

BEFORE THE NATIONAL GREEN TRIBUNAL (SZ) CHENNAI
MEMORANDUM OF APPLICATION
(Under Section 18(1) read with Sections 14, 15 of National Green
Tribunal Act, 2010)

OA No. 24 of 2021

O.A Ninan

... Applicant

VERSUS

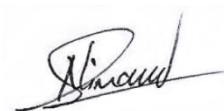
The State of Kerala & Ors

... Respondents


REPLY AFFIDAVIT FILED BY THE APPLICANT

I, O.A Ninan S/o O.N. Abraham aged 75 years and was serving as the manager, Grace Mount Residential School, Kumbanadu P.O Thiruvalla, Pathanamthitta , Kerala - 689 547 do solemnly affirm and sincerely state as follows:

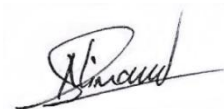
1. I state that I am aware of the facts and circumstances of the case and competent to swear this affidavit.
2. I am advised to raise the following concerns relating to the Reply Filed by the 4th Respondent/Kerala Water Authority dated on the 22nd day of July, 2022 in the OA 24 of 2021 by O.A. Ninan Kerala Vs the State of Kerala Thiruvananthapuram and others. I deny the entire contents of the affidavit under reply, except to the extent expressly admitted hereunder.
3. In the above Affidavit the 4th Respondent/Kerala Water Authority has been detailing the theoretical textbook version of a Recycling Plant which was not followed in letter and spirit in any of the 200 plus water treatment plants owned by the Kerala Water Authority in the State of Kerala.



4. The Report of the studies conducted, which was submitted to the Hon'ble Tribunal in the earlier submission of the applicant, the Pamba river water has a minimal Bio-chemical oxygen demand (BOD) of 4.5 mg/l and this BOD is present in the proposed intake point also. This BOD is primarily generated by the dead leaves, domestic sewage discharged in the river and due to human use in the upstream side of the river like pilgrimage of Sabrimala and wastewater flow from the upstream townships Ranni, Kozhencherry and the like. When the solids are concentrated to 1% in a Recycling plant and it concentrate the filth of the remaining 99% treated product water, the BOD of the solids turnout to be 450 mg/l (Result of a simple calculation: $4.5 \times 100 / 1 = 450$ mg/l).
5. The BOD content of 250 mg/l present in the domestic sewage which is treated through an STP, as per law requires a prior environmental audit. So the Recycling plant proposed for the wastewater treatment plant is supposed to treat waste of BOD 450 mg/l which is more virulent than domestic sewage (BOD = 250 mg/l). This argument can be verified by the Proponent theoretically or by a pilot plant study and can be reviewed by the Hon'ble Tribunal. The performance of the so-called Recycling plant should have been forecasted by the design under the Detailed Project Report (DPR) and subsequent environmental audit by the mandated agency. This exercise only can predict harmless or otherwise of the products of the so-called Recycling plant to the Ecology instead the 4th Respondent/Kerala Water Authority is accusing the Applicant of misconception and offhandedly stating that the sludge won't cause any environmental pollution.

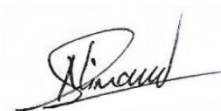


6. It is true that as per rules Environmental Impact Assessment (EIA) is not required for setting up a Water Treatment Plant (WTP). However, it is required for a Wastewater Treatment Plant (WWTP) or STP. Recycling Plant is a wastewater treatment plant and it is analogous to an STP as it is treating a waste that is more virulent than domestic STP in this case. This condition if they find it unclear it can be verified in any of its Regional or State laboratory of KWA by conducting a simulation test. Hence EIA would be attracted into this Project because in this case the WTP has been proposed in a landlocked area 6 km away from the river bank, flouting the guidelines of the Central Public Health Engineering and Environmental Organization (CPHEEO) in which the guidelines states that the WTP should be as near as possible to the river from which it is sourced, the copy of the guidelines submitted as exhibits in the previous submission to the Hon'ble Tribunal. Whereas, if the WTP is located in the vicinity of the river as done in other WTPs of KWA, this wash-water without concentrating its sludge would be discharged fresh to the river before it get putrefies due to stagnation and before it develop an anaerobic condition. It takes 24 hours to begin the anaerobic condition with the biodegradation of solids wherein the BOD level starts to build up to higher level. However, in the normal case without a Recycling Plant, the solids generated by the sedimentation and filtration process of the WTP as done by KWA in other Plants, would be discharged into the river, within 5 hours before anaerobic condition develops. It get purified due to the dilution with the water in the river from which it is collected.
7. Now contrary to what was mentioned in the Detailed Project Report (DPR), KWA, stating that it has no plans to discharge the wash-water generated from the WTP to the nearby land or water body and it is being treated in a



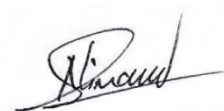
recycling system as per CPHEEO guidelines. If so it should be with an engineering design & drawings with calculation predicting the performance of the Recycling Plant. And as it is a WWTP which is treating wastewater which is more virulent than domestic sewage - calculation submitted in the previous Para, it needs EIA also. The Applicant and the local residents fear that they would be duped into untold environmental consequences with the WWTP imposed upon them without proper design and subsequent environmental audit. The proponent - officers who offhandedly claiming no environmental harm would retire after some time and go scot-free with hefty pensions leaving the residents in distress. That is why a proper engineering design with engineering drawings & calculation predicting the performance of the Recycling Plant and an audit by way of EIA is solicited to save the residents from environmental harm.

8. It has been claimed in the previous Affidavit submitted by the 4th Respondent/Kerala Water Authority stated that the KWA is operating more than 200 nos. of WTPs without any adverse effect on the environment. This is because the Plants are operating in the principles of discharging the wash-water within 5 hours to the river before anaerobic condition develops and it get purified due to the dilution with the water in the river.
9. It has been submitted by the 4th Respondent/Kerala Water Authority that discharging the residue from the water treatment plant directly to the river is not the best method of disposal and also in modern treatment plants the wastewater will be recycled and proper sludge handling & disposal facilities are proposed along with water treatment. However, for the proper sludge handling & disposal facilities of a concentrated sludge to 1% from the raw water when concentrated is more virulent than domestic STP, as worked out in the earlier Para. It takes the anaerobic condition to start in 24 hours

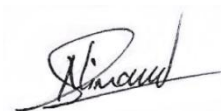


with the biodegradation of solids, then the BOD level starts to build up to higher level of about 450 mg/l. Thus as the Recycling plant is treating a waste more virulent than STP, it needs the environmental audit of the competent agency as in the case of the STP. The practice of locating the WTPs on the river banks facilitates the continuous flushing of the wash-water having discharged to the river by mixing and getting diluted in the river flow with any ill-effects of muddy water, BOD & chemicals being eliminated. This practice has been followed by KWA and still being followed for new WTPs located near the vicinity of the river. So it is wrong to say KWA proposes modern scientific wastewater disposal system. Similarly, 99% of the WTPs of the KWA are located in the vicinity of the river and not in the landlocked area far away from the river, including the major WTPs of the state like Aluva waterworks which supplies water to Cochin city having located on the banks of 'Aluva River (Periyar)', Aruvikara waterworks which supplies water to Thiruvananthapuram city having located on the banks of 'Aruvikara river', Mavoor waterworks which supplies water to Kozhikode having located on the banks of 'Chali Aru' and the like operate on this principle.

10. Whereas, the 25 mld Plant in Medical College Campus Kottayam, central Kerala, working on the principles of treating the wastewater in a Recycling Plant in the same principle as planned for the new proposed plant for this Project is a failure. As the Recycling Plant failed to treat the sludge, the raw sludge with high BOD from the Recycling plant is being discharged to the undeveloped areas that belong to the Medical college. As the dumping area is the government land, there is no public protest. The Applicant is placing this issue before the Hon'ble Tribunal for its review.

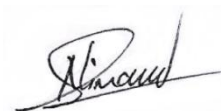


11. However in the DPR which is the fundamental commentary of the design of the Project has mentioned that the waste is dumped into an existing lagoon and the supernatant liquid will be discharged to the natural water courses, both lagoon and a through drainage is non-existent in the site, a copy of the pages of DPR submitted to the Hon'ble Tribunal in the earlier submission of the Applicant.
12. As mentioned earlier, in the above Affidavit the 4th Respondent/Kerala Water Authority has been detailing the theoretical textbook version of a Recycling Plant with a schematic diagram. On the other hand, if the 4th Respondent/Kerala Water Authority is serious, they should have provided the design of the Recycling plant with drawings outlining the characteristics of the product water of the Recycling plant and sludge including the safe disposal methods of the sludge and seeking the environmental audit on the treatment process. The Respondent/Kerala Water Authority is not committing the detailed design and safe disposal to the waste before the Hon'ble tribunal. This is because the performance of the Recycling plant always tend to fail as in the case of the aforesaid Kottayam Plant and then the proponent would be forced to discharge untreated sludge to the surroundings.
13. It is submitted by the 4th Respondent/Kerala Water Authority that it has no plans to discharge the wash-water from the treatment plant to the nearby land or natural drain. Rather the wash-water would be recycled & reused, sludge will be disposed as per CPHEEO norms. This needs to answer the questions like a) What is the characteristics of the product water from the Recycling plant?, b) If the quality of the product water from the Recycling plant is worse than the raw water from the river, it cannot be returned to the treatment plant and then what is the backup plan for using



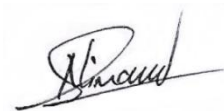
up the recycled water? c) If the quality of the recycled water is worse, will they blend it with raw water and treat it in the WTP? d) In that case a stage will be reached due to accumulation of the waste, they have to discharge/waste it to the environment as in STPs? e) Have they compared the cost of treatment plant with Recycling plant or without Recycling plant in riverside locations?

14. Whereas, now the 4th Respondent/Kerala Water Authority is improvising the replies offhandedly in an unprofessional way to counter the objections on the design. It is true that BOD is a sign of organic pollution generated from dead leaves, organic matter and also none of the townships in the upstream side of the river including Ranni, Kozhencherry and the like don't have STPs. So they are freely discharging sewage from hotels and other facilities into the river without any treatment. This would worsen the BOD level in the river and this sewage reach the raw water intake point of the treatment plant. KWA which is equipped with many laboratories can easily verify the level of BOD in lean summer period and pilgrimage periods and derive the data for the design of the Recycling Plant and formulate the design and can seek the environmental clearance.
15. Now the 4th Respondent/Kerala Water Authority is stating that they have proposed wastewater treatment with reuse and sludge handling & disposal facilities. However in the DPR which is the fundamental commentary of the design of the Project has mentioned that the wash-water would be dumped into an existing lagoon and the supernatant liquid would be discharged to the natural water courses, both lagoon and a through drainage is non-existent in the site.
16. The 4th Respondent/Kerala Water Authority is stating that the Recycling Plant has the sludge treatment facility that includes sludge



thickening, sludge dewatering either by using drying bed, sludge lagoon, filter press, vacuum filtration or centrifuge. This is a process that takes place in a WWTP/STP that requires an environmental audit. In the DPR, no mention of the treatment process of the Recycling Plant with Engineering design and drawings or about the disposal of the sludge including the final disposal of the sludge in the landfill. The Applicant humbly request that "Where is the land they have planned for the landfill?" Or whether the planning and design of the brick manufacturing unit, if any, has been carried out including its marketing management?

17. The 4th Respondent/Kerala Water Authority has stated that KWA is operating more than 200 WTPs in all over Kerala. The Applicant humbly request that on which principle these Plants have been working whether on the principle of the wash-water having discharged directly to the river when the wash-water is fresh before any biodegradation of the wash-water starts or storing the wash-water and treating in a Recycling Plant. The Applicant humbly state that 99% plants working on the principle of the wash-water having discharged directly to the river when the wash-water is fresh before any biodegradation of the wastewater starts. Whereas none of the plants in Kerala working on Recycling Plant principle is efficiently working in which the Plant in the Medical college campus, Kottayam is the classic failure example.
18. The 4th Respondent/Kerala Water Authority has stated that Kerala Water Authority is operating a 33 mld Water Treatment Plant in the heart of Thiruvalla town, nearly 10 km from this proposed site, which started operations in 1977. In fact I am advised to state that there is a natural drainage to facilitate the flow of the reject and wastes from the aforesaid WTP located in the Thiruvalla and it ends up in 'Chandakavu' a tributary of




Manimala River located at 2 Km from the Plant. However, the wet land/paddy field in katturkara area that lies adjacent to the above channel was not suitable for cultivation for the last few years due to flooding from the wash-water discharged from this treatment plant.

19. The 4th Respondent/Kerala Water Authority has stated earlier that as per EIA notification mandated prior environmental clearance for Water Supply Projects is not required. However, for WWTP/STP prior environmental clearance is required. Whereas, the Applicant has proved in his explanation that the proposed 'Recycling Plant' is supposed to handle a waste more virulent than domestic sewage as in STP which required a prior environmental clearance. So introducing a Recycling plant, in the process other than the normal practice of discharging the wash-water directly back to the river, necessitated a prior environmental clearance.
20. Whereas in the present Affidavit submitted by the 4th Respondent/Kerala Water Authority stated that with regard to the operation and consideration of recycling plant that site specific and pilot or full-scale testing of Recycling plant is recommended prior to plant operation which in this case not carried out before proposing the Recycling plant. The Applicant is submitting this issue before the Hon'ble Tribunal for its review.
21. However, in the present Affidavit submitted by the 4th Respondent/Kerala Water Authority stated that the wash-water generated in most of the treatment systems around the world is discharged into the watercourse which leads to accumulative rise of Aluminium concentration in water and human bodies. It has been claimed that this practice had been linked to the occurrence of Alzheimer's disease. This is the most ironic and



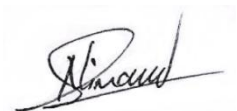
surprising statement by the 4th Respondent/Kerala Water Authority. If it is true, KWA has to close down all the 200 plus water treatment plants in the State of Kerala in which traditional discharge of wash-water directly to the rivers are employed without any treatment. This contention has been raised without the backing of any scientific studies. Whereas the KWA is using WHO approved chemicals like Aluminium Sulphate - $Al_2(SO_4)_3$ and Calcium hydroxide ($CaOH_2$) for water treatment which is not at all harmful to the humans to the least. However, KWA which is equipped with District laboratories and State laboratory can very well test the river water sample for any increase in the existing Aluminium concentration beyond permissible levels in the rivers where it is discharging the wash-water from WTPs to support this argument by facts and figures. This type of customized responses without substantiating the facts is bad in law especially when it is raised in the face of the genuine concerns having raised with regard to the functioning of the Recycling Plant & management of its waste wherein KWA has deviated from its traditional water treatment modus of operation.

22. The Detailed Project Report (DPR) which is the fundamental commentary of the design & installation of the Project never mention anything of the sort of setting up a Recycling Plant for the Project. When concerns have been raised against the configuration of discharging this reject onto the land, KWA came up with the scheme of Recycling plant which is neither specified in the DPR nor budgeted. In the DPR, there is neither design nor drawings or neither the technical details of the Recycling Plant has been furnished nor in the budget it is included. Now as claimed by KWA, if the recycling plant is employed to reuse the liquid part of the wastewater, this will generate semi-solid waste with a very high BOD



content having concentrated from the wastewater from the plant which requires environmental clearance for its Processing, Transport and Disposal. KWA is proceeding without carrying out the Environmental Impact Assessment (EIA) and without seeking the clearance of the State level Environment Impact Assessment Authority (SEIAA) Act, 2010, for this project. While the volume of the waste discharged is huge with high BOD which is arrived by calculation in the previous Para as 450 mg/l

23. Whereas in the present Affidavit submitted by the 4th Respondent/Kerala Water Authority stated that water treatment sludge is extremely close to brick clay in chemical composition. In this case, the analysis of the chemical composition of the Recycling plant's treated waste that is to be furnished by KWA may be reviewed by the Hon'ble Tribunal to verify the veracity of the statement. The Detailed Project Report (DPR) which is the fundamental commentary of the design & installation of the Project never mention anything about the production of bricks from the sludge generated from the water treatment plant. This is a tailor-made response when questions are raised about the disposal of the sludge generated from the Recycling Plant. Thus it is relevant to note that KWA has no plans to address the accumulation of the waste from the recycling plant, any waste management plan for processing, transporting and disposal of the waste. The site for dumping of the waste is not identified or earmarked till date. This would end up in discharging this concentrated semi-solid waste with high pollution potential to the natural channels beside the site which spell far-reaching environmental hazard to the whole area which would come to light only if this is subject to an environmental auditing. Considering these facts, the Applicant believes that the present site is not an ideal location for the WTP as it is located in a landlocked area



and can wreak havoc to the downstream properties of the residents including the Applicant's assets. KWA could have shifted to a riverside site that provide an ideal location for WTP for this project that meet the norms of CPHEEO.

24. I am advised to state that the site for dumping the waste or else the arrangement for disposing of the sludge cake is not in place in any of the KWA's treatment plants. Because as it is a standard practice to discharge the wash-water to the river when it is fresh and it purifies itself in the natural process of dilution with the river water. If there is a waste management system in KWA treatment plants, I humbly request that they can produce trip sheets or tendering processes of the sludge cakes before the Hon'ble Tribunal to prove this point. In Kerala with the maximum density of the population, it is impossible to get dumping sites which end up in the sludge being dumped into the site of the WTP which will generate leachate that get magnified to multiple times with the rain and will spell environmental hazard to the nearby areas.

It is therefore prayed that the above submissions be taken into consideration by this Hon'ble Tribunal and the application be allowed as prayed.

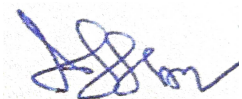


O.A. Ninan
Manager, Gracemount School,
Kumbanad

Solemnly affirmed at Pattanamthitta]

Before me,

This the 22nd of August 2022 and]



signed his name in my presence]

Advocate, Pattanamthitta