai.</i></p>	<p><i>TNPCB &KSPCB (every year)</i></p>
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*In view of the above, a letter has been addressed to the Block Development Officer, Hosur, Krishnagiri District vide T.O. Letter dated 23.10.2020 (**Annexure VI**) and instructed that the solid wastes dumped in the banks of River Thenpennai shall be cleared immediately around the river bed in Bagalur area and near Bagalur Bridge, and to dispose them in a proper scientific manner as per the provisions of the Municipal Solid Waste Management Rules, 2016.*

Further, a letter has also been addressed to the Block Development Officer, Hosur vide T.O. Letter dated 23.10.2020 (**Annexure VI**) and instructed that the sewage generated from the households, commercial establishment and other activities shall not be discharged into River Thenpennai, and the entire sewage shall be treated and disposed by providing suitable treatment system and requested to furnish the **short-term and Long-term action plan** shall be prepared and implement to avoid the discharging of Sewage into River Thenpennai .”

5. We have also received the Joint Committee Report received dated 'nil' e-filed on 3.2.2021 and received on 17.2.2021 which reads as follows:

BACKGROUND

Hon'ble National Green Tribunal, Southern Zone, Chennai in the matter of O.A No. 111 of 2020; Tribunal on its own motion based on the News Item in Tamil Newspaper Dinamalar Chennai Edition dated 13.07.2020, “Frothing of Chemical Foam in the River Thenpennai” Vs The Principal Secretary to Government, Public Works Department, Chennai &Ors., passed orders dated 20.07.2020. Copy of Hon'ble NGT Orders dated 20/07/2020 is appended as **Annexure I.**

Excerpts of the News Item in Tamil Newspaper Dinamalar Chennai Edition dated 13.07.2020, “Frothing of Chemical Foam in the River Thenpennai” is given below:

- (i) On 13th July, 2020 about 640 Cusecs water was discharged from Kelavarapalli Reservoir, Hosur and huge amount of chemical foam was found in Thenpennai River.
- (ii) The flow of water into the reservoir increased gradually from 320 cusecs (09th July, 2020) to 480 cusecs (11th July, 2020) due to heavy rainfall in the catchment area.
- (iii) In general, whenever the flow of water increases in Kelavarapalli reservoir the domestic sewage and industrial effluent from Karnataka mixes into the river in huge quantity.
- (iv) On the day of 13th July, 2020, a huge quantity of sewage/effluent were discharged into Thenpennai and therefore, chemical froth/foam were found floating on the surface of water flowing in Kelavarapalli and near thattakalapalli bridge.

Hon'ble Tribunal(SZ), Chennai vide its orders dated 20.07.2020 appointed a Joint Committee to inspect the area in question and submit status as well as action taken report, if

there is any violation found. The Hon'ble Tribunal has also issued following directions to the committee;

- (i) To ascertain the water quality and also ascertain the sources of pollution and take action against the person who are responsible in accordance with law including imposing of environmental compensation.
- (ii) To submit a long term and short term action plan with shorter time lines to protect the water body against pollution. If there is any contamination caused, the committee is also directed to suggest ways and means to remedy the same.

Hon'ble Tribunal vide aforesaid orders directed the committee to submit the report within a period of two months i.e., on or before 05.10.2020.



The Joint Committee submitted interim report on 01.10.2020 and informed the Hon'ble NGT that the report of the joint committee requires six weeks time and the report would be submitted after incorporating the analysis results of samples collected in River Thenpennaialongwith action plan. In this regard, Hon'ble NGT accepted the interim report and vide order dated 05.10.2020 directed that, "... some more time can be given to the committee to submit the report as directed by this Tribunal...The Committee is directed to submit the report on or before

Copy of the Hon'ble NGT Order dated 05.10.2020 is appended as

CONSTITUTION OF JOINT COMMITTEE AND MEETINGS

In compliance to the aforesaid orders dated 20/07/2020 of Hon'ble Tribunal (SZ), Chennai, a Joint Committee comprising of following members has been constituted by Central Pollution Control Board (Nodal Agency) vide its Office Memorandum No. Tech 39/Legal(NGT)/RDS/2020-21/466-474 dated 24.08.2020 and 16.09.2020. Copy of the said Office Memorandum is appended as **Annexure III& IV**.

1.	Sh. Gunasekaran Revenue Divisional Officer & Sub Divisional Magistrate Hosur Division, Tamilnadu	Member
2.	Sh. N Suresh Superintending Engineer, WRO Public Works Department Tiruvannamalai, Tamilnadu	Member
3.	Sh B H Manjunath* Superintending Engineer Public Works Department Bangalore Circle, Karnataka	Member

4.	<p><i>Sh. N Nagaraj</i></p> <p><i>Superintending Engineer</i></p> <p><i>Minor Irrigation & Ground Water Development Circle, Jayanagar</i></p> <p><i>Bangalore, Karnataka</i></p>	<i>Member</i>
5.	<p><i>Dr M Senthil Kumar</i></p> <p><i>District Environmental Engineer</i></p> <p><i>Tamilnadu Pollution Control Board</i></p> <p><i>Hosur District, Tamilnadu</i></p>	<i>Member</i>
6.	<p><i>Sh. M K Prabhudev</i></p> <p><i>Chief Environmental Officer – 2</i></p> <p><i>Karnataka Pollution Control Board</i></p> <p><i>Bangalore, Karnataka</i></p>	<i>Member</i>
7.	<p><i>ShShivanna M G</i></p> <p><i>Assistant Commissioner (South)</i></p> <p><i>Bangalore Urban</i></p> <p><i>Karnataka</i></p>	<i>Member</i>
8.	<p><i>Smt. Selvi P K</i></p> <p><i>Scientist D, Regional Directorate</i></p> <p><i>Central Pollution Control Board</i></p> <p><i>Bangalore</i></p>	<i>Nodal Officer & Member</i>

vide Government of Karnataka Order dated 28-08-2020, Sh B H Manjunath, Superintending Engineer, PWD, Bangalore has been nominated as a member of the above Joint Committee.

Three meetings were organized by Central Pollution Control Board, Bangalore (Nodal Agency) with the members of Joint Committee on 20.08.2020, 04.09.2020 and 18.09.2020 and minutes were circulated for necessary actions. First and Second Meeting of the Joint Committee were conducted on 20.08.2020 & 04.09.2020 to discuss about the preliminary information to be collected before conducting Monitoring and Sampling of River Thenpennai. Therefore, the joint committee decided to collate following information from the concerned departments to carry out further investigations in the matter;

S.No	Information Required from concerned Departments / Organisations in Tamilnadu and Karnataka
A.	Minor irrigation and Water Resources Organisations
1.	Drainage River Map of Thenpennai.
2.	Details of Water Quality Monitoring locations (viz., drainage (flow), length, velocity etc.) in the entire stretch of river from origin till Kelavarapalli Reservoir. Designated use of water flowing in the river stretch
3.	Quantity of water discharged from the river stretch for irrigation and other purposes.
4.	Annual Rainfall and Rainfall details for August, September, October 2020 Custodian of the river to preserve the quality of water to be pristine.
5.	
6.	
B.	State Pollution Control Boards

7.	<p><i>Details of Water Quality Monitoring Locations and water quality data of the River in terms of DO, BOD, COD, TC, phosphates & others for the last three years.</i></p> <p><i>Major Sources of pollution (industrial and domestic) –</i></p>
8.	<p><i>(a) Status of list of industries with its type/category/classification, Effluent generation, characteristics, treatment, discharge details etc.</i></p> <p><i>(b) Details of domestic effluent generation, treatment, discharge options etc.</i></p> <p><i>(c) Status of Operation of Sewage Treatment Plants with its performance evaluation.</i></p> <p><i>(d) Information regarding open dumping of solid or biomedical or hazardous waste, open burning of waste and illegal encroachment or other activities along the river bed etc.</i></p>
C.	Public Works Department
9.	<p><i>Status of sewage discharge and sewerage networking plan in the unsewered area.</i></p>
10.	<p><i>About Kelavarapalli dam and designated use of dam water.</i></p>



Subsequently, it was discussed and decided to collect the following information from Bangalore Water Supply and Sewerage Board (BWSSB), Bangalore Development Authority (BDA) and Bangalore BruhatMahanagaraPalike (BBMP) in the second meeting of the Joint Committee conducted on 04.09.2020;

- (a) Status of Sewage Treatment Plants (STPs) (existing & operational, under construction and proposed) in Koramangala&ChallaghattaValley and Hebbal Valley
- (b) Drainage map / layout showing locationsof STPs with capacity and sewerage networking in those valleys
- (c) Details of flow of domestic sewage measured at inlet and outlet (after treatment) of each of the STPs
- (d) Performance of STPs based on its operational capacity, Waste water generated vs actual quantity treated, gap analysis andtreated waste water quality (w.r.t discharge standards of STP) in Real Time Monitoring stations installed etc.
- (e) Quantum of untreated sewage flowing in Koramangala&Challaghatta and Hebbal valley with its proposed Underground Drainage network plan and others
- (g) Details of plan for diversion of treated wastewater to Kolar, Chikaballapurand other districts of Karnataka
- (h) Details of Rejuvenation of lakes and water bodies in Bengaluru etc.

Third meeting of the Joint Committee was conducted on 18.09.2020 to discuss and review the status of Action taken on the defaulters followed by Action Plan for compliance etc.

Subsequent to the orders of the Hon'ble NGT dated 05.10.2020, two meetings were organized with the state functionaries of Karnataka (BWSSB and KSPCB) on 08.10.2020 and 22.10.2020 to discuss& collate the information about the details of industries located in Karnataka near the River basin of Thenpennai and status of STPs located in Koramangla&Challaghatta and Hebbal Valley.

ABOUT RIVER THENPENNAI

Thenpennai River also known as South Pennar or DakshinaPinakini is an interstate River. The River originates on the south eastern slopes of Chennakesava Hills, northwest of Nandidurg of Chikaballapur district in Karnataka State at an altitude of 1000m above mean sea level, which flows in the southern direction through Chikkaballapura, Bengaluru Rural and Bengaluru Urban districts in Karnataka state and descends to Tamilnadu near Hosur.

Thenpennairiver basin is one of the largest rivers of the state of Tamil Nadu. The river has supported many a civilizations of peninsular India in supplying precious water for drinking, irrigation and industry to the people of the states of Karnataka, Tamil Nadu and Pondicherry. The total length of Ponnaiyar River is 432 km, of which 112 km lies in Karnataka state, 180 km in Dharmapuri and Krishnagiri, 34 km in Thiruvannamalai and 106 km in Cuddalore, Kallakurichi and Villupuram districts of Tamil Nadu before joining Bay of Bengal. En route, its tributaries are Chinnar, Markandeyanahi, Vaniar and Pamban rivers in Tamilnadu. With a total catchment of approximately 16,019 km², it is dry for the most part of the year but swells during the north east monsoon season.

In Karnataka, the river traverses through series of zilla panchayat tanks and also Minor Irrigation tanks namely Nandi tank, Kuppalli tank, Chadalapura tank, Kothanuru tank, Kolavanahalli tank, Cikkadigenahalli tank, Bommanahalli tank, Kanithahalli tank, Muthur tank, malluru tank, Amani Bhadrakere tank in Chikkaballapur district, HosakoteDoddakere tank in Bengaluru Rural district, and YelemallappaChettytank in Bengaluru Urban District.

The stretch of the river is mostly dry to scanty from Origin (Nandi) towards Chikkaballapur, Kolar district, Bangalore Urban District and Hoskote taluk of Bangalore Rural districts of Karnataka. Before descending the interstate border into Tamilnadu, overflow of water from Bellandur and Varthur lakes carrying domestic sewage of Koramangala & Challaghatta and Hebbal valleys of Bangalore adds to the flow in river Thenpennai thereby causes frothing in the river stretch.

PRELIMINARY JOINT COMMITTEE SURVEY AND INVESTIGATION

Preliminary Reconnaissance Survey and Observations

The Joint Committee conducted a preliminary survey during 28.08.2020 and 01.09.2020, in order to investigate the current scenario of River flowing in both the states (Karnataka and Tamilnadu). The findings of the preliminary reconnaissance survey of Chikkaballapur, Kolar districts, Bangalore Urban District and Hoskote taluk in Bangalore rural districts in Karnataka are given below:

(A) Chikkaballapur District: South Pinakini river flows in Chikkaballapur, Siddlaghatta and Chintamani (border) taluks in Chikkaballapur District.

- The basin of the river is very small and for majority of the period in a year, the river basin remains dry.
- Since this river connects many tanks, water flow can be seen only when the tanks overflow.
- Under Chikkaballapur district jurisdiction, on the banks of this river, no major industries can be seen.

(B) Kolar District: South Pinakini river flows in Kolar, Malur and Bangarpet taluks in Kolar District.

- The basin of the river is very small and for majority of the period in a year, the river basin remains dry.
- Since this river connects many tanks, water flow can be seen only when the tanks overflow.
- Under Kolar district jurisdiction, Markandeya major tank in Bangarpet taluk (the catchment area is in Malur taluk) discharged water only 15 years back and the tank is having a flood discharge of 8,200 Cusecs. Catchment area is 113.14 Sq miles with tank's total capacity of 807

Units which irrigates the total irrigation area of about 847 acres. At the time of discharge, water flow through this valley joins at Yarragolu dam. Water will be used for drinking purpose by people in 3 taluks namely Kolar, Bangarpet, Malur. Finally, the discharge of Yarragolu dam water joins the valley of south pennar of Krishnagiri district in Tamilnadu state.

(C) Hoskote Taluk: South Pinakini river flows in Hoskote taluk in Bangalore Rural district.

- *The basin of the river is very small and for majority of the period in a year, the river basin remains dry.*
- *Water flow can be seen only when the tanks overflow in Hoskote taluk.*
- *Under Hoskote jurisdiction, on the banks of this river, no major industries can be seen.*

River also flows down in Anekal (border) in Bangalore Urban District.

In addition to above, preliminary reconnaissance survey of River basin of South Pennar flowing in Bangalore district was also conducted and the observations are given below;

(D) Bangalore District: *Survey was carried out in the areas of River South Pennar drainage basin covering Hebbal Valley and Koramangla / Chalghatta Valley, wherein series of lakes/tanks namely, Agara, Bellandur, Varthur (K & C Valley), Yellamalappachetty lake, Kadugodi bridge, Channasandra bridge (Hebbal), Hoskote tank, Mugalur bridge followed by few industries in Samethanahalli and Thiruvaranga were also visited and found dismantled/closed.*

- i. Water was found to be flowing clear from Agara lake to the storm water drain, however domestic sewage and solid waste was found mixing down the drain near Agara lake.*
- ii. It was observed that due to the desilting work, temporary diversion channels were created on the outer ring of the tanks in Bellandur and Varthur for enabling flow of water through the tanks. Color of water was found to be flowing greyish in varthur as compared to Bellandur lake and it was informed that untreated domestic sewage from about 110 villages/hamlets in Bangalore joins varthur (sewerage networking is under progress and same will be completed by 2023).*
- iii. Two weirs of Hoskote tanks were observed to be having less water and no flow was found during the visit.*
- iv. Further, water flowing in Mugalur (KSPCB monitoring location) was also observed to be frothy and greyish, where few pig farming activity were found discharging washings.*
- v. Some micro/small scale dyeing units were also found operational illegally and discharging untreated effluent down the drain nearly 50 m away from the river stretch in Samethanahalli weir and immediate actions were taken by Karnataka SPCB to close those units.*
- vi. Also, a few other non-operational/closed and dismantled dyeing units in Samethanahalli and*

Thiruvaranga were also visited during the survey. In Samethanahalli, water was observed to be flowing greyish and frothy, which may be attributed to joining of sewage from K&C valley. Details of Action taken on the defaulting industries, as provided by KSPCB is discussed in Section 6.0 of chapter VI.

vii. Washings and droppings of piggery farms located in samethanahalli and thiruvarangamay add to organic load of the River flowing inSamethanahalli.

viii. Color of the water flowing in the tanks and course of River Thenpennai was found to be greyish in Varthur diversion channel, Agara drain, Y junction, Samethanahalli weir and Mugalur bridge.

ix. Information regarding number of STPs (operational status) and proposed STPs (capacity) of K&C Valley and Hebbal valley was explained by Bangalore Water Supply and Sewerage Board (BWSSB) during the survey with the help of layout map. Details of Sewage management in the two valleys of Bangalore is provided in section 4.4 of Chapter 4. Information about desilting work carried out in Bellandur and Varthur tanks was also shared by BangaloreDevelopment Authority (BDA)

Then, the joint committee conducted survey in the areas of River South Pennar drainage basin flowing down southcovering Sokarasanapalli (KSPCB monitoring location), Singasadanapalli (Central Water Commission monitoring location), Kodiyalam, Bagalur villages near hosur and Kelavarapalli Reservoir in Tamilnadu.

(E) Villages near Hosur, Tamilnadu:

i. Details of the villages with Population density located on Thenpennai riverine namely, singasadanapalli, kodiyalam, kooliganapalli, sokkarasanapalli, bagalur, lingapuram, ottapallithinna, kanimangalam, padathepalli, nanjapuram, sathyamangalam, muneeswararnagar, kembasandhiram, chennasandiram, kallipuram were provided as below;

S.No	Name of Village	Distance from the River bed	Number of houses	Population	Population density (Sq. Km)

		(m)			
1.	<i>Singasadanapalli</i>	1000	120	660	242.50
2.	<i>kodiyalam</i> <i>(kooliganapalli)</i>	500	260	1106	217.03
3.	<i>Sokkarasanapalli</i>	500	250	855	348.97



4.	Bagalur	50	1500	11000	2534
5.	Lingapuram	100	300	2000	1666.67
6.	Ottapallithinna	400	35	130	97.01
7.	Kanimangalam	1000	110	310	94.80
8.	Padathepalli	1000	120	390	127.03
9.	Nanjapuram	-	-	-	-
10.	sathyamangalam, muneeswararnagar	500	255	1390	260.787
11.	Kembasandhiram	500	25	550	705.12
12.	Chennasandiram	600	300	1417	885.62
13.	Kallipuram	-	-	-	-
	Total		3275	19808	7179.5

- ii. It has been informed by representative of Tamilnadu Pollution Control Board that there are no industrial discharge along the stretch of Thenpennai River in Tamilnadu and no underground sewerage lines or STPs operating near the Riverside. Further, Tamilnadu SPCB informed that following industries are located near the river stretch;

S. No	Name of the industry	Classification/ Category	Discharge Options	Details of Consent	Remarks

1.	M/s Premier VVG & SPG Mills Pvt Ltd., Belathur, Bagalur	Textile / Large /Red	Zero Liquid Discharge and there is no discharge of industrial effluent / sewage into River Thenpennai	Consent to Operate issued on 08.11.2001 valid up to 31.03.2003 Renewal of Consent issued on 20.03.2017 valid upto 31.03.2022	The unit is located at a distance of 900 meter from River Thenpennai. Re-commissioning the dyeing and printing operation during first week of Octobe
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						r 2020.
2.	M/s Exide Industries Ltd., Chichuruganapalli, Sevaganapalli	integrated battery manufacturing unit/ Large /Red	Zero Liquid Discharge and there is no discharge of industrial	CTO issued on 13.11.2013 valid	4 km away from river and	

			effluent / sewage into River Thenpennai	up to 31.03.20 14 Renewal of Consent issued on 20.12.20 17 valid upto 31.03.20 22	divided by undula ted terrain
3.	M/s Shahi Exports Pvt. Ltd., Sevaganapalli	Textile garment unit / Large / Green	STP and treated effluent utilized for green belt and there is no discharge of Sewage into River Thenpennai	CTO issued on 22.08.20 11 valid up to 31.03.20 12 RCO issued on 03.07.20 20 valid upto 31.03.20	No dischar ge outside premis es

				22	
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- iii. Color of Water flowing in the River stretch was observed to be greyish in sokkarasanapalli, frothy/slight greyish in kodiyaalam, brownish to grey in Bagalur bridge and greenish in Kelavarapalli Reservoir.*
- iv. Solid waste dumping and mixing of domestic sewage into the river stretch flowing through bagalur bridge was also observed and Tamil Nadu Pollution Control Board was asked to take note of the scenario for appropriate actions. Action taken report is given in section 6.0 of chapter VI.*
- v. Representative of Tamilnadu Pollution Control Board has informed that sewage generation has been estimated as 0.8 MLD (approx.) from Bagalur village and 0.01 MLD to 0.15 MLD (approx.) from rest of the villages in Tamilnadu. It was also informed that the sewage generated in the above hamlets percolates within the hamlet limits and therefore may not get discharged into River Thenpennai.*
- vi. Average rainfall of Kelavarapalli is about 533 mm.*

About Kelavarapalli Reservoir

Kelavarapalli Reservoir Project was built in 1978-1995 at Krishnagiri district, Tamilnadu and the Reservoir or Dam is situated at a distance of 8 km from Karnataka and 10 km away from Hosur, Tamilnadu across the River Thenpennai, which actually originates from the eastern slopes of Chennakesava Hills in Karnataka. The dam further leads water to the districts of Dharmapuri, Tiruvannamalai, Kallakuruchi, Villupuram and Cuddalore before joining Bay of Bengal.

Kelavarapalli Dam is situated at the latitude of 12°52'42"N and longitude of 78°46'06" E which is located in the Northwestern part of Tamil Nadu, bordering Karnataka and Andhra Pradesh states. The Dam is operational from 10th November 2002. Salient features of the dam include:

(a) Salient features of Dam:

- 
1. Type of dam : Masonry cum earthen Dam
 2. Length : 665m
 3. Height : 13.50m
 4. FRL Water spread Area : 433.20 Hec
 5. Volume : 0.481 TMC
 6. Catchment area : 2442.00 Sq.Km
 7. Gross Capacity : 13.61 Mcum
 8. Maximum Water level : 831.50 9.
 - FRL : 831.50
 10. Water Supply Period : 1st Crop = July to December - 150 Days

 11. Spillway Type : Ogee Crest Type
 12. Spillway Nos : 7 Nos
 13. Spillway Size : 12.20m x 6.10m
-

14. Crest Level : 825.40
15. Design flood Discharge : 88980 Cusecs
16. River Sluice : 1 No (1.20m x1.82m)
17. Canal Sluice : 2 Nos (0.90m x 1.50m)
18. Length of Canals

Right Main Canal (RMC) = 21.99 km Left Main
Canal (LMC) = 25.500 km

3.80 km LMC Branch canal III = 2.78 km LMC Branch canal IV = 4.96 km

LMC Branch canal V = 0.71 km Distributaries I of B.C IV
= 1.80 km

Distributaries II of B.C. IV = 2.00 km

Distributaries I of B.C V = 1.48 km Distributaries II of
B.C. V = 1.15 km

19. Irrigation Area : 3676 Hec
20. Approved Estimate : Rs.551.50 Lakhs
21. Revised Estimate : Rs.606.70 Lakhs

(b) Present condition of Dam (as on 09.09.2020)

1. Water level : 12.30 m
2. Water storage level : 343.74 Mcuft
3. Water incoming : 400 cusecs
4. Water discharge : 400 cusecs

Kelavarapalli Dam SIPCOT Central Water Supply Scheme provided 14.00MLD of water to Hosur Municipality Phase I during 2015-16. Water supply of Hosur Municipality is mainly

being met out from the Government of Tamilnadu's Hoganekkal water supply Project which was executed & maintained by Tamilnadu Water Supply and Drainage Board (a statutory body under Tamilnadu Government) and the other sources are from Kelavarapalli Dam, one from Perandapalli River and few local wells. At present the entire Municipality is receiving 30.39 MLD of water supply from all the above said sources. (Source: <https://www.twadboard.tn.gov.in/content/major-water-supply-schemes-1518>).

Since Thenpennai river is the sole water source in Krishnagiri, Tiruvannamalai and Cuddalore districts, it has been extensively dammed. As it enters Tamilnadu, the water is stored in the Kelavarapalli dam reservoir near Hosur. The surplus amount reaches the Krishnagiri dam, which is situated 60 km downstream.

Excerpts of Thenpennai River Monitoring in the matter of O.S No. 2 of 2015 before Hon'ble Supreme Court & in the matter of O.A No. 125/2017 before Hon'ble NGT

A) In O.S No. 2 of 2015 before Hon'ble Supreme Court

In compliance to Hon'ble Supreme Court directions in the Original Suit No. 02 of 2015, a joint monitoring Report on River Cauvery and Thenpennaiyar was submitted by CPCB, KSPCB and TNPCB, wherein the monitoring team carried out sampling of water for the period September 2017 to May 2018. The committee filed the report before the Hon'ble Court in 2018 (the case is pending before Hon'ble Supreme Court). The findings of the Report is given as below:

1. In case of River Thenpennaiyar at Sokarasanapalli, the water quality falls below designated best use Class C during all nine monitoring and the critical parameters are BOD, DO and TC. The Total Coliform was always > 5000 MPN/1000 ml and DO was <1 except during January and February 2018 showing the DO as 2.4 and 3.8 mg/l respectively. BOD also exceeded the Sewage standards notified (i.e. 20 mg/l) for all nine months showing the water is highly polluted.
2. The River Thenpennaiyar receives the outflow of treated and untreated sewage of Bellandur and varthur

lake system. Comprehensive plan of restoration of these lakes along with identifying other sources of untreated sewage into the River only will help to restore the quality of the river. Government of Karnataka may prepare such plan on priority considering the pollution issues of Bellandur and varthur lake system, which contributes to the pollution of Thenpennai River.

B) In O.A No. 125/2017 before Hon'ble NGT

C) On the subject of remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore, including preventing discharge and dumping of pollutants, removing encroachments from catchment area and other steps for restoration, Hon'ble Tribunal, Principal Bench, New Delhi, in the matter of O.A No. 125/2017, constituted a monitoring committee headed by Justice ShSantosh Hegde, former Judge of the Hon'ble Supreme Court to oversee the execution of the action plan. In this regard, summary of Compliance Report to the observations of the Monitoring Committee in respect of BWSSB, BDA, UDD, Minor Irrigation and KSPCB was filed before Hon'ble NGT, Principal Bench on 04.08.2020, wherein Hon'ble Tribunal vide orders dated 13.08.2020 has directed that **"...the left-over work may be expeditiously completed which may be reviewed by the Monitoring Committee. The status of compliance as on 31.12.2020 may be compiled by the Monitoring Committee and report furnished to this Tribunal by 15.01.2021..."**

Major Sources of Pollution

Major sources of pollution to River Thenpennai appear to be from untreated/partial treated sewage from Bangalore. Sewage generated from Bengaluru is the predominant reason for deterioration of lakes and water bodies in Bangalore, which is ultimately flowing into river Thenpennai.

There are various reasons such as ageing of sewers, encroachment of sewers, damages in the sewerage system, crown corrosion of sewers etc. for direct discharges of a part of wastewater from housing colonies and such discharge is flowing through Storm Water Drains and enters lakes in Bengaluru. Lakes in Bengaluru were created for rain water harvesting and once served as sources of water supply to the city. Lakes are under the custody of various departments namely Bangalore BruhatMahanagaraPalike (BBMP), Bangalore Development Authority (BDA), Karnataka Forest Department (KFD), Lake

Development Authority (LDA), Minor Irrigation and Water Resources Department.

In recent years, few lakes have been converted into built-up area owing to industrialization and urbanisation. Among all the lakes, Bellandur and Varthur are highly polluted due to discharge of untreated and partially treated sewage from the city. Bellandur lake receives nearly 40 % of Bangalore's sewage and further drains into varthur lake, then flows into Thenpennai River towards south of Bangalore. Lakes are polluted due to inadequate drainage system leading to bypassing of sewage into lakes, entry of sewage from apartments/commercial establishments into storm water drains leading to lakes, insufficient sewage treatment plants, encroachment of lakes and Rajakaluves (storm water drains), dumping of municipal solid waste, construction and demolition wastes, illegal discharge of industrial effluents etc. The foremost reason for pollution of Bellandur Lake is sewage/ Sullage flowing in the storm water drains. One of the main reasons for development of foam in the waste weir is agitation of water falling over a height and due to surfactants present in sewage. Now after establishment of sluice gate and weir modification, foam formation reduced considerably, informed KSPCB. Additionally, fertilisers used by farmers of Karnataka as well as Tamilnadu may add to the pollution of river thenpennai.

Status of Domestic Sewage Management in Bangalore

Sewage is one of the major causes for poor water quality of rivers, lakes and water bodies causing adverse impacts on human health and aquatic species. Bangalore Water Supply and Sewerage Board (BWSSB) was formed in 1964 to provide Sewerage system in areas of Bangalore in a phased manner. Domestic Sewage generation in Bengaluru has been estimated as 1160 MLD which is attributed to increased urbanization and population. The actual amount of sewage generated would be higher since a large number of private bore wells exist and there is no scientific estimate of the quantity of water withdrawn from the borewells.

Sewage flow follows the regional topography and flow down along the three principal valleys and five minor valleys ensuring free flow of sewage without any major pumping requirement. Also treated wastewater of Bangalore is also being diverted to recharge drought

ridden stretch/tanks of chikbellapur and kolar districts.

KSPCB informed that the industries have been encouraged to opt for Zero Liquid Discharge (ZLD). Further, 08 CETPs are operational for treating effluent generated from small scale industries from Bangalore. KSPCB has been directed by CPCB to make entries in the river basin module on status of ETPs in the state based on Hon'ble Supreme Court and Hon'ble NGT Orders and the same is under progress.

In compliance to Hon'ble Supreme Court directions in the Original Suit No. 02 of 2015, Chief Secretary, Government of Karnataka submitted to Hon'ble Supreme Court in 2018 that, "...fourteen STPs of total 129 MLD for 110 villages under Japan International Cooperation Agency (JICA) Fund Scheme were proposed. It was then assessed that, with the establishment of those STPs, the total capacity of STPs to treat the sewage from Bengaluru would rise up from the existing capacity of 1050 MLD to 1575 MLD by 2020 and 1704 MLD by 2022."

In this connection, BWSSB has now informed that fourteen STPs of total 124 MLD for 110 villages under Japan International Cooperation Agency (JICA) Fund Scheme were proposed and 3 STPs of 400 MLD capacities are under construction with the help of Megacity Revolving Fund (MCRF). It is now assessed that, with the establishment of those STPs, the total capacity of STPs to treat the sewage from Bengaluru would rise up from the existing capacity of 1182.5 MLD to 1582.5 MLD by 2021 and same would be increased to 1726.5 MLD by 2024.

Domestic sewage generation of hamlets/areas namely, Gottigere, JP Nagar, Puttenahalli, Bilekahalli, Arekere Lake, Hulimavu Lake, Madiwala lake, BTM Layout, HSR Layout, Agara Lake, Shivajinagar, Ulsoor Lake, Domlur, Indiranagar, HAL, Kalasipalya, Lalbagh Road, KH Road, Shantinagar Bus Station, National Games Village, Ejipura, Sinivagilu located in the stretch of Hebbal and K&C Valley, Bangaloreis around 292 MLD &574 MLD (total 866 MLD) respectively, of which608 MLD (70 %) is being treated in 21 STPs(having capacity of736.5 MLD located in the two valleys).Further, as per Action plan of BWSSB,110 MLD of the balance sewage will be taken into sewerage network by completing the works in2022.

BWSSB has also reported that as per the understanding with Minor Irrigation Department the treated waste water from 21 STPs are to be diverted to Kolar and Chikkaballapur districts to recharge the drought ridden tanks. Presently, it is estimated that approximately 290 MLD of treated wastewater (as against the quantity of 400 MLD as per MoU with Minor Irrigation) from 4 STPs located in K&C valley treated water is discharged to 126 minor irrigation tanks located in Kolar District. Further, it has been reported that around 100 MLD of treated wastewater from 03 STPs located in Hebbal Valley is discharged to 65 minor irrigation tanks of chikkaballapur district. The information on the quantity of treated wastewater that has been diverted for recharging the minor irrigation tanks, as provided by Minor Irrigation are given below;

S No	District	No. of Tanks filled till October, 2020	Water Pumped (TMC)
1.	Kolar	78	6.69
2.	Chikkaballapur	24	1.16
Total		102	7.85

The status of sewage generation, treatment and enhancement of treatment capacity plan, as reported by BWSSB, is given below:

A. Quantity of Sewage generated in Bangalore	1160 MLD
B. Quantity of Sewage generated in K&C and Hebbal Valley, Bangalore	866 MLD
C. Number of STPs in two valleys	21 Nos.
D. Treatment capacity of the 21 STPs in two valleys	736.5 MLD
E. Quantity of Sewage actually treated by 21 STPs in two valleys (on an average)	608 MLD

F. Quantity of treated wastewater diverted for irrigation to Kolar & Chikkaballapur districts	390 MLD from 07 STPs
G. Total gap in wastewater treatment in the two valleys of Bangalore	<p>(i) Gap in installed Capacity of STPs = 866 – 736.5 = 129.5 MLD</p> <p>(ii) Gap in actual treatment of wastewater in STPs = Installed capacity (736.5 MLD) – Operational Capacity (608 MLD) = 128.5 MLD</p> <p>Total Gap in waste water treatment = (i) + (ii) = 258 MLD</p>
H. Total Enhancement of Sewage	K&C valley = 150 MLD

Treatment Capacity of STPs in two valleys, Bangalore estimated by BWSSB	<p>Hebbalvalley = 133 MLD</p> <p>Total enhancement of capacity of STPs = 283 MLD</p>
I. Enhancement of Sewage Treatment Capacity of STPs in entire Bengaluru (covering both the valleys) estimated by BWSSB	<p>1582.5 MLD by 2021</p> <p>1726.5 MLD by 2024</p>

BWSSB has informed that in Hebbal valley, 02 STPs of 100 MLD capacity at Hebbal and 20MLD STP at K.R Puram is under construction and the same will be commissioned in 2021. In addition to that, construction of one STP with 07 MLD capacity is also under progress

in Hebbal valley. To further enhance the sewage treatment capacity, a STP of 6MLD at Horamavu in Hebbal Valley is planned and the same will be operational by 2023. An average 59 MLD of sewage generation is estimated (which includes sewage generation from part of 110 villages in Hebbal Valley) where presently there is no sewer network.

In case of Koramangla&Challghatta valley, of 02 STPs, one STP at Chikkabegur has already started treating sewage and another STP (150MLD) will be commissioned by Dec 2020. Status of Sewage Treatment Plants of K&C and Hebbal Valleys in Bangalore along with its performance in terms of capacity, as provided by BWSSB is given as **Annexure V**.

Considering 135 lpcd water supply for the population of 1062278 in 110 villages in 2019, the estimated quantum of sewage generation from 110 villages of BBMP limit in K&C and Hebbal Valley is calculated as 143.41 MLD, which remains untapped for treatment in STPs due to absence of Under Ground Drainage Network by BWSSB.

In addition to above, as per the Government of Karnataka Notification No. FEE 316 EPC 2015, Bengaluru dated 19.01.2016, KSPCB Clearance is required for the following projects:

- a) All residential group housing projects/apartments with 20 units and above or having total BUA of 2,000 sq.m including basement
- b) Commercial constructions projects (commercial complexes, office, IT related activities etc) with total built up area of 2,000 sq.m and above
- c) Educational institutions with or without hostel facility having total built up area of 5,000 sq.m and above
- d) Townships and area development projects with an area of 10 acres and above

Accordingly, KSPCB is covering apartments with 20 flats & above and commercial buildings of 2000 sq.mts and area development projects of 10 acres and above only. All the projects covered by KSPCB under consent mechanism are required to provide Sewage Treatment Plant (STP) for treating the sewage. However, sewage generated from the smaller projects like apartments with less than 20 flats, commercial buildings with less than 2000 sq.mts built up area are required to be treated by BWSSB.

KSPCB has filed two Criminal cases against BWSSB w.r.t pollution of Bellandur Lake.

Further, as per the directions of Hon'ble NGT in the matter of O.A.125/2017, Karnataka State Pollution Control Board has imposed Environmental Compensation against the defaulting Apartments/Housing Associations. Few projects have approached the Hon'ble High Court of Karnataka in this matter. As per the directions of Hon'ble High Court of Karnataka, Karnataka State Pollution Control Board is following the due procedure. Details of action taken by KSPCB on the defaulting apartments/housing complexes are provided in section 6.0 of Chapter VI.

SAMPLING AND ANALYSIS OF SURFACE WATER FLOWING INTO RIVER THEN PENNAI

Sampling Locations

The Joint Committee identified the following sampling points for collecting surface water samples based on the reconnaissance survey conducted in Tamilnadu and Karnataka during 28th August and 01st September, 2020;

S.No	State	Sampling Points (no. of samples)	Geo-Coordinates	
1.	Karnataka	i. Agara drain	12.923 °N	77.639 °E
		ii. Y junction drain (Agara/Koramangla)	12.923 °N	77.646 °E
		iii. Bellandur diversion channel	12.931 °N	77.677 °E
		iv. Varthur diversion channel	12.945 °N	77.746 °E
		v. Channasandra bridge	12.945 °N	77.776 °E
		vi. Samethanahalli weir	12.985 °N	77.784 °E

			°N	
			12.970	
			°N	
2.	Inter State Boundary	vii. Mugalur bridge (Karnataka)	12.853 °N	77.831 °E
		viii. Sokkarasanapalli (Tamilnadu)	12.896 °N	77.831 °E
3.	Tamilnadu	ix. Bagalur bridge	12.769 °N	77.875 °E
		x. Kodiyalam	12.769 °N	77.877 °E
		xi. Kelavarapalli reservoir	12.857 °N	77.823 °E
		xii. Kelavarapalli outfall	12.831 °N	77.871 °E

Surface water samples of the above twelve locations were collected by Joint Committee on 09th and 10th September, 2020.

Geographic profile and details of the sampling locations in the sequence of the flow of River Thenpennai is provided below;

(i) Agara drain:

Agara lake spread over 98 acre, is located at Agara in southeast direction of Bengaluru. The lake receives outfall from the upstream Madivala lake. The excess water from Agara lake overflows through the storm water drain to Bellandur lake near southwest direction. At Agara, the flow of water was found clear and no frothing was found. However, domestic sewage and solid waste was found mixed down the drain with greyish color leading

to Bellandur.

(ii) Bellandur diversion channel:

Bellandur Lake is located in southeast direction of Bengaluru and is the largest lake in the city and the weir flow of Agara Lake joins Bellandur lake. It was observed that, of the two Bellandur Lake weirs, water was flowing in one weir towards Southern direction (near Bellandur village, popularly called as Bellandur bridge) through channels created on the outer



ring of the lake, whereas Northern weir (near Yamalur, popularly called as Yamalur bridge) was taken up for restoration work by BDA.

Sampling Locations		STP Locations	
1	Agara Lake	1	Faecal STP
2	Y Junction	2	BWSSB 6 MLD
3	BelandurKodi	3	Horamavu
4	Varthur Kere	4	Hennur
5	Channasandra	5	Hebbal Raja Canal
6	Samethanahalli	6	Cubbon Park
		7	Lalbagh 1.5 MLD
		8	Ulsoor
		9	Lidkar CETP
		10	Hulimavu
		11	Sarakki
		12	Chikkudlukere
		13	Agara
		14	K & C 60 MLD
		15	K&C 218 MLD
		16	K&C 30 MLD
		17	K&C 150 MLD
		18	BelandurAmanikere 90 MLD
		19	Kadabeesanahalli 50

	MLD
20	TC Palya 15 MLD
21	TC Palya U/C 20 MLD
22	YelemallappaChetty 15 MLD
23	Koralur 5 MLD

24	Madivala Not Operating
25	ChikkBegur U/C



It was also observed that, the storm water drain near bellandur lake was found with lots of floating materials such as plastic bags and municipal solid waste etc. This might be due to local people residing in the area with no awareness about solid waste collection and management. There is a need for clearance of solid waste dumped in the storm water drain and lake by local authorities and monitoring by KSPCB to protect the lake from pollution. At Bellandur, the flow of water was found slightly clear and no frothing was found.

(iii) Varthur diversion channel:

The Varthur Lake takes the main inflow from outflow weirs of Bellandur Lake, along with some other water entry points (about 6 to 9) between outer ring road (that connects Marathalli with Sarjapura road) and Varthur, between which the Varthur Lake lies. It

was seen that Varthur Lake has 02 outflow weirs viz: Northern weir near Sigma Softech Park, Ramagondanahalli (popularly called as Varthur Kodi) and Southern weir near Varthur (popularly called as Varthur Bridge).

Even in varthur lake, water was flowing only in southern weir as the Northern weir was taken up for restoration work by BDA. It was informed that both the weir flow of the lake joins at a point at about 600 m in South Eastern direction of the Northern weir, thereafter, the stream joins the South Pennar River, through Ajjigondahalli bridge, at about 3.8 Km in east of north eastern direction. The joined streams of out flow weir of Varthur Lake flowing en route, Ajjigondahalli Bridge, represents entire wastewater / domestic effluent of Koramangla & Challaghatta Valley flowing into South Pennar River. At varthur, the flow of water was found greyish to brown and no frothing was found.

(iv) Channasandra bridge:

Channasandra Bridge located on Hope Farm Junction towards Chikka Tirupathi Road, flows in Southern direction in order to further confluence with the out flow of Varthur Lake (K & C Valley).

Whereas, lakes of Hebbal Valley flows into Yelemalappa Chetty Lake (YMC Lake) located on Old Madras Road. Over flow through the outflow weir of YMC Lake joins the South Pennar River at about 4.9 Km South East of YMC Lake and flows in southern direction to join channasandra bridge. At channasandra, the flow of water was found green in color with absolutely no frothing. However, solid waste was found dumped near the bridge.

(v) Samethanahalli weir:

Samethanahalli is located downstream of varthur lake at south eastern direction of Bangalore outskirts. It was observed that domestic and industrial discharges of samethanahalli confluences into tributaries of South pennar river basin and flows down to join downstream of ajjigondahalli towards Mugalur. At samethanahalli, the flow of water was greyish with froth floating over.

Few unauthorized micro/small scale dyeing units were found operational during the

visit and found discharging untreated effluent down the drain. KSPCB has taken immediate action to close those units.

(vi) Mugalur bridge:

Mugalur Bridge is on Sarjapura – ChikkaTirupati road which is at a distance of about 11.47 Km south east of northern weir of Varthur Lake. The South Pennar River leaves Karnataka State and enters into Tamil Nadu and joins Kelavarapalli reservoir (about 7.5 Km north east of Hosur city) which is located at about 14.18 Km south east of Mugalur Bridge. At Mugalur Bridge, the flow of water was greyish to brown and it contained scanty pockets of froth here and there. Solid waste dumping and outlet of pig farming into the river was found near the area.

(vii) Sokarasanapalli:

Sokarasanapalli is located at interstate border of Tamilnadu and Karnataka with a distance of 500 m from the river bed.

Sokarasanapalli is an interstate water quality monitoring location being sampled by Karnataka on a quarterly basis. The flow of water in sokkarasanapalli was observed as greyish and with growth of floating aquatic plants in a large area.

(viii) Kodyalam: Kodyalam is situated in north east direction of Hosur district, Tamilnadu. In kodyalam, there is one anicut which has two sluices constructed to distributewater flowing from sokkarasanapalli for agriculture purpose. Central Water Commission, Cauvery and Southern Rivers Division monitors flow of the river at this location. Water was found to be flowing in greyish color and frothy foam was floating on the river.

(ix) Bagalur bridge:

Bagalur bridge is situated in north eastern direction of hosur district, Tamilnadu. Bagalur bridge was found with water flowing in brown to greyish color and solid waste was found dumped on either sides of the river bed. Cattles were also found grazingthe grass near the solid waste dumped area which could cause lethal effects due to plastics and other inert materials dumped over.

(x) Kelavarapalli dam:

Kelavarapalli dam is located in the Northwestern part of Tamil Nadu. 400 cusecs of water was found flowing through spillway shutters with reasonably clear water in green color on the day of visit. Also scanty pockets of froth were seen due to water flowing with force from high fall of the dam.

In the areas namely, samethanahalli, mugalur, sokkarasanapalli, kodiyaalam, bagalurkelavarapalli water was found being pumped and used for agriculture in the nearby areas.

Sampling Protocol

The surface water samples of the above identified 12 locations in River Thenpennai were collected during 09th and 10th September, 2020 and submitted to laboratory for analysis. The Joint Committee followed CPCB's Standard Operating Procedure for National Water Quality Monitoring Programme and Submission of data (August, 2017). The scope of the SOP is to standardise the process of sample collection, preservation, handling and analysis, preparation of data reports, etc.

Results and Discussion:

The River originates in Nandi Hills of Chikkaballapur district and the flow is mostly dry to scanty from Origin (Nandi) towards Chikkaballapur district, Kolar District, Bangalore Urban District and Hoskote taluk of Bangalore Rural district. Therefore, no samples could be collected till Hoskote tank.

Subsequently, it was informed by KSPCB that overflow of water from Bellandur and Varthur lakes carrying domestic sewage of

Koramangala&Challaghatta and Hebbal valleys of Bangalore adds to the flow in river Thenpennai. Accordingly, samples were collected from the diversion channels of Bellandur and Varthur lakes,Agara drain, Y Junction to ascertain the sources of pollution flowing into River Thenpennai.

The joint committee discussed that the quality of water flowing in river Thenpennaicould be assessed based on the water samples from the above four major drains/channels, river flowing in major confluence points and interstate monitoring locations identified in consultation with concerned State Pollution Control Boards such as Channasandra bridge, Samethanahalli, Mugalur bridge, Sokkarasanapalli, Bagalur bridge, Kodiyalam, Kelavarapalli.

The analysis results of the samples collected from all the above 12 locations were compared with Designated Best Use (DBU) criteria and Classification notified under Environment (Protection) Rules, 1986. The categorisation and classification of water flowing in River Thenpennai is given below at **Table 1**.

Table 1. Classification as per Designated Best Use Criteria of Samples collected in River Thenpennai

Sample Locations	Designated Best Use Criteria										Class
	pH	DO	SS	Turbidity (NTU)	FC (MPN / 100 ml)	BO (D)	EC (µs/cm)	SA (R)	Boron	Free Ammonia	
Sampling in diversion channel of Lakes / Tanks, Bengaluru – Outfall into River Thenpennai											
Agara Drain	6.92	3.8	21.5	18.9	500	16	810	1.6	0.016	Nil	E
Y junction	6.87	4.9	59	11.4	900	15	762	1.3	0.019	Nil	D

<i>Bellandur diversion channel</i>	6.89	5	45	10.4	160 0	11	758	1.4	0.016	Nil	D
<i>Varthur diversion channel</i>	7.04	3.7	115	27.5	500	10	706	1.4	0.015	Nil	E
Sampling Locations in River											
Thenpennai											
<i>Channasan dra bridge</i>	7.02	3.8	171	13.8	900	11	931	2	0.017	Nil	E
<i>Samethana halli</i>	6.98	2.4	78	35	160 0	10	825	1.8	0.015	Nil	E
<i>Mugalur Bridge</i>	6.79	2.4	574	450	500	21	628	1.5	0.017	Nil	E
<i>Sokkarasa napalli</i>	6.83	3.5	806	630	900	23	648	1.6	0.015	Nil	E
<i>Kodiyalam</i>	6.82	1.6	1474	997	900	26	727	1.5	0.018	Nil	E



Bagalur bridge	6.92	2.2	1121	850	500	53	1111	2.2	0.019	Nil	E
Kelavarapalli Reservoir	7.35	4.7	50	12.4	500	11	1069	2.4	0.019	Nil	D
Kelavarapalli Outfall	7.19	5.2	10	7.5	900	10	1049	2.2	0.017	Nil	D
Designated Best Use Criteria	A - Drinking Water Source without conventional treatment but after disinfection B - Outdoor bathing (Organised) C - Drinking water source after conventional treatment and disinfection D - Propagation of Wild life and Fisheries E - Irrigation, Industrial Cooling, Controlled Waste disposal										
Classification of River Thenpennai	The analysis of Water Samples collected at 12 locations joining River Thenpennai shows that the Water Quality of the River falls under the Class E as per Designated Best Use Criteria notified under Environment (Protection) Rules, 1986.										

Analysis of water quality in River Thenpennai reveal that Dissolved oxygen concentration was found be above > 4mg/l only in kelavarapalli reservoir, its outfall, Y junction, and Bellandur diversion channel. The water quality was found to be deteriorated in terms of presence of oxygen from channasandra bridge till Bagalur bridge of River Thenpennai and also in varthur diversion channel and Agara drain. Improved oxygen level found in kelavarapalli reservoir may be attributed to large area of the reservoir allowing the suspended solids to settle and the water flowing through sluices with a high rise fall. Further, greenish plants/algal growth in scanty pockets seen in Kelavarapalli and Sokkarasanapalli known as Eutrophication, arises from the oversupply of nutrients (N & P), which leads to overgrowth of plants and algae. Degradation of dead algae and plants by microbes consuming dissolved oxygen in the water may lead to the state of hypoxie.

Further, BOD of the water was found to be not complying in all the sampled locations as per Designated Best Use Criteria notified under Environment (Protection) Rules, 1986. Wherein, BOD is found to be beyond the permissible limit in Bagalur bridge (53 mg/l) when compared with the General Standards for discharge of Environmental Pollutants Part-A: Effluents notified under The Environment (Protection) Rules, 1986, which is also shown in Figure 10 below.

The total and faecal coliform analysis indicates the 'potability' of water & its suitability for consumption/drinking. The count measures the concentration of total coliform bacteria associated with the possible presence of disease causing organisms. The Total Coliform was found to be non complying in all the sampling points of River Thenpennai. Analysis of Faecal coliform count in River Thenpennai shows that the concentration of microbial count in the range of 500 to 1600 MPN/100 ml which may be attributed to discharge of untreated and partially treated sewage into the River.

Results of suspended solids in the Analysis of water quality in River Thenpennai were compared with the prescribed limits of General Standards for discharge of Environmental Pollutants Part-A: Effluents notified under The Environment (Protection) Rules, 1986, which reveal that the values were not complying in the locations viz., Varthur diversion channel, Channasandra bridge, Mugalur bridge, Sokkarasanapalli, Bagalur bridge, Kodiyalam. The larger the Suspended solids, the larger shall be the presence of bacteria, protozoa and viruses. High TSS wastewater cannot be easily disinfected, as the suspended particles "hide" these microorganisms and also react with chemical disinfectants. The Physico-Chemical Parameters analysed for the samples collected in River Thenpennai is given at **Table 2.**

Sample Locatio ns	Table 2. Physico-chemical Parameters (mg/l) analysed in River Thenpennai																					
	TDS	COD	Tot al Coli f orm	Tot al Alk	Fluo ride	Chl o rid e	Sulp h ate	O- Pho sp hate as P	Total Phosp hate as P	Anion surfa ctant	Surf ace Activ e Agen t s	Am m onia cal Nitro g en	Tot al Har d nes	Calci um	T K N	Nit r at e- N	Nitrite -N	T O C	Na	K	Mg	P h e n ol s
Bengaluru diversion channel of Lakes / Tanks – Outfall into River Thenpennai																						
Agara Drain	476	57	1600	227	3.8	65	41	0.53	0.68	BDL	BDL	BDL	237	69	12.3	2	0.05	7.9	57	11	16	B D L
Y juncti ondrain	410	53	900	216	0.19	65	62	0.47	0.61	BDL	BDL	BDL	216	62	12.6	2	0.23	6.5	44	11.8	15	B D L
Bellan	414	45	1600	216	0.25	75	22	0.84	1.01	BDL	BDL	1.6	192	62	11.5	2	0.12	7	45	10.5	9	B

<i>diversion channel</i>																							<i>BDL</i>
<i>Varthur diversion channel</i>	408	37	900	169	3.8	75	51	0.42	0.62	<i>BDL</i>	<i>BDL</i>	<i>BDL</i>	188	54	11	<i>BDL</i>	0.12	16	44	10.2	13	<i>BDL</i>	
Sampling Locations in River Thenpennai																							
<i>Channasandra bridge</i>	536	41	900	216	3.8	126	49	1.06	1.38	<i>BDL</i>	<i>BDL</i>	<i>BDL</i>	209	69	17.3	5	0.36	11	66	12.2	9	<i>BDL</i>	
<i>Samethanahalli industrial zone</i>	484	33	1600	192	2.3	100	53	1.11	1.32	<i>BDL</i>	<i>BDL</i>	<i>BDL</i>	184	57	11.3	4	0.3	14	56	11.3	10	<i>BDL</i>	

Mugal ur Bridge	363	86	900	137	0.23	70	57	0.53	1.73	BDL	BDL	BDL	139	41	12.1	2	0.05	10.4	41	9.3	9	B D L
Sokkaras anapalli	363	90	900	157	0.2	70	21	0.63	0.8	0.34	0.45	BDL	145	41	14.8	B D L	0.01	10	44	9	10	B D L
Kodiyal am	404	98	1600	196	0.35	100	55	0.6	1.7	BDL	BDL	BDL	180	44	19.5	2.2	0.11	9.9	47	9.5	17	B D L
Bagal ur bridg e	640	204	900	298	1.2	138	19	0.93	1.32	0.43	0.49	BDL	265	74	26.9	B D L	0.03	13	80	13	19	B D L
Kelavarap alli	620	33	1600	200	0.23	131	52	0.98	1.57	BDL	BDL	BDL	241	70	6.6	4.9	0.24	10.7	86	14	16	B

<i>Reservoir</i>														
<i>Kelavarapalli Outfall</i>	612	41	1600	235	0.3	150	33	1.97	2.23	BDL	BDL	BDL	265	6
<i>Classification of River Thenpennai</i>	The analysis of Water Samples collected at 12 locations joining River Thenpennai reveals that <i>with the permissible limits prescribed under Drinking Water specification of Indian Standard IS 10 Environmental Pollutants Part-A: Effluents notified under The Environment (Protection) Rules, 198 channel, Channasandra bridge and Samethanahalli.</i>													

Analysis results of heavy metals in River Thenpennai are given at **Table 3** below. Metals and heavy metals namely, Aluminium, Chromium, Manganese, Iron, Cobalt, Nickel, Copper, Zinc, Total Arsenic, Selenium, Cadmium, Mercury and Lead were analysed in all the 12 locations of River.

Sample Locations	Heavy Metals in mg/l												
	Al	Cr	Mn	Fe	Co	Ni	Cu	Zn	Total As	Se	Cd	Hg	Pb
Sampling in diversion channel of Lakes / Tanks, Bengaluru – Outfall into River Thenpennai													
<i>Agara Drain</i>	0.66	0.00	0.15	1.38	BL	BL	0.004	0.06	BLQ	BLQ	BLQ	0.001	BLQ

	1	9	2	0	Q	Q		6					
Y junction	0.64	0.00	0.22	1.40	BL	0.00	0.031	0.05	BLQ	BLQ	BLQ	0.005	0.006
	0	3	1	5	Q	3		1					
Bellandur	0.66	BL	0.18	1.17	0.00	0.00	0.010	0.04	BLQ	BLQ	BLQ	0.012	0.005
Diversion	8	Q	2	4	1	3		6					
Channel													
Varthur	0.75	BL	0.22	1.63	BL	BL	0.013	0.04	0.001	BLQ	BLQ	0.005	0.005
Diversion	8	Q	5	7	Q	Q		2					
Channel													
Sampling Locations in River													
Thenpennai													
Channasa	0.17	BL	0.20	0.72	BL	BL	0.006	42.0	BLQ	BLQ	BLQ	0.003	BLQ
nd													
ra bridge	4	Q	0	8	Q	Q		51					
Samethan	0.35	BL	0.11	0.99	BL	BL	BLQ	0.00	BLQ	BLQ	BLQ	0.006	BLQ
ah													
alli weir	4	Q	0	0	Q	Q		3					
Mugalur	1.37	BL	0.21	3.14	BL	BL	0.024	0.04	BLQ	BLQ	BLQ	0.003	0.007
Bridge	8	Q	9	8	Q	Q		2					
Sokkaras	1.79	BL	0.26	4.20	0.00	0.00	0.022	0.06	BLQ	BLQ	BLQ	BLQ	0.008
ana													
Palli	8	Q	8	2	3	4		2					
Kodiyala	3.23	0.00	0.37	10.2	0.00	0.01	BLQ	0.17	BLQ	BLQ	0.004	BLQ	0.025
m													
	9	3	9	86	7	0		2					
Bagalur	1.51	BL	0.34	4.89	0.00	0.00	0.010	0.09	BLQ	BLQ	BLQ	BLQ	0.010
Bridge	0	Q	8	1	3	5		6					
Kelavarap	BL	BL	0.21	0.10	BL	BL	BLQ	21.4	BLQ	BLQ	BLQ	0.002	BLQ
al													
Li	Q	Q	6	4	Q	Q		83					

Reservoir													
Kelavarapal li Outfall	BL	BL	0.20	0.22	BL	BL	BLQ	BL	BLQ	BLQ	BLQ	0.002	BLQ
	Q	Q	0	1	Q	Q		Q					

Analysis results reveal that concentration of fluoride has been found to be not complying in the locations namely, Agara drain, Varthur diversion channel, Channasandra bridge and Samethanahalli weir. The concentration of fluoride in the River Thenpennai in the above areas were reported to be in the range of 0.19 to 3.8 mg/l, which may be attributed to usage of groundwater as drinking water source alongwith water supplied by Bangalore Water Supply and Sewerage Board followed by untreated sewage discharge into the river. However, as reported by World Health Organisation in its report Fluoride in Drinking Water, Fluorides may also enter a river as a result of industrial discharges (Slooff et al., 1988). The maximum level of fluoride which the body may tolerate is 1.5 parts per million (ppm) which is often based on water fluoride content. The other sources for fluoride are infiltration of agricultural runoff containing chemical fertilisers, improper disposal of liquid waste from industries, alumina smelting, cement production and ceramic and brick firing..

Nitrogen and phosphorus in all forms are major rate limiting elements essential for the growth of algae and other vegetation in water bodies leading to a state called eutrophication. The greenish color water with large vegetation growth is common sight for not only lakes and ponds but also slow moving rivers. Eutrophication leads to many problems related to water

quality: □ Large Dissolved oxygen variation leads to fish kills □ Filling the water body with dead algae and other vegetation. □ Decomposition of dead algae and vegetation at the bottom causing oxygen depletion and further release of nutrient. □ Release of algal toxins and odors causing substances make the water unsuitable for human and animal consumption.

The water quality was also analysed for the presence of pesticides namely, Anilopho, 2-4 D, Carbaryl, Beta Endosulfan, Aldrin, Dieldrin, Alpha HCH, Alpha Endosulfan, Beta HCH, Delta HCH, Endosulfan sulphate, Ethion, Gamma HCH, o,p' DDD, o,p' DDE, o,p' DDT, p,p' DDD, p,p' DDE, p,p' DDT,

Methyl parathion, Malathion, Chlorpyrifos. However, no traces of pesticides was found in the samples collected in River Thenpennai and channels/drain/overflow of tanks leading to the River.

Analysis of water samples collected also reveal that no presence of Anionic Surfactants and Surface Active Agents in River Thenpennai except in Sokkarasanapalli and Bagalur bridge.

It is submitted that, there recorded an average rainfall of more than 100 mm on the previous night of sampling i.e 09.09.2020. Subsequent to the rainfall day, the locations namely, Agara drain, Y junction, Bellandur diversion channel, Varthur diversion channel, Channasandra bridge, Samethanahalli were inspected and samples were collected on 10.09.2020.

Findings and Observations of the Joint Committee:

1. The stretch of the river is mostly dry to scanty from Origin (Nandi) towards Chikkaballapur district, Kolar District, Bangalore Urban District and Hoskote taluk of Bangalore Rural district. Overflow of water from Bellandur and Varthur lakes carrying domestic sewage of Koramangala&Challaghatta and Hebbal valleys of Bangalore adds to the flow in river Thenpennai thereby causes frothing of river stretch.
2. The Joint committee has also observed that flow of Surface water in River Thenpennai carries about a portion of treated wastewater from STPs.i.e 300 MLD {750 (STP capacity) – 450 (Treated water diverted to Kolar &Chikkaballapur)} and untreated sewage i.e258 MLD (i.e866 MLD – 608 MLD) of Bangalore, as informed by BWSSB.
3. Solid Waste dumping was found in the locations including Agaradrain, Bellandur diversion channel, Y Junction, Channasandra bridge, Mugalur bridge and bagalur bridge, which needs to be removed by the concerned agencies of the State Government. Tamilnadu Pollution Control Board has instructed the

Block Development Officer for taking action for proper disposal of solid waste and domestic sewage in the area of investigation, which is provided in Section 6.0 of Chapter VI.

4. Frothy flow was found in locations namely, Samethanahalli, Mugalur, Kodyalam, Kelavarapalli which may be attributed to mix of industrial effluents and domestic sewage flowing from the areas. However, it is also noted that no presence of surface active agents and anionic surfactants were found in the samples collected during the monitoring except in Sokkarasanapalli and Bagalur bridge.
5. Analysis results of River Thenpennai reveals that the quality of the surface water flowing in River Thenpennai falls under Category E of the Designated Best Use Criteria notified under Environment (Protection) Rules, 1986, which is attributed to absence of sufficient dissolved oxygen and presence of suspended solids followed by faecal coliform in all the locations. There appears deteriorated Dissolved Oxygen in the river stretches from Channasandra bridge to Bagalur bridge.
6. Faecal coliform count in River Thenpennai were found to be in the concentration of 500 to 1600 MPN/100 ml which may be attributed to discharge of untreated and partially treated sewage with night soil contamination.
7. No traces of pesticides were found in the surface water samples collected.
8. It was observed that water flowing in samethanahalli, mugalur, sokkarasanapalli, kodyalam, bagalur, kelavarapalli is being pumped and used for agriculture in the nearby fields/farms, which may be checked for water quality, on a regular basis by concerned authorities to ensure the water quality, as it is also being used for edible food crops. Necessary steps may be taken by the agricultural departments of respective State Governments.
9. The surface water quality needs improvement in terms of dissolved oxygen, Total Coliform/Faecal Coliform, suspended solids, dissolved solids, fluorides, nitrates, phosphates, organic pollutants and heavy metals.
10. Therefore, the joint committee recommends development of Biodiversity park and wetland as per CPCB Guidelines titled 'Guidelines for setting up of Biodiversity parks in Floodplains of Rivers of India, including River Ganga', at suitable locations and its feasibility may be identified by State Government Authorities of Karnataka and Tamilnadu as a means of remedial measures.

ACTION PLAN AND REMEDIAL MEASURES

6.0 Action Taken Report on Defaulters

A. Action taken on defaulting industries by Tamilnadu Pollution Control Board

In the matter of O.A No. 111 of 2020, Tamilnadu Pollution Control Board carried out inspections of unauthorized dyeing units on 14.09.2020 based on the telephonic message received from the public of Paduthepalli village, Hosur Taluk, Krishnagiri district. During the inspection, TNPCB made following observations;

- (i) Two unauthorized dyeing units carrying out dyeing of cotton fabric/hosieries were found operational, namely (a) M/s Veeraraj Dyeing, SF No. 156/1, Pauthepalli Village, Nanthimangalam Post, Hosur Taluk, Krishnagiri District, owned by Smt Yellamma, w/o Sh Bowseruvappa and (b) M/s Moorthy dyeing, SF No. 209/3B2, Pauthepalli village, Nanthimangalam post, Hosur taluk, Krishnagiri district, owned by Smt. Sikkathayamma, w/o ShKembaiyya.
- (ii) The above units have not obtained Consent to Operate from TNPCB and permission from other Government agencies/authorities. The units were found to be drawing water from agriborewell for the dyeing activity and discharging untreated dyeing effluent into the River Thenpennai through pipeline causing pollution of River.
- (iii) The above two units were found to be located within 5 km from the Riverbed of Thenpennai, against the regulations passed by G.O Ms. No. 127/E&F/EC Dept./ECIII/ dated 08.05.1998.
- (iv) No Effluent Treatment Plant was provided for the treatment of the trade effluent generated and the untreated dyeing colored effluent was being discharged directly into River Thenpennai through pipeline.
- (v) TNPCB sought permission from DC, Krishnagiri and Chairman of District Coordination Committee for Krishnagiri district to stop the illegal discharge of effluent into water bodies/land and to take stringent action against defaulting units as per the guidelines.
- (vi) Subsequent to the approval of the Chairman, DCC dated 15.09.2020, actions were taken to disconnect TNEB power supply followed by demolishing of machineries/shed installed by the

unauthorized dyeing units on 17.09.2020 by the members of DCC with police protection, to prevent any such dyeing operations in the future.

(vii) Water Quality Analysis of River Thenpennai by TNPCB

TNPCB informed that samples at sokkarasanapalli village have been continued till date. From the said analysis reports, it has been revealed that parameters such as Dissolved oxygen, Biochemical oxygen demand and Total Coliform are exceeding the standards prescribed by the Board.

It has also been submitted by TNPCB that, the industries generating trade effluent in Krishnagiri District are treating their trade effluent through Effluent Treatment Plants and the treated effluent are being either recycled back to their process or discharged on their own land for green belt development after satisfying the standards prescribed by the Board. There is no discharge of trade effluent into river thenpennai from Krishnagiri district. However, all the industries are being closely monitored by Tamilnadu Pollution Control Board. A note on the water quality analysis carried out by TNPCB is appended as **Annexure VI**.

B. Action Taken by TNPCB with regard to Solid Waste Management and domestic sewage management

On the basis of field survey and investigation carried out by the joint committee in Bagalur bridge alongside River Thenpennai, the following instructions have been given to the Block Development Officer, Hosur Panchayat Union, Hosur, Krishnagiri District by TNPCB;

- (i) The Solid Waste and Biomedical waste generated from the areas viz., Bagalur covered under the local body jurisdiction shall be collected, segregated and disposed as per the provisions of Solid Waste Management Rules, 2016.
- (ii) The Solid Wastes dumped in the banks of River Thenpennai shall be cleared immediately around the river bed in Bagalur area and near Bagalur Bridge, and to dispose them in a proper scientific manner as per the provisions of Solid Waste Management Rules, 2016.

Similarly, TNPCB has given instructions to the Block Development officer of Hosur panchayat Union in Hosur, Krishnagiri District that the domestic sewage generated from the households, commercial establishments and other activities shall not be discharged into River

Thenpennai, and the entire sewage shall be treated and disposed by providing suitable treatment system.

In this regard, the local body has also been instructed to submit action taken report w.r.t solid waste management and sewage management alongwith short term and long term action plan to avoid discharging of sewage into River from the inhabitants of Bagalur.

C. Action Taken on defaulters by Karnataka State Pollution Control Board

(i) Action taken on defaulting industries

1. Thenpennai or DakshinaPinakini River catchment area is spread over in the following districts;

- a. Part of Bengaluru Urban
- b. Part of Bengaluru Rural
- c. Part of Kolar
- d. Part of Chikkaballapura

2. Following Industrial Areas are located in Thenpennai or DakshinaPinakini River catchment area:

- i. Jigani
- ii. Electronic city
- iii. Veerasandra Industrial Area
- iv. Bommasandra Industrial Area
 - v. Old Airport and HAL Complex.
 - vi. Doddanakundi Industrial Area.
 - vii. Sadaramangala Industrial Area
- viii. White field
- ix. New Air Port
- x. Aerospace park near New Air Port
- xi. Hardware Park near New Air Port
- xii. Software Park near New Air Port

xiii. Hoskote Industrial Area

xiv. Malur Industrial Area

3. None of the above Industrial Areas are located on the banks of Thenpennai or Dakshina Pinakini River

4. All the above Industrial Areas are located away from the Dakshina Pinakini River.

5. None of the industries are permitted to discharge its effluents in to Thenpennai or Dakshina Pinakini River.

6. Quantity of effluent generation, treatment and utilization in Thenpennai or Dakshina Pinakini River catchment area is as below: -

(i) Generation of Domestic and trade effluents from industries

Total No. of industries (Red+Orange)	Quantity of effluent generated/ treated in MLD		Total
	Domestic	Trade	
882	27.04	19.58	46.62

(ii) Treatment and disposal of Domestic and trade effluents from industries

Total generation of Domestic and Trade effluent in MLD	Treatment and disposal of effluent in MLD					
	Septic Tank and Soak Pit (Domestic only)	UGD	CETP	Reuse/ On land	Stream	River
46.62	1.79	0.96	0.65	43.22	00	00

KSPCB has issued Closure Directions to 72 nos. of defaulting industries during 2018 – 2020. Out of which 29 No's of closure directions were revoked after compliance. The list and

status is enclosed as **Annexure VII**. Further,

Environmental Compensation imposed on the defaulting industries are discussed in Section 6.1 below.

(ii) Action taken by KSPCB w.r.t Sewage Management in Bangalore

- i. Bangalore has nearly 3000 decentralized STPs. The treated sewage is proposed to be used mandatorily for the construction, gardening and Parks maintenance. KSPCB has identified the parks of City Corporation and the forest lands in the Bangalore Rural and Urban Districts and also other plantation on medians, avenues. Their GPS locations and latitude and longitude are obtained. The Excess treated sewage from the independent apartments is being connected to these usages. A user-friendly app is also being developed in the lines of aggregation of Cabs.
- ii. A Study is being conducted by the Indian Institute of Science, Bengaluru to check the safety of using the treated sewage for the construction purpose with respect to the strength and the corrosion of steel. The requirement of water for the construction alone is expected to be 52 MLD including the Ready Mix Concrete (RMC) plants and about 20 MLD for other usages.
- iii. It is proposed to introduce the Sensors for the online measurement of quality of treated sewage. The specifications have been developed in consultation with the experts and the Indian Institute of Science to make it mandatory to have these sensors to check the quality of the final treated water. This would help in making the quality treated sewage available.
- iv. On Continuous persuasion of KSPCB, online real time monitoring equipments are installed by BWSSB at 15 Nos. of STPs located in the Thenpennai or Dakshina Pinakini River Catchment area. The Real time monitoring data is linked to KSPCB server and it is available in KSPCB and BWSSB websites.

Besides above, KSPCB has filed cases against 16 defaulting Apartments w.r.t domestic sewage management. The list and status is enclosed as **Annexure**

VIII. Further, Environmental Compensation imposed on the Apartments are discussed in the section 6.1 below.

(iii) Action taken by KSPCB w.r.t pollution of lakes

KSPCB is monitoring the water quality of 79 lakes located in DakshinaPinakini River catchment area. The annual water quality is confirming to D/E Class of Primary Water Quality Criteria. The list of lakes and its Quality is appended as **Annexure- IX**.

Action taken by Karnataka State Pollution Control Board on pollution of lakes in Bangalore is as below;

1. The KSPCB, Regional Office, Bangalore East has filed a Criminal Case under Water Act, 1974 against BWSSB (CC No. 928/2006) w.r.t. pollution of Bellandur Lake.
2. The KSPCB, Regional Office, Bommanahalli has filed one more Criminal Case under Water Act, 1974 against BWSSB in May 2015 (CC No. 30236/2015) w.r.t. pollution of Madiwala Lake, Arakere Lake and Hulimavu Lakes which are feeder Lakes for Bellandur Lake.
3. The Board is monitoring Lake Water quality, treated water quality from BWSSB STPs & other STPs of apartment / Commercial complexes / IT Parks etc., are being regularly monitored by the Board.

(iv) Water Quality Analysis of River Thenpennai by KSPCB

KSPCB is monitoring the water quality of Thenpennai or DakshinaPinakini River near Mugalur bridge. The water quality is confirming to D/E Class of Primary Water Quality Criteria. The Water Quality of River Thenpennai is appended as **Annexure X**. DakshinaPinakini is not a perennial river and the flow is only treated / untreated sewage of Bengaluru. The river water quality can be improved if and only when the sewage is treated in the STPs.

(v) Other Actions and Initiatives by KSPCB for Waste Management

Facilities available at Bengaluru for effective management of various wastes generated:

- i. 08 No's of CETPs of total capacity of 1775 KLD are facilitating industries located in and around Bengaluru for effective treatment and disposal of effluents generated from SSI sectors.
- ii. 2 No's of TSDF are facilitating Transport, Storage, treatment and Disposal of Hazardous Wastes generated from the industries.
- iii. 5 No's of Common Bio Medical Waste Treatment Plants are facilitating Health care establishment in and around Bengaluru for effective treatment and disposal of Bio Medical Waste.

- iv. *Plastic carry bags are banned in the entire State by Government of Karnataka vide Gazette Notification No.FEE I7 EPC 2012 dated 11.03.2016.*
- v. *For managing the solid waste, 9 land fill sites of 3350 TPD is established by BBMP.To encourage segregation at source, BBMP has established 188 Dry Waste Collection Centre. 10 mixed waste treatment facility, 7 landfill sites, 15 decentralized bio-methanationfacility with 5 TPD capacity each. Further, Bulk Generators of waste like Hotels, Restaurants, KalyanMantaps, Apartments etc., have been directed to establish a system to handle Municipal Solid Waste generated in their premises or through empanelled service providers.*
- vi. *Board has accorded permission to BBMP to establish solid waste processing units at 7 different locations.Board has given authorization to M/s Rock Crystals, Bengaluru of installed capacity 1000 TPD for C&D waste processing.*
- vii. *An Integrated Control & Command Centre has been set up at KSPCB, Bengaluru, wherein a common number (080) 2558 2559 is made available for the public. This Centre monitors the complaints until it is attended and the issue is resolved. This centre will also monitor the Emergency Response Vehicles.*
- viii. *KSPCB has addressed the letter to Heads of the Stake Holders viz., BBMP, BWSSB, DMA, BESCOM and Rural Development and Panchayat Raj (RDPR) to co-operate in identifying the polluting industries operating without consent of the Board and having trade license or not to prevent pollution of Water bodies. Copy of the letter is enclosed asAnnexure-XI.*
- ix. *KSPCB has called expression of interest for installation CETP (Common Effluent Treatment Plant) at Peenya Industrial Area for treatment of Industrial Effluents generated from the Small Scale Surface treatment units.*
- x. *All the common effluent treatment plants of the state are being fitted with the sensors which monitor the key parameters and also the quantity of effluents received and treated. The movement of vehicles is also tracked through GPS. The data is synced with the Command Control Centre for effective monitoring.*

The control and prevention of pollution is a continuous process. Hence, the KSPCB is making all efforts to arrest and prevent pollution both Air & Water pollution on a continuous basis. Active co-operation is being sought from other Departments like BWSSB, BBMP, BDA and local bodies, else, the task of prevention and control of pollution cannot be accomplished. The KSPCB will undertake to continue its efforts to prevent and control the pollution within the parameters laid down under the provisions of Environmental Protection Act, Air Act and Water Act and abide by any directions to be issued by the Hon'ble NGT.

Environmental Compensation

(i) With Respect to Violations observed in Sewage Management by KSPCB

With regard to generation of sewage by the 873 Apartments located in the catchment area of the lakes (Bellandur and Varthur), the Hon'ble NGT vide order dated 6.12.2018 having accepted the recommendations of the NGT commission directed defaulting units to pay Environmental Compensation as per the table given below:

SNo	Violations	Environmental Compensation
1	Where STP is required as per the EC/ Consent, but the facility has not constructed the STP despite generating sewage.	Rs. 10 Lakhs per month from the date of completion certificate or date of Completion
2	Where actual capacity of STP is less than the capacity as shown in the EC/ Consent	Rs. 20000/per day from the date of inspection till final Upgradation
3	Where the number of flats/ units actually constructed is more than the number of flats / units disclosed to KSPCB while obtaining Consent	Rs. 1 Lakh per unit per month from the date of construction until the grant of fresh requisite consent

4	Where STP is not functioning or parameters are not being met or untreated sewage is being bypassed from the STP or being otherwise Diverted	Rs. 5 lakhs per default.
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Thereafter, the Hon'ble NGT vide direction in its order dated 21.10.2019 in OA No. 125/2017 in Paragraph (13), Karnataka SPCB has been made responsible to collect Environmental Compensation charges towards non – compliance by the Apartments/ Township/ Commercial Establishments.

In view of the above, Board had assessed and issued Environmental Compensation notice related to not providing STP and also for non- conformity/by pass/discharge of treated/untreated sewage by the defaulting units. Further, Show-Cause notice and notice of proposed directions were issued for continued violation.

In respect of the non compliances of the treated sewage, out of 376 units, 22 units have paid an Environmental Compensation (EC) amount of Rs 115 lakhs. Further, 6 Number of Petitioners have approached the Hon'ble High Court (writ petition No. 4540/2020). The Hon'ble High Court has issued interim order on 26.02.2020 directing the KSPCB to issue Show cause notice to the petitioner.

Post-COVID 19, Video Conference was done on 04.07.2020 calling all the Apartments who are due to pay the EC. After hearing them, the Board has taken a decision and directed the defaulters to pay the Environmental Compensation Charges as assessed by the Board earlier otherwise to initiate actions under 33(A) of the Water Act and as per the direction of the Hon'ble NGT. Post the personal hearing, as no EC has been paid, and the personal hearing proceedings are being brought to the notice of the Hon'ble NGT, Hon'ble High Court and Board would initiate action and the process is initiated and shortly the closure orders will be issued for such units by Karnataka SPCB.

KSPCB has imposed EC of Rs. 288.80 Crores on 496 No's of Apartment/Commercial establishment and Rs. 1.40 crores was collected. Detailsof Environmental Compensation

imposed and collected are appended as **Annexure- XII & XIII**.

Further, it is also submitted that in compliance with the Hon'ble Green Tribunal order dated 18.12.2019 in the matter of O.A No. 125/2017 before Principal Bench, the status and progress on sewage management (as on 15.07.2020) as submitted by Bangalore Water Supply and Sewerage Board before Hon'ble Tribunal is appended as **Annexure XIV**.

(ii) With Respect to Violations observed in Industrial Discharge by KSPCB

As per the directions of the Hon'ble NGT in OA 1038/2018, KSPCB has imposed Environmental Compensation in respect of 36 No's. of industries. However, the Hon'ble Supreme Court of India has stayed the process of levying of Environmental Compensation vide Civil Appeal Diary No.19271/2020 on 22.09.2020. Details of Environmental Compensation imposed by KSPCB on defaulting units are enclosed as **Annexure XV**.

With regard to industries observed to be discharging into River Thenpennai during the Joint committee monitoring, it is submitted that those units were illegally operating and the same were made to close immediately. The joint committee also observed that those units are falling under small and micro scale units operating illegally.

Long Term and Short Term Action Plan for improving the Water Quality of River Thenpennai

The joint monitoring team comprising of CPCB, KSPCB and TNPCB have reported in the case of Original Suit No. 02 of 2015 that, "the River Thenpennaiyar receives the outflow of treated and untreated sewage of Bellandur and Varthur lake system. Comprehensive plan of restoration of these lakes along with identifying other sources of untreated sewage into the River only will help to restore the quality of the river. Government of Karnataka may prepare such plan on priority considering the pollution issues of Bellandur and Varthur lake system, which contributes to the Pollution of Thenpennaiyar River". Further, Hon'ble Tribunal,

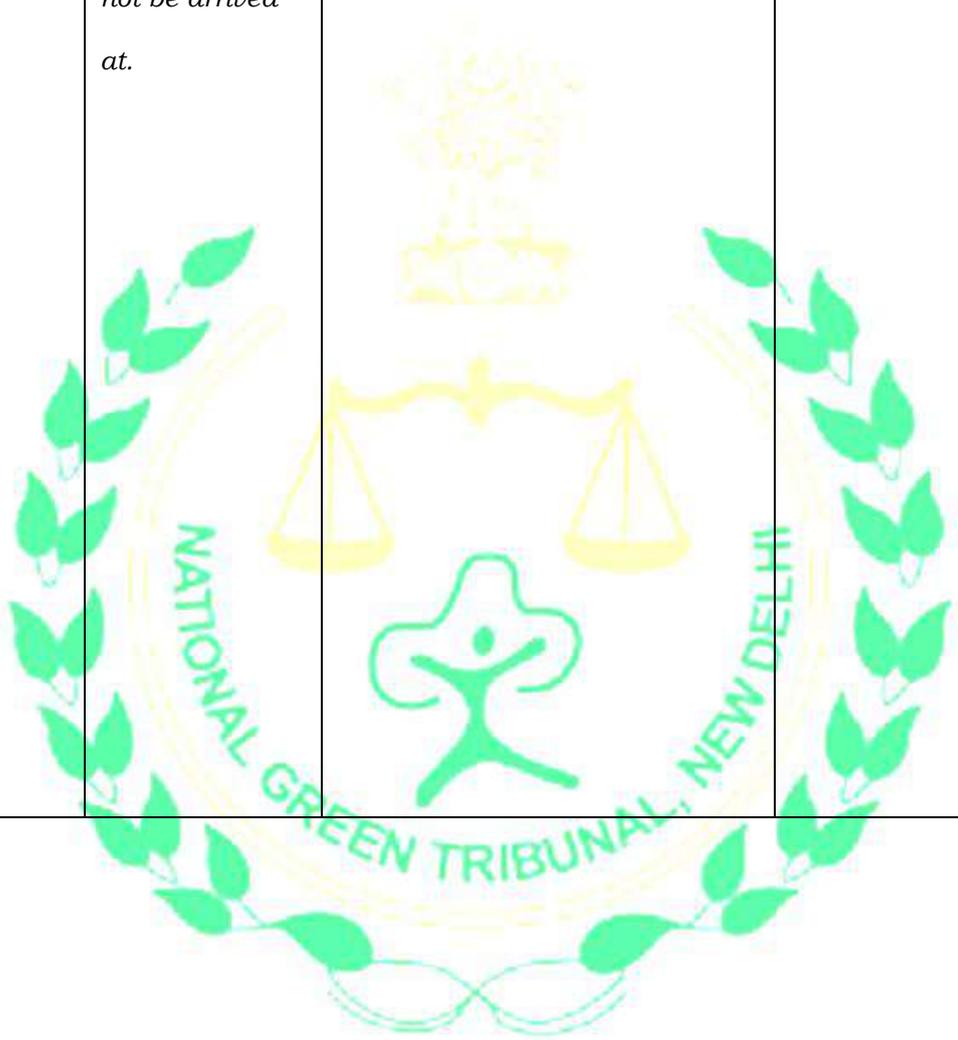
Principal Bench, New Delhi, in the matter of O.A No. 125/2017, constituted a monitoring committee headed by Justice ShSantosh Hegde, former Judge of the Hon'ble Supreme Court to oversee the execution of the action plan on remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore.

The joint committee with due cognizance of the water quality of River Thenpennai reported in section 5.2 above and the action plan already reported by the joint monitoring team comprising of CPCB, KSPCB and TNPCB and execution of the action plan on remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore by the monitoring committee in O.A no. 125/2017, the following long term and short term action plan has been prepared;

Action Points	Present Status	Proposed Action by the Joint Committee	Agency Responsible (Timeline)



	<p>whose outfall joins River Thenpennai, the flow data of River Thenpennaican not be arrived at.</p>	<p>of all records.</p>	
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			<i>BWSSB and Minor Irrigation (Threemonths)</i>
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<p>Study of Performance evaluation of Sewage Treatment Plants in Bangalore by engaging a CSIR institute</p>	<p>The performance of the STPs located in Koramangla and Challaghatta, Hebbal Valley are being assessed based on its capacity utilised an d characteristics by BWSSB. However, the treated waste water quality needs to be ascertained. Further, Water</p>	<p>(i) BWSSB may engage a CSIR Institute like CLRI or NEERI or others for evaluating performance of STPs located in K&C and Hebbal valleys. (viz., there are 32 STPs in Bangalore including 21 STPs in Koramangla & Challaghatta and Hebbal Valleys). The same may be supervised by KSPCB. The final report may be submitted to KSPCB for review.</p> <p>(ii) Completion of sewerage network for the villages in Koramangla & Challaghatta and Hebbal Valleys (of 110 villages identified by BBMP) for tapping the sewage generated, as already submitted to Hon'ble Tribunal, Principal Bench, Delhi in the matter of O.A no. 125/2017. (Next date of hearing: 15.01.2021)</p> <p>(iii) Strengthening of STP</p>	<p>BWSSB and KSPCB (Six months)</p> <p>BWSSB (as per the timeline fixed in O.A No. 125/2017)</p>
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	<p>quality of water (treated water by BWSSB) diverted for irrigation to chikkaballapur and Kolar Districts through Minor Irrigation Department is required to be assessed. Therefore, there is need to conduct audit of the data of quantity of sewage generation, sewage treatment capacity installed vs actual yoperated and</p>	<p>conveyance system to improve sewage getting completely tapped and treated, in order to avoid discharge into River Thenpennai.</p> <p>(iv)The outcome of the performance study of STPs may be submitted as Status of Compliance of the State Functionaries of Karnataka to the Monitoring Committee constituted in the matter of O.A 125/2017, for review and reporting.</p>	<p>BWSSB(on a regularbasis)</p>
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*treated
wastewater
characteristics.*



			KSPCB and BWSSB (after completion of the study)
Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode.	The information of grossly polluting industries located in the river basin along with the status of effluent management has been compiled by KSPCB.	Among the industries those that are Red/Orange category (small, medium and large) with treated effluent discharge option as surface water/sewer drain/others (which includes industries having ZLD) in River basin of Thenpennai be monitored for effluent characteristics by concerned SPCBs, so as to ascertain the quality of treated effluent discharge as per the Consent Conditions of SPCBs. The details of the compliance status and action taken report be placed in public domain (TNPCB and KSPCB website).	TNPCB & KSPCB (six months)

<p>Rejuvenation of lakes to remediate the pollution caused in River Thenpennai</p>	<p>Bellandur and Varthur lakes are being desilted by Bangalore Development Authority (BDA) and awaits guidelines and silt analysis report from Karnataka SPCB for disposal of the silt followed by development of Biodiversity park and wetlands in compliance with the Hon'ble NGT Orders in</p>	<p>Advisory for development of Biodiversity park and wetland in the River basin of Thenpennai or Dakshina Pinakini as per CPCB Guidelines titled 'Guidelines for setting up of Biodiversity parks in Floodplains of Rivers of India, including River Ganga' be notified in consultation with Government of Karnataka and KSPCB.</p> <p>Completion of Biodiversity park, which comprises of;</p> <p>(i) Feasibility study for development of Biodiversity parks in the River basin of Thenpennai</p> <p>(ii) Preparation of Detailed Project</p>	<p>BDA and concerned State functionaries of Government of Karnataka (six months)</p> <p>Bangalore Development</p>
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	<p>the matter of O.A No. 125/2017.</p>	<p>Report (DPR) for development of Biodiversity parks in Bellandur an Varthur</p> <p>(iii) Award of Project</p> <p>(iv) Completion of the Project</p>	<p>Authority (not more than One year or as per the timeline fixed in O.A No. 125/2017)</p>
<p>Environmental Compensation be imposed by SPCBs after reevaluating performance of STPs and identification of defaulters upon Random Verification.</p>	<p>Performance evaluation of STPs by BWSSB and random inspection of industries is required to be carried out by KSPCB/TNPCB with specific reference to River Thenpennai.</p>	<p>EC be calculated and imposed based on the Performance Evaluation of STPs and Random Verification of Grossly Polluting Industries.</p> <p>EC be calculated and imposed based on Random Verification of Grossly Polluting Industries</p> <p>Calculation of EC by the three member Committee comprising of CPCB, TNPCB and KSPCB, after submission of Reports by the concerned authorities (BWSSB, KSPCB, TNPCB).</p>	<p>BWSSB and KSPCB (Six months)</p> <p>TNPCB (Six months)</p> <p>CPCB (Six months on receipt of the Study Report and recommendations/criteria for imposing EC from KSPCB and TNPCB)</p>

<p><i>Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai upto till Kelavarapalli</i></p>	<p><i>Among the villages located near River Thenpennai, Bagalur is having population of about 11,000 and the domestic sewage generation is estimated to be 0.0715 MLD. Further, Solid Waste generation in Bagalur is estimated to be about 1.5 Tons/day.</i></p>	<p><i>Feasibility study for providing Sewage Treatment options (such as oxidations ponds/ diversion channels or wetlands etc.) by TNPCB followed by implementation by Local authority of the district. Solid Waste Management Plan be devised and executed by concerned Block Development Officer, Hosur taluk to ensure the solid wastes are not disposed on the riverside and managed as per Solid Waste Management Rules, 2016.</i></p>	<p><i>Feasibility study by TNPCB in consultation with local authority for implementation (six months)</i></p> <p><i>Concerned Block Development Officer to submit to TNPCB (six months)</i></p>
<p><i>Regular Water Quality Monitoring a important</i></p>	<p><i>Water Quality is being monitored by KSPCB by installing real</i></p>	<p><i>The trend of water quality and its improvement at major confluence points may be monitored for the year 2021-22 on a monthly basis</i></p>	<p><i>TNPCB & KSPCB (to monitor on yearly basis)</i></p>

<p>locations</p>	<p>time monitoring stations i n Bellandur and Varthur. Further, Mugalur bridg eand sokkarasanapa lli is being monitored underNational Wate rQuality Monitoring Programme.</p>	<p>and a report be submitted to CPCB to ensure the quality of water flowing in River Thenpennai. Responsibility as a Custodian of Rivers/tanks in Karnataka vests with State Functionaries namely, BWSSB, BBMP, BDA, Lake Development Authority, Minor Irrigation Department. Therefore, Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions.</p>	<p>BWSSB, BBMP, BDA, Minor Irrigation Department (every year)</p>
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Remedial Measures - Action Plan for Rejuvenation of Lakes

The Bellandur Lake has a catchment area of about 148 sq.km (37,000 acres) spread across Central, South, East & South East of Bangalore. The Lake receives water from three main valleys: a) Valley originating from JP Nagar, Puttenahalli, Bilekahalli, Arekere Lake, Hulimavu Lake, Madiwala lake, BTM Layout, HSR Layout, Agara Lake & finally joining Bellandur Lake;

b) Valley originating from Shivajinagar, Ulsoor Lake, Domlur, Indiranagar, HAL and finally joining Bellandur Lake; and c) Valley originating from Kalasipalya, Lalbagh Road, KH Road,

Shantinagar Bus Station, National Games Village, Ejjipura, Sinivagilu and finally joining Bellandur Lake.

There are two outflow weirs to Bellandur Lake – One near Bellandur Village & other near Yemlur Village. Lake series joining Bellandur Lake are Sarakki Lake, Arakere Lake, Begur Lake, Madiwala Lake, Agara Lake, Ibblur Lake. Both the outflow finally joins Varthur Lake. The outflow from Varthur Lake joins South Pinakini River.

Varthur lake has a total area of 439 acres and 34 Guntas with total periphery length of 8.4 km. The lake receives water from 5 inlets and the 02 outlets. For flood control and water level management near Varthur, waste weir sluice gates are provided.

Desilting work is under progress in Bellandur and Varthur lakes as per the directions of Hon'ble NGT. Then, wetland construction will be carried out post desilting work by Bangalore Development Authority.

Further, development of biodiversity parks in those lakes are also under progress. The above status has been reported by BDA in compliance to the orders of Hon'ble NGT dated 14.08.2020 in the matter of O.A No. 125/2017, to oversee the execution of the action plan on remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore, including preventing discharge and dumping of pollutants, removing encroachments from catchment area and other steps for restoration by the monitoring committee headed by Justice ShSantosh Hegde, former Judge of the Hon'ble Supreme Court.

Notification of Standards for Phosphorus in Soaps & Detergents

Froth formation and related items are taken up by NGT in OA 125/2017 and noted that, major cause for foam formation is considered to be discharge of untreated sewage through open drains.

- i. As per directions of the Hon'ble National Green Tribunal, MoEF& CC and CPCB have been requested by KSPCB to limit the phosphorous content in Soaps & Detergents being

manufactured by the industries. Since it is a Standard specified on a product, the same is to be effected by Bureau of Indian Standards. In this regard Bureau of Indian Standards has published notification during August 2020 for the following products.

a. Synthetic Detergents for washing woollen and silks Fabrics -Specification
(Second Revision)

b. Household Laundry Detergent Bars- Specification (ThirdRevision)

c. Household Laundry Detergent Powders- Specification. (FifthRevision).

ii. The above notifications are enclosed as **Annexure- XVI**.

CHAPTER VII

CONCLUDING

REMARKS

The causes and sources of pollution has been assessed by the joint committee based on the samples collected from 12 locations in River Thenpennai during September, 2020. It has been ascertained that, the water quality of River Thenpennai falls under the category of Class E (Irrigation, Industrial Cooling, Controlled Waste disposal) of the Designated Best Use Criteria notified under Environment (Protection) Rules, 1986. The reason being largely, the discharge of treated and untreated sewage from Bangalore, a Comprehensive plan for restoration of the quality of River Thenpennai is under consideration before Hon'ble Supreme Court in O.S No. 02 of 2015 and Hon'ble National Green Tribunal O.A No. 111 of 2020.

In cognizance of the above, the joint committee has devised an Action plan (Long Term and Short Term with timelines) under section 6.2 of Chapter VI for restoring the quality of River Thenpennai. Therefore, it is humbly prayed that, the improvement of River Water Quality would require union of orders/directions of Hon'ble NGT in O.A No. 125/2017 and in O.A No. 111/2020 alongwith directions of Hon'ble Supreme Court in O.S No. 02 of 2015.

6. It is seen from the report that there is no source of pollution found in Tamil Nadu area and also the source of pollution was from the Karnataka region and certain action plans have been prepared by the Karnataka State for the purpose of remedying the situation on the basis of the directions given by this Tribunal in this case and also by the Principal Bench in O.A.No.125 of 2017 and the case pending before the Hon'ble Supreme Court as **C.S.2 of 2015** Though certain time line has been provided in the action plan, it is not clear as to whether anything has transpired at the ground level for the implementation of the action plan that has been submitted by the respective departments before the committee. So the respective departments who have given the action plan before the committee are directed to submit separate status report regarding the action taken by them on the basis of the action taken report. The committee is also directed to supervise the implementation of the action plan that has been submitted by the State of Karnataka and other departments and submit a further progress report regarding the same and also the improvement of the water quality on account of the short term measures that has been taken by the departments before this Tribunal on or before 8.4.2021 by e-mail in the form of Searchable PDF/OCR Supportable PDF and not in the form of Image PDF along with necessary hardcopies to be produced as per Rules..

7. The Registry is directed to communicate this order to the Members of the Committee, the State Departments, the Chief Secretary, State of Karnataka and State of Tamil Nadu for their information and follow up action in this regard.

For consideration of further report, post on 8.4.2021

.....J.M.
(Justice K. Ramakrishnan)

.....E.M.
(Shri. Saibal Dasgupta)

O.A. No.111/2020,
18.2.21

kk



NGT MATTER (Time Bound)

File No. Tech(39)/Legal(NGT)/RD-BLR/2020-21

March 24, 2021

To

1377-1380

The State Functionaries of Karnataka
(As per enclosed list)

Kind Attn: Sh Muni Reddy, Executive Engineer (Mahadevapura Division)

Sub: Hon'ble NGT, Southern Zone, Chennai order in the matter of O.A. 111 of 2020 (SZ) regarding "Frothing of Chemical Foam in the River Thenpennai"

Ref: (i) Letter no. Tech(39)/Legal(NGT)/RDS/2020-21 dated 19.02.2021
(ii) Letter no. Tech(39)/Legal(NGT)/RDS/2020-21 dated 03.03.2021
(ii) NGT Order dated 18.02.2021 (Copy enclosed)

Sir,

This has reference to the meeting with the State Functionaries of Karnataka in compliance with the Hon'ble NGT Order dated 18.02.2021, for implementation of the Action Plan submitted by the State of Karnataka and other departments conducted on 16th March, 2021 at 11:00 AM in CPCB, Nisarga Bhawan, Bengaluru. Minutes of the meeting was circulated vide email dated 18.03.2021 for reference.

In this regard, it was informed in the meeting that, with regard to measurement of flow of tanks/lakes flowing into River Thenpennai, performance evaluation of STPs, rejuvenation of lakes and water quality to be maintained as pristine by the departments (viz., BDA, BBMP, BWSSB and KSPCB), the action taken report may be arranged to be provided by following up with concerned agencies/departments of Karnataka, as appropriate.

Further, it was decided in the meeting that the above information, with signed copy of Action Taken Report of the individual authorities / departments in the format (copy enclosed) shall be arranged to be provided to CPCB on or before 25.03.2021, so as to enable the CPCB (nodal agency) to complete preparation of Progress Report and file before Hon'ble Tribunal by next date of hearing i.e. 08.04.2021.

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In case of shortfalls in meeting the above timelines, it is requested to provide the status report along with proposed timelines to CPCB for filing before Hon'ble Tribunal. Smt. Selvi P K, Scientist D/Sr. Env Engr. (Mobile: 9868166753, email: pkselvi.cpcb@nic.in / pkselvi.rdb@gmail.com) is the nodal officer and member of the committee from CPCB, RD, Bengaluru for further follow up and may be contacted for any queries.

Yours faithfully,

(S. Suresh)
Regional Director
9480672128
cpcbsuresh@gmail.com

Encl. As Above



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

NGT MATTER (Time Bound)

File No. Tech(39)/Legal(NGT)/RDS/2020-21

March 03, 2021

To

The Commissioner
Bruhat Bengaluru Mahanagara Palike (BBMP)
N.R Square, Bengaluru
Karnataka - 560 002

Sub: Hon'ble NGT, Southern Zone, Chennai order in the matter of O.A. 111 of 2020 (SZ) regarding "Frothing of Chemical Foam in the River Thenpennai"

Ref: (i) File No. Tech(39)/Legal(NGT)/RDS/2020-21 dated 19.02.2021
(ii) NGT Order dated 18.02.2021 (Copy enclosed)

Sir,

In the matter of O.A 111 of 2020, a Suo Motu case registered by the Hon'ble Tribunal, SZ, Chennai, Hon'ble NGT vide orders dated 18.02.2021 directed that, "...The committee is also directed to supervise the implementation of the action plan that has been submitted by the state of Karnataka and other departments and submit a further progress report regarding the same and also the improvement of the water quality on account of the short term measures that has been taken the departments before this Tribunal on or before 08.04.2021.."

CPCB vide aforesaid letter dated 19.02.2021 requested the members of the Joint Committee and concerned departments that the long term and short term action plan prepared by the joint committee for execution by the concerned agencies be complied as per the specified timelines.

In compliance to the Hon'ble NGT Order dated 18.02.2021 the members of the joint committee and the concerned agencies of the state of Karnataka and Tamilnadu are requested to prepare Action Taken Report on the above long term and short term action plan, as per the format (copy enclosed).

Contd/...

क्षेत्रीय निदेशालय (दक्षिण) : निसर्ग भवन, ए-ब्लॉक, प्रथम एवं द्वितीय तल, तिममय्या रोड, 7-डी मैन, शिवनगर, बेंगलूरु - ५६० ०७९.

Regional Directorate (South) : * Nisarga Bhawan *, A-Block, 1st & 2nd Floors, Thimmaiah Road, 7th D - Main, Shivanagar, Bengaluru - 560 079.

दूरभाष / Telephone : 080-23233739, 23233827, 23233996, 23233600, 23232559, 23226002, 23222539, Fax : 080-23234059

ई-मेल / E-mail : cpcbszo@yahoo.com, zobangalore.cpcb@nic.in

प्रधान कार्यालय : परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली- ११० ०३२.

Head Office : Parivesh Bhawan, East Arjun Nagar, Delhi - 110 032.

दूरभाष / Telephone : 011-43102030, Fax : 22305793, 22307078, 22307079, 22301932, 22304948

ई-मेल / E-mail : cpcb@nic.in वेबसाइट / Website : www.cpcb.nic.in

In this connection, a meeting is scheduled to be held on **10th March, 2021** with the members of the joint committee / concerned departments to discuss about the reply affidavit and responses submitted to Hon'ble NGT in the matter of O.A No. 125/2017 and O.A No. 111/2020 followed by Department-wise Action Taken Report on the short term and long term action plan for preparing the Joint Committee Progress Report to be submitted on or before **08.04.2021**.

A copy of the action plan along with the format is enclosed herewith for necessary actions and compliance. Smt. Selvi P K, Scientist D/Sr. Env Engr. (Mobile: 9868166753, email: pkselvi.cpcb@nic.in / pkselvi.rdb@gmail.com) is the nodal officer and member of the committee from CPCB, RD, Bengaluru for further follow up.

It is requested to nominate a nodal officer from your department/organisation for providing compliance report to CPCB in this regard. In case of any queries, the nodal officer may be contacted.

Yours faithfully,

S. Suresh
3/3/2021

(S. Suresh)

Regional Director
9480672128

cpcbsuresh@gmail.com

Encl. As Above



केन्द्रीय प्रदूषण नियंत्रण बोर्ड
CENTRAL POLLUTION CONTROL BOARD
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, GOVT. OF INDIA

NGT MATTER (Time Bound)

File No. Tech(39)/Legal(NGT)/RDS/2020-21

March 03, 2021

To

The Commissioner
Bangalore Development Authority (BDA)
Kumara park West, T.Chowdaiah Road
Bengaluru - 560 020

Sub: Hon'ble NGT, Southern Zone, Chennai order in the matter of O.A. 111 of 2020 (SZ) regarding "Frothing of Chemical Foam in the River Thenpennai"

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CPCB vide aforesaid letter dated 19.02.2021 requested the members of the Joint Committee and concerned departments that the long term and short term action plan prepared by the joint committee for execution by the concerned agencies be complied as per the specified timelines.

In compliance to the Hon'ble NGT Order dated 18.02.2021 the members of the joint committee and the concerned agencies of the state of Karnataka and Tamilnadu are requested to prepare Action Taken Report on the above long term and short term action plan, as per the format (copy enclosed).

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प्रधान कार्यालय : परिवेश भवन, पूर्वी अर्जुन नगर, दिल्ली- ११० ०३२.

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ई-मेल / E-mail : cpcb@nic.in वेबसाइट / Website : www.cpcb.nic.in

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A copy of the action plan along with the format is enclosed herewith for necessary actions and compliance. Smt. Selvi P K, Scientist D/Sr. Env Engr. (Mobile: 9868166753, email: pkselvi.cpcb@nic.in / pkselvi.rdb@gmail.com) is the nodal officer and member of the committee from CPCB, RD, Bengaluru for further follow up.

It is requested to nominate a nodal officer from your department/organisation for providing compliance report to CPCB in this regard. In case of any queries, the nodal officer may be contacted.

Yours faithfully,

S. Suresh
31/3/2021

(S. Suresh)

Regional Director

9480672128

cpcbsuresh@gmail.com

Encl. As Above

<p>treated wastewater by BWSSB i.e. 126 tanks in Kolar District and 65 tanks in Chikaballapur district.</p> <p>3. Measurement of flow of all the major drains (i.e storm water drains) joining the river for estimate of flow of River Thenpennai and maintenance of all records.</p>	<p>BWSSB and Minor Irrigation (Three months)</p>			
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II. Study of Performance evaluation of Sewage Treatment Plants in Bangalore by engaging a CSIR institute

<p>(i) BWSSB may engage a CSIR Institute like CLRI or NEERI or others for evaluating performance of STPs located in K&C and Hebbal valleys. (viz., there are 32 STPs in Bangalore including 21 STPs in Koramangla & Challaghatta and Hebbal Valleys). The same may be supervised by KSPCB. The final report may be submitted to KSPCB for review.</p> <p>(ii) Completion of sewerage network for the villages in Koramangla &</p>	<p>BWSSB and KSPCB (Six months)</p> <p>BWSSB (as per the timeline fixed in O.A No. 125/2017)</p>			
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<p>Challaghatta and Hebbal Valleys (of 110 villages identified by BBMP) for tapping the sewage generated, as already submitted to Hon'ble Tribunal, Principal Bench, Delhi in the matter of O.A no. 125/2017. (Next date of hearing: 15.01.2021)</p> <p>(iii) Strengthening of STP conveyance system to improve sewage getting completely tapped and treated, in order to avoid discharge into River Thenpennai.</p> <p>(iv) The outcome of the performance study of STPs may be submitted as Status of Compliance of the State Functionaries of Karnataka to the Monitoring Committee constituted in the matter of O.A 125/2017, for review and reporting.</p>	<p>BWSSB (on a regular basis)</p> <p>KSPCB and BWSSB (after completion of the study)</p>			
<p>III. Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode.</p>				
<p>i. Among the industries those</p>	<p>TNPCB & KSPCB (six</p>			

<p>that are Red/Orange category (small, medium and large) with treated effluent discharge option as surface water/sewer drain/others (which includes industries having ZLD) in River basin of Thenpennai be monitored for effluent characteristics by concerned SPCBs, so as to ascertain the quality of treated effluent discharge as per the Consent Conditions of SPCBs. The details of the compliance status and action taken report be placed in public domain (TNPCB and KSPCB website).</p>	<p>months)</p>			
<p align="center">IV. Rejuvenation of lakes to remediate the pollution caused in River Thenpennai</p>				
<p>1. Advisory for development of Biodiversity park and wetland in the River basin of Thenpennai or Dakshina Pinakini as per CPCB Guidelines titled '<i>Guidelines for setting up of Biodiversity parks in Floodplains of Rivers of India, including River Ganga</i>' be notified in consultation with Government of Karnataka and KSPCB.</p>	<p>BDA and concerned State functionaries of Government of Karnataka (six months)</p>			

<p>2. Completion of Biodiversity park, which comprises of;</p> <p>(i) Feasibility study for development of Biodiversity parks in the River basin of Thenpennai</p> <p>(ii) Preparation of Detailed Project Report (DPR) for development of Biodiversity parks in Bellandur and Varthur</p> <p>(iii) Award of Project</p> <p>(iv) Completion of the Project</p>	<p>Bangalore Development Authority (not more than One year or as per the timeline fixed in O.A No. 125/2017)</p>			
<p>V. Environmental Compensation be imposed by SPCBs after evaluating performance of STPs and identification of defaulters upon Random Verification</p>				
<p>1. EC be calculated and imposed based on the Performance Evaluation of STPs and Random Verification of Grossly Polluting Industries.</p> <p>2. EC be calculated and imposed based on Random Verification of Grossly Polluting Industries.</p> <p>3. Calculation of EC by the three member Committee comprising of CPCB, TNPCB and KSPCB, after submission of Reports by the concerned</p>	<p>BWSSB and KSPCB (Six months)</p> <p>TNPCB (Six months)</p> <p>CPCB (Six months on receipt of the Study Report and recommendations/criteria for imposing EC from KSPCB and TNPCB)</p>			

authorities (BWSSB, KSPCB, TNPCB).				
VI. Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai up till Kelavarapalli				
1. Feasibility study for providing Sewage Treatment options (such as oxidations ponds/diversion channels or wetlands etc.) by TNPCB followed by implementation by Local authority of the district.	Feasibility study by TNPCB in consultation with local authority for implementation (TNPCB: six months)			
2. Solid Waste Management Plan be devised and executed by concerned Block Development Officer, Hosur taluk to ensure the solid wastes are not disposed on the riverside and managed as per Solid Waste Management Rules, 2016.	Concerned Block Development Officer to submit to TNPCB (six months)			
VII. Regular Water Quality Monitoring at important locations				
1. The trend of water quality and its improvement at major confluence points may be monitored for the year 2021-22 on a monthly basis and a report be submitted to CPCB to ensure the quality of water flowing in River Thenpennai.	TNPCB & KSPCB (to monitor on yearly basis)			
2. Responsibility as a Custodian of Rivers/tanks in Karnataka vests with State	BWSSB, BBMP, BDA, Minor Irrigation Department (every year)			

<p>Functionaries namely, BWSSB, BBMP, BDA, Lake Development Authority, Minor Irrigation Department. Therefore, Water Quality of the water flowing in River Thenpennai be maintained pristine and tested for its characteristics in the respective jurisdictions.</p>				
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Note: *In compliance to the Hon'ble NGT Order dated 18.02.2021, the improvement of the water quality on account of the short-term measures that has been taken by the departments may also be provided.*

Water quality of River Thenpennai be monitored by concerned SPCB of Karnataka and Tamilnadu at suitable inter-state locations (For example, Mugalur bridge, Sokkarasanapalli and others) and the analysis reports be submitted before Hon'ble Tribunal on or before 08.04.2021.



Annexure IV

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board

"ಪರಿಸರ ಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ. 49, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ ರಾಜ್ಯ, ಭಾರತ
"Parisara Bhavan", 1st to 5th Floor, # 49, Church Street, Bangalore - 560 001, Karnataka State, India

//BY RPAD//

NO. KSPCB/CEO-2/OA No.111/2020/2020-21/ 5603

Date:

09 MAR 2021

To,

Sri. S. Suresh,
Regional Director,
Central Pollution Control Board,
"Nisarga Bhavan", A-Block, 1st & 2nd Floor,
Thimmaiah Road, 7th D-Main, Shivanagar,
Bengaluru - 560 079

Sir,

Sub: Nomination of the Officer for the Joint inspection of Thenpennai River as per the Hon'ble National Green Tribunal, Southern Zone, Chennai order in the matter of the Original Application No. 111/2020 (SZ) regarding "Frothing of Chemical Foam in the River Thenpennai" - reg.

Ref: 1.This Office Letter No. PCB/CEO3/2021/1561, Dated 06.08.2020.

With reference to the above subject and in continuation to this Office letter cited under reference, the Chairman, Karnataka State Pollution Control has Nominated Sri. Syed Khaja Mohiddin, Senior Environmental Officer (Mobile No--98451-20743) as Nodal Officer for the Joint Committee in place of Sri M.K. Prabhudev, Chief Environmental Officer. You can co-ordinate with the Officer for further needful.

Yours faithfully,

Sd/-

MEMBER SECRETARY

Copy to:

1. The Member Secretary, Central Pollution Control Board, Parivesh Bhavan, East Arjun Nagar, Delhi - 110 032 for kind information.
2. Sri. M. K. Prabhudev, Chief Environmental Officer-2, Karnataka State Pollution Control Board, Bengaluru for kind information
3. Sri. Syed Khaja Mohiddin, Senior Environmental Officer, Infrastructure Cell, Head Office, KSPCB, Bengaluru for information and to co-ordinate with the Nodal agency.
4. The Law Officer, Legal Cell, Karnataka State Pollution Control Board, Bengaluru for information.
5. Case file.

A. Veday Kumar
CHIEF ENVIRONMENTAL OFFICER-2

Flow details at Bellanduru and Varthuru lake

Total Sewage generated in K&C Valley as reported to NGT is 583 MLD at the downstream of Varthuru Lake

Sl No	Location	Measured Flow as on April-2019	Measured Flow as on date	Remarks
1	HAL Valley SWD	48.60	0.00	
2	Agaram & Koramangala (Y-Junction) SWD	179.50		
3	Ibbalur inlet	5.00	0.00	
4	Kempapura inlet	3.00	0.00	
5	218 MLD STP KC Valley	170.00	170.00	
6	60 MLD STP KC Valley	22.00	60.00	
7	30 MLD STP KC Valley	26.00	30.00	
8	90 MLD STP Bellanduru Ammanikere	30.00	93.00	
9	50 MLD STP Kadubeesanahlli	40.00	50.00	
10	2 MLD STP Ulsoor	1.50	1.50	
11	4.0 MLD TTP Cubbon Park	1.50	3.00	
12	4 MLD STP Madiwala	0.00	0.00	
13	5 MLD STP Chikkabeguru	0.00	4.50	
14	10 MLD STP Hulimavu	0.00	5.00	
15	5 MLD STP Sarakki	0.00	3.00	
16	35 MLD STP Agaram	0.00	35.00	
17	150 MLD STP KC Valley	0.00	110.00	
Total		527.10	565.00	MLD
Earlier Measured Flow			583.00	MLD
Balance Flow			18.00	MLD

Note:

- 1 The Flow Measured during April-2019 for only to the bellanduru lake inlets and the varthur lake outlet as measured physically in the storm water drains was 527.10 MLD
- 2 Presently after starting treatment of the treatment in 150 MLD STP and after commisiioning the STP's at Sarakki, chikkabeguru, Hulimavu , Agaram and enhancement of capacity at cubbon Park, the flow is 565.00 MLD.
- 3 The Balance flow observed in Storm water drian at present is 18.00 MLD (583.00-565.00) in K&T Valley at Y Junction
- 4 The flow observed in Challaghatta Valley at HAL inlet is zero.
- 5 The balance flow seen is mainly due to flow from 110 Villages area wherein BWSSB is creating sewer network under JICA Project.
- 6 Presently the treated effluent from 150 MLD STP KC Valley (110 MLD inflow), 50 MLD STP Kadubeesanahlli, 2 MLD STP Ulsoor, 5 MLD STP Chikkabeguru , 10 MLD STP Hulimavu, 5 MLD STP Sarakki and 35 MLD STP Agaram is flowing along with remaining untreated Sewage of 18 MLD. The same can be augmented from Minor Irrigation Projects of supplying treated water to the lakes of District/Taluks surrounding to Bangalore city.



सत्यमेव जयते

INDIA NON JUDICIAL

Government of Karnataka

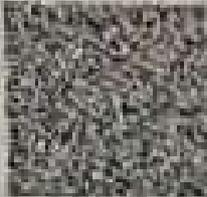
Rs. 500

e-Stamp

Certificate No. : IN-KA813105519814363
 Certificate Issued Date : 04-Dec-2020 11:03 AM
 Account Reference : NONACC (FD) KARNATAKA BANGALORE KA-BA
 Unique Doc. Reference : SUBIN-KAKACRSFLD8529882942702705
 Purchased by : SOCIETY FOR INNOVATION DEVELOPMENT IISC
 Description of Document : Article 12 Bond
 Description : AGREEMENT
 Consideration Price (Rs.) : 0
 (Zero)
 First Party : THE CHIEF ENGINEER EE BWSSB BANGALORE
 Second Party : SOCIETY FOR INNOVATION DEVELOPMENT IISC
 Stamp Duty Paid By : SOCIETY FOR INNOVATION DEVELOPMENT IISC
 Stamp Duty Amount(Rs.) : 500
 (Five Hundred only)

सत्यमेव जयते

Authorised Signatory
Members Credit Co-Op. Society Ltd.
Lal Bahadur Shastri, Bangalore-560 044



AGREEMENT

AGREEMENT No. **25** /2020-21 **07-12** -2020

This agreement for the project titled BNR removal studies, is made on the **7th** day of **DECEMBER** 2020.

BY AND AMONG

Chief Engineer, Bangalore Water Supply and Sewerage Board (BWSSB) Bangalore on behalf of the Government of Karnataka (hereinafter called "the Employer")

Secretary/Asst.

1. The authenticity of the Stamp certificate should be verified by the Chief Engineer (WWT) at the office of the Chief Engineer, BWSSB, 5th Floor, Cauvery



Page 1 of 1

AND

SOCIETY FOR INNOVATION AND DEVELOPMENT, Indian Institute of Science, a Society registered under the Karnataka Societies Registration Act of 1960, situated at the Innovation Centre Building of the Indian Institute of Science Campus, Bangalore - 560012, Karnataka, India (hereinafter referred to as "SID-IISc", IISc being an academic institution, in order to further its societal objectives, has promoted SID to act as an interact between itself and the industry and acts as one party for this project agreement which expression shall mean and include its successors-in-interest and permitted assigns) and represented by its Chief Executive or a duly authorized representative.

NOW, THEREFORE, IN CONSIDERATION OF THE MUTUAL COVENANTS AND AGREEMENTS HEREINAFTER SET FORTH, THE PARTIES AGREE AS FOLLOWS:

Whereas the Employer to entrust the work conducting studies towards the upgradation of the existing twenty (20) sewage treatment plants of BWSSB, to meet the effluent discharge standards as directed by the Honorable National Green Tribunal, at a total outlay of the grant Rs. 47,30,000.00 (Rupees Forty Seven Lakhs Thirty Thousand only) inclusive of all taxes & GST. The Honorable Government of Karnataka, through BWSSB has agreed to fund this project, as per the 4G exemption letter from the

Karnataka State Finance Department No: ಕ೦ಫಿ ಟ೦ ೨೨ ದಿ೦ 12/2020 dated 19th October 2020. As per the GO of Karnataka we are entrusting the BNR removal studies.

The Government of Karnataka, through the BWSSB is operating 20 STPs in Bangalore. The BWSSB through their letter

- No. BWSSB/CE(WWM)/ACE(WWM) 1 & 3/TA-1/799/2020-21 dated 27/07/2020, has requested IISc to inspect all the 20 STPs for assessing the required upgradation works and for furnishing the concept reports.

WHEREAS, as a response to this letter dated 27/07/2020 with reference number, BWSSB/CE(WWM)/ACE(WWM) 1 & 3/TA-1/799/2020-21, IISc submitted a proposal on 10th of August 2020, titled Biological Nutrient Removal (BNR) of the treated effluent from STPs of BWSSB. Subsequently based on the discussions between teams, BWSSB

- through their letter No BWSSB/CE(WWM)/ACE(WWM) 1 & 2/1642/2020-21 dated 11th of November 2020 provided the approval against IISc proposal
- through their letter No BWSSB/CE(WWM)/ACE(WWM) 1 & 2/TA-1/1767/2020-21 dated 01st of December 2020 had approved to execute the memorandum of agreement to take this project forward
- BWSSB, Karnataka, India, has agreed to transfer the funds for the Parties to carry out further work based on the Objectives and the scope of work as per the terms mutually agreed herein.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them and they shall be deemed to form and be read and constructed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the party or parties hereinafter mentioned, the hereby covenants with the Employer to execute and complete the works in all aspects.
3. The Employer hereby covenants to pay the party or parties in consideration of the completion of the project and in the manner prescribed in the agreement.


Chief Engineer (WWM)

BWSSB, 5th Floor
Cauvery Bhavan, K.G. Road
Bangalore-560 009



The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.,

- i. Objective
- ii. Scope of work
- iii. Budget / Payment schedule
- iv. Project Schedule / Time frame
- v. Roles & Responsibilities
- vi. Background IPR
- vii. Principal Investigators / Project Leaders
- viii. Project intellectual property terms
- ix. Terms of terminations
- x. Indemnification

i) Objective

The following is the aim/objective of the proposal related to the parties:

- Study and modelling of the STP process under the current operation mode to determine the necessary upgradations and process modifications for each of the 20 STPs

ii) Scope of Work

The scope of work shall include the following activities:

- Technical visit to each of the 20 STPs to understand the process and the gathering process data required for modelling of the STPs
- Detailed water quality analysis of various water samples at all intermediate stages, including inlet sewage and effluent for each of the STPs to assess the degree of functioning and potential for improvements.
- Process modelling of each of the 20 STPs to determine the necessary upgradation protocols and process modifications details
- Preparing a technical report listing the necessary upgradations and process modifications to achieve the desired effluent quality covering all the 20 STPs

iii) Budget / Payment schedule

Total budget outlay of the Project is Rs. 47,30,000.00 (Rupees Forty Seven Lakhs Thirty Thousand only) inclusive of all taxes & GST. Source of funding for this Project is from the grant allocated by government of Karnataka. The budget and payment schedules for the study is as per the table 1 below:

Table 1a Budget and payment schedule BNR removal study

Recurring Expenses	Details	Rs lacs
Salaries	Manpower costs towards sample collection, analysis, process modelling and supervision	17.5
Consumables	Chemicals for sample analysis, sample collection bottles, sample storage and sample preparation	12.2
Contingencies	Contingency expenses	1.0
Miscellaneous	Misc. expenses	1.0
Travel	Field trips associated with field sample collection	0.5

Chief Engineer (WWM)
 BWSSB, 5th Floor
 Cauvery Bhavan, K.G. Road
 Bangalore-560 009



Modelling and data analysis	Data modelling and analysis	3.7
Non-Recurring		
Equipment & Hardware	DO and nitrate probes (Excluding existing lab hardware and instruments)	3.5
Sub-Total		39.4
Lab utilization charges	Lab utilization charges	7.9
Grand Total		47.3

Table 1b Payment Schedule for the BNR removal study (in ₹ Lakhs)

First installment 70%	At the beginning of the project	33.1
Second Installment 30%	After the end of first quarter	14.2

Deliverables: Deliverables of this project are

1. Technical report on plant visits listing the process details of each of the 20 STPs
2. Water quality report for each of the STPs and their performance improvement potential
3. Recommendation report containing details of the necessary upgradations and process modifications for each of the STPs

The cost of the project including institute overheads is Rs. 47,30,000.00 (Rupees Forty Seven Lakhs Thirty Thousand only) inclusive of all taxes & GST. That payment shall be made as per payment schedule.

iv) Project Schedule / Time frame

Six (06) months from the date of start of the project with an option to extend the project to 11 months which will be decided on the 5th month of the project time line.

v) Roles, Responsibilities of BWSSB & IISc

a) Activities and obligations of BWSSB

- BWSSB shall be responsible for providing the funds required for the project, as identified in the budget Section.
- Facilitate necessary permissions and access to site and relevant information so as to conduct BNR removal studies.
- BWSSB will provide the following data, documents, and information needed for the project:
 - All design details including the design calculations, capacities/sizes of each of their sub-components of the 20 STPs being studied.
 - Water quality results available with BWSSB.
 - Current effluent flow details for each of the 20 STPs
 - Existing data, models, and operating conditions relevant for the BNR studies such as recirculation rates, capacities etc.
- BWSSB will provide timely feedback on the project activities and outcomes.

b) Activities and obligations of IISc

IISc is responsible for completing the following

- Conduct technical visit to each of the 20 STPs to understand the process and the gathering process data required for modeling of the STPs

Chief Engineer (WWM)
BWSSB, 5th Floor
Cauvery Bhavan, K.G. Road
Bangalore-560 009



- Conduct detailed water quality analysis of various water samples at all intermediate stages, including inlet sewage and effluent for each of the STPs to assess the degree of functioning and potential for improvements.
- Build process models of each of the 20 STPs to determine the necessary upgradation protocols and process modifications details
- Prepare a technical report listing the necessary upgradations and process modifications to achieve the desired effluent quality covering all the 20 STPs

vi) Background IPR

A. BWSSB Department Background IPR: None

B. Collaborator Background IPR: None

Note: Background Intellectual Property* means Intellectual Property of a Party that is:

- Proprietary to that Party and was conceived, created, or developed prior to, or independent of, any research performed pursuant to this Project; and
- Necessary for the performance of the Project.

vii) Principal Investigators / Project Leaders

PI: Dr. Lakshminarayana Rao, Center for Sustainable Technologies, IISc

Co-PI: Prof. H. N. Chanakya, Center for Sustainable Technologies, IISc

Co-PI: Former Prof. M. S. Mohan Kumar, IcWAR and Department of Civil Engineering, IISc

viii) Project intellectual property terms

- In the event any inventions are made during the tenure of the current project which may be protected by any form of Intellectual Property right, the same shall remain the joint property of BWSSB and IISc. (Joint IP). The Joint IP shall be jointly and equally owned by BWSSB and IISc. In an event, either Party is not interested in such Joint IP, they may confirm their disinterest in writing within 6 months from the date of ascertaining of the Joint IP and in such event, other Party would be free to register the Intellectual Property rights in Joint IP in its own name and the other Party shall have no ownership rights in such IP.
- The other commercial terms for exploitation of IP will be discussed at a later point of time.

ix) Terms of terminations

In the event of premature termination of this Project or any task, at the instance of either of the Parties, all IP generated pursuant to this Project shall vest solely with the Parties. As per the need the agreement will be vented for further duration with same terms and conditions or mutually agreeable modifications.

In the event of any dispute or difference between the Parties hereto, arising out of or in relation to this Project, such difference or dispute shall be resolved amicably by mutual consultation or through the good offices of the Director of IISc, or his nominee, who shall represent the interests of IISc, and the Head of BWSSB, or a person nominated by BWSSB, in the said context at the relevant point of time.

x) Indemnification

Each party to this AGREEMENT shall be held responsible for its own acts and/or omissions and those of its Officers, employees and agents. Neither party shall be held responsible for the indemnification of their respective obligations under this

AGREEMENT due to the exigency of one or more of the force majeure events such as but not limited to acts of God, War, Flood, Earthquakes, Strikes, Locusts beyond the control of the party claiming force majeure, Epidemics, Riots, Civil Commotions etc. provided on the occurrence and cessation of any such event the party affected thereby shall give a notice in writing to the other party within one month of such occurrence or cessation. If the force majeure conditions continue beyond six months, the parties shall jointly decide about the future course of action.

In witness where of the parties thereto have caused this agreement to be executed as be executed on day of 2020.

Society for Innovation and Development
Indian Institute of Science

BWSSB

By its authorized signatory
Chief Executive

By its authorized signatory
Chief Engineer

Signature: B. Gurusamy
Name: Prof. B. Gurusamy
Chief Executive

Signature: B. C. Gangaiah
Name: B. C. Gangaiah
Chief Engineer (W&M)

Seal: Society for Innovation and Development
Indian Institute of Science
Bengaluru - 560012

Seal: Cauvery Bhavan, K.G. Road,
Bengaluru - 560 009

WITNESS

From BWSSB

From SID-IISC

[Signature]
[Signature]
h.v. Rao



ಬೆಂಗಳೂರು ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ
BANGALORE WATER SUPPLY & SEWERAGE BOARD
Office of the Chief Engineer (WWM), 5th Floor
Cauvery Bhavan, K.G. Road, Bangalore-560009.

No.BWSSB / CE(WWM)/ ACE(WWM) /TA/ 187 /2020-21

Dated : 10/12/2020

Work Order

To,
Chief Executive,
SOCIETY FOR INNOVATION AND DEVELOPMENT,
Indian Institute of Science,
Innovation Centre Building of the Indian Institute of Science Campus,
Bangalore - 560012

For Kind attention of

1. Dr. Lakshminarayana Rao, Assistant Professor, Department of Civil Engineering, The Indian Institute of Science, Bangalore-560012	2. Pro. H.N. Chanakya, Chief Research Scientist, Department of Civil Engineering, The Indian Institute of Science, Bangalore-560012
3. Dr. M.S. Mohan Kumar, Professor,(Retd.) Department of Civil Engineering, The Indian Institute of Science, Bangalore-560012	

Sir,

Sub:- Work of conducting studies towards the up gradation of the existing twenty (20) sewage treatment plants of BWSSB, to meet the effluent discharge standards as directed by the Honorable National Green Tribunal.

Ref: 1. Letter No. BWSSB/CE(WWM)/ACE(WWM) 1 & 3/TA-1/799/2020-21 dated 27/07/2020

1. Proposal dated 10th of August 2020, titled Biological Nutrient Removal (BNR) of the treated effluent from STPs of BWSSB.

2. Letter No. BWSSB/CE(WWM)/ACE(WWM)-1&2/TA-1/1642/2020-21 Dt:11-11-2020.

4. Your e-mail dated 17.11.2020

5. No.BWSSB / CE(WWM)/ ACE(WWM)-1&2 /TA-1/1787/2020-21 Dated:01-12-2020

6. Agreement No.25/2020-21 Dated: 07.12.2020

Pursuant to the above and signing the contract agreement for the work of conducting studies towards the up gradation of the existing twenty (20) sewage treatment plants of BWSSB, to meet the effluent discharge standards as directed by the Honorable National Green Tribunal at a cost of Rs.47,30,000/- (Rupees Fourty Seven lakhs Thirty thousand only), you are hereby informed to proceed with the execution of the said work. Further you are hereby informed to carry out the work under the instructions of Additional Chief Engineer (WWM-3)-(STP-K Valley), Executive Engineer (STP-V.Valley), Executive Engineer (STP-H.Valley), Executive Engineer (STP-A.Valley) and Executive Engineer (STP-C.Valley). Further the scope of work also includes the validation of the DPR and cost estimates during actual execution of work in addition to the scope of work included in the agreement.

Please acknowledge the receipt of this work order.

Thanking you,

Yours faithfully,


Chief Engineer (WWM)
BWSSB
Ch

Copy to ACE(WWM-3)-(STP-K.V)/EE(STP-V.V)/EE(STP-H.V)/EE(STP-A.V) and EE(STP-C.V) for information and immediate necessary action.

The detailed work wise progress achieved as on 31.03.2021

Sl No	Items of work to be completed	Progress Achieved	Committed timeline for completion	Remarks
1	150 MLD Capacity new Sewage Treatment Plant based on activated sludge process with BNR with Power generation Date of completion 30.07.2020	The overall progress as on 31.03.2021 is 93% against the Planned target of 100.00%.	30.07.2021	As per the commitment to NGT, intake of sewage was taken on 22.03.2021(before March 2021)and treatment is in progress. Presently, about 100MLD of sewage is being augmented, it requires minimum of 45 days for developing MLSS and to achieve the effluent standards. By the end of April 2021, the results will be achieved. The balance liquid stream will be completed by May2021 and the work will be completed in all respects including sludge line by July2021.
2	Construction of 210 MLD capacity ISPS at Koramangala Sports Complex – including O&M for 7 years: Date of completion 29.01.2020	The ISPS is Commissioned.	Work Completed	
3	Laying of 1800 mm dia raising main from 210 MLD ISPS to 150 MLD STP –	The Pumping main is Commissioned on 22.03.2021.	Work Completed	

	S2D(a) of length 5.315 Km Date of completion 07.01.2020			
4	Sarakki – 5.0 MLD STP at Sarakki lake	Completed and commissioned on 08.11.2019.	Work Completed	Presently the treated water is let into Sarakki Lake.
5	Chikkabeguru – 5.0 MLD STP Date of completion March-2020	Completed and commissioned on September 2020.	Work Completed	Presently the treated water is let into Chikka Begur Lake.
6	Hulimavu – 10 MLD STP Date of completion March-2020	Completed and Commissioned on 31.03.2020	Work Completed	Presently the treated water is let into Hulimavu Lake.
7	Augmenting sewage from Iblur side and conveying to Bellandur Amanikere STP (Laying of sewer sub main) Date of completion 30.12.2020	Completed and Commissioned on 23.12. 2020	Work Completed	
8	Agaram – 35 MLD STP Date of completion Dec-2019	Completed and Commissioned on 31.03.2020		Presently the treated water is let into Agaram Lake.
9	Waste water wet well – 32.5 MLD Capacity near the premises of 90MLD Bellanduru Amanikhane	The overall progress as on 31.03.2021 is 70% against the Planned target of 100.00%. However, the temporary arrangement made for pumping sewage to Bellanduru Amanikhane STP.	31.05.2021	Though the progress is not achieved due to COVID-19. intermediate arrangements have been made and presently sewage is augmented to Bellanduru STP, however the

	STP to augment sewage from the adjoining areas of Bellanduru Amanikhane STP Date of completion 30.09.2020			work will be completed before 31.05.2021.
10	A proper mechanism should be developed/placed to identify the blockages in the existing UGDs and to attend them mechanically.	BWSSB has 175 Jetting cum suction machines and 40 de-silting machines to clean the UGD lateral network., BWSSB is clearing the manholes once in a year. 6 High Pressure desilting machines and one recycler machine are engaged in cleaning of sub-mains and main sewers.		Maintenance of sewer lines is also done regularly based on the complaints and extensive, massive desilting of sewer lines will also be taken periodically to ensure proper flow of sewage.
11	Up gradation of 4 MLD STP at Madivala.	The overall progress as on 31.03.2021 is 38.00% as against 100% and the work will be completed by December 2021. However, it is ensured that during this rehabilitation work the sewage which was earlier augmented to this STP is now diverted to Agaram ISPS by linking this network to ISPS through 900mm dia sewer link line. At present there is no sewage entry into the Madivala lake.	31.12.2021	This STP was taken up by Karnataka Lake Conservation and Development Authority with funds from KSPCB. Due to poor progress on this work has been handed over to BWSSB. From then onwards BWSSB has taken up upgradation of this STP.
12	Proposal for upgradation of all existing STPs with facilities to removal of Biological Nutrient Removal at 248 MLD STP at K&C Valley.	The operating STPs of 90 MLD STP at Bellandur Amanikere, 60 MLD STP at K&C Valley, 5 MLD STP at Sarakki and under construction STP's of 150 MLD at K&C Valley, 5 MLD at Chikkabegur, 10 MLD Hulimavu and 35 MLD STP at Agaram are with Biological Nutrient Removal process. The working STPs at Cubbon Park and Lalbagh are Tertiary Treatment Plants.		The Final DPR for the 248 MLD (KC Valley) has been submitted to Govt for approval.

For the 248 MLD (KC Valley), upgradation the DPR and the estimate is ready and had been sent to Government for approval.

Further, for not having received responses for the tenders, based on the concept note developed by Professors of IISc and in consultation with the consultants M/s CH2M Hill India Pvt. Ltd., modifications in process were made to achieve removal of nutrients in the other two STP's i.e. 30 MLD STP & 218 MLD STP. Based on the directions of the Hon'ble NGT committee, samples were collected jointly by CPCB, KSPCB and IISc, the results furnished by them are annexed. From which it is clear that due to the modification made in the process the Biological Nitrates have been removed and the same is complying with the NGT requirements.

Also, it is to submit that the treated effluent from all the 3 above STP's and one more 90 MLD STP at Bellandur Amanikere are eventually transmitted to the Minor Irrigation Jack Well situated near Bellandur Amanikere from where the effluent is finally discharged into Lakshmi Sagar Lake of Kolar District.

After these modifications BWSSB has got tested the effluent from the MI Jack Well 2 near Bellandur Amanikere and has ascertained the reduction in Biological Nutrients. As per the test reports, the Total Nitrogen is 6.4 mg/ltr and the Total Phosphates is 0.85

		<p>mg/ltr which is within the ranges as suggested by Hon'ble NGT.</p> <p>To further ascertain the status of Biological Nutrients values in the treated effluent discharged at Lakshmi Sagar Lake, BWSSB has requested the professors of IISc who are entrusted with the studies of Environmental Impact due to augmentation of treated water from K&C Valley STP's into Kolar District Lakes to share the results of the samples collected and as reported by them the Biological Nutrients in the ultimate discharge point of Lakshmi Sagar Lake are well within the NGT stipulations.</p>		
13	Interim remediation.	<p>The peripheral diversion channels have been constructed by the BDA in both the lakes and sewage water is flowing through this channel. Entry of sewage water into these lakes have been stopped. Further, the BWSSB have installed aerating systems and has completed by 31.01.2020 at 1) HAL side and Kempapura inlet, 2) Agaram inlet, 3) Koramangala inlet, 4) Iblur inlet coming under Bellandur Lake, 5) Northern and 6) Sothern side of Varthur lake for inline treatment of sewage. Further, in addition the BWSSB is also installing artificial floating islands.</p>	Work Completed	<p>In order to comply with the time line of 01.02.2020 fixed in the orders of the NGT, the aerating systems in the 6 locations were installed before 31.01.2020 and same have been observed by the NGT Committee during their inspection of the said location on 21.01.2020.</p> <p>Subsequently, in order to enhance the interim remediation artificial floating islands have also been installed.</p> <p>Same have been observed by the NGT Committee during their inspection on 25.02.2020</p>
14	Disconnections to ensure that no treated effluent is discharged into BWSSB UGD network.	<p>As per the Hon'ble NGT order BWSSB may further ensure that treated water is not discharged into the UGD network. Further, the list provided by KSPCB for 496 buildings having STPs has been inspected by BWSSB</p>		

		<p>engineers and out of 496 buildings 109 buildings UGD connections are disconnected, there is no BWSSB UGD network near 378 buildings, 2 buildings are beyond the 110 village limits of BBMP, 5 buildings addresses are repeated in the list, earlier for 1 building which address was not traceable has been identified – it is individual building for which STP is not applicable and 1 building does not have STP.</p> <p>BWSSB is identifying the sources of discharge of sewage and will disconnect water supply and UGD connections of the defaulting establishments and also send a complaint to KSPCB. If the defaulting establishment is using ground water then the complaint has also to be booked with KSPCB for its action.</p> <p>Further, the treated water was allowed as per the conditions stipulated in the order of the consent issued by KSPCB. Under the circumstances, BWSSB request not to take any action against its officials. The detailed report was submitted while furnishing compliance on 31.12.2020.</p>		
15	<p>To properly design UGD network so as to feed the existing STPs to their full capacity and also to the STPs under construction treated water should be reused.</p>	<ol style="list-style-type: none"> 1. HAL SWD (Challaghatta Valley) – Totally 23 works are to be taken up for augmenting this flow out of which 23 works are completed on 23.12.2020 2. Koramangala and AgaramValley Totally 48 works are to be taken up for augmenting this flow out of which 48 works are completed on 23.12.2020 		<p>The flow in the SWD's were measured in the month of April-2019 and the details of flow are as follows:</p> <p>HAL-48.60</p> <p>Agaram&Koramangala (Y-Junction)-179.50</p> <p>Total-228.10 MLD</p> <p>The flow details of STP's at K&C Valley,</p>

		<p>3. Iblur Catchment area Completed and Commissioned on 23.12.2020.</p> <p>4. Kempapura Catchment area BWSSB has taken up work of laying 300 mm dia RCC NP3 sewer line for a length of 1000 RMT to convey the sewage generated in this area Bellanduru Amanekhane STP. The work is completed and commissioned in the month of may 2020</p>	<p>Bellandur on the day of measurement were, 218 MLD-170 MLD 60 MLD-22 MLD 30 MLD-26MLD 90 MLD-30 MLD Total-248 MLD After carrying out major interlinking/new pipeline works on the upstream side, the flow was measured in the 1st week of March-2020, the details are as follows: HAL-31.4 MLD Agaram&Koramangala (Y-Junction)-114.26 Total-145.66 MLD</p> <p>The flow details of STP's at K&C Valley, Bellandur on the day of measurement were, 218 MLD-180 MLD 60 MLD-51 MLD 30 MLD-30 MLD 90 MLD-70 MLD Total-331 MLD</p> <p>At present the flow details of STP at K&C valley measurement were</p> <p>218 MLD-194 MLD 60 MLD-60MLD 30 MLD- 30MLD 90 MLD -93 MLD 50 MLD-42MLD 2MLD-1.50MLD 1.50MLD-1.50MLD 4MLD-2MLD</p>
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			<p>5MLD-4.50MLD 10MLD-5MLD 5MLD-3MLD 35MLD-18MLD 150 MLD-83 MLD Total=542.50 MLD.</p> <p>As can be seen from the above it is clear where the flow in the SWD to an extent of 294.50 MLD has been reduced and are being augmented to STP's.</p> <p>The combined treatment capacity of the above plants will be 664.50 MLD against a measured flow of 583 MLD. Presently 542.50 MLD of sewage is being treated. The total treated sewage will be 542.50 MLD (93%) as against the measured flow of 583 MLD. The balance quantity will be augmented in phased manner (110 villages network will be completed in the year 2024)</p>
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ANALYSIS REPORT (NON ACCREDITED PARAMETERS)

Station code	4107				Date: 05-02-2021	
Date & time of Sample taken	Date	21-01-2021	Time	09.30 AM	Type of Water Body	Lake
Name of Monitoring Station	Mugaluru Bridge				SAMPLE COLLECTED BY: Sri. C.R. Manjunath, E.O RO: Sarjapura	
Use Based Class	Class -" E"— Irrigation, Industrial cooling, Controlled Waste disposal					
Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
Depth of water body (meter)	> 50cm	50-100 cm ✓	> 100 cm	Flood	AGENCY:	KARNATAKA
Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	21-01-2021
Colour	Clear	Turbid	Light ✓ Grey	Brown	Date of completion of test	28-01-2021
Odour	None	Fishy	H ₂ S ✓	Other	Sample Report No.	W-2781A
Particulars of sample collected	Lake water sample				Sample No.	W-2781

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Test Method
			A	B	C	D	E		
1.	Boron as B	mg/L	-	-	-	-	2.0	BDL	APHA 23rd edition (Part 4500B B): 2017
2.	Dissolved Oxygen	mg/L	6	5	4	4	-	BDL	IS 3025 (Part 38): 2003
3.	Nitrate as N	mg/L	-	-	-	-	-	1.06	APHA 23rd edition (Part 4500-NO ₃ D): 2017
4.	Magnesium as CaCO ₃	mg/L	-	-	-	-	-	36.9	IS 3025 (Part 46):2003
5.	P – Alkalinity	mg/L	-	-	-	-	-	Nil	IS:3025 (Part 23):2003
6.	Total Phosphate as P	mg/L	-	-	-	-	-	0.62	IS 3025 (Part 31): 2003
7.	Fecal streptococci	MPN /100ml	-	100(desirable) 500(Max permissible)	-	-	-	79	APHA 23 rd edition (Part 9230 B)9- 118 to 9119: 2017
8.	Bicarbonate (HCO ₃)	mg/L	-	-	-	-	-	472	APHA (23rd Edition):2017;2320 B. Table 2320-II
9.	Carbonate (CO ₃)	mg/L	-	-	-	-	-	Nil	

INFERENCE Class -" E"— Irrigation, Industrial cooling, Controlled Waste disposal

Note: 1. Additional analysis report No: W-2781 dated 05-02-2021 shall also be read for declaration of Inference of the sample Tested.

2. BDL: Below Detection Limit in mg/L
Boron as B:0.1; Dissolved Oxygen:0.5;

Radha. M. S.
Section Head
Microbiology Testing Laboratory

R. S. V.
Section Head
Water Testing Laboratory

—End of Report —

Sl No.	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
10.	Total Hardness as CaCO ₃	mg/L	-	-	-	-	-	324	1 to 2000 mg/L	IS 3025 (Part 21): 2009
11.	Calcium as CaCO ₃	mg/L	-	-	-	-	-	172	1 to 1000 mg/L	IS 3025 (Part 40): 2003
12.	Chloride as Cl	mg/L	-	-	-	-	-	184	1 to 2000 mg/L	IS 3025 (Part 32): 2003
13.	Sodium as Na	mg/L	-	-	-	-	-	109	1 to 1000 mg/L	IS 3025 (Part 45): 2003
14.	Potassium as K	mg/L	-	-	-	-	-	29	1 to 100 mg/L	IS 3025 (Part 45): 2003
15.	Sulphate as SO ₄	mg/L	-	-	-	-	-	17.3	1 to 1000 mg/L	IS 3025 (Part 24): 1992
16.	T - Alkalinity as CaCO ₃	mg/L	-	-	-	-	-	472	1 to 1000 mg/L	IS 3025 (Part 23): 2003
17.	Total Dissolved Solids	mg/L	-	-	-	-	-	956	10 to 2000 mg/L	IS 3025 (Part 16): 2006
18.	Fluoride as F	mg/L	-	-	-	-	-	0.4	0.1 to 100 mg/L	IS 3025 (Part 60): 2008

INFERENCE Class -" E"— Irrigation, Industrial cooling, Controlled Waste disposal

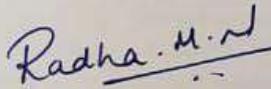
Note: 1. Additional analysis report No: W-2781A dated 05-02-2021 shall also be read for declaration of Inference of the sample Tested.

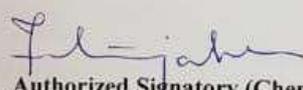
2. The above results pertain only to the sample tested.

3. The report shall not be reproduced without the written approval of the laboratory.

4. Samples will be stored for a period of 15 days from the date of issue of report.

5. Decision Rule: "Statement of conformity / non conformity applies only to test results as per standard stipulated by regulatory authority".


 Authorized Signatory (Biological)
 (Radha M. N)
 Assistant Scientific Officer


 Authorized Signatory (Chemical)
 (Farhath Jabeen)
 Deputy Scientific Officer

--End of Report --

ANALYSIS REPORT (NON ACCREDITED PARAMETERS)

Date: 28-01-2021

Station code	4107				Page-3of 3	
Date & time of Sample taken	Date	24-12-2020	Time	08:30 AM	Type of Water Body	Lake
3 Name of Monitoring Station	Mugalur Bridge				SAMPLE COLLECTED BY : Sri. C.R. Manjunath, EO RO: Sarjapura	
4 Use Based Class	Class " E " - Irrigation, Industrial cooling, Controlled Waste disposal					
5 Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
6 Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
7 Depth of water body (meter)	< 50 cm	50-100cm ✓	>100 cm	Flood	AGENCY:	KARNATAKA
8 Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	24-12-2020
9 Colour	Clear	Turbid	Light Grey ✓	Brown	Date of completion of test	04-01-2021
10 Odour	None	Fishy	H ₂ S ✓	Other	Sample Report No.	W-2545 A
1 Particulars of sample collected	Lake Water Sample				Sample No.	W-2545

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Test Method
			A	B	C	D	E		
1.	Dissolved Oxygen	mg/L	6	5	4	4	-	BDL	IS 3025(Part38):2003
2.	Nitrate as N	mg/L	-	-	-	-	-	3.8	APHA 23rd edition (Part 4500-NO ₃ -D): 2017
3.	Ammonia as N	mg/L	-	-	-	-	-	90.8	IS 3025(Part34):2003
4.	Magnesium as CaCO ₃	mg/L	-	-	-	-	-	150	IS 3025 (Part 46):2003
5.	P - Alkalinity	mg/L	-	-	-	-	-	Nil	IS:3025 (Part 23):2003
6.	Total Phosphate as P	mg/L	-	-	-	-	-	0.18	IS 3025 (Part 31): 2003
7.	Boron as B	mg/L	-	-	-	-	2.0	BDL	APHA 23rd edition (Part 4500B B): 2017
8.	Bicarbonate (HCO ₃)	mg/L	-	-	-	-	-	410	APHA (23rd Edition): 2017;2320 B. Table 2320-II
9.	Carbonate (CO ₃)	mg/L	-	-	-	-	-	Nil	

INFERENCE

Class " E " - Irrigation, Industrial cooling, Controlled Waste disposal

Note: 1. Additional analysis report No: W-2545 dated 28-01-2021 shall also be read for declaration of Inference of the sample Tested.

2. BDL: Below Detection Limit in mg/L
Boron as B : 0.1; Dissolved Oxygen:0.5.


Section Head
Water Testing Laboratory

--End of Report --




KARNATAKA STATE POLLUTION CONTROL BOARD
CENTRAL ENVIRONMENTAL LABORATORY
 Legal 42(3)/87.E(P)ACT, 1986 RECOGNISED ENVIRONMENTAL LABORATORY
 ISO/IEC 17025 Accredited Testing Laboratory by NABL Vide Certificate Number TC-5487
 IS 18001:2007 CERTIFIED LABORATORY

Website : <http://kspcb.gov.in>

ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಬೆಂಗಳೂರು
 ೭ನೇ 'ಡಿ' ಮುಖ್ಯ ರಸ್ತೆ, ಶಿವಾನಗರ,
 ಬೆಂಗಳೂರು, ಕರ್ನಾಟಕ - ೫೬೦೦೭೯
 K.S.P.C.B., "Nisarga Bhavan"
 7th D Cross, Thimmaiah Road,
 Shivanagar, Bangalore - 560079

ANALYSIS REPORT (ACCREDITED PARAMETERS)

Date: 05-02-2021

1	Station code	4107				Page 1 of 3	
2	Date & time of Sample taken	Date	21-01-2021	Time	09.30 AM	Type of Water Body	Lake
3	Name of Monitoring Station	Mugaluru Bridge				SAMPLE COLLECTED BY: Sri. C.R. Manjunath, E.O RO: Sarjapura	
4	Use Based Class	Class -" E"— Irrigation, Industrial cooling, Controlled Waste disposal					
5	Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
	Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
7	Depth of water body (meter)	> 50cm	50-100 cm ✓	> 100 cm	Flood	AGENCY:	KARNATAKA
8	Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	21-01-2021
9	Colour	Clear	Turbid	Light ✓ Grey	Brown	Date of completion of test	28-01-2021
10	Odour	None	Fishy	H ₂ S ✓	Other	Sample Report No.	W-2781
11	Particulars of sample collected	Lake water sample				Sample No.	W-2781

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
1.	Temperature	°C	-	-	-	-	-	25	-	Thermometric
2.	pH@25° C	-	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.0-8.5	6.9	2 to 12 Unit	IS 3025 (Part 11): 2002
3.	Conductivity@25° C	µs/cm	-	-	-	-	2250	1400	10 to 5000µs/cm	IS 3025 (Part 14): 2013
4.	Biochemical Oxygen Demand (3 days @ 27° C)	mg/L	2	3	3	-	-	44	2 to 300 mg/L	IS 3025 (Part 44): 2009
5.	Total Coliform	MPN /100ml	50	500	5000	-	-	1600x10 ⁵	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 A, B, C) 9-68 to 9-75: 2017
6.	Fecal Coliform	MPN /100ml	-	500 (desirable) 2500 (Maximum)	-	-	-	150x10 ⁵	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 E, D) 9-77to 9-78: 2017
7.	Chemical Oxygen Demand	mg/L	-	-	-	-	-	328	4 to 1000 mg/L	IS 3025 (Part 58): 2006
8.	Ammonia as N	mg/L	-	-	-	-	-	30.0	0.1 to 50 mg/L	IS 3025 (Part 34): 2003
9.	Turbidity	NTU	-	-	-	-	-	28.7	0.1 to 500 NTU	IS 3025 (Part 10): 2002

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Station code
Date & time of Sa
Name of Monitor
Use Bas

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
10.	Total Hardness as CaCO ₃	mg/L	-	-	-	-	-	224	1 to 2000 mg/L	IS 3025 (Part 21): 2009
11.	Calcium as CaCO ₃	mg/L	-	-	-	-	-	120	1 to 1000 mg/L	IS 3025 (Part 40): 2003
12.	Chloride as Cl	mg/L	-	-	-	-	-	117	1 to 2000 mg/L	IS 3025 (Part 32): 2003
13.	Sodium as Na	mg/L	-	-	-	-	-	86.55	1 to 1000 mg/L	IS 3025 (Part 45): 2003
14.	Potassium as K	mg/L	-	-	-	-	-	16.08	1 to 100 mg/L	IS 3025 (Part 45): 2003
15.	Sulphate as SO ₄	mg/L	-	-	-	-	-	14.13	1 to 1000 mg/L	IS 3025 (Part 24): 1992
16.	T - Alkalinity as CaCO ₃	mg/L	-	-	-	-	-	264	1 to 1000 mg/L	IS 3025 (Part 23): 2003
17.	Total Dissolved Solids	mg/L	-	-	-	-	-	610	10 to 2000 mg/L	IS 3025 (Part 16): 2006
18.	Fluoride as F	mg/L	-	-	-	-	-	0.318	0.1 to 100 mg/L	IS 3025 (Part 60): 2008

INFERENCE Class " E " - Irrigation, Industrial cooling, Controlled Waste disposal

- Note: 1. Additional analysis report No: W-2319A dated 21-12-2020 shall also be read for declaration of Inference of the sample Tested.
- The above results pertain only to the sample tested.
 - The report shall not be reproduced without the written approval of the laboratory.
 - Samples will be stored for a period of 15 days from the date of issue of report.
 - Decision Rule: "Statement of conformity / non conformity applies only to test results as per standard stipulated by regulatory authority".

Radha M.N
Authorized Signatory (Biological)
 (Radha M.N)
 Assistant Scientific Officer

Farhath Jabeen
Authorized Signatory (Chemical)
 (Farhath Jabeen)
 Deputy Scientific Officer

---End of Report---

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
10.	Total Hardness as CaCO ₃	mg/L	-	-	-	-	-	224	1 to 2000 mg/L	IS 3025 (Part 21): 2009
11.	Calcium as CaCO ₃	mg/L	-	-	-	-	-	120	1 to 1000 mg/L	IS 3025 (Part 40): 2003
12.	Chloride as Cl	mg/L	-	-	-	-	-	117	1 to 2000 mg/L	IS 3025 (Part 32): 2003
13.	Sodium as Na	mg/L	-	-	-	-	-	86.55	1 to 1000 mg/L	IS 3025 (Part 45): 2003
14.	Potassium as K	mg/L	-	-	-	-	-	16.08	1 to 100 mg/L	IS 3025 (Part 45): 2003
15.	Sulphate as SO ₄	mg/L	-	-	-	-	-	14.13	1 to 1000 mg/L	IS 3025 (Part 24): 1992
16.	T - Alkalinity as CaCO ₃	mg/L	-	-	-	-	-	264	1 to 1000 mg/L	IS 3025 (Part 23): 2003
17.	Total Dissolved Solids	mg/L	-	-	-	-	-	610	10 to 2000 mg/L	IS 3025 (Part 16): 2006
18.	Fluoride as F	mg/L	-	-	-	-	-	0.318	0.1 to 100 mg/L	IS 3025 (Part 60): 2008

INFERENCE **Class " E " - Irrigation, Industrial cooling, Controlled Waste disposal**

- Note: 1. Additional analysis report No: W-2319A dated 21-12-2020 shall also be read for declaration of Inference of the sample Tested.
 2. The above results pertain only to the sample tested.
 3. The report shall not be reproduced without the written approval of the laboratory.
 4. Samples will be stored for a period of 15 days from the date of issue of report.
 5. Decision Rule: "Statement of conformity / non conformity applies only to test results as per standard stipulated by regulatory authority".

Radha M.N
Authorized Signatory (Biological)
(Radha M.N)
Assistant Scientific Officer

Farhath Jabeen
Authorized Signatory (Chemical)
(Farhath Jabeen)
Deputy Scientific Officer

---End of Report---

ANALYSIS REPORT (NON ACCREDITED PARAMETERS)

Date: 21-12-2020

Station code	4107				Page-1 of 1	
2 Date & time of Sample taken	Date	27-11-2020	Time	11:05 AM	Type of Water Body	River
3 Name of Monitoring Station	Dakshina Pinakini River, near Mugalur Bridge				RO: Sarjapura	
4 Use Based Class	Class " E " - Irrigation, Industrial cooling, Controlled Waste disposal					
5 Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
6 Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
7 Depth of water body (meter)	> 50 cm	50-100cm ✓	>100 cm	Flood	AGENCY:	KARNATAKA
8 Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	30-11-2020
9 Colour	Clear	Turbid	Light Grey ✓	Brown	Date of completion of test	05-12-2020
10 Odour	None	Fishy	H ₂ S ✓	Other	Sample Report No.	W-2319 A
11 Particulars of sample collected	River Water Sample				Sample No.	W-2319

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Test Method
			A	B	C	D	E		
1.	Dissolved Oxygen	mg/L	6	5	4	4	-	BDL	IS 3025 (Part 38): 2003
2.	Nitrate as N	mg/L	-	-	-	-	-	0.58	APHA 23rd edition (Part 4500-NO ₃ -D): 2017
3.	Magnesium as CaCO ₃	mg/L	-	-	-	-	-	25.2	IS 3025 (Part 46):2003
4.	P - Alkalinity	mg/L	-	-	-	-	-	Nil	IS:3025 (Part 23):2003
5.	Total Phosphate as P	mg/L	-	-	-	-	-	0.052	IS 3025 (Part 31): 2003
6.	Boron as B	mg/L	-	-	-	-	2.0	BDL	APHA 23rd edition (Part 4500B B): 2017
7.	Bicarbonate (HCO ₃)	mg/L	-	-	-	-	-	264	APHA (23rd Edition): 2017;2320 B. Table 2320-11
8.	Carbonate (CO ₃)	mg/L	-	-	-	-	-	Nil	
9.	Fecal streptococci	MPN /100ml	-	100 (desirable) 500 (Max Permissible)	-	-	-	170	APHA 23 rd edition (Part 9230 B)9- 118 to 9-119: 2017

INFERENCE	Class " E " - Irrigation, Industrial cooling, Controlled Waste disposal
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Note: 1. Additional analysis report No: W-2319 dated 21-12-2020 shall also be read for declaration of Inference of the sample Tested.

2. BDL: Below Detection Limit in mg/L
Dissolved Oxygen :0.5; Boron as B : 0.1.

Radha M.N
Section Head
Microbiology Testing Laboratory

B
Section Head
Water Testing Laboratory

---End of Report---

ANALYSIS REPORT (NON ACCREDITED PARAMETERS)

Date: 04-12-2020

1	Station code	4107				Page 1 of 1	
2	Date & time of Sample taken	Date	22-10-2020	Time	11.40 AM	Type of Water Body	Lake
3	Name of Monitoring Station	Mugaluru Bridge				RO: Sarjapura	
4	Use Based Class	Class - " D " — Propagation of Wild Life, Fisheries					
5	Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
6	Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
7	Depth of water body (meter)	> 50cm	50-100 cm ✓	> 100 cm	Flood	AGENCY:	KARNATAKA
8	Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	22-10-2020
9	Colour	Clear	Turbid	Light Grey ✓	Brown	Date of completion of test	23-11-2020
10	Odour	None	Fishy	H ₂ S	Other ✓	Sample Report No.	W-1982A
11	Particulars of sample collected	Lake water sample				Sample No.	W-1982

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Test Method
			A	B	C	D	E		
1.	Boron as B	mg/L	-	-	-	-	2.0	BDL	APHA 23rd edition (Part 4500B B): 2017
2.	Nitrate as N	mg/L	-	-	-	-	-	4.0	APHA 23rd edition (Part 4500-NO ₃ -D): 2017
3.	Magnesium as CaCO ₃	mg/L	-	-	-	-	-	84	IS 3025 (Part 46):2003
4.	P – Alkalinity	mg/L	-	-	-	-	-	Nil	IS:3025 (Part 23):2003
5.	Total Phosphate as P	mg/L	-	-	-	-	-	0.62	IS 3025 (Part 31): 2003
6.	Cadmium	mg/L	-	-	-	-	-	BDL	APHA 23 rd edition (Part 3125B): 2017
7.	Total Chromium	mg/L	-	-	-	-	-	BDL	APHA 23 rd edition (Part 3125B): 2017
8.	Fecal streptococci	MPN /100ml	-	-	-	-	-	130	APHA 23 rd edition (Part 9230 B) 9-118 to 9119: 2017
9.	Bicarbonate (HCO ₃)	mg/L	-	-	-	-	-	148	APHA (23rd Edition) 2017, 2320 B. Table 2320-11
10.	Carbonate (CO ₃)	mg/L	-	-	-	-	-	Nil	

INFERENCE Class - " D " — Propagation of Wild Life, Fisheries

Note: 1. Additional analysis report No: W-1982 dated 04-12-2020 shall also be read for declaration of Inference of the sample Tested

2. BDL: Below Detection Limit in mg/L
Boron as B:0.1; Cadmium:0.001; Total Chromium:0.02;

Radha. M. N.
Section Head
Microbiology Testing Laboratory

[Signature]
Section Head
Water Testing Laboratory

---End of Report --

Sl No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
10.	Turbidity	NTU	-	-	-	-	-	4.1	0.1 to 500 NTU	IS 3025 (Part 10): 2002
11.	Total Hardness as CaCO ₃	mg/L	-	-	-	-	-	176	1 to 2000 mg/L	IS 3025 (Part 21): 2009
12.	Calcium as CaCO ₃	mg/L	-	-	-	-	-	92	1 to 1000 mg/L	IS 3025 (Part 40): 2003
13.	Chloride as Cl	mg/L	-	-	-	-	-	102	1 to 2000 mg/L	IS 3025 (Part 32): 2003
14.	Sodium as Na	mg/L	-	-	-	-	-	67	1 to 1000 mg/L	IS 3025 (Part 45): 2003
15.	Potassium as K	mg/L	-	-	-	-	-	14	1 to 100 mg/L	IS 3025 (Part 45): 2003
16.	Sulphate as SO ₄	mg/L	-	-	-	-	-	33	1 to 1000 mg/L	IS 3025 (Part 24): 1992
17.	T - Alkalinity as CaCO ₃	mg/L	-	-	-	-	-	148	1 to 1000 mg/L	IS 3025 (Part 23): 2003
18.	Total Dissolved Solids	mg/L	-	-	-	-	-	500	10 to 2000 mg/L	IS 3025 (Part 16): 2006
19.	Fluoride as F	mg/L	-	-	-	-	-	0.19	0.1 to 100 mg/L	IS 3025 (Part 60): 2008
20.	Copper	mg/L	-	-	-	-	-	0.006	0.001 to 100 mg/L	APHA 23 rd edition (Part 3125B): 2017
21.	Lead	mg/L	-	-	-	-	-	0.006	0.001 to 100mg/L	APHA 23 rd edition (Part 3125B): 2017
22.	Nickel	mg/L	-	-	-	-	-	0.003	0.002 to 100mg/L	APHA 23 rd edition (Part 3125B): 2017
23.	Zinc	mg/L	-	-	-	-	-	0.039	0.002 to 100mg/L	APHA 23 rd edition (Part 3125B): 2017
24.	Iron	mg/L	-	-	-	-	-	0.192	0.02 to 100 mg/L	APHA 23 rd edition (Part 3125B): 2017
25.	Manganese	mg/L	-	-	-	-	-	0.146	0.1 to 10 mg/L	APHA 23 rd edition (Part 3125B): 2017

INFERENCE Class - " D " — Propagation of Wild Life, Fisheries

- Note: 1. Additional analysis report No: W-1982A dated 04-12-2020 shall also be read for declaration of Inference of the sample Tested.
- The above results pertain only to the sample tested.
 - The report shall not be reproduced without the written approval of the laboratory.
 - Samples will be stored for a period of 15 days from the date of issue of report.
 - Decision Rule: "Statement of conformity / non conformity applies only to test results as per standard stipulated by regulatory authority".

Radha M.N
 Authorized Signatory (Biological)
 (Radha M. N)
 Assistant Scientific Officer

Farhath Jabeen
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 (Farhath Jabeen)
 Deputy Scientific Officer

---End of Report---

080-23238458
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KARNATAKA STATE POLLUTION CONTROL BOARD
CENTRAL ENVIRONMENTAL LABORATORY

Legal 42(3)/87,E(P)ACT, 1986 RECOGNISED ENVIRONMENTAL LABORATORY
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ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ಬೆಂಗಳೂರು
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ANALYSIS REPORT (ACCREDITED PARAMETERS)

Date: 21-12-2020

1	Station code	4107				Page-1 of 2	
2	Date & time of Sample taken	Date	27-11-2020	Time	11:05 AM	Type of Water Body	River
3	Name of Monitoring Station	Dakshina Pinakini River, near Mugalur Bridge				RO: Sarjapura	
4	Use Based Class	Class " E " - Irrigation, Industrial cooling, Controlled Waste disposal					
5	Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
6	Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
7	Depth of water body (meter)	> 50 cm	50-100cm ✓	>100 cm	Flood	AGENCY:	KARNATAKA
8	Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	30-11-2020
9	Colour	Clear	Turbid	Light Grey ✓	Brown	Date of completion of test	05-12-2020
10	Odour	None	Fishy	H ₂ S ✓	Other	Sample Report No.	W-2319
11	Particulars of sample collected	River Water Sample				Sample No.	W-2319

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
1.	Temperature	°C	-	-	-	-	-	24.9	-	Thermometric
2.	pH@25° C	-	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.0-8.5	6.8	2 to 12 Unit	IS 3025 (Part 11): 2002
3.	Conductivity@25° C	µs/cm	-	-	-	-	2250	866	10 to 5000 µs/cm	IS 3025 (Part 14): 2013
4.	Biochemical Oxygen Demand (3 days @ 27° C)	mg/L	2	3	3	-	-	39	2 to 300 mg/L	IS 3025 (Part 44): 2009
5.	Total Coliform	MPN /100ml	50	500	5000	-	-	1600x10 ⁵	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 A, B, C) 9-68 to 9-75: 2017
6.	Fecal Coliform	MPN /100ml	-	500 (Desirable) 2500 (Max permissible)	-	-	-	110x10 ⁵	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 E, D) 9-77 to 9-78: 2017
7.	Chemical Oxygen Demand	mg/L	-	-	-	-	-	280	4 to 1000 mg/L	IS 3025 (Part 58): 2006
8.	Ammonia as N	mg/L	-	-	-	-	-	18.3	0.1 to 50 mg/L	IS 3025(Part34):2003
9.	Turbidity	NTU	-	-	-	-	-	55.8	0.1 to 500 NTU	IS 3025 (Part 10): 2002

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ANALYSIS REPORT (NON ACCREDITED PARAMETERS)

Date: 07-11-2020

1	Station code	4107			Page 1 of 1		
2	Date & time of Sample taken	Date	09-09-2020	Time	11:40 AM	Type of Water Body	Lake
3	Name of Monitoring Station	Mugaluru Bridge			RO: Sarjapura		
4	Use Based Class	Class - " D" — Propagation of Wild Life, Fisheries					
5	Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
6	Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
7	Depth of water body (meter)	> 50cm	50-100 m ✓	> 100 cm	Flood	AGENCY:	KARNATAKA
8	Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	10-09-2020
9	Colour	Clear	Turbid	Light Grey ✓	Brown	Date of completion of test	28-09-2020
10	Odour	None	Fishy	H ₂ S	Other ✓	Sample Report No.	W-1343A
11	Particulars of sample collected	Lake water sample			Sample No.	W-1343	

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Test Method	
			A	B	C	D	E			
1.	Boron as B	mg/L	-	-	-	-	-	2.0	BDL	APHA 23rd edition (Part 4500B B); 2017
2.	Nitrate as N	mg/L	-	-	-	-	-	-	2.12	APHA 23rd edition (Part 4500-NO ₃ -D); 2017
3.	Magnesium as CaCO ₃	mg/L	-	-	-	-	-	-	52	IS 3025 (Part 46); 2003
4.	P – Alkalinity	mg/L	-	-	-	-	-	-	Nil	IS:3025 (Part 23); 2003
5.	Total Phosphate as P	mg/L	-	-	-	-	-	-	0.17	IS 3025 (Part 31); 2003
6.	Cadmium	mg/L	-	-	-	-	-	-	BDL	IS 3025 (Part 41); 2003
7.	Copper	mg/L	-	-	-	-	-	-	BDL	IS 3025 (Part 42); 1992
8.	Lead	mg/L	-	-	-	-	-	-	BDL	IS 3025 (Part 47); 2009
9.	Total Chromium	mg/L	-	-	-	-	-	-	BDL	IS 3025 (Part 52); 2003
10.	Nickel	mg/L	-	-	-	-	-	-	BDL	IS 3025 (Part 52); 2003
11.	Zinc	mg/L	-	-	-	-	-	-	BDL	IS 3025 (Part 49); 2003
12.	Fecal streptococci	MPN /100ml	-	-	-	-	-	-	48	APHA 23rd edition (Part 9230B) 9-118 no 9119-2017
13.	Bicarbonate (HCO ₃)	mg/L	-	-	-	-	-	-	176	APHA (23rd Edition); 2017; 2320 B; Table 2320-11
14.	Carbonate (CO ₃)	mg/L	-	-	-	-	-	-	Nil	

INFERENCE

Class - " D" — Propagation of Wild Life, Fisheries

Note: 1. Additional analysis report No: W-1343 dated 07-11-2020 shall also be read for declaration of Inference of the sample Tested

2. BDL: Below Detection Limit in mg/L
 Boron as B:0.1; Cadmium:0.1; Copper:0.05; Lead:0.2; Total Chromium:0.2; Nickel:0.1; Zinc:0.1; Manganese:0.

Microbiology Testing Laboratory

---End of Report ---

Water Testing Laboratory

Radia M. S.
 Section Head

R. S. R.
 Section Head



**KARNATAKA STATE POLLUTION CONTROL BOARD
CENTRAL ENVIRONMENTAL LABORATORY**

Legal 42(3)/87,E(P)ACT, 1986 RECOGNISED ENVIRONMENTAL LABORATORY
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IS 18001:2007 CERTIFIED LABORATORY

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೭ ನೇ 'ಡಿ' ಮುಖ್ಯ ರಸ್ತೆ, ಶಿವಮೊಗ್ಗ ರಸ್ತೆ,
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ANALYSIS REPORT (ACCREDITED PARAMETERS)

Date: 04-12-2020

1	Station code	4107				Page 1 of 2	
2	Date & time of Sample taken	Date	22-10-2020	Time	11.40 AM	Type of Water Body	Lake
3	Name of Monitoring Station	Mugaluru Bridge				RO: Sarjapura	
4	Use Based Class	Class - " D" — Propagation of Wild Life, Fisheries					
5	Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant
6	Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer
7	Depth of water body (meter)	> 50cm	50-100 cm ✓	> 100 cm	Flood	AGENCY:	KARNATAKA
8	Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	22-10-2020
9	Colour	Clear	Turbid	Light Grey ✓	Brown	Date of completion of test	23-11-2020
10	Odour	None	Fishy	H ₂ S	Other ✓	Sample Report No.	W-1982
11	Particulars of sample collected	Lake water sample				Sample No.	W-1982

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
1.	Temperature	°C	-	-	-	-	-	21	-	Thermometric
2.	pH@25° C	-	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.0-8.5	6.7	2 to 12 Unit	IS 3025 (Part 11): 2002
3.	Conductivity@25° C	µs/cm	-	-	-	-	2250	705	10 to 5000 µs/cm	IS 3025 (Part 14): 2013
4.	Dissolved Oxygen	mg/L	6	5	4	4	-	5.5	0.5 to 20 mg/L	IS 3025 (Part 38): 2003
5.	Biochemical Oxygen Demand (3 days @ 27° C)	mg/L	2	3	3	-	-	8.0	2 to 300 mg/L	IS 3025 (Part 44): 2009
6.	Total Coliform	MPN /100ml	50	500	5000	-	-	350x10 ²	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 A, B, C) 9-68 to 9-75: 2017
7.	Fecal Coliform	MPN /100ml	-	-	-	-	-	34x10 ²	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 E, D) 9-77to 9-78: 2017
8.	Chemical Oxygen Demand	mg/L	-	-	-	-	-	84	4 to 1000 mg/L	IS 3025 (Part 58): 2006
9.	Ammonia as N	mg/L	-	-	-	-	-	0.47	0.1 to 50 mg/L	IS 3025 (Part 34): 2003

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TC-5487

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KARNATAKA STATE POLLUTION CONTROL BOARD
CENTRAL ENVIRONMENTAL LABORATORY

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ANALYSIS REPORT (ACCREDITED PARAMETERS)

Date: 07-11-2020

1	Station code	4107		Page 1 of 2	
2	Date & time of Sample taken	Date	09-09-2020	Time	11:40 AM
3	Name of Monitoring Station	Mugalur Bridge		Type of Water Body	Lake
4	Use Based Class	Class - " D " — Propagation of Wild Life, Fisheries			
5	Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other
6	Weather	Cloudy	Clear ✓	Windy	Raining
7	Depth of water body (meter)	> 50cm	50-100 m ✓	> 100 cm	Flood
8	Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓
9	Colour	Clear	Turbid	Light Grey ✓	Brown
10	Odour	None	Fishy	H ₂ S	Other ✓
11	Particulars of sample collected	Lake water sample		Sample No.	W-1343

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
1.	Temperature	°C	-	-	-	-	-	21	-	Thermometric
2.	pH@25° C	-	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.0-8.5	6.5	2 to 12 Unit	IS 3025 (Part 11): 2002
3.	Conductivity@25° C	µs/cm	-	-	-	-	2250	649	10 to 5000 µs/cm	IS 3025 (Part 14): 2013
4.	Dissolved Oxygen	mg/L	6	5	4	4	-	5.1	0.5 to 20 mg/L	IS 3025 (Part 38): 2003
5.	Biochemical Oxygen Demand (3 days @ 27° C)	mg/L	2	3	3	-	-	5.0	2 to 300 mg/L	IS 3025 (Part 44): 2009
6.	Total Coliform	MPN /100ml	50	500	5000	-	-	2400	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 A, B, C) 9-68 to 9-75: 2017
7.	Fecal Coliform	MPN /100ml	-	-	-	-	-	480	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 E, D) 9-77to 9-78: 2017
8.	Chemical Oxygen Demand	mg/L	-	-	-	-	-	48	4 to 1000 mg/L	IS 3025 (Part 58): 2006
9.	Ammonia as N	mg/L	-	-	-	-	-	1.58	0.1 to 50 mg/L	IS 3025 (Part 34): 2003

P.T.O

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
10.	Turbidity	NTU	-	-	-	-	-	8.0	0.1 to 500 NTU	IS 3025 (Part 10): 2002
11.	Total Hardness as CaCO ₃	mg/L	-	-	-	-	-	116	1 to 2000 mg/L	IS 3025 (Part 21): 2009
12.	Calcium as CaCO ₃	mg/L	-	-	-	-	-	64	1 to 1000 mg/L	IS 3025 (Part 40): 2003
13.	Chloride as Cl	mg/L	-	-	-	-	-	95	1 to 2000 mg/L	IS 3025 (Part 32): 2003
14.	Sodium as Na	mg/L	-	-	-	-	-	85	1 to 1000 mg/L	IS 3025 (Part 45): 2003
15.	Potassium as K	mg/L	-	-	-	-	-	12	1 to 100 mg/L	IS 3025 (Part 45): 2003
16.	Sulphate as SO ₄	mg/L	-	-	-	-	-	25	1 to 1000 mg/L	IS 3025 (Part 24): 1992
17.	T - Alkalinity as CaCO ₃	mg/L	-	-	-	-	-	176	1 to 1000 mg/L	IS 3025 (Part 23): 2003
18.	Total Dissolved Solids	mg/L	-	-	-	-	-	454	10 to 2000 mg/L	IS 3025 (Part 16): 2006
19.	Fluoride as F	mg/L	-	-	-	-	-	0.22	0.1 to 100 mg/L	IS 3025 (Part 60): 2008
20.	Iron	mg/L	-	-	-	-	-	19.97	0.2 to 10 mg/L	IS 3025 (Part 53): 2006
21.	Manganese	mg/L	-	-	-	-	-	0.23	0.1 to 10 mg/L	IS 3025 (Part 59): 2006

INFERENCE

Class - " D " — Propagation of Wild Life, Fisheries

- Note: 1. Additional analysis report No: W-1343A dated 07-11-2020 shall also be read for declaration of Inference of the sample Tested.
- The above results pertain only to the sample tested.
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 Assistant Scientific Officer

Farhath Jabben
 Authorized Signatory (Chemical)
 (Farhath Jabben)
 Deputy Scientific Officer

---End of Report ---

Sl. No	Parameters	Unit	Water Quality Criteria					Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E			
10.	Turbidity	NTU	-	-	-	-	-	140	0.1 to 500 NTU	IS 3025 (Part 10): 2002
11.	Total Hardness as CaCO ₃	mg/L	-	-	-	-	-	272	1 to 2000 mg/L	IS 3025 (Part 21): 2009
12.	Calcium as CaCO ₃	mg/L	-	-	-	-	-	140	1 to 1000 mg/L	IS 3025 (Part 40): 2003
13.	Chloride as Cl	mg/L	-	-	-	-	-	156	1 to 2000 mg/L	IS 3025 (Part 32): 2003
14.	Sodium as Na	mg/L	-	-	-	-	-	111	1 to 1000 mg/L	IS 3025 (Part 45): 2003
15.	Potassium as K	mg/L	-	-	-	-	-	23	1 to 100 mg/L	IS 3025 (Part 45): 2003
16.	Sulphate as SO ₄	mg/L	-	-	-	-	-	19	1 to 1000 mg/L	IS 3025 (Part 24): 1992
17.	T - Alkalinity as CaCO ₃	mg/L	-	-	-	-	-	260	1 to 1000 mg/L	IS 3025 (Part 23): 2003
18.	Total Dissolved Solids	mg/L	-	-	-	-	-	818	10 to 2000 mg/L	IS 3025 (Part 16): 2003
19.	Fluoride as F	mg/L	-	-	-	-	-	0.29	0.1 to 100 mg/L	IS 3025 (Part 60): 2008
20.	Copper as Cu	mg/L	-	-	-	-	-	0.10	0.05 to 10 mg/L	IS 3025 (Part 42): 1992
21.	Zinc	mg/L	-	-	-	-	-	0.14	0.1 to 10 mg/L	IS 3025 (Part 49): 2003
22.	Iron	mg/L	-	-	-	-	-	1.50	0.2 to 10 mg/L	IS 3025 (Part 53): 2003
23.	Manganese as Mn	mg/L	-	-	-	-	-	0.30	0.1 to 100 mg/L	IS 3025 (Part 59): 2006

INFERENCE Class " D " - Propagation of Wild Life, Fisheries

Note: 1. Additional Test report No: W-421A dated 05-10-2020 shall also be read for declaration of Inference of the sample Tested.

- The above results pertain only to the sample tested.
- The report shall not be reproduced without the written approval of the laboratory.
- Samples will be stored for a period of 15 days from the date of issue of report.
- Decision Rule: "Statement of conformity / non conformity applies only to test results as per standard stipulated by regulatory authority".

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ಕರ್ನಾಟಕ ಸರ್ಕಾರ
ಪ್ರಮಾಣೀಕೃತ ಪರಿಸರ ಸಂರಕ್ಷಣೆ ಮತ್ತು
ಪ್ರಮಾಣೀಕೃತ ಪರಿಸರ ಸಂರಕ್ಷಣೆ ಮತ್ತು
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Shivanagar, Bangalore - 560079

ANALYSIS REPORT (ACCREDITED PARAMETERS)

Date: 09-11-2020

NAME OF THE LAKE :	Dakshina Pinakini River Sample at Chokkarasanappalli Mattanahalli Border, Bengaluru.	Page 1 of 1
SAMPLE COLLECTED BY :	N.12°51'47". E.77°49'55" RO: Sarjapura	DATE OF COMMENCEMENT OF TEST: 10-09-2020
DATE OF COLLECTION :	09-09-2020	DATE OF COMPLETION OF TEST : 23-09-2020
DATE OF RECEIPT :	10-09-2020	SAMPLE REPORT NO: W-1342
PARTICULARS :	River Water Sample	SAMPLE NO : W-1342

Sl	Parameters	Unit	Water Quality Criteria					Results	Range of testing/Limit of Detection	Test Method
			A	B	C	D	E			
1.	pH@25° C	-	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.0-8.5	6.5	2 to 12 Unit	IS 3025 (Part 11): 2002
2.	Conductivity@25° C	µs/cm	-	-	-	-	-	775	10 to 5000 µs/cm	IS 3025 (Part 14): 2013
3.	Dissolved Oxygen	mg/L	6	5	4	4	-	4.3	0.5 to 20 mg/L	IS 3025 (Part 38): 2003
4.	Biochemical Oxygen Demand (3 days @ 27 °C)	mg/L	2	3	3	-	-	16	2 to 300 mg/L	APHA 23 rd Edition (Part 4500-O-G): 2017
5.	Total Coliform	MPN /100ml	50	500	5000	-	-	920x10 ³	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 A, B, C) 9-68 to 9-75: 2017

INFERENCE

Class " D " Propagation of Wild Life, Fisheries

Note: 1. Additional analysis report No: W-1342A dated 09-11-2020 shall also be read for declaration of Inference of the sample Tested.
2. The above results pertain only to the sample tested.
3. The report shall not be reproduced without the written approval of the laboratory.
4. Samples will be stored for a period of 15 days from the date of issue of report.
5. Decision Rule: "Statement of conformity / non conformity applies only to test results as per standard stipulated by regulatory authority".

Radha M.N.
Authorized Signatory (Biological)
(Radha M. N)
Assistant Scientific Officer

Farhath Jabeen
Authorized Signatory (Chemical)
(Farhath Jabeen)
Deputy Scientific Officer

---End Of Report---

Sl. No.	Parameters	Unit	Results	Test Method
13	Chloride as Cl	mg/l	142	IS 3025 (Part 32): 2003
14	Sodium as Na	mg/l	59	IS 3025 (Part 45): 2003
15	Potassium as K	mg/l	13	IS 3025 (Part 45): 2003
16	Sulphate as SO ₄	mg/l	25.2	IS 3025 (Part 24): 1992
17	P - Alkalinity as CaCO ₃	mg/l	Nil	IS:3025 (Part 23): 2003
18	T - Alkalinity as CaCO ₃	mg/l	180	IS 3025 (Part 23): 2003
19	Total Dissolved Solids	mg/l	536	IS 3025 (Part 16): 2006
20	Total Phosphate as P	mg/l	0.12	IS 3025 (Part 31): 2003
21	Fluoride as F	mg/l	0.30	IS 3025 (Part 60): 2008
22	Boron as B	mg/l	BDL	APHA 23 rd edition (Part 4500B B): 2017
23	Bicarbonate (HCO ₃)	mg/l	180	APHA (23 rd Edition):2017;2320 B. Table 2.320-II
24	Carbonate (CO ₃)	mg/l	Nil	
25	Total Coliform	MPN/100 ml	920x10 ⁴	APHA 23 rd edition (Part 9221 A, B, C) 9-68 to 9-75: 2017
	Fecal Coliform	MPN/100 ml	120x10 ⁴	APHA 23 rd edition (Part 9221 E, D)9-77to 9-78: 2017
27	Cadmium as Cd	mg/l	BDL	IS 3025 (Part 41):1992
28	Copper as Cu	mg/l	0.63	IS:3025 (Part 42):1992
29	Lead as Pb	mg/l	BDL	IS:3025 (Part 47):1994
30	Total Chromium as Cr	mg/l	BDL	IS:3025 (Part 52):2003
31	Nickel as Ni	mg/l	BDL	IS:3025 (Part 54):2003
32	Zinc as Zn	mg/l	0.5	IS:3025 (Part 49):1994
33	Iron as Fe	mg/l	16.983	IS:3025 (Part 53):2003
34	Manganese as Mn	mg/l	0.84	IS:3025 (Part 59):2006

INFERENCE | Class-" E"—Irrigation, Industrial cooling, Controlled Waste disposal

- Note : 1. The above results pertain only to the sample tested.
 2. The report shall not be reproduced without the written approval of Head of the Laboratory.
 3. Samples will be stored for a period of 10 days from the date of despatch of report.
 4. BDL: Below Detection Limit in mg/L. Boron as B: 0.1; Cadmium as Cd:0.1;Lead as Pb:0.2; Total Chromium as Cr: 0.2;Nickel as Ni:0.1;

Radha M.N.
 Section Head
 Microbiology Testing Laboratory

[Signature]
 Section Head
 Water Testing Laboratory

..... End of Report

ANALYSIS REPORT (ACCREDITED PARAMETERS)

Date: 05-10-2020

1	Station code	4107			Page-1 of 2			
2	Date & time of Sample taken	Date	11-08-2020	Time	11:40 AM	Type of Water Body	River	
3	Name of Monitoring Station	Dakshina Pinakini River, Near Mugalur Bridge					RO: Sarjapura	
4	Use Based Class	Class "D". Propagation of Wild Life, Fisheries						
5	Visible Effluent Discharge in Proximity	None	Moderate ✓	High	Other	Completed by	Scientific Assistant	
6	Weather	Cloudy	Clear ✓	Windy	Raining	Verified by:	Deputy Scientific Officer	
7	Depth of water body (meter)	< 50 cm	50-100 m ✓	> 100 cm	Flood	AGENCY:	KARNATAKA	
8	Human Activities	Cattle Wading	Melon Farming	Fishing	Other ✓	Date of commencement of test	11-08-2020	
9	Colour	Clear	Turbid	Light Grey ✓	Brown	Date of completion of test	24-08-2020	
10	Odour	None	Fishy	H ₂ S	Other ✓	Sample Report No.	W-421	
11	Particulars of sample collected	River Water Sample					Sample No.	W-421

Sl. No	Parameters	Unit	Water Quality Criteria						Result	Range of testing / Limit of Detection	Test Method
			A	B	C	D	E				
1.	Temperature	°C	-	-	-	-	-	-	21	-	Thermometric
2.	pH@25° C	-	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.5	6.5	7.08	2 to 12 Unit	IS 3025 (Part 11): 2002
3.	Conductivity@25° C	µs/cm	-	-	-	-	2250	1232	1232	10 to 5000 µs/cm	IS 3025 (Part 14): 2013
4.	Dissolved Oxygen	mg/L	6	5	4	4	-	5.3	4.0	0.5 to 20 mg/L	IS 3025 (Part 38): 2003
5.	Biochemical Oxygen Demand (3 days @ 27° C)	mg/L	2	3	3	-	-	4.0	4.0	2 to 300 mg/L	IS 3025 (Part 44): 2009
6.	Total Coliform	MPN /100ml	50	500	5000	-	-	9200	9200	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 A, B, C) 9-68 to 9-75: 2017
7.	Fecal Coliform	MPN /100ml	-	-	-	-	-	940	940	Qualitative (<1.8 to >1600 MPN/100 ml)	APHA 23 rd edition (Part 9221 E, D) 9-77 to 9-78: 2017
8.	Chemical Oxygen Demand	mg/L	-	-	-	-	-	48	48	4 to 1000 mg/L	IS 3025 (Part 58): 2006
9.	Ammonia as N	mg/L	-	-	-	-	-	0.48	0.48	0.1 to 50 mg/L	IS 3025 (Part 34): 2003

P.T.O

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ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
ಕೇಂದ್ರ ಪರಿಸರ ಪ್ರಯೋಗಾಲಯ
Karnataka State Pollution Control Board
Central Environmental Laboratory

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ANALYSIS REPORT

Date: 06-08-2020

NAME OF THE PLACE :	Dakshina pinakini River, Near Mugalur Bridge, Mugalur, Bengaluru.	Page 1 of 1
SAMPLE COLLECTED BY :	RO: Sarjapura	DATE OF COMMENCEMENT OF TEST:28-05-2020
DATE OF COLLECTION :	27-05-2020	DATE OF COMPLETION OF TEST: 09-06-2020
DATE OF RECEIPT :	27-05-2020	SAMPLE REPORT NO: W-3407
PARTICULARS:	Soil Sample	SAMPLE NO : W-3407

Sl No.	Parameters	Unit	Results
1.	Cadmium as Cd	mg/ Kg	3.0
2.	Copper as Cu	mg/Kg	42.0
3.	Lead as Pb	mg/Kg	224.0
4.	Total Chromium as Cr	mg/Kg	32.0
5.	Nickel as Ni	mg/ Kg	21.0
6.	Zinc as Zn	mg/ Kg	73.0
7.	Iron as Fe	mg/ Kg	25361
8.	Manganese as Mn	mg/ Kg	145.0

Note: 1. The above results pertain only to the sample tested.
2. The Report shall not be reproduced without the written approval of Head of the laboratory.
3. Samples will be stored for a period of 15 days from the date of dispatch of report.
4. This method followed as per USEPA - 3050B.

H. K. S. P. C. B.
Section Head
Water Testing Laboratory
A. K. S. P. C. B.

---End of Report---

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ಕೇಂದ್ರ ಆರೋಗ್ಯ ಪ್ರಯೋಗಾಲಯ

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Legal 42(3)/87, E(P)ACT, 1986 RECOGNISED ENVIRONMENTAL LABORATORY

AN ISO/IEC 17025:2017 (NABL) ACCREDITED LABORATORY & BS 18001:2007 CERTIFIED LABORATORY

ANALYSIS REPORT (MINARS)

1	Station code	4107				Date : 4/8/2020				Page 1 of 2	
2	Date & time of Sample taken	Date :	27.05.2020	Time :	12.10AM	Type of Water Body				Lake	
3	Name of Monitoring Station	Dakahina pinakini river, near mugalur bridge									RO: Sarjapura
4	Use Based Class	Class -" E" -Irrigation, Industrial cooling, Controlled Waste disposal									
5	Visible Effluent Discharge	None	Moderate ✓	High	Other	Completed By	Hemanthini Scientific Assistant				
6	Weather	Cloudy	Clear ✓	Windy	Raining	Verified By	Deputy Scientific Officer				
7	Depth of water body (meter)	0.5 m	0.5-1.0 m ✓	<1.0 m	Flood	AGENCY	KARNATAKA				
8	Human Activities	None	Melon Farming	Fishing	Other✓	Date of Commencement of Test	27-05-2020				
9	Colour	Clear	Turbid	Light Grey✓	Brown	Date of Completion of Test	02/07/20				
10	Odour	None	Fishy	H ₂ S	Other✓	Sample No.	W-3406				
11	Particulars of sample collected	Lake Water Sample									W-3406
Sl. No.	Parameters	Unit	Results	Test Method							
1	Temperature	°C	21	Thermometric							
2	pH @ 25 °C	—	7.7	IS 3025 (Part 11): 2002							
3	Conductivity @ 25 °C	µs/cm	766	IS 3025 (Part 14): 2013							
4	Dissolved Oxygen	mg/l	1.0	IS 3025(Part 38) :1989							
5	Biochemical Oxygen Demand (3 days @ 27 °C)	mg/l	30	APHA 23rd edition (Part 4500-O- G): 2017							
6	Chemical Oxygen Demand	mg/l	189	IS 3025 (Part 58): 2006							
7	Nitrate as NO ₃ - N	mg/l	15.0	APHA 23rd edition (Part 4500-NO3- D): 2017							
8	Ammonical Nitrogen as NH ₄	mg/l	14.3	IS 3025 (Part 34): 2003							
9	Turbidity	NTU	53.4	IS 3025 (Part 10): 2002							
10	Total Hardness as CaCO ₃	mg/l	236	IS 3025 (Part 21): 2009							
11	Calcium as CaCO ₃	mg/l	124	IS 3025 (Part 40): 2003							
12	Magnesium as CaCO ₃	mg/l	112	IS 3025 (Part 46):2003							

P T O

Summary of items/works in respect of KSPCB as on 31.03.2021
(SI No. ii(i), ii(iv), iii(1), v(1), v(3), vii(1))

Sl. No. (MC-SL.No.)	Directions of Hon'ble NGT vide orders dated 18.02.2021	Progress as on 31.03.2021
1.	<p>ii) BWSSB may engage a CSIR Institute like CLRI or NEERI or others for evaluating performance of STPs located in K&C and Hebbal valleys. (viz., there are 32 STPs in Bangalore including 21 STPs in Koramangla & Challaghatta and Hebbal Valleys). The same may be supervised by KSPCB. The final report may be submitted to KSPCB for review.</p>	<p>A letter is addressed to BWSSB to furnish the status (copy enclosed)</p>
2.	<p>ii(iv) The outcome of the performance study of STPs may be submitted as Status of Compliance of the State Functionaries of Karnataka to the Monitoring Committee constituted in the matter of O.A 125/2017, for review and reporting.</p>	<p>After obtaining the performance study report, the same will be placed before the Monitoring Committee</p>
3.	<p>iii(1) Among the industries those that are Red/Orange category (small, medium and large) with treated effluent discharge option as surface water/sewer drain/others (which includes industries having ZLD) in River basin of Therpennai be monitored for effluent</p>	<p>KSPCB has issued Closure Directions to 72 nos. of defaulting during 2018-2020. Out of which 29 No's of closure directions were revoked after compliance.(Annexure-1).</p>

	<p>The Marshals with Emergency Response Vehicle will be engaged to identify any illegal discharge.</p>
<p>4. v(1) EC be calculated and imposed based on the Performance Evaluation of STPs and Random Verification of Grossly Polluting Industries.</p>	<p>The same will be carried out after obtaining the evaluation report</p>
<p>5. v(3) Calculation of EC by the three member Committee comprising of CPCB, TNPCB and KSPCB, after submission of Reports by the concerned authorities (BWSSB, KSPCB, TNPCB)</p>	<p>The same will be furnished to the CPCB</p>
<p>6. viii(1) The trend of water quality and its improvement at major confluence points may be monitored for the year 2021-22 on a monthly basis and a report be submitted to CPCB to ensure the quality of water flowing in River Therpennai.</p>	<p>KSPCB is monitoring the water quality of Therpennai or Dhakshinapinakini River near Muggalur Bridge. The water quality is confirming to D/E Class of Primary Water Quality Criteria. Dakshinapinakini is not a Perennial river and the flow is only treated/untreated partial sewage from K&C Valley of BWSSB. The river water quality can be improved if and only when the sewage is treated in the STPs. (Annexure-2)</p>


MEMBER SECRETARY
KARNATAKA STATE POLLUTION CONTROL BOARD

LIST OF INDUSTRIES HAVE BEEN ISSUED CLOSURE DIRECTIONS					
Sl No	Name and Address of the Industry	Category	Date of Issue	Remarks	
1	Kumar Organic Products Limited , Plot No.60/65, Road No.3, Jigani Industrial Area, Anekal, Bangalore Urban - 562106	LR	26.10.2018	Revocation order issued under Water and Air Act on 07.09.2019	Revoked
2	Kumar Organic Products Private Limited, ; Plot NO:62, Road NO:3 & 5, Jigani Industrial Area, Anekal Taluk, Bangalore Urban District - 560105	LR	26.10.2018	Revocation order issued under Water and Air Act on 07.09.2019	Revoked
3	Sharada Electrochem, No. S.P 175, 1st Phase, Jigani, KSSIDC Industrial Area, Anekal Taluk, Bengaluru Urban District - 560105	SR	05.11.2018	Revocation order issued under Water and Air Act on 04.06.2019	Revoked
4	Sri Shivashakthi Rubbers, No.84-P4, 1st Phase, J.I.A, Jigani Hobli, B'lore	SR	13.11.2018	Revocation order issued under Water Act on 24.01.2019	Revoked
5	Sathya Industries, No.142/145,Jigani Industrial Area, Dr. B.R Ambedkar Industrial Estate, 1st Phase, Anekal Taluk, Bengaluru Urban District - 560 106	SR	19.11.2018	Revocation order issued under Water Act on 22.12.2018	Revoked

6	Pavithra Chemicals, No. 183, Jigani, KSSIDC Industrial Estate, Jigani, Anekal Taluk, Bengaluru Urban District	SR	05.11.2018	Revocation order issued under Water Act on 31.12.2019	Revoked
7	Shine Chemical Industries, No.SP-165, Jigani Industrial Estate, Jigani, Anekal Taluk, Bengaluru Urban District - 562106	SR	24.11.2018	Revocation order issued under Water and Air Act on 17.09.2019	Revoked
8	SB Refineries, Plot No. 81, Bommasandra - Jigani Link Road Industrial Area, 4th Phase, Anekal Taluk, Bangalore Urban District- 560099	SO	26.06.2018	Revocation order issued under Water and Air Act on 02.05.2019	Revoked
9	Chowdeshwari Brick Industry, Survey No. 271/3 & 271/2B, Haragadde Village, Jigani Hobli, Anekal Taluk, Bangalore Urban District	SG	25.03.2019	Industry demolished	Closed
10	Vohra Packaging, No:94, Ii Phase, , Jigani Industrial Area, Anekal, Bangalore Urban - 562106	SG	25.03.2019	Revocation order issued under Water Act on 04.09.2019	Revoked
11	Poonam's Furniture House, No. 121/3, Kachanayakanahalli Village, Hennagara Post, Jigani Hobli, Anekal Taluk, Bangalore Urban District	SG	25.03.2019	Industry demolished	Closed
12	Poonam's Interiors & Decorators, Survey No. 121/2, Kachanayakanahalli Village, Hennagara Post, Jigani Hobli, Anekal Taluk, Bangalore Urban District	SG	25.03.2019	Industry demolished	Closed

13	Yashashwini Concrete Blocks & Its Allied Products, Survey No. 342, Hulimangala Village, Jigani Hobli, Anekal Taluk, Bangalore Urban District	SG	25.03.2019	Closed	Closed
14	Ekomate Systems India Private Limited, Plot No. 141, Bommasandra - Jigani Link Road Industrial Area, 4th Phase, Anekal Taluk, Bangalore Urban District- 560 099	SG	27.03.2019	Revocation order issued under Water Act on 03.06.2019	Revoked
15	Sapthagiri Brick Works, Survey Nos. 345/2A 345/2B & 346/1, 346/3 & 346/36 of Anekal Town, Kasaba Hobli, Anekal Taluk, Bangalore Urban District	SG	27.03.2019	Closure order inforce	Closure order inforce
16	Hatson Agro Product Limited, Anekal Chilling Center., Sy No. 382, Marsoor Village, Bangalore	SO	27.03.2019	Closed	Closed
17	Leo Concrete Pvt Ltd., D.L.F Maiden Heights, # 260/1, Rajapura, Jigani Link Road, Bangalore	SG	27.03.2019	Closed	Closed
18	Maini Materials Movement Private Limited, Survey No. 150/1, Bandapura Village, Marsur Post, Kasaba Hobli, Anekal Taluk, Bangalore Urban District	SG	27.03.2019	Closure order inforce	Closure order inforce
19	Jyothi Can Mix, 93/2, Audadenahalli Village, Kasaba Hobli, Bangalore	SG	27.03.2019	Closed	Closed
20	R.S.R Stone Works, 23/P, 50, Thammanayakanahalli, Kasaba Hobli, Anekal Taluk, Bangalore	SO	27.03.2019	Temporarily closed	Closed
21	Sudarshan Brick Works, Survey Nos. 5 & 7, Chikkahagade Village, Sidi Hosakote Post, Kasaba Hobli, Anekal Taluk, Bangalore Urban District	SG	27.03.2019	CFO issued from this office vide No. A-108866 dtd: 11.02.2019 valid up to 31.12.2025 under Air Act.	Revoked

22	N.R Granites, Sy No. 5/1, Agara Thimmanahalli, Kasaba Hobli, Bangalore	SG	27.03.2019	Closed	Closed
23	Nagarjuna Chamber Brick Works, Survey No. 492, Bodarahalli, Sidi Hosakote (Post), Kasaba Hobli, Anekal Taluk, Bangalore Urban District	SG	27.03.2019	Closed	Closed
24	P.K Plastics, Sy No. 30/29, Thirupalya , Angala Main Road, Near New Town Layout, Jigani Hobli, Anekal Taluk, Bengaluru Urban District	SO	17.09.2019	Closure order inforce	Closure order inforce
25	Sri Shivashakthi Rubbers, No.84-P4, 1st Phase, Jigani Industrial Area, Jigani Hobli, Bengaluru	SR	02.01.2020	Closure order issued. Applied for revocation of closure order.	Closure order inforce
26	Manjunatha Metal Finishers, No. 105, 4th Phase, Bommasandra Jigani Link Road, Anekal Taluk, Bengaluru	SR	23.01.2020	Closed	Closed
27	Shine Electroplating Industries, No. 105, 4th Phase, Bommasandra Jigani Link Road, Anekal Taluk, Bangalore	SR	23.01.2020	Revocatio n order issued under Water Act on 05.08.202 0	Revoke d
28	Power Control Equipment, Unit-II, ; Plot No.40-A, Phase-I, Road No.3, Jigani Indl. Area, Bangalore.	MR	05.02.2020	Revocatio n order issued under Water and Air Act on 21.03.202 0	Revoke d
29	Ravi Industries, Plot No. 206, Survey No. 239- P, Bommasandra - Jigani Link Road Industrial Area, Anekal Taluk, Bengaluru Urban District - 560 099	SR	05.02.2020	Revocatio n order issued under Water and Air Act on 02.03.202 0	Revoke d

30	Sun Clad Coaters, Plot No.18/A, 2nd Phase KSSIDC Indl. Area, Jigani, Anekal Taluk, Bangalore.	SR	05.02.2020	Revocation order issued under Water and Air Act on 22.04.2020	Revoked
31	Aron Universal Private Limited, Survey No: 25/1, Jigani Industrial Area, 2nd Phase, Anekal Taluk, Bengaluru Urban District - 560105	LR	05.02.2020	Revocation order issued under Water and Air Act on 14.07.2020	Revoked
32	Arihant Metals & Extruded Private Limited, Plot No. 9-L, Yarandahalli, Bommasandra Industrial Area, I Phase, Anekal Taluk, Bengaluru Urban District - 562 158	MR	06.02.2020	Revocation order issued under Water and Air Act on 02.03.2020	Revoked
33	Saify industries (plant-3),(formerly Automax) ; Plot No.75, Jigani Indl Area, Jigani, Anekal Taluk, Bengaluru Urban District - 560 099	MR	05.02.2020	Hon'ble High Court order industry was operating (W.A No. 3532/2020 dtd: 02.03.2020) & applied for revocation of closure order	Revoked
34	Vishal Precision Steel Tubes & Stripes Pvt Ltd (Formerly known as Arryaa Bright Industries,) Unit-2, Plot No. 88, Bommasandra Jigani Link Road, 4th Phase, Bommasandra Indl Area, Bangalore	SR	05.02.2020	Industry permanently closed	Closed

35	Omax Autos Limited, Plot No. 6, KIADB Industrial Area, Bommasandra - Jigani Link Road Industrial Area, 4th Phase, Anekal Taluk, Bangalore Urban District- 560 099	LR	05.02.2020	Revocation order issued under Water Act on 02.02.2020	Revoked
36	Stellance Pharmascience Ltd., (Formerly Karnataka Chemzyn Limited,), Plot No:456/1 A&B, Jigani Industrial Area, Anekal, Bangalore Urban District	LR	20.03.2020	Closure order issued. Applied for revocation of closure order.	Closure order inforce
37	Progressive Poly Pack Industries, Plot No. 90, Road No. 3, Bommasandra Industrial Area, 4th Phase, Anekal Taluk, Bangalore Urban District- 560 099	SG	22.06.2020	CFO issued from this office vide No. AW-110206 dtd: 14.06.2019 valid up to 31.12.2025 under Water and Air Act.	Revoked
38	Murugan Dyeing Unit, Ward. No.191, 7th Cross, Bhuvaneshwari Layout, Naganathapura, Bengaluru 100	Red	17.12.2018	Closed	Closed
39	Abhishek Washing Tech (Other name Sneha Fab Solutions) No.7, Lakshmi Layout Main Road, Chikkabegur Road, Bengaluru	Red	17.12.2018	Closed	Closed
40	Jayalakshmi Dyeing, Lakshmi Layout, G B Palya, Begur Hobli, Bengaluru	Red	17.12.2018	Closed	Closed
41	V M Process, Sy.No.182, Begur Village, Begur Hobli, Bengaluru	Red	03.01.2019	Closed	Closed
42	Srindraj Dyeing, Lakshmi Layout, Garvebhavi Pallya, Begur Hobli, Bengaluru	Red	16.01.2019	Closed	Closed
43	Sachin Design Creations, 13th Main, 18th Cross, Viratanagar, Bommanhalli, Bengaluru	Red	30.01.2019	Closed	Closed

44	Shree Mahalakshmi Dyeing Works , No.55, 3rd Cross, Mangammanpallya Main Road, Popular Colony, Bommanhalli, Bengaluru - 560068	Red	22.02.2019	Closed	Closed
45	Subramani Dyeing Works, 8th Cross, Hongasandra, Begur Post, Bengaluru -560068	Red	22.02.2019	Closed	Closed
46	Om Shakthi Dyeing Works, No.97/7B, No. 253, Balakrishna Reddy Building, Hongsandra, Bengaluru- 560068	Red	26.02.2019	Closed	Closed
47	H.M.Process, Sy.No. 176/65, Bilekhalli, Bannerughatta Main Riad, Bengaluru	Red	28.06.2019	Closed	Closed
48	Manjunatha Condiments , No. 166/7, Amruthappa layout, Doresanipallya, BG Road, Bengaluru	Orange	06.07.2019	Closed	Closed
49	Hyat Heat Transformers.No. 860/1, Bilekhalli, Doresanipallya, Bg Road, Bengaluru	Orange	06.07.2019	Closed	Closed
50	MA Interiors & Manufacturrers.No. 116/7, Amruthappa Layout, Bengaluru	Green	06.07.2019	Closed	Closed
51	Om Shakthi Dyeing Works, Sy.No. 230, Begur Village & Hobli, Bengaluru	Red	19.07.2019	Closed	Closed
52	Velkan Engineering Pvt Ltd, 139/1/7A, Sarvabhuma Industrial Area, Behind HSBC, Futura, Bannerghatta Road, Bangalore - 560076.	Green	16.09.2019	Closed	Closed
53	Samrudhi Packaging Industry. NO. 83/2, Doddamma Layout, Hulimavu Road, Bengaluru	Green	17.09.2019	Closed	Closed
54	Ravika Creations, No. 62/4, Bommanahalli, Begur Road, Bengaluru	Green	18.09.2019	Closed	Closed
55	TMA Hospitality Services Pvt Ltd., Ammis Biryani-Central Kitchen, No.3, Begur Kodichikkanahalli Road, Bommanahalli, Bangalore-61.	Red	18.09.2019	Closed	Closed
56	Rakashan Enterprises, No.14, Kunnappa Industrial Estate, Doddakallasandra, Kanakapura Main Road, Bangalore-560 062	Red	18.09.2019	Closure order revoked & Operating	Revoke d

57	Thirumala Dyeing Work, No. 13, 3rd Cross' Lakshmi Layout, Garvebhavipallya, Bengaluru	Red	27.09.2019	Closed	Closed
58	Prime Lences Pvt Ltd. No. 229/296/264, NR Layout, roopena Agarahara, Bengaluru	Orange	18.12.2019	Closed	Closed
59	Sri Lakshmi Ranganatha Industries, No.78, Singasandra Village, Begur Hobli, Bengaluru	Red	29.05.2020	Closed	Closed
60	Jax Green Tech, Plot No. 93, KIADB Industrial Area, 4th Phase, Malur, Kolar District.	Small Red	Closure direction issued by the Board on 24.12.2019.	For not adopting SOP compliances	Closure order inforce
61	Bangalore Enamels Paints & Chemicals Plot No. 3E, Doddenkundi Indl Area, I Phase, Whitefld Road Mahadevapura Post Bangalore East Taluk	Orange	05.09.2019	Closure order inforce	Closure order inforce
62	Chamundeshwari Stone Crusher Sy. No. 21/3, Bidarahalli Hobli, Mittaganahalli, Bengaluru East Taluk, Bengaluru 562 149	Orange	12.09.2019	revoked closure order on 21.11.2019.	Revoked
63	CPF India Pvt. Ltd. (Formerly Charoen Pokhand (India) Pvt ltd., (Food Division)) Sy No. 34, mandur Village and post Budigere Road, Bidarahalli Hobli Bangalore East Taluk	Green	04.10.2018	revoked closure order on 02.02.2019	Revoked
64	Elite Vehicles Pvt LTd Plot No. 2, Dyavasadrna Indl Area, 2nd phase, Bangalore East Taluk	Orange	22.06.2018	revoked closure order on 17.12.2018	Revoked
65	Barque Hotel Private Limited (Formerly Hotel Formule 1, (A Unit of Mandakini Constructions Pvt Ltd) Plot No. 4, EPIP, Zone, EOIZ Indl Area Phase-II, Whitefield Road Bangalore East Taluk	Orange	04.10.2018 & 11.10.2018 (apc & wpc)	revoked closure order on 15.05.2019	Revoked
66	Khivraj Motors No. 174/1C and Katha no. 431 Hoodi Village, Whitefield Road Bangalore East Taluk	Orange	27.09.2019	Closed	Closed
67	Mallya Steel Industries No. 28/A, Vishweshwariah Indl Area Mahadevapura Bangalore East Taluk	Red	18.09.2019	revoked closure order on	Revoked

				07.01.2020	
68	New Whites Laundry Sy No. 36/2, Doddagubbi Village, Doddagubbi main road, Bidarahalli Hobli, Bengaluru East Taluk, Bengaluru	Orange	16.11.2018	Closed	Closed
69	Shakthi Food And Beverages Services LLP Plot No. 02, Vishveshwaraiah Industrial Area, Mahadevapura Post, K.R Puram Hobli, Bengaluru 560 048	Orange	18.09.2019	revoked closure order on 01.06.2020.	Revoke d
70	Silicon Steel Pvt. Ltd, Plot No. 39, 12th Mile, Old Madras Road, ,Bangalore East Taluk	Orange	23.06.2018	revoked closure order on 07.09.2018	Revoke d
71	Jaskey Exports Pvt. Ltd.No. 91/3, Shed No.1 & 2, Dhruva Industrial Estate Cheemasandra Village, Bidarahalli Hobli, Bengaluru East Taluk.	Green	19.07.2019	revoked closure order on 23.10.2019.	Revoke d
72	Swastik Bright Industries Plot No 34, Rampura Village, Bidarahalli Hobli, Bengaluru East Taluk.	Red	03.06.2019	revoked closure order on 24.07.2020	Revoke d

Annexure -2

Water Quality of the river Dakshina Pinakini near Mugalur Bridge

Year	Sampling Location	Date Of Sample Collection	Classification				
			A	B	C	D	E
2018-19	Dakshina Pinakini River, Near Mugalur Bridge, Mugalur, Bengaluru	24.05.2018	-	-	-	D	-
		12.06.2018	-	-	-	-	E
		26.07.2018	-	-	-	-	E
		14.08.2018	-	-	-	-	E
		18.09.2018				D	
		26.10.2018	-	-	-	D	-
		27.11.2018	-	-	-	D	-
		14.12.2018	-	-	-	-	E
2019-20		11.04.2019	-	-	-	D	-
		18.05.2019	-	-	-	-	E
		03.05.2019	-	-	-	-	E
		14.03.2019	-	-	-	-	E
		05.02.2019	-	-	-	-	E
		16.01.2019	-	-	-	D	-
		14.06.2019	-	-	C	-	
		16.07.2019	-	-	-	D	-
	5.08.2019	-	-	-	-	E	
	6.08.2019	-	-	-	-	E	
	17.10.2019	-	-	-	D	-	
	05.11.2019	-	-	-	-	E	
	17.09.2019	-	-	-	D	-	
	12.12.2019	-	-	-	-	E	
30.01.2020	-	-	-	D	-		
2020-21	09.01.2020	-	-	-	-	E	
	22.04.2020	-	-	-	-	E	
	27.05.2020	-	-	-	-	E	

Thenpennaiyar River Water samples collected at Chokarasanapalli village at the inter State Border (on Behalf of TNPCB during Joint Monitoring Committee Visit from September 2017 to May 2018)

Sl. No.	Parameter	Units	Date of Sample Collection								
			20.09.2017	24.10.2017	21.11.2017	12.12.2017	18.01.2018	22.02.2018	22.03.2018	26.04.2018	24.05.2018
1	pH	Number	7.13	7.65	7.28	6.90	7.58	7.89	7.72	7.54	7.32
2	Total Suspended Solids	mg/l	-	-	38	36	38	36	34	42	44
3	Total Dissolved Solids	mg/l	610	-	1040	780	880	760	1510	1008	1160
4	Chloride	mg/l	-	-	325	320	360	300	320	400	440
5	Sulphate	mg/l	-	-	260	140	160	120	140	200	210
6	Oil and Grease	mg/l	-	-	1.0	1.0	1.0	1.0*	1.0*	1.0*	1.0*
7	BOD 3 days at 27°C	mg/l	6	10	20	30	26	28	26	32	26
8	COD	mg/l	64	-	64	88	80	80	80	88	88
9	Conductivity	mg/l	1050	-	1368	1280	1050	1403	1760	1388	1154
10	Dissolved Oxygen	mg/l	1.0*	1.0*	1.0*	1.0*	2.60	4.20	2.60	1.00	1.0*
AEL, TNPCB, Salem											
11	Total Coliform	MPN / 100 ml	1400	2200	110000	350000	280000	170000	170000	140000	170000
12	Fecal Coliform	MPN / 100 ml	490	----	----	----	----	----	----	----	----

Thenpennaiyar River Water sample collected at Chokarasanapalli village at inter State Border by the DEE, TNPCB, Hosur from June 2018 to December 2018

Sl. No.	Parameter	Units	Date of Sample Collection						
			28.06.2018	25.07.2018	22.08.2018	27.09.2018	26.10.2018	29.11.2018	31.12.2018
1	pH	Number	7.68	7.56	6.22	7.16	7.44	6.13	5.87
2	Total Suspended Solids	mg/l	18	96	260	124	36	24	24
3	Total Dissolved Solids	mg/l	808	960	986	972	716	670	708
4	Chloride	mg/l	205	185	225	410	200	275	244
5	Sulphate	mg/l	91	117	20	60	43	36	38
6	Oil and Grease	mg/l	1.0*	1.0*	1.0*	1.0*	2.0*	1.0*	2.0
7	BOD 3 days at 27°C	mg/l	6.0	16	12	20	22	32	32
8	COD	mg/l	40	80	80	80	160	128	80
9	Dissolved Oxygen	mg/l	0.88	2.55	-	2.30	1.94	2.12	5.40
AEL, TNPCB, Salem									
10	Total Coliform	MPN / 100 ml	----	220000	17000	1700	2100	2200	2800
11	Fecal Coliform	MPN / 100 ml	----	----	----	----	----	----	----

Thenpennaiyar River Water samples collected at Chokarasanapalli village at the inter State Border by the TNPCB, DEE, Hosur from January 2019 to December 2019

Sl. No.	Parameter	Units	Date of Sample Collection											
			24.01.2019	22.02.2019	28.03.2019	11.04.2019	09.05.2019	20.06.2019	11.07.2019	16.08.2019	20.09.2019	18.10.2019	27.11.2019	25.12.2019
1	pH	Number	7.12	6.57	6.19	6.38	7.50	6.72	7.64	7.62	8.14	7.42	7.92	8.23
2	Total Suspended Solids	mg/l	18	26	38	40	18	28	568	540	280	126	38	450
3	Total Dissolved Solids	mg/l	702	852	810	928	698	1620	968	788	654	624	760	754
4	Chloride	mg/l	265	250	230	230	200	640	425	235	195	325	220	220
5	Sulphate	mg/l	42	42	40	7.0	19.0	299	148	81	35	88	59	138
6	Oil and Grease	mg/l	1.0*	1.0	1.0*	2.0	2.0	1.0*	1.0*	2.0	1.0*	1.0*	3.0	16
7	BOD 3 days at 27°C	mg/l	14	18	16	24.0	10.0	20	56	152	10	15	48	40
8	COD	mg/l	80	176	80	200	48	80	104	216	152	96	72	96
9	Dissolved Oxygen	mg/l	13.8	4.15	4.56	3.34	4.00	4.20	2.08	4.58	2.86	2.21	5.04	3.21
AEL, TNPCB, Salem														
10	Total Coliform	MPN / 100 ml	----	3300	2400	2400	2100	3500	3400	2800	3500	4300	3900	4800
11	Fecal Coliform	MPN / 100 ml	----	----	----	----	----	----	----	----	----	----	----	----

Thenpennaiyar River Water samples collected at Chokarasanapalli village at the inter State Border by the TNPCB, DEE, Hosur from January 2020 to April 2021

Sl. No.	Parameter	Units	Date of Sample Collection														
			23.1.20	20.2.20	19.3.20	22.5.20	26.6.20	30.7.20	20.8.20	24.9.20	22.10.20	26.11.20	24.12.20	20.01.21	25.02.21	25.3.21	27.4.21
1	pH	Number	8.12	8.01	7.91	8.01	6.95	7.15	7.24	7.19	5.58	7.01	6.89	7.63	7.04	6.35	6.92
2	Total Suspended Solids	mg/l	548	308	140	122	756	324	958	258	204	136	40	100	72	94	84
3	Total Dissolved Solids	mg/l	820	866	832	662	502	616	632	598	890	468	794	696	244	150	728
4	Chloride	mg/l	250	225	210	185	130	160	180	157	125	175	209	205	200	90	180
5	Sulphate	mg/l	98	143	74	117	79	37	112	24	26	92	11	74	26	40	42
6	Oil and Grease	mg/l	1.0*	1.0	1.0*	6.00	2.00	1	1	2	1.0*	4	2	2	2	2	4
7	BOD 3 days at 27°C	mg/l	12	40	42	48	21	47	33	24	27	44	40	31	47	40	23
8	COD	mg/l	144	176	96	128	128	72	168	320	96	3.36	272	152	168	224	136
9	Dissolved Oxygen	mg/l	3.72	0.31	2.40	2.79	0.32	4.77	4.61	4.3	3.2	0.88	0.42	0.39	0.51	0.96	0.21
10	Dissolved Phosphate	mg/l	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Total Hardness	mg/l	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Sulphide	mg/l	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	Total Coliform	MPN / 100 ml	5800	6300	1200	210	940	1100	1400	2200	840	1700	∞	1300	1400	2600	-
14	Fecal Coliform	MPN / 100 ml	----	----	-	----	----	----	----	----	----	----	----	----	----	-	-

Inference

From the ROA it reveals that the parameters such as BOD, DO & Total Coliform are not meeting with the Designated Best Use Water Quality Criteria Class B prescribed by CPCB

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District Environmental Engineer
TNPCB, HOSUR



TAMIL NADU POLLUTION CONTROL BOARD

From

Dr . M. Senthilkumar, M.E., Ph.D.,
District Environmental Engineer,
Tamilnadu Pollution Control Board,
Plot No: I49-A, SIPCOT -1, Dharga,
Hosur - 635 126.

To

The Regional Director,
Regional Directorate (South),
Central Pollution Control Board,
"Nisarga Bhawan", A-Block, 1st & 2nd
Floors,
Thimmaiah Road, 7th D Main,
Shivanagar, Bengaluru-560 079.

Lr. No. F- 46 TECH/NGT //DEE/TNPCBHSR/2021, Dated: 25.05.2021

Sub: TNPC Board - O/o. DEE, Hosur - Honb'le NGT (SZ), Chennai order in the matter of O.A.No.111 of 2020 (SZ) regarding "Frothing of Chemical Foam in the River Thenpennai" - Action taken report - Oh behalf of Tamilnadu Pollution Control Board - Submitted - reg.

Ref:1 Hon'ble NGT Order dated 18.02.2021 in the matter of O.A.No.1-11 of 2020 (SZ) regarding "Frothing of Chemical Foam in the River Thenpennai"

2 File No.Tech (39)/Legal (NGT)/RDS/2020-21, Dated: 26.2.2021

3 Minutes of Joint Committee meeting in O A No 111 of 2020 held on 24.5.2021

With reference to the above, I submit herewith the status of action taken report as on 21-5-2021 on short Term & Long Term action plan in the Joint Committee Report in the matter of O. A.No.111 of 2020 by Tamilnadu Pollution Control Board for favour of kind information and further action please.

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Encl: as above

District Environmental Engineer
Tamil Nadu Pollution Control Board,
Hosur.

ACTION TAKEN REPORT ON SHORT TERM & LONG TERM ACTION PLAN IN THE JOINT COMMITTEE REPORT IN THE MATTER OF O.A NO. 111 OF 2020 BY TAMILNADU POLLUTION CONTROL BOARD (AS ON 21-05-2021)

- ❖ **Status of Compliance and Action Taken Report on the Action Plan**
[Action Points [III (1), V (2), V (3), VI (1), VI (2), VII (1)]]

Submitted by

**DISTRICT ENVIRONMENTAL ENGINEER
TAMILNADU POLLUTION CONTROL BOARD
HOSUR, KRISHNAGIRI DISTRICT**

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
I. Random Verification of grossly polluting (water polluting) industries located in the River Basin and Assessment of wastewater management and discharge mode.				
<p>1. Among the industries those that are Red/Orange category (small, medium and large) with treated effluent discharge option as surface water/sewer drain/others (which includes industries having ZLD) in River basin of Thenpennai be monitored for effluent characteristics by concerned SPCBs, so as to ascertain the quality of treated effluent discharge as per the Consent Conditions of SPCBs. The details of the compliance status and action taken report be placed in public domain (TNPCB and KSPCB website).</p>	<p>TNPCB (Six months)</p>	<p>There is no discharge of industrial effluent into river Thenpennai in the area under investigation ie., from Chokkarasanapalli Village to Kelavarapalli Dam stretch.</p> <p>1) M/s. Premier WVG & SPG Mills Pvt Ltd., Belathur Village, Bagalur / (Red-Large) located nearby the river stretch. It is an textile dyeing and weaving unit having ZLD system and there is no discharge of sewage/trade effluent into outside the unit premises.</p> <p>The details of STP and ZLD based ETP system installed for the treatment of sewage and trade effluent is enclosed vide Annexure-I.</p> <p>The report of Analysis (ROA) of treated sewage and treated trade effluent (RO Permeate) collected</p>	<p>The industries located in the area covered under the investigation in Thenpennaiar River Basin are closely monitored by the TNPC Board to ensure zero liquid discharge.</p>	<p>The unit is located at a distance of 900 meter from River Thenpennai.</p> <p>Renewal Consent with validity upto 31.03.2022.</p>

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
		<p>from the unit for the past one year (Jan 2020 to March 2021) is enclosed vide Annexure-II. From the ROA, it reveals that the quality of treated sewage and treated trade effluent are satisfying the standards prescribed by the TNPC Board.</p> <p>The report of analysis (ROA) of AAQ/SM survey conducted in the vicinity of the unit during the period 26.08.2020 is enclosed vide Annexure-III. From the ROA, it reveals that the pollutant parameters are well within the standards prescribed by the TNPC Board.</p>		
V. Environmental Compensation be imposed by SPCBs after evaluating performance of STPs and identification of defaulters upon Random Verification				
2. EC be calculated and imposed based on Random Verification of Grossly Polluting Industries.	TNPCB (Six months)	No violating/defaulting industries are identified.	-	-
3. Calculation of EC by the three member Committee comprising of CPCB, TNPCB and KSPCB, after submission of Reports by the concerned authorities (BWSSB, KSPCB,	CPCB (Six months on receipt of the Study Report and recommendations/criteria for imposing EC from KSPCB and TNPCB)			

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
TNPCB).				
VI. Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai up till Kelavarapalli				
1. Feasibility study for providing Sewage Treatment options (such as oxidations ponds/ diversion channels or wetlands etc.) by TNPCB followed by implementation by Local authority of the district.	Feasibility study by TNPCB in consultation with local authority for implementation (Six months)	Construction of diversion channel with wet land system at a cost of Rs. 25 Lakh has been provided at Bagalur village (about 90% civil works completed) for the treatment of sewage generated from part of the Bagalur village by the local body of Hosur Panchayat Union.	The wet land for the stream #1 will be completed on 30.06.2021 For the remaining four stretches, construction of wetland system will be executed after approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed before 31.10.2021.	Bagalur village. Additional time requested by the local body due to COVID Pandemic situation
		Construction of diversion channel with wet land system at a cost of Rs. 24 Lakh has been provided at Belathur village (about 90% civil works completed) for the treatment of sewage generated from part of the Belathur village by the local body of Hosur Panchayat Union.	The wet land for the stream #1 will be completed on 30.06.2021. For the remaining stretches, construction of wetland system will be executed after approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed before 31.10.2021.	Belathur village Additional time requested by the local body due to COVID Pandemic situation

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
			Construction of diversion channel with wet land system for the treatment of sewage generated from the Sokkarasanapalli village will be carried by the Hosur Panchayat Union after obtaining necessary approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed within 5 months.	Sokkarasanapalli village. Additional time requested by the local body due to COVID Pandemic situation
		The sewage generated from part of the 70 houses is being treated through the septic tank followed by the soak pit.	Construction of diversion channel with wet land system for the treatment of part of sewage generated from the Chennasandiram village will be carried by the Hosur Panchayat Union after obtaining necessary approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed within 5 months.	Chennasandiram Additional time requested by the local body due to COVID Pandemic situation
		The sewage generated from part of 125 houses is being treated through the septic tank followed by the soak pit.	Construction of diversion channel with wet land system for the treatment of part of sewage generated from the Kanimangalam village will be carried by the Hosur Panchayat Union after obtaining necessary approval of District Collector, Krishnagiri	Kanimangalam Additional time requested by the local body due to COVID Pandemic situation

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
			under grey water management scheme and the works will be completed within 5 months.	
		The sewage generated from 40 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Guliganapalli (Kodiyalam) village.
		The sewage generated from Thummanapalli village Panchayat [280 houses in Sathyamangalam and 98 houses in Muneeswar Nagar] is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Sathiyamangalam, Muneeswar Nagar
		The sewage generated from 190 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Lingapuram
		The sewage generated from 220 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Baduthepalli

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
		The sewage generated from 25 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Kempasandiram
		The sewage generated from 121 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Singasadanapalli
2. Solid Waste Management Plan be devised and executed by concerned Block Development Officer, Hosur Taluk to ensure the solid wastes are not disposed on the riverside and managed as per Solid Waste Management Rules, 2016.	Concerned Block Development Officer to submit to TNPCB (six months)	The local body of Hosur Panchayat Union has removed the solid waste dumped in the banks of River Thenpennai.		Bagalur
		<p>The average collection of solid waste in the Bagalur Panchayat is about 2.0 MT. The Municipal Solid Waste is being collected through door to door collection by engaging 19 Thooimai Kavalars and deploying with five tri-cylces and three electronic bikes.</p> <p>The local body of Hosur Panchayat Union has constructed</p>	<p>The MCC centre at Bagalur is proposed to commission on 30.06.2021.</p> <p>Under Central Government scheme of National Rurban Mission project a Plastic shredding unit is proposed at a cost of Rs. 20 Lakhs to handle the plastic wastes and the shredded plastics will be used</p>	Additional time requested by the local body due to COVID Pandemic situation

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
		the Micro Compost Centre with a maximum capacity to process 3.0 MT of segregated biodegradable municipal solid wastes at a cost of Rs. 20 Lakh.	for road laying works.The work will be completed before 31.10.2021.	
		The average collection of solid waste in the Belathur Panchayat is about 2.0 MT. The Municipal Solid Waste is being collected through door to door collection by engaging 19 Thooimai Kavalars and deploying with five tri-cylces and three electronic bikes. The local body of Hosur Panchayat Union has constructed the Micro Compost Centre with a maximum capacity to process 3.0 MT of segregated biodegradable municipal solid wastes at a cost of Rs. 24 Lakh.	The MCC centre at Belathur village is proposed to commission on 31.07.2021.	Belathur Additional time requested by the local body due to COVID Pandemic situation

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
		<p>The solid wastes generated from the Sokkarasanapalli village are being collected and brought to the segregation shed and segregated as bio-degradable and non-biodegradable wastes.</p> <p>The non-biodegradable wastes are burnt through the Solid waste Disposal Incinerator established at Estimate Cost of Rs.18.00 Lakhs by CSR fund of M/s. Excide factory. (Photographs enclosed).</p>		Sokkarasanapalli village.
		<p>The solid wastes generated from the households are being collected through Thooimai Kavalars and brought to the segregation shed and segregated as bio-degradable and non-biodegradable wastes for further treatment and dispose. (Photographs enclosed).</p>		Guliganapalli, Sathiyamangalam, Muneeswar Nagar, Lingapuram, Baduthepalli, Kempasandiram, Chennasandiram, Singasadanapalli, Kanimangalam, Kallipuram and Oddapalli Thinna villages.

Action Points	Agency Responsible (Timeline)	Progress made as on 21 st May, 2021	Proposed Action Plan with target date (if any)	Remarks
VII. Regular Water Quality Monitoring at important locations				
1. The trend of water quality and its improvement at major confluence points may be monitored for the year 2021-22 on a monthly basis and a report be submitted to CPCB to ensure the quality of water flowing in River Thenpennai.	TNPCCB &KSPCCB (to monitor on yearly basis)	The water quality of River Thenpennai is being monitored on monthly basis at interstate border i.e at Chokkarasanapalli Village and the report of analysis for the period from September 2017 to April 2021 is enclosed vide Annexure-IV.		Refer Annexure-IV – ROA of Thenpennai River. at Chokkarasanapalli Village from September 2017 to April 2021

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**District Environmental Engineer,
Tamilnadu Pollution Control Board
Hosur**

SITE PHOTOGRAPHS:



Diversion channel with wet land system for the treatment of sewage Bagalur Village



Diversion channel with wet land system for the treatment of sewage Belathur Village



MCC work under progress in Bagalur Village





MCC work under progress in Belathur Village



Solid wastes dumped in the river bed area have completely been removed by the local bodies.



Solid waste Disposal Incinerator at Sevaganapalli Panchayat



Solid wastes dumped in the river bed area have completely been removed by the local bodies.

SOLID WASTE MANAGEMENT ACTIVITIES:



Solid Waste Management – Belathur village



Solid Waste Management – Baduthepalli village



Solid Waste Management – Guliganapalli village



Solid Waste Management – Sathiyamangalam village



Solid Waste Management – Lingapuram village



Solid Waste Management – Kembasandiram village

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M/s. PREMIER SPG & WVG MILLS PVT LTD, SF.NO. 54/1, 56/1,56/4, 57/1, 66/3, 57/13, 66/1, 55/2, 56/5, 56/2, 55/2, 55/4, 55/1, 54/2, 55/3,etc.,BELATHUR VILLAGE, HOSUR TALUK, KRISHNAGIRI DISTRICT:

SEPTIC TANK AND SP/DT - STP COMPONENTS:

SL. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1	Septic tank - I	1	8.5x3.5x2.4
2	Septic tank - II	1	4.5x2.5x2.4

ETP COMPONENTS:

SL. No.	Name of the Treatment Unit	No. of Units	Dimensions in metres
1	Bar Screen	1	1.75x4.2
2	Equalization tank No.1	1	14.x13x4 - 743KL
3	Equalization No.2	1	6.5x15x4 - 390KL
4	Equalization No.3	1	6.2x15x4 - 370KL
5	Distribution Tank	1	5x4.5x6 - 135KL
6	Biological Tank	1	17x28.5x6 - 2970KL
7	De-nitrification Tank	1	2.7x2x6 -32.4KL
8	Lamella Clarifier	1	6x4.5x6 - 162KL
9	Pre Treatment - 1	1	4x4x3.5 - 56KL
10	Pre Treatment -2	1	4x4x3.5 - 56KL
11	Clariflocculator	1	9.75Dx3.5H - 261KL
12	Traction Clarifier -1	1	12.2Dx3H-350KL
13	Traction Clarifier -2	1	12.2DX3h -350KL
14	Sludge Thickener	1	4.5Dx2.8H - 56KL
15	Sludge Decanter (Dewatering system)	1	5KL/Hr
16	Pressure Sand Filter	2	1.8 D x 1.6 H (Mtrs)
17	Activated Carbon Filter	2	1.8Dx1.6H
18	Quartz Filter	1	2Dx3.4H
19	Ultra Filtration	1	1200KLD
20	Sludge Return Sump	1	60 KL

21	RO I – A	1	40 KL/Hr - 800KLD
22	RO I B (Standby)	1	60KL/Hr (1200 KLD)
23	RO II - A	1	40KL/Hr (800KLD)
24	RO II -B (Stand by)	1	40KL/Hr(800KLD)
25	RO III	1	25KL/Hr - (500 KLD)
26	Combined RO permeate RCC Tank	2	6.2 x 5.5 x 7.4 M
27	RO III stage reject collection RCC Tank	2	4.75 x 9.5 x 2.8 M
28	Multiple Effect Evaporator (5 Effect Falling Film)	1	250 KLD
29	Forced Circulation Evaporator (Two Effect)	1	1 KL/Hr - 20KLD
30	Salt Recovery System (Vertical Thin Film Dryer)	1	0.260 KL/Hr -5.2 KLD
31	Solar Evaporation Pan (540 Sq.M x18No's)	18	9720 Sq.mtr

**MUTHUSAMY
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**District Environmental Engineer
Tamilnadu Pollution Control Board
Hosur**

CONSOLIDATED ROA OF TREATED SEWGAE AND EFFLUENT SAMPLES COLLECTED FROM THE UNIT OF M/S. PREMIER SPG & WVG MILLS PVT LTD, , BELATHUR VILLAGE, HOSUR TALUK, KRISHNAGIRI DISTRICT

a) TREATED SEWAGE (Jan 2020 to March 2021)

S.No.	Parameter	Jan 20	Feb 20	Mar 20	May 20	June 20	July 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21
1	pH	7.62	8.12	7.62	7.47	6.48	6.75	7.41	7.70	6.59	6.82	6.73	8.04	6.04	7.02
2	TSS	42	4.0	4.0	4.0	6.0	4.0	4.0	6.0	18	20	2.0	10	4.0	6.0
3	BOD	12	1.0	1.0	2.0	1.0	2.0	2.0	5.0	12	5.3	5.0	6.0	3.0	3.0

b) R.O PERMEATE (Jan 2020 to March 2021)

S.No.	Parameter	Jan 20	Feb 20	March 20	May 20	June 20	July 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21
1	pH	6.24	8.01	7.96	7.98	6.61	6.26	7.33	6.69	6.72	7.21	7.21	7.26	6.52	7.11
2	TSS	6.0	12	24	4.0	4.0	4.0	2.0	2.0	4.0	4.0	4.0	26	6.0	4.0
3	TDS	974	854	1070	1752	1016	222	826	194	664	106	1990	1942	1204	136
4	Chloride	240	130	300	385	210	85	165	75	135	65	400	445	222	25.0
5	Sulphate	166	107	292	369	57	33	127	24	77	14	35	124	440	24.0
6	Oil and Grease	1.0*	1.0*	6.0	1.0*	1.0*	1.0*	1.0	1.0*	1.0*	1.0*	1.0*	1.0*	1.0*	1.0*
7	BOD	8.0	3.0	12	8.0	1.0	1.0	1.0	2.0	11	2.73	5.0	12	2.0	2.0
8	COD	72	40	64	40	8.0	8.0	40	8.0	32	64	32	112	24	64.0
9	Lead	-	-	0.001*	0.001*	0.001*	-	-	-	-	-	-	-	-	-
10	Cadmium	-	-	0.001*	0.001*	0.001*	-	-	-	-	-	-	-	-	-
11	Total Kjeldhal Nitrogen	-	-	3.8	3.62	1.0*	-	-	-	-	-	-	-	-	-

S.No.	Parameter	Jan 20	Feb 20	March 20	May 20	June 20	July 20	Aug 20	Sep 20	Oct 20	Nov 20	Dec 20	Jan 21	Feb 21	Mar 21
12	Total Residential Chlorine	-	-	0.002*	0.1*	0.01*	-	-	-	-	-	-	-	-	-
13	Phenolic Compounds	-	-	0.005*	0.005*	0.01*	-	-	-	-	0.5*	0.5*	0.5*	0.5*	0.5*
14	Sulphide	-	-	2.0*	1.0*	0.01*	-	-	-	-	2.0*	2.0*	2.0*	2.0*	2.0*
15	Percent Sodium	-	-	49	46	2.0	-	-	-	-	-	-	-	-	-
16	Total Chromium	-	-	-	-	0.001*	-	-	-	-	0.01*	0.03*	0.03*	0.03*	0.03*
17	Ammonical Nitrogen	-	-	-	-	-	-	-	-	-	1.68	3.92	5.04*	3.92	5.04

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**District Environmental Engineer,
Tamilnadu Pollution Control Board,
Hosur.**



TAMILNADU POLLUTION CONTROL BOARD

From
Dr.S.Ramani,
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Board,
HOSUR – 635126

To
M/s. Premier Spinning Mills Pvt Ltd,
Belathur Po,
Bagalur,
Hosur – 635 124.

Lr.No.TNPCBd/DEL-HSR/Air Survey/F.P5 /2020 - 2021, Dt.09.07.2020.

Sir,

Sub : Furnishing of Report of Analysis of Ambient Air Quality / Stack Monitoring / Ambient Noise Level Survey – Reg.

Ref : 1. This Office Lr.No. DEL / HSR / AAQS /F.P-5 / 2020-2021 /Dt : 11.05.2020
2. Your Lr.No.Nil dt.07.09.2020
3. Cash Receipt No.82229 dt.19.06.2020 Rs.32,300/-

I am sending herewith the Report of Analysis of Ambient Air Quality / Stack Monitoring/ Ambient Noise Level Survey conducted in the vicinity of your industry on 26.08.2020 with invoice for **RS.32,300/-** (Rupees **Thirty Two Thousand and Three Hundred** only) towards the above survey / analysis charges, and the same has been adjusted vide reference (3) cited.

Kindly acknowledge the receipt of the above without fail.

**Chief Scientific Officer,
District Environmental Laboratory
TNPCB / Hosur.**

Encl.: As above.

Copy submitted to:

- 1.The District Environmental Engineer, TNPCBd, Hosur for favour of kind information please.
2. Copy to file.



TAMIL NADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Hosur .

AMBIENT AIR QUALITY SURVEY – Report of Analysis

Report No.47 / AAQS/2020-2021

Date:09.09.2020

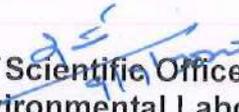
1. Name of the Industry :Premier Spinning Mills Pvt Ltd.,
2. Address of the Industry :Belathur PO, Bagalur, Hosur – 635 124.
3. Date of Survey : 26.08.2020.
4. Duration of Survey : 8 Hours
5. Category :Red – Large
6. Land Use Classification :Textile Processing

Ambient Temperature (⁰ C)	Min 26	Max 31	Relative Humidity (%)	Min 56	Max 67
Weather Condition	Clear sky		Rain Fall (mm)	NIL	
Predominant Wind Direction	SE - NW		Mean Wind Speed (km/hr)	---	

Ambient Air Quality Survey Results

Sl. No	Location	Direction *	Distance (m) *	Height Form GL (m)	Pollutants Concentration (microgram / m ³)		
					PM 10	SO ₂	NO ₂
1	Top of the Scaffolding Near 'D' Gate	NE	150	2	20	-8-	12
2	Top of the Scaffolding Near Main Gate	E	270	2	39	-8-	13
3	Top of the Scaffolding Inside the Ladies Hostel	SE	170	2	19	-8-	11
4	Top of the Scaffolding near STP	SW	400	2	37	-8-	12
5	Top of the Scaffolding Near Evaporator	NW	300	2	45	-9-	18

Note: * With respect to major emission


 Chief Scientific Officer,
 District Environmental Laboratory,
 TNPCB, Hosur.

Test Performed	Test Method
PM10	IS 5182 : (Part 23) – 2006
SO ₂	Modified West – Graeke / IS 5182 : (Part 2) – 2001 RA: 2012
NO _x	Jacobs – Hochheiser / IS 5182 : (Part 6) – 2006 RA:2012



TAMILNADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Hosur

AMBIENT AIR QUALITY SURVEY

Schematic Diagram Showing Location of Sampling

Report No. 47 /AAQ/SM/2020 -2021

Name and Address of the Industry : Premier Spinning Mills Pvt Ltd,
Belathur PO, Bagalur, Hosur – 635 124.

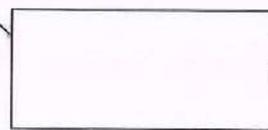
Date of Survey : 26.08.2020

Station : V
PM ₁₀ : 45
SO ₂ : -9-
NO ₂ : 18

Station : I
PM ₁₀ : 20
SO ₂ : -8-
NO ₂ : 12

NW

NE



E

Station : II
PM ₁₀ : 39
SO ₂ : -8-
NO ₂ : 13

SW

SE

Station : IV
PM ₁₀ : 37
SO ₂ : -8-
NO ₂ : 12

Station : III
PM ₁₀ : 19
SO ₂ : -8-
NO ₂ : 11

Note: All the values are expressed in and restricted to sampling period of 8 hours.

Meteorological Conditions:	
Predominant Wind Direction	SE - NW
Wind Speed	----
Weather Condition	Clear Sky
Rainfall	Nil

[Signature]
Chief Scientific Officer,
District Environmental Laboratory,
TNPCB / HOSUR.



TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory, Hosur
STACK MONITORING SURVEY – Report of Analysis

Report No.47 / SM/2020-2021

Date: **09.09.2020.**

1. Name of the Industry : Premier Spinning Mills Pvt Ltd,
2. Address of the Industry : Belathur PO, Bagalur, Hosur – 635 124.
3. Date of Survey : 26.08.2020
4. Type of Industry : Textile Processing

Stack Monitoring Survey Results

Sl. No.	Stack attached to	Stack .Temp °C	Velocity in (m/ sec)	Discharge rate In Nm ³ /Hr	Pollutants (mg / Nm ³)		
					PM	SO ₂	NO _x
1	Boiler	101	6.41	13025	98	21	-3-

Test Performed	Test Method
PM10	IS 5182 : (Part 23) – 2006
SO ₂	Modified West – Graeke / IS 5182 : (Part 2) – 2001 RA: 2012
NO _x	Jacobs – Hochheiser / IS 5182 : (Part 6) – 2006 RA:2012


Chief Scientific Officer,
DEL, TNPCB, Hosur



TAMILNADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Hosur

Stack Details

Report No. 47 /AAQ/SM/2020 – 2021

1. Name and Address of the Industry : Premier Spinning Mills Pvt Ltd,
Belathur PO, Bagalur, Hosur – 635 124
2. Date of Survey : 26.08.2020

Sl. No.	Particulars	1	
1.	Stack attached to	Boiler	
2.	Details of process stack	Steam Generation	
3.	Height from G Level in (m)	30	
4.	Diameter in (m)	0.95	
5.	Port hole height from Ground Level or bends or ducts in (m)	12	
6.	Fuel Used (with % Sulphur content)	Bio Briquettes	
7.	Fuel Consumption rate per day (mention units)	46.5 Ton	
8.	Boiler type and capacity	----	
9.	APC Measures provided	----	
10.	APC functional status	Functioning	
11.	Composition of flue gas	CO %	--
		CO ₂ %	--
		O ₂ %	--
12.	Moisture content in %	--	
13.	Ambient temp in °K	298	
14.	Temp of flue gas in °K	374	
15.	Velocity of flue gas in m/sec	6.41	
16.	Volume of flue gas sampled in m ³	0.5	
17.	Gaseous Discharge rate per day in Nm ³ /Hr	13035	
18.	Combustion efficiently %	--	


Chief Scientific Officer,
District Environmental Laboratory,
TNPCB / Hosur.



TAMIL NADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Hosur.

STACK MONITORING SURVEY – Additional details

Report No. 47 / SM/2020-2021

Date:09.09.2020.

1. Name of the Industry : Premier Spinning Mills Pvt Ltd,
2. Address of the Industry : Belathur PO, Bagalur, Hosur – 635 124
3. Date of Survey : 26.08.2020
4. Type of Industry : Textile Processing

Stack Monitoring Additional details

Sl.No.	Details of stack mentioned in the Air Consent order	Details of stack available and in working condition	Details of stack for which stack Emission sampling have been done	Justification for the left out of stack Emission Sampling
1	Boiler 10 T / Hr	Boiler 10 T / Hr Working Condition	SPM , SO ₂ , NO _x Sampling done	----

25/09/2020
Chief Scientific Officer,
District Environmental Laboratory,
TNPCB / HOSUR.



TAMIL NADU POLLUTION CONTROL BOARD

District Environmental Laboratory, Hosur .

AMBIENT/SOURCE NOISE LEVEL SURVEY - Report of Analysis

Report No.47 / NLS/2020-2021

Date:09.09.2020

1.	Name of the Industry	Premier Spinning Mills Pvt Ltd,		
2.	Address of the Industry	Belathur PO, Bagalur, Hosur – 635 124		
3.	Date of Survey	26.08.2020		
Category		Red / Large	Land use Classification	UnClassified
Type of Survey		Ambient	Time of Survey	Day
Meteorological conditions		Clear Sky		

Logging Parameters

Instrument Used	Quest Technologies		Serial No	C8110029	
Logging Interval	10 Minutes each point		Measuring Range	40 - 100	
Weighting	“ A”	Peak Weighting	“C”	Time Weighting	FAST
Sound Incidence	RANDOM		Time in hrs	11.00 – 11.50Hrs	

Report of Noise Level Monitoring

Sl No	Location	Duration (min)	Distance (M)	Direction	Sound Level – dB (A)					
					L _{eq}	L ₉₀	L ₅₀	L ₁₀	Min	Max
1	Near 'D' Gate	10	50	NE	50.4	50.0	50.1	50.2	49.9	63.2
2	Near Main Gate	10	100	E	50.3	49.8	49.9	50.0	49.7	63.2
3	Near Ladies Hostel	10	100	SE	50.2	49.8	49.9	50.0	49.7	62.8
4	Near STP	10	50	SW	50.4	50.0	50.1	50.2	49.9	63.4
5	Near Evaporator	10	80	NW	50.2	49.9	50.0	50.1	49.8	63.1

Note:L90 Value refers to background noise; L50 Value refers to mean noise.

L10 value refers to nuisance or annoyance level :Leq value is the average energy for the measured period.

Chief Scientific Officer,
District Environmental Laboratory,
TNPCB / HOSUR.

Page 7 of 10



TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory, Hosur
General Particulars

Report No.47./AAQ/SM/2020-2021

Name and Address of the Industry : M/s.Premier Spinning Mills Pvt Ltd,
Belathur PO, Bagalur, Hosur – 635 124

Date of Survey : 26.08.2020

Sl. No.	Particulars	
1.	Process Description	Cotton to Yarn Yarn to Fabric
2.	Emission Sources	Boiler 10 Ton
3.	Fugitive Emission Sources	-----
4.	Raw Material Consumptions	Cotton – 6874 Kgs Polyester –562 Kgs
5.	Production Capacity as per Air Consent order No. & Date	1.Fabric – 25,00,000 Meters / Month 2.Yarn - 2,00,000 Kgs / Month Consent Order No.7056 dt. 15.11.95
6.	Production on the day of Survey	1.Fabric – 38129 Meters 2.Yarn - 4274 Kgs
7.	Percent production with respect to Air Consent Order	1.Fabric – 40% 2.Yarn - 56 %
8.	Air Consent Order No. Validity upto 31 st March 20.....	170828375917 /dt.20.03.2017 Valid upto 31.03.2022
9.	Details of APC measures	MDC Provided for Boiler
10.	Functional Status of APC measures	Functioning
11.	Compliance with Consent Conditions	Complied
12.	Field Observations	----

[Signature]
Chief Scientific Officer,
District Environmental Laboratory,
TNPCB / HOSUR.



TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory, Hosur.

INFERENCE REPORT ON AAOS/ S.M.

1. Name of Industry : Premier Spinning Mills Pvt Ltd
Belathur PO, Bagalur. Hosur – 635 124
2. Pollution Category : Red / Large
3. Date of A.A.Q. Survey : 26.08.2020
4. Predominant Wind Direction : SE to NW
5. Weather condition : Clear Sky

STATUS OF POLLUTANTS LEVEL

I. AMBIENT AIR QUALITY :-

1. Total No. of A.A.Q. stations monitored : 5
2. No. of A.A.Q. stations in which Pollutants
Level exceeded the Boards standards : NIL

Maximum and Minimum values of Pollutants Level observed:

Sl. No	POLLUTANT	Values in microgram/m ³		BOARD'S STANDARD (As per consent order)
		Maximum	Minimum	
1.	PM ₁₀	45	19	100
2.	<u>GASEOUS POLLUTANTS:-</u>			
	(i) SO ₂	-9-	-8-	80
	(ii) NO ₂	18	11	80

II. STACK MONITORING:-

1. Total No. of Stacks Monitored : 1
2. No. of Stacks in which Pollutants level
Exceeded the Boards standards : Nil


Chief Scientific Officer,
District Environmental Laboratory
TNPCB / HOSUR.



TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory, Hosur.

BILL

Report No.47./AAQ/SM/2020 - 2021

Bill No.	47 / 2020-2021
Date	09.09.2020

To
Premier Spinning Mills Pvt Ltd
Belathur PO, Bagalur, Hosur – 635 124

- Ref: 1. B.PMs.No.6 Dt.31.03.2009.
2. This Office Lr.No. DEL / HSR / AAQS /F.P-5 / 2020-2021 /Dt : 11.05.2020
3. Your Lr.No. Nil dt. 07.09.2020
4. Cash Receipt No. 82229 dt.19.06.2020 Rs.32,300/-

Sl. No	Description	No. of Stations	Rate (Rs.)	Amount (Rs).
1.	Ambient Air Quality Survey – PM ₁₀ (Sampling)	5	2,000.00	10000.00
2.	Stack Monitoring – PM, SO ₂ , NO _x	1	7,500.00	7500.00
3.	Analysis Charges – PM ₁₀	6	600.00	3600.00
4.	Analysis Charges – Sulphur dioxide	6	600.00	3600.00
5.	Analysis Charges – NO ₂ & Nitrogen Oxides	6	600.00	3600.00
6.	Ambient Noise Level testing charges (First 5 Points)	1 st 5 points	4,000.00	4000.00
Total				32,300.00
Less: Advance – Vide CR No.82229Dt:19.06.2020				32300.00
Advance Vide & Report No: Dt:				NIL
Balance to be paid				NIL
Excess payment with TNPCB				Nil

Chief Scientific Officer,
District Environmental Laboratory
TNPCB / HOSUR.

ACTION TAKEN REPORT ON SHORT TERM & LONG TERM ACTION PLAN IN THE JOINT COMMITTEE REPORT IN THE MATTER OF O.A NO. 111 OF 2020 BY TAMILNADU POLLUTION CONTROL BOARD (AS ON 21-05-2021)

Submitted by

**BLOCK DEVELOPMENT OFFICER
HOSUR BLOCK, HOSUR TALUK
KRISHNAGIRI DISTRICT**

VI. Sewage and Solid Waste Management in the villages (13) adjoining River Thenpennai upto Kelavarapalli Dam

1. Feasibility study for providing Sewage Treatment options (such as oxidations ponds/ diversion channels or wetlands etc.) by TNPCB followed by implementation by Local authority of the district.	Feasibility study by TNPCB in consultation with local authority for implementation (Six months)	Construction of diversion channel with wet land system at a cost of Rs. 25 Lakh has been provided at Bagalur village (about 90% civil works completed) for the treatment of sewage generated from part of the Bagalur village by the local body of Hosur Panchayat Union.	The wet land for the stream #1 will be completed on 30.06.2021 For the remaining four stretches, construction of wetland system will be executed after approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed before 31.10.2021.	Bagalur village. Additional time requested by the local body due to COVID Pandemic situation
		Construction of diversion channel with wet land system at a cost of Rs. 24 Lakh has been provided at Belathur village (about 90% civil works completed) for the treatment of sewage generated from part of the Belathur village by the local body of Hosur Panchayat Union.	The wet land for the stream #1 will be completed on 30.06.2021. For the remaining stretches, construction of wetland system will be executed after approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed before 31.10.2021.	Belathur village Additional time requested by the local body due to COVID Pandemic situation

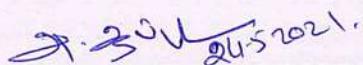
			Construction of diversion channel with wet land system for the treatment of sewage generated from the Sokkarasanapalli village will be carried by the Hosur Panchayat Union after obtaining necessary approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed within 5 months.	Sokkarasanapalli village. Additional time requested by the local body due to COVID Pandemic situation
		The sewage generated from part of the 70 houses is being treated through the septic tank followed by the soak pit.	Construction of diversion channel with wet land system for the treatment of part of sewage generated from the Chennasandiram village will be carried by the Hosur Panchayat Union after obtaining necessary approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed within 5 months.	Chennasandiram Additional time requested by the local body due to COVID Pandemic situation
		The sewage generated from part of 125 houses is being treated through the septic tank followed by the soak pit.	Construction of diversion channel with wet land system for the treatment of part of sewage generated from the Kanimangalam village will be carried by the Hosur Panchayat Union after obtaining necessary approval of District Collector, Krishnagiri under grey water management scheme and the works will be completed within 5 months.	Kanimangalam Additional time requested by the local body due to COVID Pandemic situation

		The sewage generated from 40 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Guliganapalli (Kodiyalam) village.
		The sewage generated from Thummanapalli village Panchayat [280 houses in Sathyamangalam and 98 houses in Muneeswar Nagar] is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Sathyamangalam, Muneeswar Nagar
		The sewage generated from 190 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Lingapuram
		The sewage generated from 220 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Baduthepalli
		The sewage generated from 25 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Kempasandiram

		The sewage generated from 121 houses is being treated through the septic tank followed by the soak pit and there is no discharge of sewage into River Thenpennai.		Singasadanapalli
2. Solid Waste Management Plan be devised and executed by concerned Block Development Officer, Hosur Taluk to ensure the solid wastes are not disposed on the riverside and managed as per Solid Waste Management Rules, 2016.	Concerned Block Development Officer to submit to TNPCB (six months)	The local body of Hosur Panchayat Union has removed the solid waste dumped in the banks of River Thenpennai.		Bagalur
		<p>The average collection of solid waste in the Bagalur Panchayat is about 2.0 MT. The Municipal Solid Waste is being collected through door to door collection by engaging 19 Thooimai Kavalars and deploying with five tri-cylces and three electronic bikes.</p> <p>The local body of Hosur Panchayat Union has constructed the Micro Compost Centre with a maximum capacity to process 3.0 MT of segregated biodegradable municipal solid wastes at a cost of Rs. 20 Lakh.</p>	<p>The MCC centre at Bagalur is proposed to commission on 30.06.2021.</p> <p>Under Central Government scheme of National Rurban Mission project a Plastic shredding unit is proposed at a cost of Rs. 20 Lakhs to handle the plastic wastes and the shredded plastics will be used for road laying works. The work will be completed before 31.10.2021.</p>	Additional time requested by the local body due to COVID Pandemic situation

		<p>The average collection of solid waste in the Belathur Panchayat is about 2.0 MT. The Municipal Solid Waste is being collected through door to door collection by engaging 19 Thooimai Kavalars and deploying with five tri-cycles and three electronic bikes. The local body of Hosur Panchayat Union has constructed the Micro Compost Centre with a maximum capacity to process 3.0 MT of segregated biodegradable municipal solid wastes at a cost of Rs. 24 Lakh.</p>	<p>The MCC centre at Belathur village is proposed to commission on 31.07.2021.</p>	<p>Belathur</p> <p>Additional time requested by the local body due to COVID Pandemic situation</p>
		<p>The solid wastes generated from the Sokkarasanapalli village are being collected and brought to the segregation shed and segregated as bio-degradable and non-biodegradable wastes.</p>		<p>Sokkarasanapalli village.</p>
		<p>The non-biodegradable wastes are burnt through the Solid waste</p>		

		Disposal Incinerator established at Estimate Cost of Rs.18.00 Lakhs by CSR fund of M/s. Excide factory. (Photographs enclosed).		
		The solid wastes generated from the households are being collected through Thooimai Kavalars and brought to the segregation shed and segregated as bio-degradable and non-biodegradable wastes for further treatment and dispose. (Photographs enclosed).		Guliganapalli, Sathiyamangalam, Muneeswar Nagar, Lingapuram, Baduthepalli, Kempasandiram, Chennasandiram, Singasadanapalli, Kanimangalam, Kallipuram and Oddapalli Thinna villages.


BLOCK DEVELOPMENT OFFICER
HOSUR BLOCK, HOSUR TALUK
KRISHNAGIRI DISTRICT

Item No. 01

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 125/2017

Court on its own Motion

Applicant(s)

Versus

State of Karnataka

Respondent(s)

Date of hearing: 04.08.2020

Date of uploading of order: 13.08.2020

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE S. P. WANGDI, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

ORDER

1. This order is being passed in furtherance of earlier order of the Tribunal dated 18.12.2019 on the subject of remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore, including preventing discharge and dumping of pollutants, removing encroachments from catchment area and other steps for restoration.

2. As noted in the order dated 18.12.2019, the matter of removing encroachments from the buffer zones of the drains and other water bodies was dealt with vide order dated 07.05.2015 in *Original Application No. 222/2014, The Forward Foundation Vs. State of Karnataka & Ors.*¹ The said issue was finally disposed of by Hon'ble Supreme Court vide order dated 05.03.2019 in Civil Appeal No. 5016/2016². With regard to other remedial measures, the Tribunal appointed a Committee headed by

¹ 2015 ALL (1) NGT REPORTER (2) (DELHI) 81

² (2019) SCC Online SC 322

Shri Raj Panjwani, Senior Advocate. The Committee gave its report dated 31.05.2018 after visit to the site on 14-15 April, 2018 which was accepted by the Tribunal vide order dated 06.12.2018. In terms of the said order, steps required to be taken included removal of encroachments and stopping discharge of pollution in the water body. An action plan was required to be prepared with timelines and budgetary support under the overall supervision of Additional Chief Secretary, Urban Development Department (UDD), Karnataka and the Bruhat Bengaluru Mahanagara Palike (BBMP). Execution of the action plan was to be overseen by the Monitoring Committee headed by Justice Santosh Hegde, former Judge of the Hon'ble Supreme Court.

3. The matter was thereafter considered by this Tribunal on 21.10.2019 in the light of reports of the Monitoring Committee dated 27.05.2019 and 20.09.2019. The Tribunal found continuing violation of environmental norms and required the personal presence of the Additional Chief Secretary, Urban Development, Karnataka, Commissioner, BBMP, Commissioner, Bangalore Development Authority (BDA), Chairman, Bangalore Water Supply and Sewerage Board (BWSSB) and the Member Secretary, State PCB with compliance reports and explanation for violation of earlier orders of the Tribunal. The said order was affirmed by the Hon'ble Supreme Court vide order dated 22.11.2019 in Civil Appeal No. 9666-68 of 2019, State of Karnataka v. D. Kupendra Reddy & Ors.

4. The matter was thereafter considered on 18.12.2019 in the personal presence of the officers and in the light of status report furnished under 37 headings, including steps for preventing discharge of solid and liquid waste into the lake, removing encroachments, removing

illegal construction inside the lake, de-silting and de-weeding etc. The Tribunal discussed all the relevant aspects in paras 14 to 27 of the order and finally issued following directions:

“28. We may now sum up our directions as follows:

- i. **Timelines for execution of projects for setting up of STPs and laying of sewerage network may not be extended beyond 30.09.2020.** If the works remains incomplete even till 30.09.2020, compensation will be liable to be paid @ Rs. 10 lakh per STP per month which may be liable to recovered from the erring officers, apart from adverse entries in their service records and other adverse action.
- ii. **Bangaluru Water Supply and Sewerage Board (BWSSB) must ensure that no sewage/effluent is discharged into the lakes** and till setting up of STPs, interim remediation must be done forthwith. Any default in this regard will result in requirement to pay compensation of Rs. 5 lakh per month per inlet into the lakes from 01.02.2020.
- iii. **BSWWB may further ensure that treated water is not discharged into the UGB network.** Action may be taken against persons responsible for having allowed this to be done earlier resulting into loss of Rs. 2 Lakhs per day i.e. Rs. 60 Lakhs per month and more than Rs. 7 Crore per year without any justification whatsoever.
- iv. Sources of discharge of sewage be controlled/regulated and electricity and water supplies to the defaulting establishments be stopped for enforcement of law till remedial steps are taken for compliance.
- v. Encroachments which are still continuing be removed by using force wherever necessary. If any injunction has been granted by any Court which is considered erroneous, higher forum can be moved so that law is upheld.
- vi. Action against erring officers which has not yet been taken must be initiated forthwith as already directed. Failures of officers still in service should be duly reflected in their ACRs.
- vii. The State PCB itself may lay down standards for phosphorus instead of waiting for notification by MoEF&CC.
- viii. The State of Karnataka may either resolve the issue of fencing with the Defence establishment or put such establishments to notice to place their objections before

this Tribunal within one month of such notice after which the State of Karnataka will be at liberty to proceed with the fencing and such Defence establishment will stand restrained from interfering unless otherwise directed by this Tribunal or any other authority.

- ix. Compensation already assessed be recovered by adopting coercive measures such as disconnection of electricity and water supplies.*
- x. Steps be taken expeditiously for de-silting, de-weeding. Analysis of sludge and silt may be carried out before its disposal based on the result of such analysis, the mode of disposal and protocol be determined in accordance with laid down principles under the relevant Rules.***
- xi. The State PCB may develop a robust water quality monitoring programme for monitoring of water quality of drains leading to the lakes and also undertake water quality monitoring at atleast 5 locations for each lake.*
- xii. Steps may be taken to explore development of wetlands and bio-diversity parks apart from other remedial action for reducing the pollution load on the recipient water bodies.*
- xiii. C&D waste processing facility be commissioned expeditiously and steps be taken to ensure that the timeline proposed is adhered to.*
- xiv. Real time water quality system be commissioned by 31.01.2020 as proposed.*
- xv. The issue of removing 1.5 km road laid upon the lake bed, within the boundary of Varthur lake, by dumping of C&D debris be finalized as per directions of Justice Hegde Committee in terms of para 26 above.*

29. The Monitoring Committee headed by Justice Hegde may also review the progress made in terms of all the issues considered in the order of this Tribunal dated 06.12.2018 and submit its report on or before 06.03.2020 by e-mail at judicial-ngt@gov.in. The Monitoring Committee may also give its findings to the Chief Secretary of Govt. of Karnataka. Considering that the entire exercise requires inter sectional and inter departmental coordination, Chief Secretary, Karnataka may steer the action of different departments and bodies. We extend the tenure of Monitoring Committee till 31.03.2020.”

5. Accordingly, the Tribunal has received the report dated 06.03.2019 from the Monitoring Committee (with a letter of correction dated

13.05.2020). Reports have been filed by BBMP on 29.02.2020 (with further report on 03.08.2020), by BWSSB on 13.05.2020 and a further affidavit on 11.06.2020 and by the Urban Development Department on 03.06.2020. Summary of compliance report in respect of BWSSB, BDA, UDD, Minor Irrigation and KSPCB has been filed on behalf of State of Karnataka on 04.08.2020.

6. We have perused the above and heard learned Counsel for the appearing parties. On conclusion of the hearing on 04.08.2020, we allowed learned Amicus Curiae and other Counsel to file their observations and notes of submissions, if any. Shri Panjwani, learned Amicus has filed a note submitting that BWSSB has failed to undertake the work earnestly which calls for invoking performance guarantee and fixing responsibility of the individuals. BWSSB should provide details of the steps taken for removing of Biological Nutrient from the sewage. Action needs to be taken against persons responsible for discharge of treated water in the drainage network. Details of amount to be recovered from the units operating without STPs and the stage of proceedings pending before the State PCB need to be provided. Steps taken for seeking vacation of interim order passed by the High Court should be ascertained. The final outcome of the proceedings against erring officers need to be ascertained. The KSPCB/State may take action for fixing standards for phosphorus for use in soaps and detergents. State PCB may furnish a report about recovery of compensation. The BDA has wrongly understood that biodiversity parks are to be set up within the lake boundary. Such parks are to be set up along the periphery of the lake boundary. Enquiry should be conducted about the illegality in laying the pipeline by the Minor Irrigation Department. Construction of retaining wall should not result in reduction of width of the water bodies.

Details of action taken by the BBMP against illegal structures are required to be furnished. BBMP should survey and notify the *rajakaluves* for purposes of buffer zones of 50, 25 and 15 meters.

The BBMP has filed its submission that the retaining walls will not reduce the size of the drains and are necessary to prevent illegal constructions.

We are of the view that the observations of the Amicus may be duly considered by the monitoring Committee and appropriate action taken. We may consider the issues which may survive after the next report of the monitoring Committee.

7. We may now refer to the report of the Monitoring Committee. The Committee has mentioned point wise progress achieved and steps which remain to be taken and also made certain recommendations. It is not necessary to refer to all the observations, except where the Committee has expected intervention of this Tribunal. With regard to compliance of direction (iii) above, it is mentioned that as per State PCB excess discharge was 1.3%. The State PCB has suggested that no action be taken in that regard. The Monitoring Committee has suggested that the NGT should take a view. However, we leave this aspect to be finalised by the Monitoring Committee in the light of ground situation and remedial steps taken. Likewise, with regard to report of the ADLR regarding encroachments, we leave the matter to be dealt with by the Monitoring Committee. With regard to direction (x), the Committee has mentioned that there is difference of opinion between the CPCB and the State PCB. According to CPCB, the sediments of Bellandur Lake (at three out of five locations) have heavy metal values, above response level. At Varthur Lake, at all locations (5 No) the values reported for heavy metals are less

than response levels. The disposal methods of sediments may be further evaluated based on compost quality as per Solid Waste Management Rules 2016 and screening level values for Heavy metals. Further, the Guidelines for evaluation of MSW Landfills as per Solid Waste Management Rules, 2016 may be the most suitable option. The Central Public Health and Environmental Engineering Organization Manual may also be referred for guidance. As against this opinion, the State PCB has suggested that in view of metal content, the silt may not be fit for agriculture and Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2016 may be followed. According to BDA, the matter should be referred to NEERI which will take five months. The Committee has left the matter to be dealt with by this Tribunal.

8. We have given due consideration to the rival opinions. We are of the view that some more sampling may be got carried out with regard to de-silted debris/sludge at appropriate representative locations for comprehensive database and thereafter disposal protocol may be finalized in consultation with the CPCB. This will avoid unnecessary delay and cost.

9. We now refer to the reports from different departments. Since summary of compliance report has been filed on 04.08.2020 by the State of Karnataka, it is not necessary to refer to reports of individual departments. The summary is reproduced below:

“Summary of Compliance Report in respect of BWSSB, BDA, UDD, Minor Irrigation and KSPCB

Sl. No.	Directions of Hon’ble NGT vide order dated 18.12.2019	Observations of the Monitoring Committee Report dated 06.03.2020	Compliance/ status of work as on 15.07.2020
1.	<p>Para 28(i):</p> <p>Timelines for execution of projects for setting up of STPs and laying of sewerage network may not be extended beyond 30.09.2020. If the works remains incomplete even till 30.09.2020, compensation will be liable to be paid @ Rs. 10 lakh per STP per month which may be liable to recovered from the erring officers, apart from adverse entries in their service records and other adverse action.</p>	<p>Pg. 2, Sl. No. 1 of the Report</p> <p>a. Construction of 150 MLD capacity new Sewage Treatment Plant at K&C Valley based on activated sludge process with BNR with Power generation:</p> <p>- Overall 75.21% is progress is achieved against the planned target of 86.38%. the BWSSB states that the pending work will be completed by 30.07.2020.</p> <p>b. Construction of 210 MLD capacity ISPS at Koramangala Sports Complex– including O&M for 7 years:</p> <p>- It is ready for operation but the sewage will be pumped after completion of the 150 MLD STP i.e. 30.07.2020.</p> <p>c. Laying of 1800 mm dia raising main from 210 MLD ISPS to 150 MLD STP:</p> <p>- Laying of pipelines in the storm water drains (SWD) is very difficult as the location of the work in this drain is at the end of the valley carrying huge quantity of storm water. At present 3500 RMT of pipeline work is completed as against 5315 RMT.</p> <p>d. Sarakki – 5.0 MLD STP at Sarakki lake:</p> <p>- Completed and commissioned.</p>	<p>Pg. 4 of Compliance, Sl. No. 1</p> <p>a) The overall progress as on 15.07.2020 is 79.00% against the planned target of 99.00%. The plant will be ready to treat sewage by 30.10.2020. The STP in full, inclusive of water line and sludge line will be completed by 31.03.2021. [Progress as on 15.11.2019: 66.53%] Overall Progress @89, Photos @91-97</p> <p>b) Ready for operation but the sewage will be pumped after completion of the 150 MLD STP. [Progress as on 15.11.2019: 82.99%] Overall Progress &Photos @99-103</p> <p>c) This work will be completed before 31.03.2021 when the STP is commissioned. Due to loss of time during the summer in view of the Covid-19 situation, the work has not progressed much. As the work is to be taken up in the storm water drain and due to monsoons this work can be started only after October 2020. [Progress as on 15.11.2019: 50.23%] Overall Progress & Photos @105-111</p> <p>d) Completed and commissioned w.e.f. 08.11.2019. Photos @113-115</p> <p>e) The overall progress is 95% as on 04.08.2020. However, as all the infrastructure for treating sewage is ready, sewage has been augmented to STP from 23.06.2020 and development of MLSS is in progress. In view of the Covid-19 situation the timeline for completion of the work will go beyond September, 2020. [Progress as on</p>

		<p>e. Chikkabeguru – 5.0 MLD STP:</p> <ul style="list-style-type: none"> - The overall progress is 72.00% against the planned target of 92.00%. the work will be completed by 31.03.2020. <p>f. f) Hulimavu – 10 MLD STP:</p> <ul style="list-style-type: none"> - Completed and commissioned. <p>g. Augmenting sewage from Iblur side and conveying to Bellandur Amanikere STP (Laying of sewer sub main):</p> <ul style="list-style-type: none"> - About 950 mtrs out of 2425 mtrs of 900/600/450 mm dia RCC NP3 pipeline along the alignment is laid. Work is under progress. The work is planned to be completed by 30-06-2020. <p>h. Agaram – 35 MLD STP:</p> <ul style="list-style-type: none"> - The STP is put into operation, presently stabilization of process is under progress. The overall progress is 97.24% against the planned target of 100.00%. <p>i. Waste-water wet well – 32.5 MLD capacity near the premises of 90MLD Bellandur Amanikhane STP to augment sewage from the adjoining areas of Bellandur Amanikhane STP:</p> <ul style="list-style-type: none"> - Work order is issued. It is planned to completed by 19.02.2021. <p>j. A proper mechanism should be developed/placed to identify the blockages in the existing UGDs and to</p>	<p>15.11.2019: 45.92%] Overall Progress &Photos @117-121</p> <p>f) Completed and commissioned w.e.f. 31.03.2020. [Progress as on 15.11.2019: 62.01%] Photos @123-125</p> <p>g) Laying of 1437 RMT of pipeline is completed as against 2425 RMT. In view of Covid 19 situation, work will be completed by December, 2020. [Tenders had not been finalised as on 15.11.2019] Work Plan @127</p> <p>h) Completed and commissioned w.e.f. 31.03.2020. [Progress as on 15.11.2019: 72.90%] Photos @129-133</p> <p>i) Earth work excavation for wet well portion is in progress. In view of the Covid-19 situation the timeline for completion of the work will be 31.03.2021. [Tenders had not been finalised as on 15.11.2019] Photos @135</p> <p>j) BWSSB has 175 Jetting cum suction machines and 40 de-silting machines to clean the UGD Lateral network. Maintenance of sewer lines is done regularly based on the complaints and extensive, massive desilting of sewer lines will also be taken periodically to ensure proper flow of sewage. [145 Jetting cum suction machines and 40 de-silting machines as on 15.11.2019] Photos @137-139</p>
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		<p><i>attend them mechanically:</i></p> <p><i>- BWSSB has 165 Jetting cum suction machines and 40 de-silting machines to clean the UGD lateral network. 10 more machines are under procurement and by February 2020, BWSSB will be in a position clear the manholes once in a year. 6 High Pressure desilting machines and one recycler machine are engaged in cleaning of sub-mains and main sewers.</i></p>	
2.	<p>Para 28(ii):</p> <p><i>Bengaluru Water Supply and Sewerage Board (BWSSB) must ensure that no sewage/effluent is discharged into the lakes and till tting up of STPs, interim remediation must be done forthwith. Any default in this regard will result in requirement to pay compensation of Rs. 5 lakh per month per inlet into the lakes from 01.02.2020.</i></p>	<p>Pg. 5, Sl. No. 2 of the Report</p> <p><i>The peripheral temporary diversion channels have been constructed by BDA in both Bellandur and Varthur lakes and sewage water is flowing through these channels. Entry of sewage water into the lakes has been stopped. Further, the BWSSB have installed aerating systems and has been completed by 31.01.2020 at 1) HAL side and Kempapura inlet, 2) Agaram inlet, 3) Koramangala inlet, 4) Iblur inlet coming under Bellandur Lake, 5) Northern and 6) Southern side of Varthur lake for inline treatment of sewage. Further, in addition the BWSSB is also installing artificial floating islands.</i></p>	<p>Pg. 12 of Compliance, Sl. No. 3; Photos@141-151</p> <p><i>BWSSB has installed aerating systems in the following 6 locations by 31.01.2020, through M/s KRIDL:</i></p> <ol style="list-style-type: none"> 1) HAL side & Kempapura inlet, 2) Agaram, 3) Koramangala inlet, 4) Iblur inlet coming under Bellandur lake and 5) Northern & 6) Southern side of Varthur lake. <p><i>They have been inspected by the NGT Monitoring Committee during their inspections on 21.01.2020. Also, bio-remedial installations of artificial floating islands have been installed for the inline treatment.</i></p>
3.	<p>Para 28(iii):</p> <p><i>BSWWB may further ensure that treated water is not discharged</i></p>	<p>Pg. 6, Sl. No. 3 of the Report</p> <p><i>BWSSB submits that the excess treated water was allowed to be discharged in the UGD network as per</i></p>	<p>Pg. 14 of Compliance, Sl. No. 4 to be r.w. Pg. 75 of Compliance, Sl. No. 1.</p>

<p><i>into the UGB network. Action may be taken against persons responsible for having allowed this to be done earlier resulting into loss of Rs. 2 Lakhs per day i.e. Rs. 60 Lakhs per month and more than Rs. 7 Crore per year without any justification whatsoever.</i></p>	<p><i>the conditions stipulated in the consent for operation issued to private STPs by KSPCB. After the orders of NGT, BWSSB in consultants with KSPCB, the connections given for letting treated water to UGDs have been disconnected for 109 units (out of 496 units, in 109 units UGD connections are disconnected; there is no BWSSB UGD network near 378 units; 2 units are beyond the 110 villages limits of BBMP; 5 units addresses are repeated in the list; 1 unit address is not traceable and 1 unit does not have STP). The ACS, UDD, submits that since, treated water was allowed as per the conditions in the order of consent to operate, no action can be taken against the officials of BWSSB in this matter.</i></p> <p><i>In response to the above, the Member Secretary, KSPCB, reports that from the list of 109 Residential/Commercial project total quantity of sewage generated is about 11.462 MLD, out of which by utilizing treated sewage for secondary usage, there is an excess treated sewage of about 4.58 MLD. At present BWSSB is operating 7 sewage treatment plant in Bellandur catchment and 3 more are under stabilization. Total capacity of the 7 operating STP's is 448 MLD and 3 STP's under stabilization is about 50 MLD.</i></p> <p><i>It indicates that the volumetric load from discharge of excess treated sewage into BWSSB UGD is 1.03%. This may be considered as small quantity. The Member Secretary submits that their officers/ officials are doing regular monitoring and taking actions to prevent the pollution. He has requested that in this background, no action against the officials may be taken. The NGT is requested to take a view in the above facts and circumstances.</i></p>	<p><i>The list provided by KSPCB for 496 buildings having STPs has been inspected by BWSSB engineers. Out of 496 buildings, in 109 buildings UGD connections are disconnected. There is no BWSSB UGD network near 378 buildings, 2 buildings are beyond the 110 village limits of BBMP, 5 buildings addresses are repeated in the list, 1 building address is not traceable and 1 building does not have STP.</i></p> <p><i>BWSSB is identifying the sources of discharge of sewage and will disconnect water supply and UGD connections of the defaulting establishments and also send a complaint to KSPCB. If the defaulting establishment is using ground water then the complainant is also to be booked with KSPCB for its action.</i></p> <p><i>Further, the treated water was allowed as per the conditions stipulated in the order of the consent issued by KSPCB. Under the circumstances, BWSSB requests to not take any action against its officials.</i></p> <p>Pg. 75 of Compliance, Sl. No. 1</p> <p><i>Moreover, a letter is also addressed to the IIT, Chennai for the suitability to use in the construction purpose by adopting the sensor based monitoring system and the same was also approved in the TAC (Technical Advisory Committee meeting held on 17.1.2020).</i></p> <p><i>Board is exploring the possibilities of filling up of the dried lakes from excess treated sewage from the nearby apartments through app based technology after confirmation of the treated sewage to the Board Standards.</i></p> <p><i>The subject of permitting private STPs to discharge excess treated sewage into storm water drains was discussed in the Board meeting held on 06.12.2019 and it was resolved</i></p>
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			<p><i>as under:</i></p> <p><i>i) The excess treated sewage water from the private STPs shall be reduced to minimum by encouraging all alternative units outside the premises of the apartment owing the STPs.</i></p> <p><i>ii) The unused/ excess treated sewage from STPs will be allowed to be let out in the storm water drains if they are meeting the standards after due check by KSPCB and due permission from BBMP. Thereafter, BWSSB will take necessary steps regarding the matter.</i></p> <p><i>iii) STPs not meeting the standards will be continued to be levied penalty as per Hon'ble NGT orders and they shall let out excess treated water in the UGD of BWSSB till they meet the standards.</i></p> <p><i>Further, the above subject and the Board decisions was again discussed in the Board meeting held on 13.01.2020 and also the work entrusted by the Board to IISc, Bangalore to study & submit the report on feasibility of sensor based monitoring systems for the private STPs to ascertain the conformity of standards prescribed by the Board.</i></p>
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4.	<p>Para 28(iv):</p> <p>Sources of discharge of Sewage be controlled/ regulated and electricity and water supplies to the defaulting establishments be stopped for enforcement of law till remedial steps are taken for compliance.</p>	<p>Pg. 8, Sl. No. 4 of the Report</p> <p>KSPCB reports that there are 61 units identified which are not having STPs. Rs.271.5 Crores are estimated to be recovered. No money has been paid by the units till date. The closure orders under section 33(a) of Water Act are under process of issuing show cause notices to the concerned.</p> <p>[See Pg. 5, Sl No. 1(l) of the Report for observations w.r.t. regulation/control of sewage discharge]</p>	<p>Pg. 78 of Compliance, Sl. No. 2</p> <p>i. Board has identified 376 defaulting units and assessed an amount of Rs 19.85 crores. Out of 376 units, 22 units have paid an Environmental Compensation (EC) amount of Rs 115 lakhs.</p> <p>[Note: For details, please see Sl. No. 9 (NGT direction at Para 28(ix)) of this chart.]</p> <p>ii. The process to be followed is issue of Notice of proposed Directions under Section 33(A) of Water Act followed by personnel hearing and then issue of closure orders.</p> <p>The Board conducted personal hearing on 4.7.2020 through Video Conference in which it directed the defaulters to pay the Environmental Compensation Charges as assessed by the Board earlier otherwise to initiate actions as per the direction of the Hon'ble NGT. The process has been initiated and shortly the closure orders will be issued for such units.</p> <p>iii. Details of valley wise works taken up to control/regulate sewage discharge are: [Pg. 16 of Compliance, Sl. No. 5]</p> <p>a) HAL SWD (Challaghatta Valley): Totally 23 works are to be taken up for augmenting this flow – Out of which 14 works completed and 10 MLD flow is increased. The remaining 9 work will be completed by December-2020. [6 works completed as on 15.11.2019]</p> <p>b) Koramangala and Agaram Valley: Totally 48 works are to be taken up for augmenting this flow – Out of which 36 works and the other linking at Mahindra Showroom is completed and 72.44 MLD flow has increased. After completing the remaining 12 works by December, 2020, balance sewage can be augmented. [6 works completed as on 15.11.2019]</p>
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			<p>c) Iblur Catchment area: As on 15.07.2020, out of 2425 mtrs of pipeline, laying of 1437 RMT of pipeline 900/600/450 mm dia RCC NP3 pipeline along the alignment is laid, work is in progress. [Tenders had been floated as on 15.11.2019]</p> <p>d) Kempapura Catchment area: BWSSB has taken up work of laying 300 mm dia RCC NP3 sewer line for a length of 1000 RMT to convey the sewage generated in this area Bellanduru Amanekhane STP. The work is completed and commissioned in the month of May,2020. [Tenders had not been finalised as on 15.11.2019]</p> <p>The flow in the SWD to an extent of 82.44 MLD has been reduced and same is being augmented to STPs.</p>
5.	<p>Para 28(v):</p> <p>Encroachments which are still continuing be removed by using force wherever necessary. If any injunction has been erroneous, higher forum can be moved so that law is upheld.</p>	<p>Pg. 8, Sl. No. 5 of the Report</p> <p>Regarding encroachment in Bellandur Lake (Ambedkar Colony) a Writ Petition No. 50953/2019 is pending before the Hon'ble High Court of Karnataka in which an interim order has been passed on 20.11.2019, Steps are being taken to get the interim order vacated.</p>	<p>Pg. 20 of Compliance, Sl. No. 7</p> <p>Out of the 228 slum dwellers, 128 have been evicted by Karnataka Slum Development Board as on date and have been allotted flats constructed by the Karnataka Slum Development Board. The remaining 100 slum dwellers will be evicted after the vacation of interim relief granted by the Hon'ble High Court. This case was last listed for hearing on 15.05.2020 wherein the Hon'ble High Court continued the Interim Order and adjourned the matter. In the said case, BDA has preferred an Impleadment Application in order to hasten the process of vacating Interim Order. [50% of inhabitants had been shifted and relocated as on 27.11.2019]</p>
6.	<p>Para 28(vi):</p> <p>Action against erring officers which has not yet been taken must be initiated forthwith as already directed. Failures of officers still in service should be duly reflected in their</p>	<p>Pg. 8, Sl. No. 6 of the Report</p> <p>The ACS (UDD) of State Government has submitted the list of officers who were found responsible for failure in their duties to maintain the lakes, He submits that notices have been issued for initiating the action against them. The name of officers with departments is listed in the report.</p>	<p>Pg. 22 of Compliance, Sl. No. 8</p> <p>Officers who have worked in the prescribed period have been identified and show cause notices have been issued for initiating actions against them by the BBMP, BWSSB and BDA.</p> <p>The replies from the erring Officers/ Officials of BWSSB were found to be unsatisfactory pursuant to which a letter has</p>

	ACRs.	<i>[Kindly see report for names.]</i>	<p><i>been sent to the Government seeking approval for initiating disciplinary action. The above said proposal of the BWSSB is under examination. [@p. 23]</i></p> <p><i>The replies from the erring Officers/ Officials of BDA have been received and are under examination. After examination, action will be initiated. [@p. 25]</i></p>
7.	<p>Para 28(vii):</p> <p><i>The State PCB itself may lay down standards for phosphorus instead of waiting for notification by MoEF&CC.</i></p>	<p>Pg. 10, Sl. No. 7 of the Report</p> <p><i>KSPCB reports that Bureau of Indian Standards has already issued notification on Phosphorus limit in soaps and detergents.</i></p> <p><i>KSPCB has recommended to issue the notification to State Government limiting the phosphorus in soaps and detergents. The State Government is yet to issue the order.</i></p>	<p>Pg. 26 of Compliance, Sl. No. 9</p> <p><i>Bureau of Indian Standards has already issued notification on phosphorus limit in soaps and detergents awaiting copy. Meanwhile a letter is addressed to the Department of Ecology and Environment Government of Karnataka advising them to limit the phosphorous content as approved in the Board Meeting.</i></p> <p><i>KSPCB is pursuing the matter with State Government. Notification will be released shortly. [@p. 79]</i></p>
8.	<p>Para 28(viii):</p> <p><i>The State of Karnataka may either resolve the issue of fencing with the Defence establishment or put such establishments to notice to place their objections before this Tribunal within one</i></p> <p><i>month of such notice after which the State of Karnataka will be at liberty to proceed with the fencing and such Defence establishment will stand restrained from interfering unless otherwise directed by this Tribunal or any other authority.</i></p>	<p>Pg. 11, Sl. No. 8 of the Report</p> <p><i>The defence authorities have given the permission to construct the diversion channel. As regards the fencing in the defence area, Committee has been told that this work would be taken up by the defence itself. Presently there is no threat of encroachment at this point. But the work of fencing has to be done.</i></p>	<p>Pg. 26 of Compliance, Sl. No. 10</p> <p><i>BDA has completed fencing of Bellandur lake except the reaches of the said lake which lies in the defence area. The diversion channel has been completed.</i></p> <p><i>The defence authority vide letter dated 05.01.2020 has informed as follows:</i></p> <p><i>“A fencing project for 465 Acres of Defence land which includes the portion of Bellandur lake defence land has already been projected and the same is likely to be constructed in 2020. Hence, it is submitted that fencing work may please be undertaken in the balance portion of the lake other than 167 Acres and 20 Guntas which lies in defence land as the same is already under watch and ward duties of the army and no encroachment / dumping of waste is allowed on the subject matter”.</i></p>

9.	<p>Para 28(ix):</p> <p>Compensation already assessed be recovered by adopting coercive measures such as disconnection of electricity and water supplies.</p>	<p>Pg. 11, Sl. No. 9 of the Report</p> <p>An amount of Rs. 75 lakhs have been collected from the 14 units.</p> <p>Further, a Writ Petition No. 4284/2020 has been filed before the Hon'ble High Court of Karnataka by M/s Share wood Residents Association; and interim direction (26.02.2020) has been issued by the Hon'ble High Court as under:-</p> <ul style="list-style-type: none"> • By way of ad-interim relief, we restrain the second respondent from initiating any proceedings to recover the amounts mentioned in Annexures-F1 and F2. • However, notwithstanding pendency of this petition it will be always open for the second respondent (KSPCB) to issue show cause notices in terms of Annexures-F1 and F2. • Needless to add that before passing final orders on the notices at Annexures-A1 and A2 as well as G1 and G2 and show cause notices issued in terms of paragraph 9 above, and opportunity of being heard shall be granted to the petitioners. <p>Further, in another Writ Petition No. 3303/2020, the Hon'ble High Court has issued an interim order (12.02.2020) directing the KSPCB to issue show cause notice to the petitioner to be heard for a liability of Rs. 7 Crores. Meanwhile, the electricity supply to the premises of the petitioner shall not be disconnected.</p> <p>The NGT may kindly take note of it to issue further direction in the subject matter.</p>	<p>Pg. 79 of Compliance, Sl. No. 4</p> <p>Board has identified 61 defaulting units which have not installed STPs and assessed an amount of Rs 271.50 Crores.</p> <p>Issue of Closure Orders for the defaulting units which have not paid Environmental Compensation (EC) as a coercive measure is under process.</p> <p>Board has identified 376 defaulting units and assessed an amount of Rs 19.85 crores. Out of 376 units, 22 units have paid an Environmental Compensation (EC) amount of Rs 115 lakhs. [Demand notices had been served to the defaulting units as on 04.12.2019.]</p> <p>Further, in writ petition No. 4540/2020, for 6 defaulters, the Hon'ble High Court has issued interim order (27.02.2020) directing the KSPCB to issue show cause notice to the petitioners. Accordingly, the Board conducted personal hearing on 4.7.2020 through Video Conference and came to a decision, directing the defaulters to pay the Environmental Compensation Charges as assessed by the Board earlier otherwise to initiate actions as per the direction of the Hon'ble NGT.</p> <p>The process is initiated and shortly the closure orders will be issued for such units.</p>
10.	<p>Para 28(x):</p> <p>Steps be taken expeditiously for de-silting, de-weeding. Analysis of sludge and silt may be</p>	<p>Pg. 12, Sl. No. 10 of the Report</p> <p>a) De-silting of Bellandur and Varthur lakes. Tenders for both the lakes have been invited and the same are in process for issue of work order.</p>	<p>Pg. 36 of Compliance, Sl. No. 12</p> <p>Tenders for de-silting of both the lakes were invited and financial bids were opened. However, the lowest bids received were found to be very high, so action is being taken</p>

<p>carried out before its disposal based on the result of such analysis, the mode of disposal and protocol be determined in accordance with laid down principles under the relevant Rules.</p>	<p>Even after continuous persuasion by the committee, quarries for dumping the silt from both the lakes have not been identified so far by the Deputy Commissioner, Benagaluru Urban / BDA.</p> <p>b) Sludge and silt analysis, protocol development and mode of disposal</p> <p>Conflict in the views of CPCB and KSPCB w.r.t. the presence of heavy metals/toxic materials in the silt. The BDA submits that the NEERI requires 5 months for analyzing the sludge and silt samples for 79 parameters after receipt of advance of Rs. 65.25 lakhs. This may delay the de-silting work. In view of the conflicting opinions, the NGT may kindly direct the KSPCB to get the already collected samples analysed for 79 parameters from a third party recognized source to determine the mode of disposal and protocol. [Please see the report for full recommendation on this point.]</p>	<p>to invite tenders again.</p> <p>However, fixing the agencies for de-silting depends on the outcome of the analysis of soil samples being tested by the KSPCB and protocol to be decided upon for disposal of the excavated sludge/silt. BDA will revisit the estimate for de-silting on the basis of these outcomes before fixing the agencies for desilting.</p> <p>In the meanwhile, de-silting work has commenced w.e.f. 24.03.2020, pending receipt of soil test results and finalisation of protocol, by excavating a trench in the centre of both the lakes and depositing the excavated material within the lake bed along the boundaries of the lakes. The excavated muck so deposited will be transported subsequently after firming up the protocol on the basis of soil test results.</p> <p>Bellanduru Lake: Photos @p. 247-252</p> <p>Approximately 3,73,425 Cubic meters in 80 acres lake area with an average depth of 0.9 meters has been removed. 76,000 of cubic meter of de-silted muck is being utilized for diversion channel bund improvement. 75,000 of cubic meter of de-silted muck has been utilized for formation of bio diversity park near Suncity and Yamalur waste weir which was identified and approved by the NGT Committee outside the Periphery of lake by depositing excavated silt of appropriate quantity. The remaining quantity of silt is stocked in the lake bed area.</p> <p>Varthuru Lake: Photos @p. 254-257</p> <p>Approximately 2,12,000 Cubic meters in 60 acres lake area with an average depth of 0.9 meters has been removed. 70,000 of cubic meter of de-silted muck is being utilized for Diversion channel bund improvement. 60,000 of cubic meter of de-silted muck/silt has been utilized for formation of bio diversity park near Balagere and Siddapura which was identified and approved by the NGT Committee outside the</p>
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			<i>Periphery of lake by depositing excavated silt of appropriate quantity.</i>
11.	<p>Para 28(xi):</p> <p><i>The State PCB may develop a robust water quality monitoring programme for monitoring of water quality of drains leading to the lakes and also undertake water quality monitoring at atleast 5 locations for each lake.</i></p>	<p>Pg. 16, Sl. No. 11 of the Report</p> <p><i>Samples are collected and being analyzed. However, presently the sewage water is diverted through the diversion cannel in both the lakes and no water is entering into the lakes.</i></p>	<p>Pg. 51 of Compliance, Sl. No. 13</p> <p><i>Sample of lake water is being collected at atleast 2 points in each lake as the water has receded after diverting of the sewage water from the lake.</i></p>
12.	<p>Para 28(xii):</p> <p><i>Steps may be taken to explore development of wetlands and biodiversity parks apart from other remedial action for reducing the pollution load on the recipient water bodies.</i></p>	<p>Pg. 16, Sl. No. 12 of the Report</p> <p><i>The BDA has suggested an area of 52.24 acres (East of bund 5.8 acres; near Sun city 13.85 acres; near Y-junction Mantri side 5.87 acres; near Y-junction North West corner 11.77 acres and Ambedkar nagar and nearby area 14.87 acres) in Bellanduru lake; 16.6 acres (near main let 6.9 acres; Siddapura West side 2.46 acres and near Balagere 7.24 acres) in Varthur lake for biodiversity parks. The suggested areas are out of the periphery of the lakes. In such areas (biodiversity parks), silt of appropriate quantity from the lakes may be used for raising the appropriate heights. The biodiversity parks may be raised with the help of an Expert Committee in the field. The biodiversity parks will act as carbon sink, lung space and habitat to avian and other fauna and flora. The committee suggest that no other structures should be allowed in the lake areas than as suggested by the NGT in para 28 (xii).</i></p>	<p>Pg. 52 of Compliance, Sl. No. 14</p> <p><i>A proposal has been submitted to the NGT Monitoring Committee regarding the development of wetlands and bio diversity parks by the BDA. The formation of wet lands on the lines recommended by the Monitoring Committee will be taken up under the main contract being awarded for the de-silting work.</i></p> <p><i>However, the work of Bio-Diversity park has already been undertaken in Bellanduru Lake near Suncity and Yamlur waste weir and in respect of Varthuru Lake, near Belagere and Siddapura which was identified and approved by the NGT Committee outside the Periphery of lake by depositing excavated silt of respective lake.</i></p>
13.	<p>Para 28(xiv):</p> <p><i>Real time water quality system be commissioned by 31.01.2020 as proposed.</i></p>	<p>Pg. 17, Sl. No. 14 of the Report</p> <p><i>Real time water quality systems have been installed at 3 locations.</i></p>	<p>Pg. 56 of Compliance, Sl. No. 16</p> <p><i>Complied.</i></p>

14.	<p>Para 28(xv):</p> <p>The issue of removing 1.5 km road laid upon the lake bed, within the boundary of Varthur lake, by dumping of C&D debris be finalized as per directions of Justice Hegde Committee in terms of para 26 above.</p>	<p>Pg. 17, Sl. No. 15 of the Report</p> <p>The Bangalore Development Authority has proposed biodiversity parks as per para 28 (xii) of the NGT order dated 18.12.2019 (para 12 above). With this proposal the areas about 16.6 acres which falls outside the pipeline but within the outer lake boundary will not be available for water impounding. Hence, there would not be necessity of vents and anchoring as suggested by Minor Irrigation Department.</p> <p>Since the act of laying pipeline by the Minor Irrigation Department was without authority of Law and no-approval of competent authority, this Committee is of the opinion that suitable fine be levied on the Minor Irrigation Department by the NGT.</p> <p>Further, no action has been taken as per para 19 (20) of the order dated 06.12.2018 by the state Government.</p> <p>Para 19(20) of order dated 06.12.2018:</p> <p>“Hon’ble Tribunal may order an independent enquiry to examine the guilt of the officers involved in the dumping of thousands of Cubic meter of C & D debris on the Varthur lake bed for an ostensible object of laying of pipeline.”</p>	<p>Pg. 56 of Compliance, Sl. No. 17</p> <p>The 1.5 km road has been removed in March 2019. As per para 19(20) of the order dated 06-12- 2018 action has been initiated, by the government. Notices have been issued to the concerned officials vide EIC office letter dated 04.03.2020.</p> <p>This Project envisages improving the groundwater table in drought affected region of Kolar and Chikkaballapura districts by rejuvenation of bore wells and open wells which is the only way to bring the parched lands back into the main stream of agricultural activities thereby indirectly improving the ecosystem, and providing the water for agricultural use in the drought prone area.</p>
15.	<p>Para 19(16) of order dated 06.12.2018:</p> <p>Post removal of waste from the Lake and from the Rajakaluves, the State ought to prepare a detailed project report with respect to disposal of the same.</p>	<p>Pg. 22, Sl. No. 22 of the Report</p> <p>The activity has to be done once the de- silting process is over is over by the BDA.</p>	<p>Pg. 74 of Compliance, Sl. No. 25</p> <p>A detailed project report is under preparation to dispose of the silt removed from SWD and lakes in a scientific manner to the abandoned quarries as per Solid Waste Management Rule 2016, so that the quarry land is reclaimed and also such reclaimed land can be later used for afforestation and / or play grounds or parks.</p> <p>Identification of specific quarry out of available quarries at Marenahalli, Bagalur, Hullalli for disposal of silt from</p>

			<i>Bellandur and Varthur lake, will be done by BDA as a part of DPR, keeping in mind the size of landfill requirement by minimizing transportation.</i>
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10. The steps taken by the BBMP or other departments can be looked into by the Monitoring Committee. Objections/suggestions of individuals including letter dated 13.02.2020 from A.N. Yellappa Reddy, Chairman, Bangalore Environment Trust need not be considered by the Tribunal as the same can be considered by the Monitoring Committee.

11. In view above, the left-over work may be expeditiously completed which may be reviewed by the Monitoring Committee. The status of compliance as on 31.12.2020 may be compiled by the Monitoring Committee and report furnished to this Tribunal by 15.01.2021 with a copy to the Chief Secretary, State of Karnataka. The Chief Secretary, State of Karnataka may furnish a consolidated report covering the steps taken by all the concerned Departments. The individual Departments need not file separate reports before this Tribunal once the same are filed before the Monitoring Committee and the Chief Secretary, Karnataka. The Chief Secretary, Karnataka may give its own report by 31.01.2021 by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Support PDF and not in the form of Image PDF.

A copy of this order be sent to Justice Santosh Hegde, former Judge of the Hon'ble Supreme Court, the Chief Secretary, Karnataka, the Additional Chief Secretary, UDD, Karnataka, the Commissioner, BBMP, Commissioner, BDA, Chairman, BWSSB, Member Secretary, State PCB and the CPCB by e-mail.

List for further consideration on 15.02.2021.

Adarsh Kumar Goel, CP

S. P. Wangdi, JM

Dr. Nagin Nanda, EM

August 13, 2020
Original Application No. 125/2017
DV

Item No. 04

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 125/2017

(With report dated 15.02.2021)

Court on its own Motion

Applicant

Versus

State of Karnataka

Respondent

Date of hearing: 12.03.2021

**CORAM: HON'BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON'BLE MR. JUSTICE SHEO KUMAR SINGH, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER**

Applicant/
Amicus Curie:

Mr. Raj Panjwani, Senior Advocate with Mr. Saransh Jain,
Advocate

Respondent(s):

Ms. Madhvi Divan, Additional Solicitor General with Mr.
KM Darpan, Advocate for State of Karnataka
Mr. Brijendra Chahar, Senior Advocate with Mr. Kashi
Vishweshwar, Advocate for BBMP
Mr. Raj Kumar, Advocate for CPCB
Mr. Balaji Srinivasan, Advocate for BWSSB

ORDER

1. The issue for consideration is **remedial action for restoration of Bellandur, Agara and Varthur lakes at Bangalore, including preventing discharge and dumping of pollutants, removing encroachments from catchment area and other steps for restoration.**

2. The matter has been dealt with by this Tribunal on several occasions in the last almost four years. The Tribunal earlier constituted a Committee headed by Shri Raj Panjwani, Senior Advocate (now assisting the Tribunal

as Amicus) to visit the site to assess the factual position and to suggest further course of action.

Report dated 31.5.2018 about the status of degradation of lakes and further orders for remedial action – appointment of monitoring Committee headed by Justice Santosh Hegde

3. Accordingly, the Committee gave its report dated 31.05.2018 which was dealt with by this Tribunal, vide order dated 06.12.2018. While accepting the report, the Tribunal directed preparation of an action plan with timelines and budgetary support under the overall supervision of Additional Chief Secretary, Urban Development Department (UDD), Karnataka and the Bruhat Bengaluru Mahanagara Palike (BBMP). Execution of the action plan was to be overseen by the Monitoring Committee headed by Justice Santosh Hegde, former Judge of the Hon'ble Supreme Court.

Order of the Tribunal dated 21.10.2019 and Supreme Court order dated 22.11.2019

4. The matter was thereafter considered by this Tribunal on 21.10.2019 in the light of reports of the Monitoring Committee dated 27.05.2019 and 20.09.2019. **The Tribunal found continuing violation of environmental norms and required the personal presence of the Additional Chief Secretary, Urban Development, Karnataka, Commissioner, BBMP, Commissioner, Bangalore Development Authority (BDA), Chairman, Bangalore Water Supply and Sewerage Board (BWSSB) and the Member Secretary, State PCB with compliance reports and explanation for violation of earlier orders of the Tribunal. The said order was affirmed by the Hon'ble Supreme Court vide order dated 22.11.2019 in Civil Appeal No. 9666-68 of 2019, State of Karnataka v. D. Kupendra Reddy & Ors.**

Further order dated 18.12.2019 considering compliance status

5. The matter was thereafter considered on 18.12.2019 in the personal presence of the officers and in the light of status report furnished under 37 headings, including steps for preventing discharge of solid and liquid waste into the lake, removing encroachments, removing illegal construction inside the lake, de-silting and de-weeding etc. The Tribunal discussed all the relevant aspects in paras 14 to 27 of the order and finally issued following directions:

“28. *We may now sum up our directions as follows:*

- i. ***Timelines for execution of projects for setting up of STPs and laying of sewerage network may not be extended beyond 30.09.2020.*** *If the works remains incomplete even till 30.09.2020, compensation will be liable to be paid @ Rs. 10 lakh per STP per month which may be liable to recovered from the erring officers, apart from adverse entries in their service records and other adverse action.*
- ii. ***Bangaluru Water Supply and Sewerage Board (BWSSB) must ensure that no sewage/effluent is discharged into the lakes*** *and till setting up of STPs, interim remediation must be done forthwith. Any default in this regard will result in requirement to pay compensation of Rs. 5 lakh per month per inlet into the lakes from 01.02.2020.*
- iii. ***BSWWB may further ensure that treated water is not discharged into the UGB network.*** *Action may be taken against persons responsible for having allowed this to be done earlier resulting into loss of Rs. 2 Lakhs per day i.e. Rs. 60 Lakhs per month and more than Rs. 7 Crore per year without any justification whatsoever.*
- iv. *Sources of discharge of sewage be controlled/regulated and electricity and water supplies to the defaulting establishments be stopped for enforcement of law till remedial steps are taken for compliance.*
- v. ***Encroachments which are still continuing be removed by using force wherever necessary.*** *If any injunction has been granted by any Court which is considered erroneous, higher forum can be moved so that law is upheld.*

- vi. *Action against erring officers which has not yet been taken must be initiated forthwith as already directed. Failures of officers still in service should be duly reflected in their ACRs.*
- vii. ***The State PCB itself may lay down standards for phosphorus instead of waiting for notification by MoEF&CC.***
- viii. ***The State of Karnataka may either resolve the issue of fencing with the Defence establishment or put such establishments to notice to place their objections before this Tribunal within one month of such notice after which the State of Karnataka will be at liberty to proceed with the fencing and such Defence establishment will stand restrained from interfering unless otherwise directed by this Tribunal or any other authority.***
- ix. *Compensation already assessed be recovered by adopting coercive measures such as disconnection of electricity and water supplies.*
- x. ***Steps be taken expeditiously for de-silting, de-weeding. Analysis of sludge and silt may be carried out before its disposal based on the result of such analysis, the mode of disposal and protocol be determined in accordance with laid down principles under the relevant Rules.***
- xi. *The State PCB may develop a robust water quality monitoring progame for monitoring of water quality of drains leading to the lakes and also undertake water quality monitoring at atleast 5 locations for each lake.*
- xii. *Steps may be taken to explore development of wetlands and bio-diversity parks apart from other remedial action for reducing the pollution load on the recipient water bodies.*
- xiii. ***C&D waste processing facility be commissioned expeditiously and steps be taken to ensure that the timeline proposed is adhered to.***
- xiv. *Real time water quality system be commissioned by 31.01.2020 as proposed.*
- xv. ***The issue of removing 1.5 km road laid upon the lake bed, within the boundary of Varthur lake, by dumping of C&D debris be finalized as per directions of Justice Hegde Committee in terms of para 26 above.***

29. ***The Monitoring Committee headed by Justice Hegde may also review the progress made in terms of all the issues***

considered in the order of this Tribunal dated 06.12.2018 and submit its report on or before 06.03.2020 by e-mail at judicial-ngt@gov.in. The Monitoring Committee may also give its findings to the Chief Secretary of Govt. of Karnataka. Considering that the entire exercise requires inter sectional and inter departmental coordination, Chief Secretary, Karnataka may steer the action of different departments and bodies. We extend the tenure of Monitoring Committee till 31.03.2020.”

Order dated 13.8.2020 considering further progress

6. The matter was last considered on 13.08.2020 in the light of the report of the Monitoring Committee dated 06.03.2020 and response of the State dated 11.06.2020 and by way of earlier affidavit. The summary of compliance status was filed by the State of Karnataka on 04.08.2020 during the last hearing. The Tribunal considered the compliance status so presented and also the report of the Monitoring Committee and directed that the leftover work may be expeditiously completed, which may be reviewed by the Monitoring Committee and status of compliance as on 31.12.2020 be furnished to this Tribunal by 15.01.2021 with a copy to the Chief Secretary, Karnataka. It was further directed that the Chief Secretary, Karnataka may file consolidated report covering the steps taken by various departments. The concluding part of the above order of the Tribunal is as follows:

“10. The steps taken by the BBMP or other departments can be looked into by the Monitoring Committee. Objections/suggestions of individuals including letter dated 13.02.2020 from A.N. Yellappa Reddy, Chairman, Bangalore Environment Trust need not be considered by the Tribunal as the same can be considered by the Monitoring Committee.

11. In view above, the left-over work may be expeditiously completed which may be reviewed by the Monitoring Committee. The status of compliance as on 31.12.2020 may be compiled by the Monitoring Committee and report furnished to this Tribunal by 15.01.2021 with a copy to the Chief Secretary, State of Karnataka. The Chief Secretary, State of Karnataka may furnish a consolidated report covering the steps taken by all the concerned Departments. The individual Departments need not file separate reports before

this Tribunal once the same are filed before the Monitoring Committee and the Chief Secretary, Karnataka. The Chief Secretary, Karnataka may give its own report by 31.01.2021 by e-mail at judicial-ngt@gov.in preferably in the form of searchable PDF/OCR Support PDF and not in the form of Image PDF.”

Latest reports of the Monitoring Committee as on 31.1.2021 and the Chief Secretary

7. Accordingly, the Monitoring Committee has filed its report on 15.02.2021 giving the progress upto 31.01.2021 in a tabular form as follows:

Contd. at next page

Sl. no	Directions of Hon'ble NGT vide orders dated 06.12.2018, 18.12.2019 and 13.08.2020	Progress up to 31.01.2021 and Committee observations		
1	Relevant para	3		
1.	<p>Para 28(i) Order dated 18.12.2019: <i>Timelines for execution of projects for setting up of STPs and laying of sewerage network may not be extended beyond 30.09.2020. If the works remains incomplete even till 30.09.2020, compensation will be liable to be paid @Rs.10 lakh per STP per month which may be liable to recovered from the erring officers, apart from adverse entries in their service records and other adverse action.</i></p> <p><i>Further, the NGT vide order dated 13.08.2020 has directed that, the works may be expeditiously completed and to be reviewed by the Monitoring Committee.</i></p>	In regard to the construction of STPs and their commission, the details are given as under (BWSSB):		
		Sl. no	Name of the STP / others	Compliance
		i.	Sarakki – 5 MLD STP	Completed and commissioned on 08.11.2019
		ii.	Chikkabeguru - 5 MLD STP	Completed and commissioned on September 2020.
		i.	Hulimavu – 10 MLD STP	Completed and commissioned on 31.03.2020
		ii.	Agram – 35 MLD STP	Completed and commissioned on 31.03.2020
		iii.	Madivala – 4 MLD STP	24.5% work completed
		iv.	K&C Valley – 150 MLD STP	90.01 % works completed as on 31.01.2021. Primary treatment is in progress and likely to be completed by 31.03.2021 and expected to treat 83MLD sewage (with this augmentation, 536 MLD (92%) would be treated as against 583 MLD)
		v.	Construction of 210 MLD capacity ISPS at Koramangala at sports complex	The work is completed and ready for operation. The water will be pumped to 150 MLD STP, once the remaining pipe network is completed, (yet to complete 252 Rmt)
		vi.	Laying of 800 mm UGD from 210 MLD ISPS to 150 MLD STP	Against the 5315-running meter; 5063 running meter is completed. Likely to be completed by 31.03.2021.
		vii.	Waste water wet well – 32.5 MLD Capacity near the premises of 90 MLD Bellanduru Amanikhane STP to augment sewage from the adjoining areas of Bellanduru Amanikhane STP (date fixed for completion 30.09.2020)	The overall progress as on 31.01.2021 is 45.75 % against the planned target of 100.00%. This work will be completed before 31.03.2021. However, the temporary arrangement has been made for pumping sewage to Bellandur Amanikhane STP.

2.	<p>Para No.14 Order Dated 18.12.2019 <i>We also found that timelines fixed by this Tribunal have been unilaterally extended without any valid justification and no action has been taken against the erring officers on a specious plea that it was difficult to fix responsibility. Such approach is hardly compliant with the Rule of Law. We particularly disapprove the timeline for upgradation of STPs with Biological Nutrient Removal (BNR) at 248. MLD STP at K&C Valley. The same must not go beyond 30.09.2020 but preferably be completed before 30.06.2020 although earlier timeline fixed by this Tribunal was 30.06.2019. No substantial work has been done in the last one year on this aspect.</i></p>	<p>The BWSSB submits that, STPs of 90 MLD at Bellandur Amanikere; 60 MLD at K&C Valley; 5 MLD at Sarakki; 5 MLD at Chikkabegur; 10 MLD Hulimavu; 35 MLD at Agram and 150 MLD at K&C Valley (under construction) are complied with Biological Nutrient Removal treatment.</p> <p>The BWSSB further submits that for the 248 MLD STP at K&C Valley, certain modifications in the process of treatment have been made in consultation with the IISc, Bengaluru, for removal of nutrients. On sample analysis it is found that the biological nitrates have been reduced substantially (nitrogen 6.4 mg per ltr and phosphates 0.85 mg per ltr). It is noted that, the treated water from these STPs is being transmitted to the tanks in Kolar Districts for recharge of ground water for irrigation purpose. However, the upgradation of the system has not been completed but is in process.</p>
3.	<p>Para 28(ii) Order dated 18.12.2019: <i>Bengaluru Water Supply and Sewerage Board (BWSSB) must ensure that no sewage/effluent is discharged into the lakes and till completing of STPs, interim remediation must be done forthwith. Any default in this regard will result in requirement to pay compensation of Rs.5 lakh per</i></p>	<p>It is submitted that, the sewage water has been diverted through the peripheral temporary diversion channels and no sewage water enters in these lakes (Agram, Bellanduru and Varthur).</p> <p>Further, the BWSSB has installed aerating systems in these temporary diversion channels at, 1) HAL side and Kempapura inlet, 2) Agaram inlet, 3) Koramangala inlet, 4) Iblur inlet coming under Bellandur Lake, 5) Northern and 6) Sothern side of Varthur lake for inline treatment of sewage.</p> <p>The artificial floating islands have also been installed at certain places. The committee has suggested to augment phytoremediation options at locations, where the water flow is slow or stagnant to enhance the treatment efficacy, which is yet to be implemented.</p>

	<i>month per inlet into the lakes from 01.02.2020.</i>	
4.	<p>Para 28(iii) Order dated 18.12.2019: <i>BSWWB may further ensure that treated water is not discharged into the UGD network. Action may be taken against persons responsible for having allowed this to be done earlier resulting into loss of Rs.2 Lakhs per day i.e.Rs.60 Lakhs per month and more than Rs.7 Crore per year without any justification whatsoever. BY BWSSB</i></p>	<p>There are about 496 buildings having STPs as per the KSPCB records. The BWSSB submits that, wherever there was connectivity with the UGD for flowing of treated water; all have been disconnected (109 buildings). For the remaining areas there is no access to networking of UGD.</p> <p>The BWSSB submits that, treated water was allowed as per the conditions stipulated in the order issued by KSPCB. In view of these facts and circumstances, it is requested by BWSSB not to initiate action against their officials.</p>
5.	<p>Para No.16 Order Dated 18.12.2019 <i>We are informed that about 256.7 MLD untreated sewage is entering the lake from five locations which is nothing but a criminal offence which is required to be checked on war footing and violators of law brought to justice, erring officer being appropriately dealt with under the civil, criminal and service law with a view to uphold the Rule of Law. There is large scale breach of public duties by concerned Authorities dealing with the subject and earlier observations of this Tribunal have fallen on deaf ears and blatantly flouted.</i></p>	<p>The BWSSB submits that to check the flow of sewage water into the lakes, following works have been completed.</p> <ol style="list-style-type: none"> 1. HAL SWD (Challaghatta Valley) – Totally 23 works are to be taken up for augmenting this flow, out of which 23 works are completed as on 23.12.2020. 2. Koramangala and Agram Valley -Totally 48 works are to be taken up for augmenting this flow out of which 48 works are completed on 23.12.2020. 3. Iblur Catchment area- Completed and Commissioned on 23.12.2020. 4. Kempapura Catchment area- BWSSB has taken up work of laying 300 mm RCC NP3 sewer line for a length of 1000 RMT to convey the sewage generated in the area of Bellanduru Amanekhane STP. The work is completed and commissioned in the month of May 2020. <p>The BWSSB submits that, the combined treatment capacity in the catchment of these lakes will be around 664.50 MLD against the presently measured flow of 553 MLD. Presently, about 453.50 MLD of sewage is being treated. Additional treatment of 83 MLD would be augmented by commissioning of new STP (end of March 2021). Therefore, there will be treatment of 536.50 MLD (92 %) as against the measure flow of 583 MLD.</p> <p>The Committee observes that the BWSSB has to take steps to treat the remaining 8 to 10 % of sewage to stop completely the flowing of sewage into the lakes after rejuvenation. It is submitted here that, as per the earlier recommendations of the Committee, the water level in these lakes will be maintained by supplying treated water from the STPs daily to compensate evaporation and seepage losses. Only the surplus treated water should be allowed to flow to Kolar, Chikkaballapur, Anekal etc.</p>

6.	<p>Para 28(iv) Order dated 18.12.2019: <i>Sources of discharge of Sewage be controlled/ regulated and electricity and water supplies to the defaulting establishments be stopped for enforcement of law till remedial steps are taken for compliance.</i></p>	<p>The KSPCB has identified 91 units in total that are required to be installation of STP. The details of progress are given as under:-</p> <table border="1"> <tr> <td>No. of units Installed STP</td> <td>42</td> </tr> <tr> <td>No. of units connected to BWSSB</td> <td>06</td> </tr> <tr> <td>No. of units with STP under construction</td> <td>07</td> </tr> <tr> <td>No. of units issued with Closure orders for either not having STPs or not connected to UGD and letting the raw sewage into the storm water drain</td> <td>10</td> </tr> <tr> <td>Action yet to be taken</td> <td>26</td> </tr> </table>	No. of units Installed STP	42	No. of units connected to BWSSB	06	No. of units with STP under construction	07	No. of units issued with Closure orders for either not having STPs or not connected to UGD and letting the raw sewage into the storm water drain	10	Action yet to be taken	26		
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7.	<p>Para 28(v) Order dated 18.12.2019: <i>Encroachments which are still continuing be removed by using force wherever necessary. If any injunction has been erroneous, higher forum can be moved so that law is upheld.</i></p>	<p>An area of 5.20 Acres in Sy.No.319 was granted to a person from the village of Amani Bellanduru kane during 1976-77 and a new survey number 477 have been formed. This survey number was the part of Varthur lake. The matter is under process for cancelation of grant and pending before the concerned Assistant Commissioner. The other encroachments are stated as removed.</p> <p>Illegal constructions in Ballandur lake (named as Ambedkar Nagar slum) are yet to be evicted</p>												
8.	<p>Para 28(vi) Order dated 18.12.2019: <i>Action against erring officers which has not yet been taken must be initiated forthwith as already directed. Failures of officers still in service should be duly reflected in their ACRs.</i></p>	<p>The Additional Chief Secretary, Urban development Department, has submitted the following details in regard to action initiated in the subject matter. The same is produced here for further needful.</p> <p>1) Bengaluru Development Authority :</p> <table border="1"> <thead> <tr> <th>Sl. No</th> <th>Name of erring officer/ official</th> <th>Designation and Period</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Rizwan Baig</td> <td>Executive Engineer From 2010 to 2011 & 2015 to 2016</td> </tr> <tr> <td>2.</td> <td>S.Mallikarjuna Swamy</td> <td>Executive Engineer from 2010 to 2011 & 2015 to 2016</td> </tr> <tr> <td>3.</td> <td>Ravi Narayana Reddy</td> <td>Executive Engineer from 2010 to 2011 & 2015 to 2016</td> </tr> </tbody> </table>	Sl. No	Name of erring officer/ official	Designation and Period	1.	Rizwan Baig	Executive Engineer From 2010 to 2011 & 2015 to 2016	2.	S.Mallikarjuna Swamy	Executive Engineer from 2010 to 2011 & 2015 to 2016	3.	Ravi Narayana Reddy	Executive Engineer from 2010 to 2011 & 2015 to 2016
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Notices were served to erring officials on 19.02.2020 seeking their replies within 15 days. Replies were received from all the above mentioned officials. On scrutiny of the explanations given by them, the Additional Chief Secretary (ACS), submits that the replies are found acceptable.

2) BBMP : Period from 20.09.2008 to 03.05.2011

Sl. No	Name of erring officer/ official	Designation and Period	Present Dept
1.	J.C.Prakash Murthy	Assistant Engineer (1.10.2008 to 30.11.2009)	PWD
2.	H.P.Mohan Kumar	Assistant Executive Engineer (2.03.2009 to 3.1.2011)	PWD
3.	H.Chandrappa	Assistant Engineer, K.R.Puram Sub- Division, (2.12.2009 to 11.1.2012)	PWD
4.	J.C.Prakash Murthy	Assistant Executive Engineer, (after promotion) (2.12.2009 to 7.7.2010)	PWD

The State Government vide No.UDD/91/MNJ/2017, Dated.11.12.2020 directed BBMP to take necessary action on the erring officials as per the directions of the Hon'ble NGT and to submit a compliance report by 20.12.2020. The draft charges memo has been submitted to the concerned Administrative Department i.e., PWD for further necessary action.

3) BWSSB

Sl. No.	Name	Designation
1.	S.M. Basavaraju	Chief Engineer (14.11.2006 to 08.04.2013) & 10.05.2013 to 29.03.2014)
2.	S.M. Ramakrishna	Chief Engineer (29.03.2014 to 11.06.2013) & as Chief Engineer WWM (I/c) & (11.06.2014 to 31.07.2014) as Chief Engineer WWM
3.	S.R. Roopa Kumar	Additional Chief Engineer (31.01.2007 to 05.06.2008)
4.	S.P. Rudra Murthy	Additional Chief Engineer (05.06.2008 to 13.06.2012)
5.	V. Mahesh	Additional Chief Engineer (27.03.2013 to 10.07.2015)
6.	K.R. Manjunath	Additional Chief Engineer (10.07.2015 to 28.10.2016)
7.	B.M. Purushotham	Executive Engineer (29.10.2007 to 23.05.2008)
8.	C. Abdul Nazir	Executive Engineer (23.05.2008 to 04.01.2012)
9.	B.N. Sidda Gangaiah	Executive Engineer (04.01.2012 to 31.08.2012) & from 31.08.2012 to 15.11.2012
10.	C.C. Putta Mallappa	Executive Engineer (15.11.2012 to 26.08.2013)
11.	B.S.C. Soma Shekar	Executive Engineer (26.08.2013 to 07.06.2014)

		<p>The ACS submits that officers who have worked in the specified period have been identified and show cause notices have been issued to them. The replies obtained from these officers have been reviewed and found to be not acceptable. Hence, the formal approval of the Government has been sought vide letter dated.26.05.2020 for initiating disciplinary proceedings on all the concerned retired officers of BWSSB. In this regard, the State Government in letter dated.27.10.2020 has accorded approval to conduct department enquires on all the concerned retired officers of the Board. As per rule 214 (2)(B)(i) and (ii) of KCSR, action has been initiated to conduct Departmental enquiry and for this purpose show-cause notices have been issued to all the retired officers on 18.12.2020 giving 15 days' time to submit their replies. All the retired officers have sought many details and additional time for furnishing their replies. After getting their replies, further action will be initiated.</p>
9.	<p>Para 28(vii) Order dated 18.12.2019: <i>The State PCB itself may lay down standards for phosphorus instead of waiting for notification.</i></p>	<p>The KSPCB submits that the Bureau of Indian Standards has issued notification for limiting the Phosphorus content in household laundry detergents powders, household laundry detergents bars and synthetic detergents of washing woollen and silk fabrics.</p> <p>Further they submit that some follow up action has been taken as listed below:-</p> <ol style="list-style-type: none"> 1. A public notice is issued by KSPCB in this regard in the print media. 2. Letters are addressed to all the State PCB's to directly implement the order. 3. Letters are addressed to all the soap/detergent manufacturers in the state of Karnataka for the restriction of Phosphorus content. 4. Letter is addressed to MOEF for making a final notification.
10.	<p>Para 28(viii) Order dated 18.12.2019: <i>The State of Karnataka may either resolve the issue of fencing with the Defence establishment or put such establishments to notice to place their objections before this Tribunal within one month of such notice after which the State of Karnataka will be at liberty to proceed with the fencing and such Defence establishment will stand restrained from interfering unless otherwise</i></p>	<p>The issue of raising of fencing towards the Defence area have been resolved. The Commissioner, BDA, submits that an estimate is prepared and sent for 4(G) exemption to the Government for the construction of fence. Further, in regard to desilting a portion of the lake, there is a dispute pending with the Defence.</p>

	<i>directed by this Tribunal or any other authority.</i>							
11.	<p>Para 28(ix) Order dated 18.12.2019: <i>Compensation already assessed to be recovered by adopting coercive measures such as disconnection of electricity and water supplies.</i></p>	<p>In regard to this para, the KSPCB submits as under:-</p> <table border="1"> <tr> <td>Total No. of units issued with notice for EC and Amount.</td> <td>376 units (Rs.19.85 Crores)</td> </tr> <tr> <td>No. of units paid EC and Amount</td> <td>40 units (Rs.2.10 Crores)</td> </tr> <tr> <td>Action yet to be taken for recovery</td> <td>336 units</td> </tr> </table> <p>M/s. Durga rainbow flat owner's welfare association has filed an impleading application before the Hon'ble NGT on 30.08.2020.</p>	Total No. of units issued with notice for EC and Amount.	376 units (Rs.19.85 Crores)	No. of units paid EC and Amount	40 units (Rs.2.10 Crores)	Action yet to be taken for recovery	336 units
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12.	<p>Para 28(x) Order dated 18.12.2019: <i>Steps be taken expeditiously for de-silting, de-weeding. Analysis of sludge and silt may be carried out before its disposal based on the result of such analysis, the mode of disposal and protocol be determined in accordance with laid down principles under the relevant Rules.</i></p>	<p>KSPCB has collected series of samples of Silt/sludge at different depth with grid manner on 25th, 26th & 27th of December 2020. Besides sample collected on 16/09/2020, 18/09/2020, 12/11/2020, 19.12.2020 & 5.1.2021</p> <p>The CPCB has given a report for Varthur lake based on TCLP and STLC analyses of silt samples. As per the protocol based on TCLP and STLC analyses, the soil is non-hazardous and accordingly the permission is accorded to BDA by KSPCB to dispose silt from the locations showed in the grid map based on local demand. As regards to Bellandur Lake, the analysis of sediment samples for leachability tests is under progress.</p> <p>Desilting of Varthur lake: work order issued on 23.11.2020 to the Agency M/s Star Infra Tech Pvt Ltd. It is submitted that, more soil / silt / sludge samples were collected from the lake bed areas and was analysed. The sediment analysis results based on the screening levels on soil quantity para meters prescribed for agriculture use have been examined by the CPCB and a report is given. Based on the recommendations of CPCB, the KSPCB issued a letter for disposal of the silt for agriculture and other uses. The work of de-silting has commenced by M/s Star Infra Tech Pvt Ltd as per the direction of KSPCB/BDA. Further, the BDA claims that approximately in an area of 100 Acres, silt is removed and stocked in the lake area. This work of removal of silt (100 Acres) is carried out under the 4 (G) exemption.</p> <p>Desilting of Bellandur lake: work order issued on 23.11.2020 to M/s RMN Infrastructure Pvt Ltd. Lake bed pre level survey is done, removal of seepage water and others in the Bellandur lake is completed. BDA claims that under 4(G) exemption, an area of 158 Acres (Bellandur lake) silt is removed and stocked at some places inside the lake. The BDA further submits that the stocked silt will be disposed as per the protocol.</p>						

13.	<p>Para 28(xi) Order dated 18.12.2019: <i>The State PCB may develop a robust water quality monitoring program for monitoring of water quality of drains leading to the lakes and also undertake water quality monitoring at atleast 5 locations for each lake.</i></p>	<p>The KSPCB has a well-equipped laboratory to analyse the samples in house. Samples are being analysed for pH, BOD, COD, TSS, Ammoniacal Nitrogen, Iron and Manganese, Total Nitrogen, Cyanide, Hexavalent Chromium, Cadmium, Copper, Lead, Nickel, Zinc and Total Chromium at KSPCB's sophisticated Central Laboratory. KSPCB has been advised to undertake water quality monitoring at regular intervals in these lakes and drains (connecting these lakes) and upload (on monthly basis) the water quality information at KSPCB website.</p>
14.	<p>Para 28(xii) Order dated 18.12.2019: <i>Steps may be taken to explore development of wetlands and biodiversity parks apart from other remedial action for reducing the pollution load on the recipient water bodies.</i></p>	<p>Provision is made in the estimate for construction of wetland Bellandur and Varthur lakes. Once the identified wetland area within the lake is de-silted, wetland will be developed.</p> <p>Letter has been received from the ADLR (East) dated.06.11.2020 stating that Government land is not available along the periphery of the lake boundary in buffer zone.</p>
15.	<p>Para 28(xiv) Order dated 18.12.2019: <i>Real time water quality system be commissioned by 31.01.2020 as proposed.</i></p>	<p>The Board has already installed the Real Time Water Quality Monitoring systems at three locations and continuously monitoring. The results are uploaded on the website.</p>
16.	<p>Para 28(xv) Order dated 18.12.2019: <i>The issue of removing 1.5 km road laid upon the lake bed, within the boundary of Varthur lake, by dumping of C&D debris be finalized as per directions of Justice Hegde Committee in terms of para 26 above.</i></p>	<p>The Hon'ble NGT vide order dated 13.08.2020 has held that enquiry should be conducted about the illegality in laying the pipeline by the Minor Irrigation Department. Accordingly, Minor Irrigation department has taken steps as stated in para 21 in this report.</p>
17.	<p>Para 19(16) of order Order dated 06.12.2018: <i>Post removal of waste from the Lake and from the Rajakaluves, the State ought to prepare a</i></p>	<p>As regard to removal of waste from the lake area, the desilting work is in progress and once it is completed the left-out waste shall have to be removed. Meanwhile, the BBMP has to prepare a detail project report for the disposal for the same.</p> <p>In regard to removal of waste from the Rajakaluves, the BBMP submits that against approximately 218.0 kms of Rajakaluves (SWD), about 105.149 kms are being maintained. The maintenance includes removal of silt, floating</p>

detailed project report with respect to disposal of the same.

tresses, vegetation and other organics and transported to the Anjanapura abandoned stone quarries. A list of drains of 105.149 kms has been provided here as under:

Sl. No	Drain No	Drain Name		Length in M
1	MD 342A	Boganahalli	Panattur Kere	300
2	MD 425	Ramgondanahalli Adarsha Houses	MD 428 @ Chainage 0.00m	100
3	MD 428	Varthur Kere	MD 431 @ Chainage 0.00m	200
4	MD 413	Pattanduru Agrahara	Nalluralli Kere	250
5	MD 414	Saibaba Hospital	Nalluralli Kere	450
6	MD 415	Pioneer Software	Nalluralli Kere	400
7	MD 416	Nalluralli	Nalluralli Kere	450
8	MD 349	End Point of MD 322 & MD 334 Near ADA Compound Wall	Varthur Kere	400
9	MD 365A	End Point of MD 363 & MD 364	MD 369 @ chainage 0.00	400
10	MD 322	RHB Colony	Garudacharyapalya Kere	150
11	MD 322A	Garudacharyapalya Kere	Mahadevpura Kere	400
12	MD 322C	ITPL Road	Ramakka Layout	100
13	MD 325	Outter Ring Road	Doddanenkundi Kere	300
14	MD 325A	Vinayaka Nagara 8th Cross	MD 325 @ Chainage 0.00	500
15	MD 363	Chinnappanahalli Layout	MD 365 @ Chainage 0.00	500
16	MD 369	End Point of MD 365 & MD 368	Varthur Kere	500
17	MD 371	Tules CADCAM Technology	Kundalahalli Kere	500
18	MD 372	BEML Layout	Kundalahalli to Siddapura	300
19	MD 374	Tuberahalli BEML Layout	MD 375 @ Chainage 0.00m	230
20	MD 375	End Point of MD 374 & MD 373	Siddapura Kere	450
21	MD 292B	Vijaya Lakshmi Colony via Sai Baba Ashram	Dakshina Pinakini River	350
22	MD 292	Patalamma Layout	Dakshina Pinakini River via Sidhartha Layout	500

		23	MD 292A	Kashi Vishwanatha Temple	Outer Channel of YMC Kere near Railway Culvert	1050
		24	MD 294	Alembic Glass	MD 388 @ Chainage 0.00m near Channasandra Circle	1150
		25	MD 296	Channasandra Circle	Dakshina Pinakini River on Chikka Thirupathi Road	1300
		26	MD 388A	Plantation near Gunjar	MD 388 @ Chainage 0.00m	150
		27	MD 387	End point of MD 385	MD 382 @ Chainage 1840.00m	300
		28	MD 451A	Gandhipura	MD 451 @ Chainage 560.00m	360
		29	MD 451	Gandhipura	MD 453 @ Chainage 0.00m @ Immadihalli	300
		30	MD 453	End Point of MD 451	MD 454 @Chainage 0.00	360
		31	BH 628	Kaikondanahalli Kere	SowlTank	800
		32	BH 627	Kasavanalli Kere	Kaikondanahalli Kere	300
		33	BH 629	Arluur Kere	Kaikondanahalli Kere	500
		34	BH 629	Arluur Kere	Kaikondanahalli Kere	200
		35	BH627A	Bellandur	Ecospace	500
		36	BH-599	Iblur Lake	Bellandur Lake	769
		37	C 200	Doordarshan, Jayamahal Extn,	Ulsoor Tank	4150
		38	C-100	From Palace Grounds, Vasanthnagar	Wind Tunnel Road	9650
		39	C-101	Sudhamnagar	Inside HAL Airport	1875
		40	C-102	Sweepers colony, Kadirenepalya	Shastrinagar Joining C-100	1600
		41	C-103	Krishnamurthynagar	Kadirenepalya	1600
		42	C-104	Kadirenepalya	Kadirenepalya tank	2500
		43	C-105	Hanumannagar	Kodihally, Near Domlur Flyover	3000
		44	C-106	New Thippasandra	ISRO Complex	650
		45	C-107	Kaggadasapura Lake	Kaggadasapura Main Road / Doodanekkundi tank	900

46	C-108	Airport South East Corner	NAL	600
47	C-109	Adj. To Airport Compound	Bellandur Lake	675
48	N4 Drain	Nagammanagar	3rd Cross Domlur	1580
49	-	Domlur AK colony	Natasha Apartment	920
50	C-201	Ganapathy Temple, near Ulsoor Tank	MEG near Ulsoor Tank	250
51	C-202	Richards Town	Gymkhana Club	1170
52	C-203	Sagayapuram	Cleve town	750
53	C-204	Orion Mall, Marutisevanagar	Ulsoor Tank	2000
54	-	Upper Byrasandra lake - Baghmane Tech Park	Lower Byrasandra Lake - Baghmane techpark	560
55	-	Lower Byrasandra Lake - Baghmane techpark	Kaggadasapura Lake	930
56	-	KrishnaiahnaPalya	Kaggadasapura Lake	2600
57	-	Kasturinagar Park	Outer Ring Road	1000
58	-	Kasurinagar Railway track	Outer Ring Road	600
59	K-100	K.R.Market	Bellandur Lake	10200
60	K-200	Sanatorium	Bellandur Lake	7600
61	K-103	Church Street	via Austin town & Vivek nagar joining to K-100	3400
62	K-104	Jayangara 1st Block	Via Lakkasandra joining to K-100	1700
63	K-107	Lang ford town	Jalakanteshwara pura	770
64	K-108	Venkatareddy Layout	Willson Garden	1925
65	K-109	Kanteerava Stadium	via R.R. Mohan Ray & joining to K-100	2000
66	K-110	Hosur road	Sudhamanagara	625
67	K-111	South End road near Jayangara 2nd Block	Lalbh Tank	950
68	K-112	Parvathi Pura	Kumbargundi	725
69	K-114	Lang ford road	via St Michael's Church & Joining to K-100	1100
70	K-201	Vanaganahalli	Agara Lake	1350
71	K-202	Ellukunte	venkatapura	950
72	K-203	Crompton Greeves Road	Ring Road	1200
73	K-204	Madivala Tank	Hosur Road	705

74	K-205	Mudduram Nagar	Bismillah Nagar	525
75	K-206-	Tayappanahalli	Bovi Colony	1245
76	K-207	Bairsandra Ext	Bannerugatta road	1225
77	K-208	Tilaknagar	Krishnappa Garden	425
78	K-209	J P Nagara 6th Phase	Madiwala Tank	9500
79	K-210	J P Nagara 6th Phase	Joining K-200	1700
Total Length				105149 meters

It is stated here that the above details are submitted for the first time now hence Committee could not cross verify at the field level.

Further, the State Government is developing Rajakaluve K-100 for the length of 11.4 kms from Chikkalalbagh to Bellanduru lake. No Objection Certification was given in compliance with IA No.392/2020 in OA No.125/2017 subject to the conditions. Copy of the said letter dated 24.12.2020 was also submitted to the Hon'ble NGT by the Committee. The outcome of the development of this Rajakaluve should be placed before the Hon'ble NGT by the State Government.

BBMP is yet to submit the detailed report on the status of the drains (with details of encroachments) and buffer zones.

18.	Para 6 of order Order dated 13.08.2020: <i>Details of amount to be recovered from the units operating without STPs and the stage of proceedings pending before the State PCB</i>	KSPCB has identified 91 units for recovery of Rs .271.50 Crores . The stages of proceedings are as under:- <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>No. of units Installed STP</td> <td style="text-align: center;">42</td> </tr> <tr> <td>No. of units connected to BWSSB</td> <td style="text-align: center;">06</td> </tr> <tr> <td>No. of units with STP under construction</td> <td style="text-align: center;">07</td> </tr> <tr> <td>No. of units issued with Closure orders</td> <td style="text-align: center;">10</td> </tr> <tr> <td>Action yet to be taken</td> <td style="text-align: center;">26</td> </tr> </table> No recovery is made from the defaulting units.	No. of units Installed STP	42	No. of units connected to BWSSB	06	No. of units with STP under construction	07	No. of units issued with Closure orders	10	Action yet to be taken	26
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19.	Para 6 of order Order dated 13.08.2020: <i>Vacation of interim order passed by the High Court (present status)</i>	A WP No. 50953/2019 regarding unauthorised occupation of the Bellanduru lake land (Ambedkar Colony) is pending before the Hon'ble High Court.										
20.	Para 6 of order Order dated 13.08.2020: <i>The BDA has wrongly understood that biodiversity parks are to be set up within the lake boundary. Such parks are</i>	The BDA submits that no Bio-Diversity parks are developed within the periphery of the lake after Hon'ble NGT observations. The BDA submits that Government land is not available along the periphery of the lake boundary in buffer zone. BDA submit that Contour Survey is being done for both the lakes to demarcate the area between maximum flood levels and the lake periphery. So, identified/demarcated area which is beyond the maximum water level where water does										

	<p><i>to be set up along the periphery of the lake boundary. (Possibility of such Biodiversity parks).</i></p>	<p>not reach to lake periphery, such area may be developed as Bio-diversity parks without compromising total water holding capacity of lake and only on approval from competent Authority.</p> <p>Alternative land for disposal of silt or/and formation of Bio-diversity park in being explored near Defence land abutting to the Bellandur lake and also other open land available with Defence establishment within Bangalore city. Negotiation with Defence authorities are in progress. If it materialises, further action will be taken by following the protocol of disposal as per Rules.</p>																												
<p>21.</p>	<p>Para 6 of order Order dated 13.08.2020: <i>Enquiry should be conducted about the illegality in laying the pipeline by the Minor Irrigation Department (Present status).</i></p>	<p>The Additional Chief Secretary, Urban development Department, has submitted the following details in regard to action initiated against the officials in the subject matter.</p> <table border="1"> <thead> <tr> <th>SL No</th> <th>Name of the Erring Official</th> <th>Designation</th> <th>Period</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Devaraj B</td> <td>Chief Engineer</td> <td>23-09-2015 to 31-08-2017</td> </tr> <tr> <td>2.</td> <td>M Ravindrappa</td> <td>Superintending Engineer</td> <td>26-06-2014 to 18-11-2019</td> </tr> <tr> <td>3.</td> <td>S N Krishnappa</td> <td>Executive Engineer</td> <td>11-06-2015 to 27-08-2018</td> </tr> <tr> <td>4.</td> <td>Venkatesh</td> <td>Assistant Executive Engineer</td> <td>27-03-2017 to 04-11-2018</td> </tr> <tr> <td>5.</td> <td>Lakshmu</td> <td>Assistant Executive Engineer</td> <td>18-07-2016 to 26-03-2017</td> </tr> <tr> <td>6.</td> <td>Ashok H Bhagi</td> <td>Assistant Engineer</td> <td>07-12-2016 to 22-07-2019</td> </tr> </tbody> </table> <p>Officers who have worked in the specified period have been identified and show cause notices were issued to them vide dtd. 04.03.2020, giving 15 days' time to submit their replies. The replies submitted by them have been reviewed and found unacceptable. Further at Sl. No 04 Shri Venkatesh, Assistant Executive Engineer expired on 04/11/2018.</p> <p>The Additional Chief Secretary submits that a proposal will be sent to DPAR for obtaining formal approval for initiating disciplinary proceedings against the concerned retired officers and after getting approval from DPAR to conduct department enquiry action will be initiated as per rule 214 (2)(B)(i) and (ii) of KCSR.</p>	SL No	Name of the Erring Official	Designation	Period	1.	Devaraj B	Chief Engineer	23-09-2015 to 31-08-2017	2.	M Ravindrappa	Superintending Engineer	26-06-2014 to 18-11-2019	3.	S N Krishnappa	Executive Engineer	11-06-2015 to 27-08-2018	4.	Venkatesh	Assistant Executive Engineer	27-03-2017 to 04-11-2018	5.	Lakshmu	Assistant Executive Engineer	18-07-2016 to 26-03-2017	6.	Ashok H Bhagi	Assistant Engineer	07-12-2016 to 22-07-2019
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22.	<p>Para 6 of order Order dated 13.08.2020: Construction of retaining wall should not result in reduction of width of the water bodies/Rajakaluves.</p>	<p>The BBMP submits that the Construction of retaining walls to storm water drains is temporarily suspended in the Bellandur and Varthur catchment areas. To ascertain the actual width of these drains, the help of Cadastral maps is being taken in collaboration of Revenue Department and the Karnataka State Satellite Remotes Sensing Centre. They submit that the exercise will be completed by the end of March 2021. Once these exercises are completed the encroachments shall be identified at field and should be removed. The works of construction of retaining walls should be recommenced accordingly. The excess area outside the retaining walls, tree park should be developed. The BBMP is expected to consider entire lengths of SWDs in the catchment areas.</p>																												
23.	<p>Para 6 of order Order dated 13.08.2020: Details of action taken by the BBMP against illegal structures (rajakaluves and 30 meter buffer zone around the lakes)</p>	<p>The BBMP submits a detail of the encroachment removed in Mahadevapura Zone of the catchment of these lakes which were identified in the past. The details are as under:-</p>																												
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		<p>The details of encroachments of other zones for the catchment of Varthur, Bellanduru and Agram have not been submitted by the BBMP.</p>																												
		<p>The BBMP further submits that 30 meter buffer zone have been demarcated all along the outer boundary of Bellanduru lake with the help of Additional Director of Land Records. In the 30 meter buffer zone of Bellanduru lake, 22 unauthorised structures have been identified. The process up to demolition order, has been completed. Against the demolition order 13 persons have appealed before the Karnataka Administrative Tribunal; one Writ Petition has been</p>																												

		<p>filed in the High Court; 4 persons have gone to the City Civil Court. Action has to be initiated against the remaining 4 persons.</p> <p>It is further submitted that along the periphery of the Bellanduru lake 177 mild steel tubular poles and 160 LED lights have been installed and commissioned. 23 poles and 40 LED lights are yet to be installed. As regard to CCTV cameras, 51 numbers have been installed and functioning and 11 numbers are yet to be installed.</p> <p>Further, 30-meter buffer zone has been demarcated along the outer boundary of Varthur lake with the help of Additional Director of Land Records. In this buffer zone, 12 unauthorised structures have been identified. The process up to demolition orders has been completed. Against the demolition order, one person has appealed before the Karnataka Administrative Tribunal; one structure has been demolished and remaining 10 structures are yet to be demolished.</p> <p>It is further submitted that along the periphery of the Varthur lake, 184 poles and 143 LED lights have been installed and commissioned. 16 poles and 57 LED lights are yet to be completed. As regard to CCTV cameras, 24 numbers have been installed and functioning and 26 numbers are yet to be installed.</p>
24.	<p>Para 6 of order Order dated 13.08.2020: <i>BBMP should survey and notify the rajakaluves for purposes of buffer zones of 50, 25 and 15 meters</i></p>	<p>The Storm water drains are classified into the Primary, Secondary and Tertiary SWDs with the buffer zones of 50, 25 and 15 meters respectively on certain technical parameters.</p> <p>The details of length in each category have not been submitted by the BBMP. The Committee has convened several meetings in this regard but no satisfactory desired results are achieved.</p> <p>To ascertain the actual width of these drains and encroachments, the help of Cadastral maps is being taken in collaboration of Revenue Department and the Karnataka State Satellite Remotes Sensing Centre. They submit that the exercise will be completed by the end of March 2021. Once this exercise is completed, the further action of demarcating of encroachments at field should be done and to be removed. The BBMP is expected to consider entire lengths of SWDs in the catchment areas.</p>

25.	<p>Para 8 of order Order dated 13.08.2020: <i>We have given due consideration to the rival opinions. We are of the view that some more sampling may be got carried out with regard to de-silted debris/sludge at appropriate representative locations for comprehensive database and thereafter disposal protocol may be finalized in consultation with the CPCB. This will avoid unnecessary delay and cost (action taken in this regard by KSPCB for sample analysis).</i></p>	<p>More silt sampling in both lakes have been carried out jointly (by CPCB and KSPCB) and analysed for essential parameters including heavy metals. The standard protocol for assessing the hazardous (if any) is being followed through TCLP (Toxicity characteristic leaching procedure) and STLC (Soluble Threshold Limit Concentration) investigations of soil samples in Varthur and Bellandur Lakes.</p> <p>Based on this, CPCB has given a report for Varthur lake. As per the protocol based on TCLP and STLC analyses, the soil is non-hazardous and hence permission is accorded to BDA by KSPCB to dispose silt, based on the local demand</p> <p>As regards to Bellandur Lake, the analysis of sediment samples for leachability tests is under progress and is expected to be completed early. Based on the test results CPCB, will submit a report suggesting silt disposal mechanism.</p>
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This report is submitted to the Hon'ble National Green Tribunal for appropriate order.”

8. The State of Karnataka has filed its affidavit dated 09.03.2021 with a compliance report in tabular form which is reproduced below:

Contd. at next page

Sl. no	Directions of Hon'ble NGT vide orders dated 06.12.2018, 18.12.2019 and 13.08.2020	Observations of Monitoring Committee on progress up to 31.01.2021		Remarks/explanations on behalf of State of Karnataka
1	Relevant para	3		
26.	<p>Para 28(i) Order dated 18.12.2019: Timelines for execution of projects for setting up of STPs and laying of sewerage network may not be extended beyond 30.09.2020. If the works remains incomplete even till 30.09.2020, compensation will be liable to be paid @ Rs.10 lakh per STP per month which may be liable to be recovered from the erring officers, apart from adverse entries in their service records and other adverse action.</p> <p>Further, the NGT vide order dated 13.08.2020 has directed that, the works may be expeditiously completed and to be reviewed by the Monitoring Committee.</p>	In regard to the construction of STPs and their commission, the details are given as under (BWSSB):		<p>i. Sarakki – 5 MLD STP Presently, the treated water is let into Sarakki Lake. Photographs enclosed in Annexure-R-1 (Vide Pg No. 48 to 51)</p> <hr/> <p>ii. Chikkabeguru – 5 MLD STP Presently, the treated water is let into Chikka Begur Lake. Photographs enclosed in Annexure- R-2 (Vide Pg No. 52 to 55)</p> <hr/> <p>i. Hulimavu – 10 MLD STP Presently the treated water is let into Hulimavu Lake.</p>
Sl. no	Name of the STP / others	Compliance		
iii.	Sarakki – 5 MLD STP	Completed and commissioned on 08.11.2019.		
iv.	Chikkabeguru - 5 MLD STP	Completed and commissioned on September 2020.		
viii.	Hulimavu – 10 MLD STP	Completed and commissioned on 31.03.2020		

					<p>Photographs enclosed in Annexure- R-3 (Vide Pg No. 56 to 60)</p> <hr/> <p>ii.Agaram STP</p> <p>Presently the treated water is let into Agaram Lake.</p> <p>Photographs enclosed in Annexure –R-4 Vide Pg No. 61 to 66)</p> <hr/> <p>v. Madiwala STP</p> <ul style="list-style-type: none"> Initially, Construction of this STP was taken up by the Karnataka Lake Conservation and Development Authority with funds from KSPCB. Due to poor progress, this work was handed over to BWSSB. BWSSB has taken up the up-gradation of this STP and the overall progress as on 22.02.2021 is 33.00 % against the planned target of 100.00%. Due to Covid-19 pandemic there is delay, however, the work will be completed by December 2021.
		ix.	Agram – 35 MLD STP	Completed and commissioned on 31.03.2020	
		x.	Madiwala – 4 MLD STP	24.5% work completed	

					<ul style="list-style-type: none"> As an interim measure, to avoid sewage entry into the Madivala lake, the sewage which was earlier augmented to this STP is now diverted to Agarm ISPS by linking this network to ISPS through 900mm dia sewer link line, Photographs enclosed in Annexure R-5 (Vide Pg No. 67-70) <hr/> <p><i>iv) In spite of effects of Covid19, pandemic effects, the overall progress as on 22.02.2021 is 91% against the planned target of 100.00%.</i></p> <ul style="list-style-type: none"> Due to Covid 19 pandemic conditions like, Migration of Labour, Shutdown of industries of specialised equipment's manufacturing units, non-availability of construction materials like cement, steel, aggregates, etc., the shortfall is mainly in civil works and installation of plant and machineries. At present, the facilities for augmenting the sewage have been completed and intake of sewage has been taken on 31.12.2020 and primary treatment is in progress.
		xi.	K&C Valley – 150 MLD STP	90.01 % works completed as on 31.01.2021. Primary treatment is in progress and likely to be completed by 31.03.2021 and expected to treat 83MLD sewage (with this augmentation, 536 MLD (92%) would be treated as against 583 MLD)	

				<ul style="list-style-type: none"> Action is in progress to commission the balance line of treatment in a phased manner by 31-03-2021. <p>Photographs enclosed in Annexure -R-6 (Vide Pg No. 71 to 83)</p> <hr/> <p>v) The ISPS is ready for operation. The sewage will be pumped after completion of the 150 MLD STP and. Laying of pipe network, which are in progress. Photographs enclosed in Annexure R-7 (Vide Pg No. 84 to 85)</p> <hr/> <p>vi) As the location of the work lies at the end of the valley the SWD carries huge quantity of storm water. Hence, laying of pipelines in the storm water drains (SWD) is very difficult and time consuming At present, 5295 RMT of pipeline work is completed against 5315 RMT (excluding TT & Bend length).</p> <ul style="list-style-type: none"> Due to COVID-19 pandemic, the firm lost time to tackle the work in SWD from 23.03.2020 to May 2020.
		xii.	Construction of 210 MLD capacity ISPS at Koramangala at sports complex	The work is completed and ready for operation. The water will be pumped to 150 MLD STP,once the remaining pipe network is completed, (yet to complete 252 Rmt)
		xiii.	Laying of 1800 mm UGD from 210 MLD ISPS to 150 MLD STP	Against the 5315-running meter; 5063 running meter is completed. Likely to be completed by 31.03.2021.

				<ul style="list-style-type: none"> • Further, the work was delayed due to the monsoon which set in from June 2020 and lasted up to 10th of December 2020. • The work will be commissioned on or before 31st March 2021. <p>Photographs enclosed in Annexure- R-8 (Vide Pg No. 86 to 92)</p> <hr/> <p>vii) The overall progress as on 22.02.2021 is 55% against the planned target of 100.00%.</p> <ul style="list-style-type: none"> • Due to Covid 19 pandemic conditions like, Migration of Labour, non-availability of construction materials like cement, steel, aggregates, etc., there is Delay. • Also, the strata met with is in Wet well is hard rock, excavation. In hard rock wedging and chiselling is time consuming. • However, temporary arrangement has been made for pumping sewage to BellandurAmanikhane STP. • This work will be completed before 31.03.2021.
		xiv.	Waste water wet well – 32.5 MLD Capacity near the premises of 90 MLD BellanduruAmanikhane STP to augment sewage from the adjoining areas of BellanduruAmanikhane STP (date fixed for completion 30.09.2020)	The overall progress as on 31.01.2021 is 45.75 % against the planned target of 100.00%. This work will be completed before 31.03.2021. However, the temporary arrangement has been made for pumping sewage to BellandurAmanikhane STP.

			Photographs enclosed in Annexure-R-9 (Vide Pg No. 93 to 97)
27.	<p>Para No.14 Order Dated 18.12.2019</p> <p><i>We also found that timelines fixed by this Tribunal have been unilaterally extended without any valid justification and no action has been taken against the erring officers on a specious plea that it was difficult to fix responsibility. Such approach is hardly compliant with the Rule of Law. We particularly disapprove the timeline for upgradation of STPs with Biological Nutrient Removal (BNR) at 248.MLD STP at K&C Valley. The same must not go beyond 30.09.2020 but preferably be completed before 30.06.2020 although earlier timeline fixed by this Tribunal was 30.06.2019. No substantial work has been done in the last one year on this aspect.</i></p>	<p>The BWSSB submits that, STPs of 90 MLD at Bellandur Amanikere; 60 MLD at K&C Valley; 5 MLD at Sarakki; 5 MLD at Chikkabegur; 10 MLD Hulimavu; 35 MLD at Agramand 150 MLD at K&C Valley (under construction) are complied with Biological Nutrient Removal treatment.</p> <p>The BWSSB further submits that for the 248 MLD STP at K&C Valley, certain modifications in the process of treatment have been made in consultation with the IISc, Bengaluru, for removal of nutrients. On sample analysis it is found that the biological nitrates have been reduced substantially (nitrogen 6.4 mg per ltr and phosphates 0.85 mg per ltr). It is noted that, the treated water from these STPs is being transmitted to the tanks in Kolar District for recharge of ground water for irrigation purpose. However, the upgradation of the system has not been completed but is in process.</p>	<ul style="list-style-type: none"> • No response was received for the tenders floated due to COVID conditions. • To comply, based on inputs from the IISc, Bengaluru and the consultants viz M/s CH2M Hill India Pvt. Ltd., modifications in the processes have been made to ensure removal of nutrients in the two STP's i.e. 30 MLD STP & 218 MLD STP. • Samples were collected jointly by CPCB, KSPCB and I.I.Sc. The results furnished by them are annexed. • The treated effluents from all the three above STPs and one more 90 MLD STP at Bellandur Amanikere are eventually conveyed to the Minor Irrigation Jack Well situated near Bellandur Amanikere, from where the effluent is finally discharged into Lakshmi Sagar Lake of Kolar District. • As per the test reports, the Total Nitrogen is 6.4 mg/ltr and the Total Phosphates is 0.85 mg/ltr, which is within the ranges as suggested by Hon'ble NGT Monitoring Committee.

			<ul style="list-style-type: none"> • The professors of IISc (who are entrusted with the studies of Environmental Impact due to augmentation of treated water from K&C Valley STP's into Kolar District Lakes have shared the results of the samples collected to at Lakshmi Sagar Lake • As reported by them, the Biological Nutrients in the ultimate discharge point of Lakshmi Sagar Lake are well within the stipulations.
28.	<p>Para 28(ii) Order dated 18.12.2019: <i>Bengaluru Water Supply and Sewerage Board (BWSSB) must ensure that no sewage/effluent is discharged into the lakes and till completing of STPs, interim remediation must be done forthwith. Any default in this regard will result in requirement to pay compensation of Rs.5 lakh per month per inlet into the lakes from 01.02.2020.</i></p>	<p>It is submitted that, the sewage water has been diverted through the peripheral temporary diversion channels and no sewage water enters in these lakes (Agram, Bellanduru and Varthur).</p> <p>Further, the BWSSB has installed aerating systems in these temporary diversion channels at, 1) HAL side and Kempapura inlet, 2) Agaram inlet, 3) Koramangala inlet, 4) Iblur inlet coming under Bellandur Lake, 5) Northern and 6) Southern side of Varthur lake for inline treatment of sewage.</p> <p>The artificial floating islands have also been installed at certain places. The committee has suggested to augment phytoremediation options at locations, where the water flow is slow or stagnant to enhance the treatment efficacy, which is yet to be implemented.</p>	<p>BWSSB:</p> <p>The aerating systems in the 6 locations were installed before 31.01.2020.</p> <p>Subsequently, in order to enhance the interim remediation artificial floating islands have also been installed.</p> <p>Photographs and Test Reports enclosed in Annexure R-10 (Vide Pg No. 98 to 103)</p>
29.	<p>Para 28(iii) Order dated 18.12.2019:</p>		<p>In view of the facts and circumstances explained to the</p>

	<p><i>BSWWB may further ensure that treated water is not discharged into the UGD network. Action may be taken against persons responsible for having allowed this to be done earlier resulting into loss of Rs.2 Lakhs per day i.e.Rs.60 Lakhs per month and more than Rs.7 Crore per year without any justification whatsoever. BY BWSSB</i></p>	<p>There are about 496 buildings having STPs as per the KSPCB records. The BWSSB submits that, wherever there was connectivity with the UGD for flowing of treated water; all have been disconnected (109 buildings). For the remaining areas there is no access tonetworking of UGD.</p> <p>The BWSSB submits that, treated water was allowed as per the conditions stipulated in the order issued by KSPCB. In view of these facts and circumstances, it is requested by BWSSB not to initiate action against their officials.</p>	<p>Monitoring Committee, it is requested not to initiate action against the officials.</p>
30.	<p>Para No.16 Order Dated 18.12.2019 <i>We are informed that about 256.7 MLD untreated sewage is enteringthe lake from five locations which is nothing but a criminal offencewhich is required to be checked on war footing and violators of lawbrought to justice, erring officer being appropriately dealt with underthe civil, criminal and service law with a view to uphold the Rule ofLaw. There is large scale breach of public duties by concernedAuthorities dealing with the subject</i></p>	<p>The BWSSB submits that to check the flow of sewage water into the lakes, following works have been completed.</p> <ol style="list-style-type: none"> 5. HAL SWD (Challaghatta Valley) – Totally 23 works are to be taken up for augmenting this flow, out of which 23 works are completed as on 23.12.2020. 6. Koramangala and AgramValley-Totally 48 works are to be taken up for augmenting this flow out of which 48 works are completed on 23.12.2020. 7. Iblur Catchment area- Completed and Commissioned on 23.12.2020. 8. Kempapura Catchment area- BWSSB has taken up work of laying 300 mm RCC NP3 sewer line for a length of 1000 RMT to convey the sewage generated in the area ofBellanduruAmanekhane STP. The work is completed and commissioned in the month of May 2020. <p>The BWSSB submits that, the combined treatment capacity in the catchment of these lakes will be around 664.50 MLD against the presently measured flow of 553 MLD.Presently, about 453.50 MLD of sewage is being treated. Additionaltreatment of 83 MLD would beaugmented by commissioning of new STP (end of March 2021). Therefore, there will be treatment of 536.50 MLD (92 %) as against the measure flow of 583 MLD.</p> <p>The Committee observes that the BWSSB has to take steps to treat the remaining 8 to 10 % of sewage to stop completely the flowing of sewage into the lakes after rejuvenation. It is submitted here that, as per the earlier recommendations of the Committee, the water level in these lakes will be maintained by supplying treated water from the STPsdaily to compensate evaporation and seepage losses. Only the surplus treated water should be allowed to flow to Kolar, Chikkaballapur, Anekal etc.</p>	<p>The flow in the SWDs was measured in the month of April-2019 and the details of flow are as below:</p> <p>HAL-48.60 MLD</p> <p>Agaram & Koramangala (Y-Junction)-179.50 MLD Total-228.10 MLD</p> <p>The flow details of STPs at K&C Valley, Bellandur on the day of measurement were:</p> <p>218 MLD-170 MLD 60 MLD-22 MLD 30 MLD-26MLD 90 MLD-30 MLD Total-248 MLD</p>

	<p><i>and earlier observations of this Tribunal have fallen on deaf ears and blatantly flouted.</i></p>		<p>After carrying out major interlinking/new pipeline works on the upstream side, the flow was measured in the 1st week of March-2020. The details are as follows:</p> <p>HAL-31.4 MLD</p> <p>Agaram&Koramangala</p> <p>(Y-Junction)-114.26 MLD Total-145.66 MLD</p> <p>The flow details of STPs at K&C Valley, Bellandur on the day of measurement were:</p> <p>218 MLD-180 MLD 60 MLD-51 MLD 30 MLD-30 MLD 90 MLD-70 MLD Total-331 MLD</p> <p>At present, the flow details of STP at K&C valley measurement were:</p> <p>218 MLD-194 MLD 60 MLD-60MLD 30 MLD- 30MLD 90 MLD -90 MLD 50 MLD-45MLD 2MLD-1.50MLD 1.50MLD-1.50MLD 4MLD-2MLD 5MLD-4.50MLD 10MLD-5MLD 5MLD-2MLD 35MLD-18MLD Total=453.50 MLD.</p>
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			<ul style="list-style-type: none"> As can be seen from the above the flow in the SWD has been reduced to an extent of 159 MLD and is being augmented to STPs The combined treatment capacity of the above plants will be 664.50 MLD against the measured flow of 583 MLD. Presently, 453.50 MLD of sewage is being treated and 83 MLD will be augmented to new STP which is under construction and will be completed by Last week of March 2021. The total treated sewage will be 536.50 MLD (92%) by the last week of March 2021 as against the measured flow of 583 MLD (The detail report is enclosed as Annexure- R-11). (Vide Pg No. 104 to 110) 										
31.	<p>Para 28(iv) Order dated 18.12.2019: Sources of discharge of Sewage be controlled/regulated and electricity and water supplies to the defaulting establishments be stopped for enforcement of law till remedial steps are taken for compliance.</p>	<p>The KSPCB has identified 91 units in total that are required to be installation of STP. The details of progress are given as under: -</p> <table border="1"> <tr> <td>No. of units Installed STP</td> <td>42</td> </tr> <tr> <td>No. of units connected to BWSSB</td> <td>06</td> </tr> <tr> <td>No. of units with STP under construction</td> <td>07</td> </tr> <tr> <td>No. of units issued with Closure orders for either not having STPs or not connected to UGD and letting the raw sewage into the storm water drain</td> <td>10</td> </tr> <tr> <td>Action yet to be taken</td> <td>26</td> </tr> </table>	No. of units Installed STP	42	No. of units connected to BWSSB	06	No. of units with STP under construction	07	No. of units issued with Closure orders for either not having STPs or not connected to UGD and letting the raw sewage into the storm water drain	10	Action yet to be taken	26	<p>As on 20.03.2020, there were 61 units which had not installed STP, out of which 25 units have installed STP; and the remaining 36 units have not installed STP units. Closure orders have been issued to 10 units which have not installed STP units and closure orders for the remaining units are under consideration.</p>
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32.	Para 28(v)												

	<p>Order dated 18.12.2019: Encroachments which are still continuing be removed by using force wherever necessary. If any injunction has been erroneous, higher forum can be moved so that law is upheld.</p>	<p>An area of 5.20 Acres in Sy.No.319 was granted to a person from the village of Amani Bellandurukane during 1976-77 and a new survey number 477 have been formed. This survey number was the part of Varthur lake. The matter is under process for cancellation of grant and pending before the concerned Assistant Commissioner. The other encroachments are stated as removed.</p> <p>Illegal constructions in Ballandur lake (named as Ambedkar Nagar slum) are yet to be evicted</p>	<p>Out of 228 dwellers in Ambedkar Slum, 128 have shifted to Marathahalli.</p> <p>These 128 sheds have been demolished on 16.11.2019. The remaining occupants have filed PIL in the Hon'ble High Court of Karnataka, Bengaluru on 20.11.2019 vide Writ Petition No.50953/2019 (CM-RES) and obtained stay order on 20.11.2019.</p> <p>The Hon'ble High Court of Karnataka, Bengaluru through interim orders has given relief to the petitioners till next date of hearing on 13.01.2021. Next Date of hearing is on 08/03/2021 (Copy enclosed). Further action will be taken as per the Order of Hon'ble High Court of Karnataka.</p>												
33.	<p>Para 28(vi) Order dated 18.12.2019: Action against erring officers which has not yet been taken must be initiated forthwith as already directed. Failures of officers still in service should be duly reflected in their ACRs.</p>	<p>The Additional Chief Secretary, Urban development Department, has submitted the following details in regard to action initiated in the subject matter. The same is produced here for further needful.</p> <p>4) <u>Bengaluru Development Authority:</u></p> <table border="1"> <thead> <tr> <th>Sl. No</th> <th>Name of erring officer/ official</th> <th>Designation and Period</th> </tr> </thead> <tbody> <tr> <td>4.</td> <td>Rizwan Baig</td> <td>Executive Engineer From 2010 to 2011 & 2015 to 2016</td> </tr> <tr> <td>5.</td> <td>S.Mallikarjuna Swamy</td> <td>Executive Engineer from 2010 to 2011 & 2015 to 2016</td> </tr> <tr> <td>6.</td> <td>Ravi Narayana Reddy</td> <td>Executive Engineer from 2010 to 2011 & 2015 to 2016</td> </tr> </tbody> </table>	Sl. No	Name of erring officer/ official	Designation and Period	4.	Rizwan Baig	Executive Engineer From 2010 to 2011 & 2015 to 2016	5.	S.Mallikarjuna Swamy	Executive Engineer from 2010 to 2011 & 2015 to 2016	6.	Ravi Narayana Reddy	Executive Engineer from 2010 to 2011 & 2015 to 2016	
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Notices were served to erring officials on 19.02.2020 seeking their replies within 15 days. Replies were received from all the above mentioned officials. On scrutiny of the explanations given by them, the Additional Chief Secretary (ACS), submits that the replies are found acceptable.

5) **BBMP**: Period from 20.09.2008 to 03.05.2011

Sl. No	Name of erring officer/ official	Designation and Period	Present Dept
5.	J.C.PrakashMurthy	Assistant Engineer(1.10.2008 to30.11.2009)	PWD
6.	H.P.MohanKumar	Assistant ExecutiveEngineer (2.03.2009 to3.1.2011)	PWD
7.	H.Chandrappa	Assistant Engineer,K.R.Puram Sub- Division,(2.12.2009 to 11.1.2012)	PWD
8.	J.C.PrakashMurthy	Assistant ExecutiveEngineer, (after promotion)(2.12.2009 to 7.7.2010)	PWD

The State Government vide No.UDD/91/MNJ/2017, Dated.11.12.2020 directed BBMP to take necessary action on the erring officials as per the directions of the Hon'ble NGT and to submit a compliance report by 20.12.2020. The draft charges memo has been submitted to the concerned Administrative Department i.e., PWD for further necessary action.

6) **BWSSB**

Sl. No.	Name	Designation
12.	S.M. Basavaraju	Chief Engineer (14.11.2006 to 08.04.2013) & 10.05.2013 to 29.03.2014)
13.	S.M. Ramakrishna	Chief Engineer (29.03.2014 to 31.07.2017) as Chief Engineer WWM
14.	S.R. Roopa Kumar	Additional Chief Engineer (31.010.2007 to 05.06.2008)
15.	S.P. Rudra Murthy	Additional Chief Engineer (05.06.2008 to 13.06.2012)
16.	V. Mahesh	Additional Chief Engineer (27.03.2013 to 10.07.2015)
17.	K.R. Manjunath	Additional Chief Engineer (10.07.2015 to 28.10.2016)
18.	B.M. Purushotham	Executive Engineer (29.10.2007 to 23.05.2008)
19.	C. Abdul Nazir	Executive Engineer (23.05.2008 to 04.01.2012)
20.	B.N. SiddaGangaiah	Executive Engineer (04.01.2012 to 31.08.2012) & from 31.08.2012 to 15.11.2012
21.	C.C. PuttaMallappa	Executive Engineer (15.11.2012 to 26.08.2013)
22.	B.S.C. Soma Shekar	Executive Engineer (26.08.2013 to 07.06.2014)

Some of the retired officers of BWSSB have approached the Hon'ble High Court. In response to this, the Hon'ble High Court has issued an interim order of stay.

		The ACS submits that officers who have worked in the specified period have been identified and show cause notices have been issued to them. The replies obtained from these officers have been reviewed and found to be not acceptable. Hence, the formal approval of the Government has been sought vide letter dated.26.05.2020 for initiating disciplinary proceedings on all the concerned retired officers of BWSSB. In this regard, the State Government in letter dated.27.10.2020 has accorded approval to conduct department enquires on all the concerned retired officers of the Board. As per rule 214 (2)(B)(i) and (ii) of KCSR, action has been initiated to conduct Departmental enquiry and for this purpose show-cause notices have been issued to all the retired officers on 18.12.2020 giving 15 days' time to submit their replies. All the retired officers have sought many details and additional time for furnishing their replies. After getting their replies, further action will be initiated.	
34.	Para 28(vii) Order dated 18.12.2019: <i>The State PCB itself may lay down standards for phosphorus instead of waiting for notification.</i>	The KSPCB submits that the Bureau of Indian Standards has issued notification for limiting the Phosphorus content in household laundry detergents powders, household laundry detergents bars and synthetic detergents of washing woollen and silk fabrics. Further they submit that some follow up action has been taken as listed below:- 5. A public notice is issued by KSPCB in this regard in the print media. 6. Letters are addressed to all the State PCB's to directly implement the order. 7. Letters are addressed to all the soap/detergent manufacturers in the state of Karnataka for the restriction of Phosphorus content. 8. Letter is addressed to MOEF for making a final notification.	<ul style="list-style-type: none"> • BIS has released revised standards on the Phosphorus content in soaps/detergents during August, 2020. • Follow up action has been taken by the Board as also noted by the Monitoring Committee. Public notice/letters attached as Annexures-R-12. (Vide Pg No. 111 to 114)
35.	Para 28(viii) Order dated 18.12.2019: <i>The State of Karnataka may either resolve the issue of fencing with the Defence establishment or put such establishments to notice to place their objections before this Tribunal within one month of such notice after which the State of Karnataka will be at liberty to proceed with the fencing and such Defence establishment will stand restrained from</i>	The issue of raising of fencing towards the Defence area have been resolved. The Commissioner, BDA, submits that an estimate is prepared and sent for 4(G) exemption to the Government for the construction of fence. Further, in regard to de-silting a portion of the lake, there is a dispute pending with the Defence.	<p>The Finance Department approved the proposal of BDA for undertaking the left over fencing work under 4(G) exemption and issued orders vide FD 57 EXP -12/2021 dated 05.02.2021.</p> <p>Commissioner, BDA has written a letter No BDA/Com/EM/T-296/2020-21, Dated 08.02.2021 to Lt. Gen, Commandant & Colonel Commandant ASC, ASC Centre & College, Bangalore and also had a meeting with him.</p> <p>During the meeting, the Commissioner requested for permission to make use of the defence area for desilting in the defence portion of lake and also</p>

	<i>interfering unless otherwise directed by this Tribunal or any other authority.</i>		sought approval for depositing the desilted muck in the low-lying areas of the defence land. Lt. Genhas agreed in principle to allow only non-hazardous silt to be deposited in the defence land where it will be beneficial in development of army training areas & reclaiming of low-lying land. On receipt of a formal permission from the defence authority, the work of chain link fencing and de-silting in the defence area will be taken up and completed.						
36.	Para 28(ix) Order dated 18.12.2019: <i>Compensation already assessed to be recovered by adopting coercive measures such as disconnection of electricity and water supplies.</i>	In regard to this para, the KSPCB submits as under:- <table border="1"> <tr> <td>Total No. of units issued with notice for EC and Amount.</td> <td>376 units (Rs.19.85 Crores)</td> </tr> <tr> <td>No. of units paid EC and Amount</td> <td>40 units (Rs.2.10 Crores)</td> </tr> <tr> <td>Action yet to be taken for recovery</td> <td>336 units</td> </tr> </table> M/s. Durga rainbow flat owner's welfare association has filed an impleading application before the Hon'ble NGT on 30.08.2020.	Total No. of units issued with notice for EC and Amount.	376 units (Rs.19.85 Crores)	No. of units paid EC and Amount	40 units (Rs.2.10 Crores)	Action yet to be taken for recovery	336 units	Where recovery is due, action is being taken to request the Deputy Commissioners concerned to recover the amounts from the concerned as arrears of land revenue. ANNEXURE-R-13 (Vide Pg No. 115 to129)
Total No. of units issued with notice for EC and Amount.	376 units (Rs.19.85 Crores)								
No. of units paid EC and Amount	40 units (Rs.2.10 Crores)								
Action yet to be taken for recovery	336 units								
37.	Para 28(x) Order dated 18.12.2019: <i>Steps be taken expeditiously for de-silting, de-weeding. Analysis of sludge and silt may be carried out before its disposal based on the result of such analysis, the mode of disposal and protocol be determined in accordance with laid</i>	KSPCB has collected series of samples of Silt/sludge at different depth with grid manner on 25 th , 26 th & 27 th of December 2020. Besides sample collected on 16/09/2020, 18/09/2020, 12/11/2020, 19.12.2020 & 5.1.2021 The CPCB has given a report for Varthur lakebased on TCLP and STLC analyses of silt samples. As per the protocol based on TCLP and STLC analyses, the soil is non-hazardous and accordingly the permission is accorded to BDA by KSPCB to dispose silt from the locations showed in the grid map based on local demand. As regards to Bellandur Lake, the analysis of sediment samples for leachability tests is under progress.	KSPCB has collected series of samples of silt/sludge at different depths on 25 th , 26 th & 27 th of December 2020. Besides sample collection done on 16/09/2020, 18/09/2020&12/11/2020 (Annexure-14). (Vide Pg. No. 130-145) The CPCB has given a report stating that other than the areas where the heavy metals are found to be managed as per the Hazardous Waste						

	<p><i>down principles under the relevant Rules.</i></p>	<p>De-silting of Varthur lake: work order issued on 23.11.2020 to the Agency M/s Star Infra Tech Pvt Ltd. It is submitted that, more soil / silt / sludge samples were collected from the lake bed areas and was analysed. The sediment analysis results based on the screening levels on soil quantity parameters prescribed for agriculture use have been examined by the CPCB and a report is given. Based on the recommendations of CPCB, the KSPCB issued a letter for disposal of the silt for agriculture and other uses. The work of de-silting has commenced by M/s Star Infra Tech Pvt Ltd as per the direction of KSPCB/BDA. Further, the BDA claims that approximately in an area of 100 Acres, silt is removed and stocked in the lake area. This work of removal of silt (100 Acres) is carried out under the 4 (G) exemption.</p>	<p>Management rules and the balance silt can be used over the agricultural land.</p> <p>Varthur Lake: On a pilot basis, silt was removed under 4 (G) exemption over an area of 100 acres and stacked in the lake area.</p> <p>Work order was issued on 23.11.2020 to M/s Star Infratech Pvt. Ltd.</p> <p>Silt has been removed over an area of 128 acres for an average depth of 1 metre. The total quantity of silt removed and stacked till 22.02.2021 is approximately 8.75 lakhs cubic metre.</p> <p>The KSPCB has sent a letter dated 12.02.2021 which is received on 22.02.2021 informing the steps for disposal of the silt in Varthur lake (copy of the letter is enclosed herewith at page no.7). Action is being taken to stack the useful silt on the lake boundary for interested farmers to collect the required quantity till a certain time.</p>
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38.	Para 28(xi) Order dated 18.12.2019:	The KSPCB has a well-equipped laboratory to analyse the samples in house. Samples are being analysed for pH, BOD, COD, TSS, Ammoniacal Nitrogen, Iron and Manganese, Total Nitrogen, Cyanide, Hexavalent Chromium, Cadmium, Copper, Lead, Nickel, Zinc and Total Chromium at KSPCB's sophisticated Central Laboratory. KSPCB has been advised to undertake water quality	The KSPCB has a well-equipped laboratory to analyze the samples in house. Samples are being

	<i>The State PCB may develop a robust water quality monitoring program for monitoring of water quality of drains leading to the lakes and also undertake water quality monitoring at atleast 5 locations for each lake.</i>	monitoring at regular intervals in these lakes and drains (connecting these lakes) and upload (on monthly basis) the water quality information at KSPCB website.	analyzed for pH, BOD, COD, TSS, Ammoniacal Nitrogen, Iron and Manganese, Total Nitrogen, Cyanide, Hexavalent Chromium, Cadmium, Copper, Lead, Nickel, Zinc and Total Chromium at KSPCB's sophisticated Central Laboratory, out of which 6 are heavy metals. (Annexure-R-7). (Vide Pg No. 158 to 188)
39.	Para 28(xii) Order dated 18.12.2019: <i>Steps may be taken to explore development of wetlands and biodiversity parks apart from other remedial action for reducing the pollution load on the recipient water bodies.</i>	Provision is made in the estimate for construction of wetland Bellandur and Varthur lakes. Once the identified wetland area within the lake is de-silted, wetland will be developed. Letter has been received from the ADLR (East) dated.06.11.2020 stating that Government land is not available along the periphery of the lake boundary in buffer zone.	Identified wetland will be developed after desilting.
40.	Para 28(xiv) Order dated 18.12.2019: <i>Real time water quality system be commissioned by 31.01.2020 as proposed.</i>	The Board has already installed the Real Time Water Quality Monitoring systems at three locations and continuously monitoring. The results are uploaded on the website.	The Board has already installed the Real Time Water Quality Monitoring systems at 3 locations and continuously monitoring. The results are uploaded on the website. (Annexure—R-18). (Vide Pg. No. 189-191)
41.	Para 28(xv) Order dated 18.12.2019: <i>The issue of removing 1.5 km road laid upon the lake bed, within the boundary of Varthur lake, by dumping of C&D debris be finalized</i>	The Hon'ble NGT vide order dated 13.08.2020 has held that enquiry should be conducted about the illegality in laying the pipeline by the Minor Irrigation Department. Accordingly, Minor Irrigation department has taken steps as stated in para 21 in this report.	<ul style="list-style-type: none"> Show cause notices were issued to them vide dated. 04.03.2020, giving 15 days' time to submit their replies. The replies submitted by them have been reviewed and found unacceptable. A proposal will be sent to DPAR for obtaining formal approval for

	<p>as per directions of Justice Hegde Committee in terms of para 26 above.</p>		<p>initiating disciplinary proceeding against the concerned retired officer and after approval from DPAR to conduct Departmental Enquiry, action will be initiated as per rule 214(2)(B)(i) and KCSR.</p> <ul style="list-style-type: none"> Disciplinary Proceedings has been initiated against the serving official by issuing a Show Cause Notice along with article of charges under rule 12(1)(A) of KCS (CCA)rules dated 05.02.2021 to erring officials who are responsible for the execution of the work. Further, ShriVenkatesh, Assistant Executive Engineer at Sl. No 04 expired on 04/11/2018. 																																															
42.	<p>Para 19(16) of order dated 06.12.2018: Post removal of waste from the Lake and from the Rajakaluves, the State ought to prepare a detailed project report with respect to disposal of the same.</p>	<p>As regard to removal of waste from the lake area, the desilting work is in progress and once it is completed the left-out waste shall have to be removed. Meanwhile, the BBMP has to prepare a detail project report for the disposal for the same.</p> <p>In regard to removal of waste from the Rajakaluves, the BBMP submits that against approximately 218.0 kms of Rajakaluves(SWD),about 105.149kmsare being maintained. The maintenance includes removal of silt, floating tresses, vegetation and other organics and transported to the Anjanapura abandoned stone quarries. A list of drains of 105.149kmshas been provided here as under:</p> <table border="1"> <thead> <tr> <th>Sl.No</th> <th>Drain No</th> <th colspan="2">Drain Name</th> <th>Length in M</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>MD 342A</td> <td>Boganahalli</td> <td>PanatturKere</td> <td>300</td> </tr> <tr> <td>2</td> <td>MD 425</td> <td>Ramgondanahalli</td> <td>Adarsha Houses</td> <td>MD 428 @ Chainage 0.00m</td> <td>100</td> </tr> <tr> <td>3</td> <td>MD 428</td> <td>VarthurKere</td> <td>MD 431 @ Chainage 0.00m</td> <td>200</td> </tr> <tr> <td>4</td> <td>MD 413</td> <td>Pattanduru</td> <td>Agrahara</td> <td>NalluralliKere</td> <td>250</td> </tr> <tr> <td>5</td> <td>MD 414</td> <td>Saibaba Hospital</td> <td>NalluralliKere</td> <td>450</td> </tr> <tr> <td>6</td> <td>MD 415</td> <td>Pioneer Software</td> <td>NalluralliKere</td> <td>400</td> </tr> <tr> <td>7</td> <td>MD 416</td> <td>Nalluralli</td> <td>NalluralliKere</td> <td>450</td> </tr> <tr> <td>8</td> <td>MD 349</td> <td>End Point of MD 322 & MD 334 Near ADA Compound Wall</td> <td>VarthurKere</td> <td>400</td> </tr> </tbody> </table>	Sl.No	Drain No	Drain Name		Length in M	1	MD 342A	Boganahalli	PanatturKere	300	2	MD 425	Ramgondanahalli	Adarsha Houses	MD 428 @ Chainage 0.00m	100	3	MD 428	VarthurKere	MD 431 @ Chainage 0.00m	200	4	MD 413	Pattanduru	Agrahara	NalluralliKere	250	5	MD 414	Saibaba Hospital	NalluralliKere	450	6	MD 415	Pioneer Software	NalluralliKere	400	7	MD 416	Nalluralli	NalluralliKere	450	8	MD 349	End Point of MD 322 & MD 334 Near ADA Compound Wall	VarthurKere	400	<ul style="list-style-type: none"> The details of remaining length of drains with encroachments are being surveyed. The help of Karnataka State Remote Sensing Centre has been taken in identifying the details of SWD widths as per revenue maps. The work is in progress.
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7	MD 416	Nalluralli	NalluralliKere	450																																														
8	MD 349	End Point of MD 322 & MD 334 Near ADA Compound Wall	VarthurKere	400																																														

		9	MD 365A	End Point of MD 363 & MD 364	MD 369 @ chainage 0.00	400	
		10	MD 322	RHB Colony	GarudacharyapalyaKere	150	
		11	MD 322A	GarudacharyapalyaKere	MahadevpuraKere	400	
		12	MD 322C	ITPL Road	Ramakka Layout	100	
		13	MD 325	Outer Ring Road	DoddanenkundiKere	300	
		14	MD 325A	VinayakaNagara 8th Cross	MD 325 @ Chainage 0.00	500	
		15	MD 363	Chinnappanahalli Layout	MD 365 @ Chainage 0.00	500	
		16	MD 369	End Point of MD 365 & MD 368	VarthurKere	500	
		17	MD 371	Tules CADCAM Technology	KundalahalliKere	500	
		18	MD 372	BEML Layout	Kundalahalli to Siddapura	300	
		19	MD 374	Tuberahalli BEML Layout	MD 375 @ Chainage 0.00m	230	
		20	MD 375	End Point of MD 374 & MD 373	SiddapuraKere	450	
		21	MD 292B	Vijaya Lakshmi Colony via Sai Baba Ashram	DakshinaPinakini River	350	
		22	MD 292	Patalamma Layout	DakshinaPinakini River via Sidhartha Layout	500	
		23	MD 292A	Kashi Vishwanatha Temple	Outer Channel of YMC Kere near Railway Culvert	1050	
		24	MD 294	Alembic Glass	MD 388 @ Chainage 0.00m near Channasandra Circle	1150	
		25	MD 296	Channasandra Circle	DakshinaPinakini River on ChikkaThirupathi Road	1300	
		26	MD 388A	Plantation near Gunjar	MD 388 @ Chainage 0.00m	150	
		27	MD 387	End point of MD 385	MD 382 @ Chainage 1840.00m	300	
		28	MD 451A	Gandhipura	MD 451 @ Chainage 560.00m	360	
		29	MD 451	Gandhipura	MD 453 @ Chainage 0.00m @ Immadihalli	300	

		30	MD 453	End Point of MD 451	MD 454 @Chainage 0.00	360
		31	BH 628	KaikondanahalliKere	SowITank	800
		32	BH 627	KasavanalliKere	KaikondanahalliKere	300
		33	BH 629	ArluurKere	KaikondanahalliKere	500
		34	BH 629	ArluurKere	KaikondanahalliKere	200
		35	BH627A	Bellandur	Ecospace	500
		36	BH-599	Iblur Lake	Bellandur Lake	769
		37	C 200	Doordarshan, JayamahalExtn,	Ulsoor Tank	4150
		38	C-100	From Palace Grounds, Vasanthnagar	Wind Tunnel Road	9650
		39	C-101	Sudhamnagar	Inside HAL Airport	1875
		40	C-102	Sweepers colony, Kadirenapalya	Shastrinagar Joining C-100	1600
		41	C-103	Krishnamurthynagar	Kadirenapalya	1600
		42	C-104	Kadirenapalya	Kadirenapalya tank	2500
		43	C-105	Hanumannagar	Kodihally, Near DomlurFlyover	3000
		44	C-106	New Thippasandra	ISRO Complex	650
		45	C-107	Kaggadasapura Lake	Kaggadasapura Main Road / Doodanekkundi tank	900
		46	C-108	Airport South East Corner	NAL	600
		47	C-109	Adj. To Airport Compound	Bellandur Lake	675
		48	N4 Drain	Nagammanagar	3rd Cross Domlur	1580
		49	-	Domlur AK colony	Natasha Apartment	920
		50	C-201	Ganapathy Temple, near Ulsoor Tank	MEG near Ulsoor Tank	250
		51	C-202	Richards Town	Gymkhana Club	1170
		52	C-203	Sagayapuram	Cleve town	750
		53	C-204	Orion Mall, Marutisevanagar	Ulsoor Tank	2000
		54	-	Upper Byrasandra lake - Baghmane Tech Park	Lower Byrasandra Lake - Baghmanetechpark	560
		55	-	Lower Byrasandra Lake - Baghmanetechpark	Kaggadasapura Lake	930
		56	-	KrishnaiahnaPalya	Kaggadasapura Lake	2600
		57	-	Kasturinagar Park	Outer Ring Road	1000
		58	-	Kasurinagar Railway track	Outer Ring Road	600
		59	K-100	K.R.Market	Bellandur Lake	10200
		60	K-200	Sanatorium	Bellandur Lake	7600

		61	K-103	Church Street	via Austin town & Viveknagar joining to K-100	3400		
		62	K-104	Jayangara 1st Block	Via Lakkasandra joining to K-100	1700		
		63	K-107	Lang ford town	Jalakanteshwarapura	770		
		64	K-108	Venkatareddy Layout	Willson Garden	1925		
		65	K-109	Kanteerava Stadium	via R.R. Mohan Ray & joining to K-100	2000		
		66	K-110	Hosur road	Sudhamanagara	625		
		67	K-111	South End road near Jayangara 2nd Block	Lalbh Tank	950		
		68	K-112	Parvathi Pura	Kumbargundi	725		
		69	K-114	Lang ford road	via St Michael's Church & Joining to K-100	1100		
		70	K-201	Vanaganahalli	Agara Lake	1350		
		71	K-202	Ellukunte	venkatapura	950		
		72	K-203	Crompton Greeves Road	Ring Road	1200		
		73	K-204	Madivala Tank	Hosur Road	705		
		74	K-205	Mudduram Nagar	Bismillah Nagar	525		
		75	K-206-	Tayappanahalli	Bovi Colony	1245		
		76	K-207	Bairsandra Ext	Bannerugatta road	1225		
		77	K-208	Tilaknagar	Krishnappa Garden	425		
		78	K-209	J P Nagara 6th Phase	Madiwala Tank	9500		
		79	K-210	J P Nagara 6th Phase	Joining K-200	1700		
		TotalLength					105149 meters	
		<p>It is stated here that the above details are submitted for the first time now hence Committee could not cross verify at the field level.</p> <p>Further, the State Government is developing RajakaluveK-100 for the length of 11.4 kms from Chikkalalbagh to Bellanduru lake. No Objection Certification was given in compliance with IA No.392/2020 in OA No.125/2017 subject to the conditions. Copy of the said letter dated 24.12.2020 was also submitted to the Hon'ble NGT by the Committee. The outcome of the development of this Rajakaluve should be placed before the Hon'ble NGT by the State Government.</p> <p>BBMP is yet to submit the detailed report on the status of the drains (with details of encroachments) and buffer zones</p>						
43.	Para 6 of order Orderdated 13.08.2020:	KSPCB has identified 91 units for recovery of Rs.271.50 Crores . The stages of proceedings are as under:-						<ul style="list-style-type: none"> • KSPCB has identified 91 Units for violation of non-installation of

	<i>Details of amount to be recovered from the units operating without STPs and the stage of proceedings pending before the State PCB</i>	<table border="1"> <tr> <td>No. of units Installed STP</td> <td>42</td> </tr> <tr> <td>No. of units connected to BWSSB</td> <td>06</td> </tr> <tr> <td>No. of units with STP under construction</td> <td>07</td> </tr> <tr> <td>No. of units issued with Closure orders</td> <td>10</td> </tr> <tr> <td>Action yet to be taken</td> <td>26</td> </tr> </table> <p>No recovery is made from the defaulting units.</p>	No. of units Installed STP	42	No. of units connected to BWSSB	06	No. of units with STP under construction	07	No. of units issued with Closure orders	10	Action yet to be taken	26	<p>STP and assessed Environmental Compensation of Rs 271.50 Crores.</p> <ul style="list-style-type: none"> Out of 91 Units, 42 Units have installed STP, 6 units have connected to BWSSB / UGD and 16 units STP are under construction. Accordingly 55 units are at different stages of compliance and 27 Units have not complied. Closure Orders have been issued for these 27.
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44.	Para 6 of order Order dated 13.08.2020: <i>Vacation of interim order passed by the High Court (present status)</i>	A WP No. 50953/2019 regarding unauthorised occupation of the Bellanduru lake land (Ambedkar Colony) is pending before the Hon'ble High Court.	<ul style="list-style-type: none"> The Hon'ble High court extended the stay order till the next date of hearing on 13.01.2021. Next Date of hearing is on 08/03/2021 Further action will be taken after vacation of the stay order. 										
45.	Para 6 of order Order dated 13.08.2020: <i>The BDA has wrongly understood that biodiversity parks are to be set up within the lake boundary. Such parks are to be set up along the periphery of the lake boundary. (Possibility of such Biodiversity parks).</i>	<p>The BDA submits that no Bio-Diversity parks are developed within the periphery of the lake after Hon'ble NGT observations. The BDA submits that Government land is not available along the periphery of the lake boundary in buffer zone.</p> <p>BDA submit that Contour Survey is being done for both the lakes to demarcate the area between maximum flood levels and the lake periphery. So, identified/demarcated area which is beyond the maximum water level where water does not reach to lake periphery, such area may be developed as Bio-diversity parks without compromising total water holding capacity of lake and only on approval from competent Authority.</p> <p>Alternative land for disposal of silt or/and formation of Bio-diversity park in being explored near Defence land abutting to the Bellandur lake and also other open land available with Defence establishment within Bangalore city. Negotiation with Defence authorities are in progress. If it materialises, further action will be taken by following the protocol of disposal as per Rules.</p>	<ul style="list-style-type: none"> Setting up of Bio-diversity park in both the lakes within the area available between boundary of lake and Full Tank Level (FTL) is being explored. Proposal submitted to Karnataka Tank Conservation Development Authority (KTCDA) for their opinion which will be submitted to Hon'ble NGT for consideration. The Full Tank Level will be maintained through the arrangement of sluice gates at Bellandur and Varthur lake. 										

46.	<p>Para 6 of order Order dated 13.08.2020: Enquiry should be conducted about the illegality in laying the pipeline by the Minor Irrigation Department (Present status).</p>	<p>The Additional Chief Secretary, Urban development Department, has submitted the following details in regard to action initiated against the officials in the subject matter.</p> <table border="1"> <thead> <tr> <th>SL No</th> <th>Name of the Erring Official</th> <th>Designation</th> <th>Period</th> </tr> </thead> <tbody> <tr> <td>7.</td> <td>Devaraj B</td> <td>Chief Engineer</td> <td>23-09-2015 to 31-08-2017</td> </tr> <tr> <td>8.</td> <td>M Ravindrappa</td> <td>Superintending Engineer</td> <td>26-06-2014 to 18-11-2019</td> </tr> <tr> <td>9.</td> <td>S N Krishnappa</td> <td>Executive Engineer</td> <td>11-06-2015 to 27-08-2018</td> </tr> <tr> <td>10.</td> <td>Venkatesh</td> <td>Assistant Executive Engineer</td> <td>27-03-2017 to 04-11-2018</td> </tr> <tr> <td>11.</td> <td>Lakshmu</td> <td>Assistant Executive Engineer</td> <td>18-07-2016 to 26-03-2017</td> </tr> <tr> <td>12.</td> <td>Ashok H Bhagi</td> <td>Assistant Engineer</td> <td>07-12-2016 to 22-07-2019</td> </tr> </tbody> </table> <p>Officers who have worked in the specified period have been identified and show cause notices were issued to them vide dtd. 04.03.2020, giving 15 days' time to submit their replies. The replies submitted by them have been reviewed and found unacceptable. Further at Sl. No 04 Shri Venkatesh, Assistant Executive Engineer expired on 04/11/2018.</p> <p>The Additional Chief Secretary submits that a proposal will be sent to DPAR for obtaining formal approval for initiating disciplinary proceedings against the concerned retired officers and after getting approval from DPAR to conduct department enquiry action will be initiated as per rule 214 (2)(B)(i) and (ii) of KCSR.</p>	SL No	Name of the Erring Official	Designation	Period	7.	Devaraj B	Chief Engineer	23-09-2015 to 31-08-2017	8.	M Ravindrappa	Superintending Engineer	26-06-2014 to 18-11-2019	9.	S N Krishnappa	Executive Engineer	11-06-2015 to 27-08-2018	10.	Venkatesh	Assistant Executive Engineer	27-03-2017 to 04-11-2018	11.	Lakshmu	Assistant Executive Engineer	18-07-2016 to 26-03-2017	12.	Ashok H Bhagi	Assistant Engineer	07-12-2016 to 22-07-2019	
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47.	<p>Para 6 of order Orderdated 13.08.2020: Construction of retaining wall should not result in reduction of width of the water bodies/Rajakaluves.</p>	<p>The BBMP submits that the Construction of retaining wallsto storm water drains is temporarily suspended in the Bellandur and Varthur catchment areas. To ascertain the actual width of these drains, thehelp of Cadastral maps is being taken in collaboration of Revenue Department and the Karnataka State Satellite Remotes Sensing Centre. They submit that the exercise will be completed by the end of March 2021. Once these exercises are completed the encroachments shall be identified at field and should be removed.The works of construction of retaining walls should be recommenced accordingly. The excess area outside the retaining walls, tree park should be developed. The BBMP is expected to consider entire lengths of SWDs in the catchment areas.</p>	<ul style="list-style-type: none"> As per the instructions of the monitoring committee, the entire length of SWDs in the Catchment area is taken up for survey. 																												
48.	<p>Para 6 of order Orderdated 13.08.2020: Details of action taken by the BBMP against</p>	<p>The BBMP submits a detail of the encroachment removed in Mahadevapura Zone of the catchment of these lakes which were identified in the past.The details are as under:-</p>	<p>It is submitted that the regard to in regard to the encroachments pertaining to Bellandur lake, Out of 22 encroachments, 18 cases are</p>																												

<p><i>illegal structures (rajakaluves and 30 meter buffer zone around the lakes)</i></p>	<p>Sl. No</p>	<p>Zone</p>	<p>Total encroachments Identified in each Zone</p>	<p>Details of the encroachments removed by doing survey in the year 2016-17</p>	<p>Details of the encroachments removed /resolved by doing survey in the year 2018-19 on-wards</p>	<p>Balance Encroachments to be removed as on 24.12.2020</p>	<p>pending in KAT and Hon'ble High court and City Civil Court. The remaining four encroachments will be removed by 15.03.2021.</p>																		
	1	Mahadevapura	1101	98	864	139	<p>It is further submitted that along the periphery of the Bellanduru lake. The remaining 23 poles and 40 LED lights and 11 CC TV Camera installation works will be completed before 15.04.2021.</p>																		
	1a	Mahadevapura-New	45	0	0	45																			
	TOTAL		1146	98	864	184																			
<p>Further, BBMP submits that, following Writ Petitions in the matter of encroachment are filed and pending before the Hon'ble High Court.</p> <table border="1"> <thead> <tr> <th>Sl.no</th> <th>Writ Petition Number</th> <th>Number of cases</th> </tr> </thead> <tbody> <tr> <td>5.</td> <td>W.P No.27287/2019</td> <td>3 cases</td> </tr> <tr> <td>6.</td> <td>W.P No.26150/2019 & 26835-26842/19</td> <td>1 Case</td> </tr> <tr> <td>7.</td> <td>W.P No.29873/19 & 29874-876/19</td> <td>3 Cases</td> </tr> <tr> <td>8.</td> <td>W.P No.30399-30414/2019</td> <td>45 Cases</td> </tr> <tr> <td colspan="2">Total</td> <td>52 Cases</td> </tr> </tbody> </table> <p>The details of encroachments of other zones for the catchment of Varthur, Bellanduru and Agram have not been submitted by the BBMP.</p> <p>The BBMP further submits that 30 meter buffer zone have been demarcated all along the outer boundary of Bellandurulake with the help of Additional Director of Land Records. In the 30 meter buffer zone of Bellanduru lake, 22 unauthorised structures have been identified. The process up to demolition order, has been completed. Against the demolition order 13 persons have appealed before the Karnataka Administrative Tribunal; one Writ Petition has been filed in the High Court; 4 persons have gone to the City Civil Court. Action has to be initiated against the remaining 4 persons.</p> <p>It is further submitted that along the periphery of the Bellanduru lake 177 mild steel tubular poles and 160 LED lights have been installed and commissioned. 23 poles and 40 LED lights are yet to be installed. As regard to CCTV cameras, 51 numbers have been installed and functioning and 11 numbers are yet to be installed.</p> <p>Further, 30-meter buffer zone has been demarcated along the outer boundary of Varthur lake with the help of Additional Director of Land Records. In this buffer zone, 12 unauthorised structures have been identified. The process up to demolition orders has been completed. Against the demolition order, one person has appealed before the Karnataka Administrative Tribunal; one structure has been demolished and remaining 10 structures are yet to be demolished.</p> <p>Regarding encroachments pertaining to Varthur lake, out of 12 encroachments, 1 case is pending in KAT and 1 demolition is completed. The remaining 10 encroachments will be removed within 15.03.2021.</p> <p>Along the periphery of the Varthur lake, the remaining 16 poles and 57 LED lights and 26 CCTV camera installation works will be completed before 15.04.2021.</p>								Sl.no	Writ Petition Number	Number of cases	5.	W.P No.27287/2019	3 cases	6.	W.P No.26150/2019 & 26835-26842/19	1 Case	7.	W.P No.29873/19 & 29874-876/19	3 Cases	8.	W.P No.30399-30414/2019	45 Cases	Total		52 Cases
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		It is further submitted that along the periphery of the Varthur lake, 184 poles and 143 LED lights have been installed and commissioned. 16 poles and 57 LED lights are yet to be completed. As regard to CCTV cameras, 24 numbers have been installed and functioning and 26 numbers are yet to be installed.	
49.	<p>Para 6 of order Order dated 13.08.2020:</p> <p><i>BBMP should survey and notify the rajakaluves for purposes of buffer zones of 50, 25 and 15 meters</i></p>	<p>The Storm water drains are classified into the Primary, Secondary and Tertiary SWDs with the buffer zones of 50, 25 and 15 meters respectively on certain technical parameters.</p> <p>The details of length in each category have not been submitted by the BBMP. The Committee has convened several meetings in this regard but no satisfactory desired results are achieved.</p> <p>To ascertain the actual width of these drains and encroachments, the help of Cadastral maps is being taken in collaboration of Revenue Department and the Karnataka State Satellite Remotes Sensing Centre. They submit that the exercise will be completed by the end of March 2021. Once this exercise is completed, the further action of demarcating of encroachments at field should be done and to be removed. The BBMP is expected to consider entire lengths of SWDs in the catchment areas.</p>	As per the instructions of the Monitoring Committee, the entire length of SWDs in the Catchment area is undertaken for survey.
50.	<p>Para 8 of order Order dated 13.08.2020:</p> <p><i>We have given due consideration to the rival opinions. We are of the view that some more sampling may be got carried out with regard to de-silted debris/sludge at appropriate representative locations for comprehensive database and thereafter disposal protocol may be finalized in consultation with the CPCB. This will avoid unnecessary delay and cost (action taken in this regard by KSPCB for sample analysis)</i></p>	<p>More silt sampling in both lakes have been carried out jointly (by CPCB and KSPCB) and analysed for essential parameters including heavy metals. The standard protocol for assessing the hazardous (if any) is being followed through TCLP (Toxicity characteristic leaching procedure) and STLC (Soluble Threshold Limit Concentration) investigations of soil samples in Varthur and Bellandur Lakes.</p> <p>Based on this, CPCB has given a report for Varthur lake. As per the protocol based on TCLP and STLC analyses, the soil is non-hazardous and hence permission is accorded to BDA by KSPCB to dispose silt, based on the local demand</p> <p>As regards to Bellandur Lake, the analysis of sediment samples for leachability tests is under progress and is expected to be completed early. Based on the test results CPCB, will submit a report suggesting silt disposal mechanism.</p>	Comments from the CPCB with regard to disposal Protocol is awaited.

Consideration of status report, objections of the Amicus and further directions

9. We have heard learned Amicus Curie Shri Raj Panjwani, Senior Advocate and Ms. Madhvi Divan, learned ASG appearing for the State of Karnataka.

10. **Shri Raj Panjwani submitted that progress in the matter has been very slow and at a snail pace. The problem is continuing for the last about four years. The Tribunal has been monitoring the matter for the last more than two years with the assistance of Monitoring Committee, headed by a former Supreme Court judge. On significant aspects, the State Authorities have not come up to the expectations.**

Inter alia it is pointed out:

- (I) Against item nos. 8 and 16, there is practically no progress in taking action against erring officers
- (II) Against item no. 6, action taken against industrial units for discharging the industrial waste without treatment by not installing requisite STPs is inadequate. Out of 61 defaulting units, action has been taken only against 10, while compliance is only by 25. Action is yet to be taken against 26.
- (III) Against item No. 18, the progress shown is inadequate. Though compensation of Rs. 271.50 crores has been assessed against the defaulting units, no recovery has been made even though non-compliance is continuing. The State PCB ought to take coercive measure of disconnecting electricity supply, if the assessed compensation is not paid without valid reason, to enforce the "Polluter Pays' principle.
- (IV) Against item No. 11, there is similar position with regard to recovery of compensation. Instead of disconnecting

electricity/water supply, the State is merely referring to the matter to the Deputy Commissioner, with no progress.

- (V) Against Item No. 17, on the subject of removal of the waste and encroachments, there is no action taken with reference to 79 drains mentioned therein. It is further mentioned that the State Government is developing Rajakaluve K-100 for the length of 11.4 kms from Chikkalalbagh to Bellanduru lake. I.A. No. 392/2020 filed by the State before this Tribunal was disposed of on 15.12.2020 with the observation that the issue should be first looked into by the Monitoring Committee. The Monitoring Committee has left the issue to be gone into by this Tribunal, in absence of entire information being available with the Committee. **Learned Amicus Curiae submitted that in the garb of development of the Rajakaluve in question the width and capacity of the drains should not be reduced.**
- (VI) Under Item No. 12, on the subject of desilting, progress shown is that a part of the silt has been removed and stacked. **Learned Amicus submitted that the silt can be used in the abandoned mines consistent with the SOP with underneath lining or can also be used on the embankment of flyovers as per CPCB guidelines on the subject. Safeguards be taken to prevent silt re-entering the lake till it is removed.**
- (VII) Under Item No. 10, on the issue of desilting of the lake falling in the defence area, the progress is that **non-hazardous silt can be deposited on the defence land for development of army training areas and reclaiming of low-lying land.**

Learned Amicus submitted that **reclaiming of low-lying land will alter the character of the wetland, against established environmental norms. The low-lying land in question is wetland and needs to be maintained as such.**

- (VIII) Progress against item No. 20 with reference to setting up of bio-diversity park is not satisfactory. It is pointed out that the BDA has again taken a wrong stand for **demarcating area between maximum flood level and the lake periphery instead of doing so along the periphery of the lake boundary i.e. ensuring that area of lake is not used in the process.** The proposal of the BDA appears to be to develop the bio-diversity park within the boundary of the lake and the full tank level which will adversely affect the lake.
- (IX) The progress against Item No. 23 with reference to removing the illegal encroachments in the catchment areas of the lakes is not satisfactory. It is mentioned that the BBMP has still not given details of the encroachments. It is only submitted that certain cases are pending before the Karnataka Administrative Tribunal (KAT), the High Court and the City Civil Court.
- (X) Huge amount of C&D waste has been dumped and road made inside the lake itself which has to be undone, as directed earlier.
- (XI) Compensation amount determined by the Tribunal needs to be credited to a separate account and utilised for restoration and if necessary, recovered from the polluters/erring officers

11. Learned ASG, without joining issue with the above submissions of learned Amicus, which are otherwise well founded, submitted that substantial progress has taken place and the same is continuing. Further steps are being taken and even after filing of progress report, closure orders have been passed against 26 industrial units. Boundaries are being constructed. There are constraints in the form of interim orders by various Courts. **She has assured that further steps will be taken expeditiously and points made by learned Amicus will be addressed in the course of further working.**

Analysis and further Directions

12. We have given due consideration to the issue. We do find some progress but we agree with learned Amicus that the progress is very slow and inadequate. The remaining work needs to be executed on war footing by remedying the deficiencies pointed out above by learned Amicus. We also permit learned Amicus to file a supplementary note directly to the Chief Secretary or to this Tribunal. If filed with the Tribunal, the same may be forwarded to the Chief Secretary, Karnataka for being addressed in positive spirit, in the light of observations already made and assurance of learned ASG.

13. Remedial steps to be taken so far for restoration of pristine ecology of the lakes in question have been discussed in earlier orders dated 6.12.2018, 21.10.2019, 18.12.2019 and 13.8.2020 and comments on some of the issues have been made hereinabove. Justice Hegde Committee has monitored the execution of the action plan on the subject for the last more than two years. **We place on record our gratitude to Justice Hegde for the outstanding contribution in the matter.**

14. However, **monitoring by a Tribunal or Tribunal appointed Committee cannot be for indefinite period and ownership of execution of action plan for restoration of pristine ecology of the lakes/wetlands must be finally owned and taken over by the State authorities, headed by the Chief Secretary.** Governance deficit has to be made up by further action in mission mode. The road-map has already been laid down by the orders of this Tribunal. We may note that apart from the present matter, **issues of solid and liquid waste disposal generally and of polluted river stretches, water bodies, lakes and wetlands have been dealt with by this Tribunal in the light of Hon'ble Supreme Court decisions.**¹ Copies of such orders have been duly sent to the Chief Secretary, Karnataka and Chief Secretary also appeared in person twice before this Tribunal for interaction on these issues in OA 606/2018. There are 17 polluted river stretches in Karnataka including Tungabhadra which has been identified by the State to be model of compliance. Detailed guidelines have been laid down on all aspects of restoration of lakes and water bodies and several issues are overlapping with restoration of polluted river stretches. Specific directions cover the present matter on subjects of preventing discharge of sewage and effluents and solid waste, removing encroachments from catchment areas, desilting and dewatering, maintaining lake free from any constructions inside and all other matters covered by different headings of the progress report quoted

¹ (2000) 2 SCC 679 Almitra Patel, Tribunal orders in OA 606/2018, last order 2.7.2020: Solid Waste (2017) 5 SCC 326 Paryavaran Suraksha, Tribunal last order dated 22.2.2021 in OA 593/2017: Liquid waste, including 351 polluted river stretches (OA 673/2018), coastal pollution (OA829/19), re-use of treated water (OA148/2016). (2017) 5 SCC 805, Tribunal order dated 27.8.2020, [OA 351/2019](#), Raja Muzaffar Bhat v J & K: Wetlands and lakes: *M.K. Balakrishnan and Ors. v. UOI*, Tribunal order dated 18.11.2020 Lt Col Sarvadaman OA 325/2015, Water bodies, (1997) 1 SCC MC Mehta v. Kamal Nath, (2001) 6 SCC 496 Hinch Lal Tiwari vs. Kamala, (2006) 3 SCC 549 Intellectual Forum vs. State of AP

above. In the present context, we may specifically note need to remedy foaming and fire incidents, attributed to detergents containing Phosphates, sewage entering the lake needs to be diverted and treated sewage utilised for non-potable use. The lake is to be maintained with required oxygen levels for survival of aquatic life.

15. Protection of lakes and water bodies and preventing pollution is part of 'public trust' doctrine obligating the State authorities to take stern measures for enforcing the basic constitutional right of citizens to clean environment. Without this being done in a meaningful manner, there can be no sustainable development. There is need for stringent enforcement by way of adverse measures, including recovery of compensation for continuing violation and adverse entries in the record of defaulting officers. Accountability for those who are entrusted the responsibility to comply with these directions must be fixed on the principle of good governance, to enforce rule of law to protect rights of citizens.

16. In spite of the fact that Water (Prevention and Control of Pollution) Act, 1974 was enacted 47 years back, to give effect to the decision in Stockholm Conference in the year 1972, the water pollution remains rampant. Though a serious criminal offence under the law of the land, the authorities have failed to take stringent action against the violators. In a way the State-authorities, who are constitutionally under obligation to ensure treatment of sewage before the same is discharged into the water bodies, have to take the blame. The adverse effect of water pollution on health and environment is well known. **Water bodies, including lakes and wetlands, have great role in sustaining aquatic life, attract migratory and other birds, add to the natural aesthetics, help**

harvesting rain water, maintain micro climate, recharge ground water and perform other ecological services.

The Hon'ble Supreme Court in its judgment in *Paryavaran Suraksha vs. Union of India & Ors.*, (2017) 5 SCC 326 discussed the need to remedy water pollution and fixed a firm deadline of 31.03.2018 by which all necessary CETPs/STPs/ETPs should be in place failing which coercive action, including prosecution of State authorities was mandated. It also indicated sources of funding. The said direction continues to be violated. This situation can hardly be held to be conducive to the environmental rule of law. The sewage treatment is less than 50% (the sewage generation from the urban population of the country is reported to be about 70000 MLD and treatment capacity about 27000 MLD)² which is a matter of serious concern. The Tribunal has issued repeated directions on the subject. Till it is remedied, the goal of sustainable development is far cry. Similarly, directions have been given for protection of water bodies and wetlands, referred to earlier in para 14, supra.

The environmental law principles, which this Tribunal is mandated to apply under sections 20 and 15 of the NGT Act, 2010, are – 'sustainable development', 'precautionary' and 'polluter pays'. These principles, accepted in Stockholm conference, have been held to be part of right to life under article 21 of the Constitution in *Vellore Citizens' Welfare Forum v. Union of India*, (1996) 5 SCC 647. In *Hanuman Laxman*, (2019) 15 SCC 401, (paras 142-156), significance of environmental rule of law has been highlighted to achieve sustainable development goals for prosperity, health and well-being. This requires filling of gap between law and enforcement. In *T.N. Godavarman Thirumulpad v. Union of India*, (2002) 10 SCC 606,

² As per report of the CPCB dated 30.09.2020 quoted in the order of this Tribunal dated 05.02.2021 in OA 95/2018, *Aryavart Foundation v. M/s Vapi Green Enviro Ltd. & Ors.*

at page 621, it was observed that the State has to forge in its policy to maintain ecological balance and hygienic environment. Article 21 protects right to life as a fundamental right. Enjoyment of life and its attainment including the right to life with human dignity encompasses within its ambit, the protection and preservation of environment, ecological balance free from pollution of air and water and providing sanitation, without which life cannot be enjoyed. Any contra acts or actions would cause environmental damage. Therefore, hygienic environment is an integral facet of right to healthy life and it would be impossible to live with human dignity without a humane and healthy environment. Environmental protection has now become a matter of grave concern for human existence. Promoting environmental protection implies maintenance of the environment as a whole comprising the man-made and the natural environment. Therefore, there is constitutional imperative on the Central Government, State Governments and bodies like municipalities, not only to ensure and safeguard proper environment but also an imperative duty to take adequate measures to promote, protect and improve the man-made environment and natural environment.

17. Accordingly, there is need for further continuous action and effective monitoring at the highest level in the Government. Consistent with earlier orders on the subject, such monitoring needs to be taken over by the Chief Secretary, Karnataka who may take over the record from the Monitoring Committee and take stock of all the left-over issues, with the assistance of other identified authorities and experts (which may include Indian Institute of Science, Bangaluru). He may inter alia interact with the State Lake Conservation and Development Authority and Forest, Ecology and Environment Departments. First meeting may be held latest by March 31, 2021. Thereafter, review meetings may be held atleast once in a month to

monitor further progress and completion of targets, already fixed or which may be further fixed. It will be open to all persons interested in restoration and maintenance of the lakes in question to give their suggestions and offer assistance which may be duly considered by the Chief Secretary, Karnataka on its merits. All pending projects for setting up of STPs, fencing of lake, removal of encroachments, etc. may be executed expeditiously. Particular attention may be given to preventing formation of foam and fire incidents. Directions in earlier orders and current order be duly carried out and overseen by the Chief Secretary, as already mentioned, atleast once a month. In pursuance of order of this Tribunal dated 18.11.2020 in OA 325/2015, Lt. Col. Sarvadaman Singh Oberoi v. Union of India & Ors., the steps for protection of water bodies have been directed to be taken and quarterly reports sent by the Chief Secretaries of States to the Secretary Ministry of Jal Shakti. Similarly, a quarterly report is to be given by the Chief Secretaries in respect of steps taken for protection of lakes and wetlands to the National Wetlands Authority, as earlier directed in OA 351/2019, Raja Muzaffar Bhat, supra, vide order dated 27.8.2020 and also placed on the website of the State Wetland Authority, for information of all the stake holders. The lakes in question are undoubtedly of great significance for the Bengaluru city and are glory and pride of the city. We do hope the administration will appreciate the need for stringent action and efforts for maintaining the said Lakes.

18. Before parting, we place on record our deep appreciation for the invaluable services rendered by learned Amicus.

The application is disposed of accordingly.

A copy of this order be forwarded to the Secretary, MoEF&CC as Chairperson of National Wetland Authority and to Secretary, MoJS, GoI, CPCB and the Chief Secretary, Karnataka by e-mail for compliance.

Adarsh Kumar Goel, CP

S.K. Singh, JM

Dr. Nagin Nanda, EM

March 12, 2021
Original Application No. 125/2017
DV

BANGALORE DEVELOPMENT AUTHORITY

Hon'ble NGT, Southern zone, Chennai order in the matter of OA No.111/2020 (SZ) regarding “Frothing of Chemical Foam in the River Thenpennai” – Compliance and Action Taken Report

IV. Rejuvenation of lakes to remediate the pollution caused in River Thenpennai			
Action points	Progress made on 31.05.2021	Proposed Action plan with target date (if any)	Remarks
<p>1. Advisory for development of Bio diversity park, wetland in River basin of Thenpennai or Dakshina Pinakini as per CPCB guidelines titled ‘Guidelines for setting up of Bio diversity parks in Floodplains of Rivers of India, including River Ganga’ be notified in consultation with Government of Karnataka and KSPCB.</p> <p>2. Completion of Bio diversity park which comprises of;</p> <p>i) Feasibility study for development of Bio diversity parks in the River basin of Thenpennai</p> <p>ii) Preparation of Detailed Project Report (DPR) for development of Biodiversity parks in Bellandur & Varthur lakes.</p> <p>iii) Award of project.</p>	<p>Bangalore Development Authority has the jurisdiction of Bellandur & Varthur lakes. It has undertaken the desilting work in these two lakes. As per the action plan submitted by BDA for rejuvenation of Bellandur and Varthur lake, development of wetland provision is made in the DPR. However, provision for development of biodiversity park was included pursuant to the Hon'ble NGT direction on 11.12.2019 indicating “Steps may be explored for development of wet lands and biodiversity parks apart from other remedial action for reducing the pollution load on the recipient water bodies”.</p> <p>Accordingly for development of biodiversity parks in Bellandur & varthur lakes, the following available area within the lake periphery was prepared under the advice of NGT appointed Monitoring committee.</p> <p>The Hon'ble NGT appointed Monitoring Committee submitted the following area details on formation of Biodiversity parks before the Hon'ble NGT.</p> <p>An area of 52.24 acres (East of bund 5.8 acres near suncity 13.85 acres near Y-junction North west corner 11.77acres Ambedkar nagar and nearby area 14.87 acres) in Bellanduru lake: 16.6 acres (near main let 6.9 acres: Siddapura west side 2.46 acres and near Balagere 7.24 acres) in Varthur lake for biodiversity parks. The suggested areas are out of the periphery of the lakes. In such areas (biodiversity parks.) silt of appropriate quantity from the lakes may be used for rising to appropriate heights. The biodiversity parks may be raised with help of</p>	<p>Targeted date of completion of desilting of Bellandur & Varthur lake is 18 months (excluding man soon) from the date of handing over of site i.e., 4.12.2021. On removal of silt Wet land will be constructed.</p>	

<p>iv) Completion of the project.</p>	<p>an expert committee in the field. The biodiversity parks will act as carbon sink, lung space and habitat to avian and other fauna and flora. The committee suggested that no other structures should be allowed in the lake areas than as suggested by the NGT in para 28(xii)</p> <p>The Hon'ble NGT in its order dated 4/13.08.2020 has rejected the proposals with the following observation. "BDA has wrongly understood that biodiversity parks are to be setup within the lake boundary. Such parks are to be setup along the periphery of the lake boundary. Order copy attached.</p> <p>Once again to impress upon the Hon'ble NGT for formation of biodiversity park and islands within the lake on similar lines done in other lakes of Bangalore, vide IA No.392/2020 and 395/2020 in Original Application No.125/2017. Hon'ble NGT rejected the proposal in its order dated 15.12.2020, highlighting the submission learned Amicus Curiae to the Hon'ble NGT as below;</p> <p>"The BDA has wrongly understood that biodiversity parks are to be set up within the lake boundary. Such parks are to be set up along the periphery of lake boundary". (order copy attached)</p> <p>To carry out the biodiversity parks along the periphery of lake boundary in Bellandur & Varthur lake, no Government land is available along the periphery of the lake, as per the information given by the Additional Director of Land Records, (Bangalore east) Dated.06.11.2020.</p> <p>Once again on the advice of Hon'ble NGT appointed Monitoring Committee to identify and carryout survey, the area between tank full level and tank boundary where water does not spread throughout the year. Such area has been identified and marked on the lake map with levels. The new proposal with 99 acres 07 guntas in Bellandur lake and 31acres 15guntas in Varthur lake were indentified and submitted to Hon'ble NGT appointed Monitoring committee. The Monitoring Committee submitted the proposal before the Hon'ble NGT for consideration. Hon'ble NGT in its order dated.12.03.2021 (Order copy</p>		
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	<p>attached) placed the observation & comments of Amicus Curiae as stated below:</p> <p>Progress against item No.20 with reference to setting up of bio-diversity park is not satisfactory. It is pointed out that the BDA has again taken a wrong stand for demarcating area between maximum flood level and the lake periphery instead of doing so along the periphery of the lake boundary i.e. ensuring that area of lakes is not used in the process. The proposal of the BDA appears to be to develop the bio-diversity park within the boundary of the lake and the full tank level adversely affects the lake.</p> <p>Hence, there is no space available for development of biodiversity parks near Bellandur & Varthur lake. However development of wetland has already been considered and work order has been issued to the agencies. Meanwhile agencies have taken up de silting of designated area of wetland for construction of wetland in Bellandur & Varthur lakes.</p>		
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Commissioner,
BDA, Bengaluru

It is beyond Bangalore Development Authority jurisdiction and hence agency for development of Bio diversity park, wetland in River basin of Thenpennai or Dakshina Pinakini decision is to be taken at Government level, Government of Karnataka.

Bellandur lake:- For desilting Work order was issued on 23.11.2020 to M/s RMN infrastructure pvt ltd and after preliminary preparation like removal of seepage water from the lake bed and recording of pre levels by total station survey, agency has began desilting of lake from 04.12.2020.

Karnataka state Pollution Board (KSPCB) has done the analysis of silt samples and the report was received on 6.03.2021.

As per the analysis report desilted material is being transported to the designated quarry at Vittasandra and Mailasandra.

Wetland:- Formation of wetland item has been included in the DPR for rejuvenation of Bellandur lake at 3 major inlets viz.

1. Main Inlet (Y junction) proposed wetland area of 1,71,000 Sqm.
2. Iblur inlet proposed wetland area of 30750.00 Sqm.
3. HAL inlet proposed wetland area of 30,000 Sqm.

As per the work order issued on 23.11.2021 wetland at these above locations the agency will execute the wetland after desilting of the lake.

Varthur lake:- For desilting Work order was issued on 23.11.2020 to M/s Star Infratech pvt ltd and after preliminary preparation like removal of seepage water from the lake bed and recording of pre levels by total station survey, agency has began desilting of lake from 04.12.2020.

Karnataka state Pollution Board (KSPCB) has done the analysis of silt samples and the report was received on 12.02.2021.

As per the analysis report desilted material is being transported to the formers for their Agriculture purpose. As per the analysis of silt samples, the silt is suitable for Agriculture purpose.

Wetland:- Formation of wetland item has been included in the DPR for rejuvenation of Varthur lake at

1. Main Inlet in an wetland area of 163491 Sqm

As per the work order issued on 23.11.2021 wetland at these above locations the agency will execute the wetland after desilting of the lake.

BANGALORE DEVELOPMENT AUTHORITY

Sub:- Hon'ble NGT, Southern zone, Chennai order in the matter of OA No.111/2020 (SZ) regarding "Frothing of Chemical Foam in the River Thenpennai.

Supplementary information to Compliance and Action Taken Report submitted on 21.05.2021 in respect of water quality to be maintained as pristine by the departments (viz., BDA, BBMP, BWSSB & KSPCB) is provided as below.

In a parallel case, the Hon'ble National Green Tribunal, Principal Bench, New Delhi, Original Application No.125/2017 has issued directions in its Order dated on 18.12.2019 and final order dated 12.03.2021 vide page no.04 (sub sl no.xi), directing the "State PCB may develop a robust water quality monitoring programme for monitoring of water quality of drains leading to the lakes and also undertake water quality monitoring at least 5 location for each lake". As per the directions of Hon'ble NGT, monitoring of water quality of drains leading to the lakes is to be carried out by the State PCB.

The Bellandur and Varthur lakes are only 2 lakes under the custodian of BDA which flow into river Thenpennai. These 2 lakes have been emptied for carrying out de-silting work. The water entering into the lake from the storm water drain has been diverted through diversion channel. Monitoring water quality in the lakes does not arise as there is no water in the lake, due to de-silting work under progress.

The responsibility of monitoring treated water at K.C.Valley Sewage Treatment Plant (STP) is with BWSSB.

This is submitted in continuation of the compliance submitted on 21.05.2021 and as per the discussion during the online meeting held on 24.5.2021.

Engineer Member
BDA, Bangalore.

Tel.No.22875794, 22872801 Fax 08022374092 e-mail – sebgl@kpwd.gov.in	 Government of Karnataka PUBLIC WORKS DEPARTMENT	O/o Superintending Engineer, PWD Bengaluru Circle, Anand Rao Circle, Bengaluru-560009
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SEBC : AE - 3: Thenpennai river : 2021 -22

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Dated 8/4/2024

To,

The Regional Director
Central Pollution Control Board
Nisarga Bhavan
Bengaluru - 560079

Sub : Hon,ble NGT, Southern Zone, Chennai order in the matter of O.A
111 of 2020 (SZ) regarding "Frothing of Chemical foam in the River
Thenpennai" - reg

Ref : CPCB letter no. Tech (39)/Legal (NGT)/RDS 2020-21
dated 26-02-2021

With reference to the above subject, the long term and short term action plan with respect to "Frothing of Chemical foam in the river Thenpennai" have been formulated from your end and the course of action to be taken with respect to Honourable NGT order was explained to all the concerned departments in the video conference meeting on 10.03.2021.

In this connection, the PWD Government of Karnataka has actively involved in addressing the issue and has extended support to the CPCB in the same. Also, the department was involved with the joint inspection and has assisted the technical team of CPCB in the site visits of Varthur and Bellandur lake.

Since the matter pertains entirely to the departments such as BWSSB, BBMP, BDA & Minor Irrigation, this office opines that the role to play in this issue is very minor. However for the issues to be address by the PWD, this office continues to support necessary assistance further to the above departments if required . This is for your kind information.

Thanking you

Yours faithfully

Superintending Engineer
PWD Bengaluru Circle
Bengaluru

GOVERNMENT OF KARNATAKA
(Minor Irrigation and ground water development Department)

Office of the Superintending Engineer
Minor Irrigation and ground water development Circle,
Jayanagar Shopping Complex, 3rd Floor, Jayanagar 4th Block,
Bangalore 560 011.

No: SEBC: TA: AE-5: NGT : 2020-21: 631

17 MAR 2021

To:

The Regional Director,
Central Pollution Control Board,
Nisarga Bhavan, Shivanagar,
BANGALORE- 560 079

Sir,

Sub: Furnishing details of proposed long term and Short term Action plan.

Ref: Report of Joint Committee in the matter of O.A.No. 111 of 2020.

* * *

With reference to the above subject, according to the Report of Joint Committee in the matter of O.A.No. 111 of 2020, Please find here with the Action taken Report on Short term and Long term Action plan regarding water quality of river Thenpennai reported in section 5.2 of the Joint Committee as follows.

Action Points	Agency Responsible (Timeline)	Progress made as on 31 st of March.2021	Proposed Action Plan with target date (if any)	Remarks
I. Estimation of flow of water in River Thenpennai				
BWSSB to measure the flow and discharge of all the tanks/lakes locates in Koramangala & Challaghatta, Hebbal valleys flowing in to River Thenpennai viz., Agara, Bellandur, Varhtue, Channasandra Yelemallappa Chetty, Samethanahalli weire Mugalur etc. Flow details of tanks in the upstream (Hosakote taluk, Bangalore rural, Chikkaballapur) may also be included if flow is detected.	BWSSB and Minor Irrigation (Three months)	All tanks in Bangalore Urban district are in the control of BBMP. Regarding the flow measurements, Minor Irrigation department has not installed any flow measuring devices for any Minor Irrigation tanks.	At present 380 MLD of treated water is available for pumping from KC valley and HN valley BWSSB treatment plants by which 102 tanks has been filled in both Kolar and Chikkaballapur districts.. After the total quantity of 650 MLD of water received from BWSSB, all 191 tanks will be filled up for ground water recharge.	Minor Irrigation department has taken up works that comprises Lifting of Treated wastewater to fill 191 tanks in Kolar and in Chikkaballapur districts for ground water recharging purpose only. The flow and discharge are not measured at each tank by the department. However at present under these projects 102 tanks has been filled in both Kolar and Chikkaballapur districts by pumping 7.85 TMC of treated water available from BWSSB STP.
Flow or discharge of each of the tanks that are recharged by treated waste water by BWSSB i.e. 126 tanks in Kolar district and 65 tanks in Chikkaballapur district.	Minor Irrigation (Three months)	Since from last three years. Kolar 78 tanks filled by pumping 6.69 TMC. Chikkaballapur 24 tanks by pumping 1.16 TMC.		Regarding flow measurements, Minor Irrigation department has not installed any flow measuring devices for any Minor Irrigation tanks. We submit this matter for the kind persual of Honorable NGT.
Measurement of flow of all the major drains (i.e. storm water drains) joining the river for estimate of flow of river Thenpennai.	Minor Irrigation (Three months)	Storm water drains and main river course is not in the jurisdiction of Minor Irrigation department.		

Yours faithfully,

[Signature]
Superintending Engineer,

Minor Irrigation and ground water development, Circle,
Bangalore. cr