

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

ORIGINAL APPLICATION NO. 195 OF 2023 (SZ)

IN THE MATTER OF

Tribunal on its own motion-Suo Motu
Based on the News item published in
The Express News Newspaper, TN, Chennai District,
Dated 27.12.2023 Titled,
"Ammonia Gas Leak from Fertilizer Manufacturing Unit
Triggers panic in Chennai's Ennore."

...Applicant

Vs.

1. **The Principal Secretary to Government of Tamil Nadu**
Health and Family Welfare Department
Govt. Secretariat, Fort. St. George
Chennai, Tamil Nadu – 600 009
2. **The Principal Secretary to Government of Tamil Nadu**
Department of Environment,
Climate Change & Forests,
Govt. Secretariat, Fort. St. George
Chennai, Tamil Nadu – 600 009
3. **The Chairman,**
Tamil Nadu Pollution Control Board,
No. 76, Anna Salai, Guindy,
Chennai, Tamil Nadu- 600 032.
4. **The District Collector,**
Chennai District,
District Collectorate Office,
No. 62, Rajaji Salai, 4th Floor,
Chennai- 600 001.
5. **Tamil Nadu Coastal Zone Management Authority,**
Rep. by its Member Secretary,
No.1, Jeenis Road, Panagal Building,
Ground Floor, Saidapet,
Chennai- 600 015.



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6. **The Chief Inspector of Factories,**
Office of the Chief Inspector of Factories,
Chepauk, Chennai- 600 005.
7. **Coromandel International Limited,**
Rep. by its Authorised Signatory,
Post Box NO. 2, Ennore Express Highway Road,
Ennore, Chennai- 600 057.
8. **Directorate of Industrial Safety and Health,**
Rep by its Director,
T.S. No 47/1, SIDCO Industrial Estate,
(Near Metro Water Roundtana),
Guindy, Chennai- 32
9. **Tamil Nadu Maritime Board**
Rep by its Vice Chairman & Chief Executive Officer
No. 171, South Kesavaperumal Puram,
Off Greenways Road, Raja Annamalaipuram
Chennai - 600 028
10. **Fisheries and Fisherman Welfare Department**
Rep by its Additional Chief Secretary to Government,
3rd Floor, Integrated Animal Husbandry and Fisheries Building,
Nandanam, Chennai - 600 035.
11. **Inspectorate Dock Safety,**
3rd Floor, Anchor Gate Building,
Rajaji Salai, Chennai- 600 001

...Respondents

ADDITIONAL AFFIDAVIT FILED ON BEHALF OF RESPONDENT NO. 7

I, M. Vetrivel, S/o. Late A.C. Mani, aged about 41 years, do hereby solemnly affirm and sincerely state as follows:

- 1) I submit that I am the Assistant General Manager – Production in Ennore Unit (“Unit”) of the Respondent No. 7 herein and as such I am well acquainted with the facts of the case. I am duly authorised by the Respondent No. 7 herein to swear to this affidavit.



M. Vetrivel



- 2) I submit that I, on behalf of the Respondent No. 7, had earlier filed an affidavit dated 05.02.2024 before this Hon'ble Tribunal, making submissions with respect to the above matter.
- 3) I submit that this additional affidavit is being filed by this Respondent, to make further submissions with respect to certain queries raised by the Hon'ble Tribunal and considering subsequent developments in the above matter.

**SUBMISSIONS REGARDING SAFETY AND AUTOMATIC SYSTEM
INSTALLED BY THE RESPONDENT NO. 7 IN THE UNIT:**

- 4) At the last hearing, the Hon'ble Tribunal had asked the answering Respondent to explain the safety systems it had in place to prevent/ arrest any unfortunate accident such as the event in question takes place. It is respectfully submitted that the unit has full-fledged automatic control system with latest technology for all its ammonia handling operations. The trips and interlock required for the safe operation of ammonia handling like storage, precooling, unloading, and transfer are designed by globally recognised technology suppliers with ammonia system expertise. These safety and automatic systems are reviewed periodically through HAZOP study for its adequacy on the current operating scenario once in every 5 years by engaging original technology supplier. Various initiatives taken by the Unit on the safety mechanisms on the ammonia handling operations are listed below:



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A. Technology:

Some of the best-in-class technology adopted in the existing ammonia control system in the Unit are as follows:

- i. 51 Trips and Interlocks are configured in the Distributed Control System (DCS) to prevent process abnormalities with the **fastest response time of 1 second**. All critical trip systems are implemented with 2 out of 3 logics where in more than 2 instruments out of 3 should initiate trip to trigger required corrective action.
- ii. The advanced DCS is highly reliable with end-to-end redundancy at its parts like redundant power supply / redundant controllers / redundant communication systems/ redundant closed loop operations.
- iii. The system is designed with the most advanced Pair and Spare Architecture where outputs are constantly compared and a bump-less switchover to the stand-by processor is initiated if any anomalies encountered in the main processor.
- iv. All critical field instruments are supported with the latest smart transmitters with 0.055% full scale accuracy.
- v. All our field instruments involved in terminal operation are S.I.L 2 (safety integrity level 2) certified, ensuring 100 % availability of reliable instruments for process control.



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B. Operating Procedure:

All the Ammonia related operations are thoroughly investigated and standardized by engaging original technology suppliers and ammonia experts viz. Thyssen Krupp (A global leader in ammonia consultancy services). The recommendation based on the supplier report are summarized as Standard Operating Procedures for all its process activities across the plant. With respect to precooling and unloading of ammonia, the unit already has well established standard operating procedure which has helped the unit to successfully handle 210 shipments from 1996 (year) till 2023 (year) without any abnormalities. The unit carries out periodic training on the laid out standard operating procedures to all the ammonia handling executives. All the field and DCS operators must undergo the standard operating procedures awareness evaluation and will be allowed to handle the ammonia operation only on successful completion of standard operating procedure awareness test. This ensures that the operators are competent enough to operate the state-of-the-art process control systems and equipment safely and systematically.

C. Equipment Integrity:

The Unit adopts well-structured mechanical integrity program laid out as per original equipment manufacturer procedures and frequencies. The Unit ensures that all its sophisticated instruments and systems are physically checked by OEM on regular intervals. We would like to submit that before commencing precooling operation, all preventive systems like Alarms, Trips and Interlocks, Emergency Power Back up,



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Flare etc., mitigative systems like Ammonia Sensors, Fire Hydrant System etc., and the ammonia handling equipment like PLEM assembly, Mooring system, and Flexible hose etc., are checked thoroughly for its integrity and only after ascertaining the integrity of the equipment, the pre-cooling operation commences.

D. Emergency Response Systems:

The Unit has a resilient back up system in place to support seamless ammonia handling operation even during any abnormalities. The following are some of the systems in place to handle emergencies:

- a. 35 Nos. of Safety Relief Valves are installed in the ammonia storage and handling system to control the pipeline and equipment pressure when it exceeds the predetermined values. All safety relief valve outlets are connected to tank.
- b. The Unit has installed remote operated fire water sprinkler systems at pump area and tank top area. This will enable operators to respond quickly in activating the sprinklers.
- c. Fully automated flare system with full-fledged monitoring with LPG sensor, temperature profile of flare, advanced flow meters and automated trip control system. This ensures the final ammonia pressure control system is reliably operated with fully automated system.



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- d. In case of main power failure, the Unit has 750 kVA Diesel Generator (DG) and 4000 kVA Diesel Generator (DG) set in Ammonia Terminal as emergency power supply to continue the Ammonia Terminal Operation safely.
- e. The Unit has a dedicated reciprocating instrument air compressor backed by DG for safe operations of its instruments and interlocks, even during power failures and main air supply abnormalities.
- f. Ammonia Terminal DCS is remotely connected to other Plants DCS system thereby enabling the Ammonia Terminal operation remotely, as an additional precaution for safety.

E. Monitoring System:

The Unit has scientifically evaluated the requirement of suitable leak detection system and diligently implemented the leak monitoring system across the ammonia handling facility. The following are the monitoring system in place for early detection of leak and abnormalities:

- a. 138 Nos. of alarm are configured in the DCS to monitor the process parameters and to take necessary corrective action.
- b. To detect any leakages, ammonia sensors are installed in 19 strategic locations based on Fire and Gas Mapping study in the ammonia terminal.



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- c. The unit has installed adequate LPG sensors at LPG storage area and interfaced to DCS with alarms.
- d. Further, the Unit has taken all scientific measures to monitor the ammonia in ambient air in the tank farm area and during unloading areas regularly. The Unit has also installed "Continuous Ambient Air Quality Monitoring Station" (CAAQMS) at strategic locations covering the residential areas and the same is connected with Care Air Centre, TNPCB for continuous monitoring.

Considering the extensive care taken by the Unit to ensure safe and reliable operations of ammonia storage, transfer, precooling and unloading, the Respondent No. 7 reiterates that the unit has fully complied in implementing complete automatic control system for all its ammonia related operations. The recent ammonia leak was mitigated through the quick response of its pressure sensors which had accurately sensed the leak through the pressure drop and activated the pump stop command automatically helping the Respondent to immediately bring ammonia flow in the offshore pipeline to nil. It is also submitted that all ammonia pumps and compressors are automated with trip interlocks as per OEM recommendations. In addition to the above, the Unit also conducts periodic safety audits by engaging subject matter experts to get outside evaluation of our safety system.

RESPONSE TO THE REPORT OF THE TECHNICAL COMMITTEE FORMED BY RESPONDENT NO.3, TNPCB:

- 5) It is submitted that the Technical Committee has made certain observations in its report, under the heading "Precautions that



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could have avoided the accident” which has been filed before this Hon’ble Tribunal by the Respondent No. 3 TNPCB (Page 32). The Respondent No. 7 hereby denies the said observations and places on record the following clarifications:

S. No.	Observation made by Committee	Submissions of Respondent No. 7
1.	Para 1 - Relocation of heavy granite boulders - Unit not taking the observation seriously.	<p>In December 2023, after the occurrence of cyclone “Michaung”, the Company as a precautionary measure, inspected the offshore pipeline systems to assess any impact in the unloading systems including heavy granite boulder movements near the shore. The Company engaged the services of a marine contractor, M/s. Itajai Marine Service, Chennai and the report submitted by the agency confirmed that the shore adjacent to the ammonia pipelines are free of any boulders.</p> <p>It is further submitted that the Pipeline has been maintained well and the Fitness certificate has been obtained from the approved classification society (IRS).</p> <p>It is also submitted that the Unit in</p>

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		<p>order to safeguard the pipeline from damage that can potentially be caused by the heavy granite boulders, had, during its deployment in 2009-10, proactively constructed a steel corridor structure as per the recommendations of ex-professor of IIT, Chennai. The pipeline has an inbuilt protection of being a 10 layered non-corrosive material which has been designed for 25 kg/cm² pressure against the operating pressure of 6 kg/cm² and buried for the entire length beneath the seabed (approx. 1.5 metres) except for exposed area near the shore which has been suitably barricaded.</p>
2.	<p>Tripping of the Pump A and restarting of the Pump by the Operator</p>	<p>It is submitted that, upon tripping of the Pump A at 11.23 P.M., the field operator immediately responded by closing the discharge valve of Pump A at 11.24 P.M. The operator by closing the discharge valve has diligently activated the recycle operation to safeguard Pumps from failure. The closing of discharge valves of Pump A has ensured that no further ammonia flowed into the pipelines from 11.24 P.M. onwards. The quick action of the operations team within the shortest possible</p>

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		<p>time from the observation of the pressure drop with the help of Distributed Control System has resulted in controlling the flow of ammonia in the pipeline and thereby minimizing possible leakage of ammonia into the atmosphere.</p> <p>It is further submitted that, as soon as a leak was identified, the Company stopped the entire precooling activity within 4 minutes. It is also stated that the scheduled ship carrying ammonia to the Unit, was stopped at Vizag. Immediately upon the incident, the Unit operating team and its management assembled in the quickest possible time and coordinated with the respective government agencies in handling the incident. The above facts establish that the Company had handled the situation swiftly, thereby avoiding any major incident.</p>
3.	Taking necessary safety precautions for the safe operation of offshore ammonia pipeline	The Unit has "state-of-the-art" Distributed Control System (DCS), Alarms, Interlocks and Trips to monitor all the critical parameters for safe operation of ship unloading and all other ammonia handling and storage systems. Some of the critical

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		<p>parameters which are monitored and controlled are:</p> <ol style="list-style-type: none"> 1. Ammonia Tank Pressure and Temperature 2. Compressor Pressure 3. Flare Pilot Temperature 4. Ammonia Pumps Discharge Pressure 5. NKT Pipeline Pressure and Temperature 6. Ambient Ammonia <p>Besides the hardware, the ammonia control room is staffed by technically competent managers, shift officers, safety officers and field operators who handled the emergency situation very well as per the emergency response procedure laid out by the Company. In the instance case, following were the sequence of activities that took place before giving clearance for ammonia ship to reach Ennore port.</p> <ol style="list-style-type: none"> 1. Post cyclone impact assessment by external agency. 2. Obtaining weather condition clearance for handling ammonia vessel from Maritime
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		<p>Board approved pilot.</p> <ol style="list-style-type: none"> 3. Pre-inspection of subsea pipeline system and unloading facilities by external agency. 4. Assessed the integrity of Interlock by the Instrumentation & Operation team. 5. Pre-arrival intimation to Maritime Board, PCB, Indian Coast Guard, Coastal Security Guard, Immigration Dept., Intelligence Bureau and Dy. Commissioner of Police. 6. Availability of key personnel on call for any emergency in the Unit. 7. Continuous monitoring of line pressure 24/7 from the commencement of pre-cooling operation.
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RESPONSE TO THE CLAIM OF RESPONDENT NO. 3, TNPCB, TOWARDS ENVIRONMENTAL COMPENSATION:

- 6) It is submitted that, the Respondent No. 3 herein, issued a notice dated 02.02.2024, directing the Company to show cause as to why an environmental compensation of INR 5,92,50,888/- (Rupees Five Crores, Ninety Two Lakhs, Fifty Thousand, Eight Hundred and Eighty Eight only) shall not be levied against the unit of the

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Company for alleged environmental damages caused due to Ammonia gas leakage.

- 7) In response to the notice dated 02.02.2024, the Respondent No.7 submitted as follows: -
- A. In the Technical Committee Report submitted to the Government, it has been observed that the ammonia gas leakage happened due to significant relocation of heavy granite boulders around the pipeline due to cyclone "Michaung". Despite the Respondent No.7 taking all safety measures, this unfortunate accident happened due to "Force Majeure" conditions.
- B. It is also submitted that aqueous ammonia is still available in the pipeline and without retrieving the aqueous ammonia, it would be improper to conclude that 67,638 kgs of ammonia has leaked in the environment. However, the Respondent No.7 being a responsible Company in complying with regulations and follows strict protocols in ensuring safety and environmental protection, agreed to make payment of INR 5,92,50,888/- (Rupees Five crores, ninety-two lakhs, fifty thousand, eight hundred and eighty-eight only) "**Under Protest**" towards environmental compensation and public health, even though this unfortunate incident has been triggered by the Force Majeure event.

RESPONSE TO THE REPORT DATED 05.01.2024 FILED BY THE RESPONDENT NO. 8, DISH:

- 8) It is submitted that the report of the Respondent No. 8 herein has set out the description of the incident. The incident has already been investigated and sufficiently detailed in the affidavit dated

W. P. S. S.



05.02.2024 filed by this Respondent No. 7, with attention to minute details.

- 9) The Respondent No. 8 in its report, had directed the Respondent No. 7 to identify the exact location and extent of pipeline damage within a day and rectify the same before commencing the ammonia transfer. The Unit has also been instructed to carry out the above activity at war-footing and put the pipeline to operation only with the concurrence of the competent authority i.e., Tamil Nadu Maritime Board, Respondent No. 9 herein. It is respectfully submitted that the Company is willing to rectify and restore the ammonia transfer on war-footing basis, and in this connection, has been constantly requesting the officials for their support in performing the inspection. However, due to constant unrest from public, the Company or its agency is unable to access the pipeline till date. It is respectfully submitted that unless the authorities cooperate and assist in clearing the general public from the pipeline area, the Company will not be able to rectify and restore the same.

RESPONSE TO THE REPORT DATED 05.01.2024 FILED BY THE RESPONDENT NO. 9, TAMIL NADU MARITIME BOARD:

- 10) As regards the report submitted by the Respondent No. 9, the said report has detailed the consents, inspections and certificates secured by the Respondent No. 7, which serves as testament to the fact that the Respondent No. 7 has since inception ensured utmost compliance of the regulations framed by appropriate government agencies from time to time. It is also reiterated that the Unit ensures the safety and security of the Ennore minor port, by engaging various regulatory agencies relevant to port operations, periodically.

M. P. S. S.



- 11) Further, it is submitted that Respondent No. 7 has adhered to the directions of TNPCB and intimated the same to the Respondent No. 9. It is also submitted that we shall approach the Respondent No. 9 for their consent, before the Unit resumes operations.

RESPONSE TO REPORT DATED JANUARY 2024 FILED BY THE RESPONDENT NO. 10, FISHERIES AND FISHERMAN WELFARE DEPARTMENT:

- 12) It is submitted that, as regards the submissions of the Respondent No. 10, with respect to the health related issues suffered by the residents around the site of the incident, it has been sufficiently addressed and explained in the affidavit dated 05.01.2024 filed by this Respondent No. 7.
- 13) As regards the submissions relating to mortality of fishes, while the Respondent No. 7 is an advocate of the sustenance of a healthy environment and its protection and a recipient of several awards, including the "Environment Protection Award" awarded by Fertilizers Association of India (FAI), which stands as a testimony of the Company's commitment to the preservation of nature and ecosystem, it is respectfully submitted that the report of the Respondent No. 10, lacks factual evidence to relate the mortality of fishes due to Ammonia leakage. It is submitted that the Respondent No. 7 is a responsible organisation that recognizes the importance of environment friendliness and constantly works towards protecting the natural ecosystem. It is also pertinent to note that, the report submitted by the Respondent No. 10 refers to the water sample analysis that was carried out by Dr. MGR Fisheries College and Research Institute and Tamil Nadu Fisheries College, Ponneri, which clearly states that observation of water

M. P. S. S.



samples reflects that the ammonia levels were in permissible range. Hence, the observation is devoid of merit.

SUBMISSIONS WITH RESPECT TO THE DIRECTIONS ISSUED BY THE RESPONDENT NO. 3, TNPCB UNDER AIR AND WATER ACTS:

Pursuant to the recommendations of the Technical Committee, the Respondent No. 3 had issued directions to the Respondent No. 7, vide letter dated 14.01.2024. It is submitted that the Respondent No. 7 that the Unit is willing to comply with a majority of the directions and has sought an interaction / hearing with the Technical Committee to put forth certain technical difficulties in implementing a few of the directions as they are scientifically / technically unfeasible.

CONCLUSION:

- 14) It is respectfully submitted that the report of the Technical Committee as constituted by Respondent No. 3, TNPCB, observed that the ammonia gas leakage happened due to significant relocation of heavy granite boulders around the pipeline due to cyclone "Michaung". It is further submitted that despite the Respondent No.7 taking all safety measures, this unfortunate accident happened due to "Force Majeure" conditions.
- 15) It is pertinent to bring to the notice of this Hon'ble Tribunal that the Respondent No.7 has agreed to pay the environmental compensation of Rs. 5,92,50,888/- (Rupees Five crores, ninety-two lakhs, fifty thousand, eight hundred and eighty-eight only) "**Under Protest**" towards environmental compensation and public health, even though this unfortunate incident has been triggered by the "Force Majeure" event.

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- 16) The Respondent No. 7 has also initiated effecting the directions issued by the Respondent No. 3, subject to technical feasibility. The Respondent No.7 has also taken steps for interacting with the Technical Committee to put forth certain technical difficulties in implementing few of the directions and the same will be discussed with the Technical Committee.
- 17) Apart from the above, the Respondent No. 7 seeks to bring to notice of this Hon'ble Tribunal about the hardships faced by the employees of the Unit since its closure. It is important to point out that close to 800 employees (both direct and indirect) including their families have been put to hardships due to the closure of the Unit and their future is at stake due to prolonged closure. While the Unit has been supporting the employees, longer period of shut down is impacting the morale of the employees and also makes the operation unsustainable. The employees of the Respondent No.7 are worried about their uncertain future and has been demanding for early resumption of the plant. These employees have been working with the Respondent No.7 for more than 25 years and there are many employees who have retired from the Unit, who are domiciled from the neighbouring communities, and they have been living peacefully all these years with good health. It is respectfully submitted that this itself is a testimony that the Unit has been complying with all safety precautions in handling the ammonia operations without any health hazards to the employees or to the neighbouring community.

It is also important to bring to the notice of this Hon'ble Tribunal that there is ammonia in the storage tanks of the Unit to the extent of 4600 MT approx., when the unit was shut down due to the incident. It is also prayed to the Hon'ble Tribunal to grant



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permission to commence the operations of the Ammonium Phosphate Potash Sulphate Fertilizer plant once the Respondent No.7 completes the discussions with the Respondent No.3 and its Technical Committee on the compliance of the directions.

18) It is important to mention that apart from the Ammonium Phosphate Potash Sulphate Fertilizer plant, the Unit also operates Phosphoric Acid (PA) and Sulphuric Acid (SA) Plants which are not connected to ammonia operations and which have been shut down along with the Fertiliser Plant. The Respondent No. 7 would like to bring to the notice of the Hon'ble Tribunal the following key points arising out of shutdown of the PA and SA Plants:

- a. Phosphoric Acid and Sulphuric Acid are highly corrosive in nature and could result in severe damage to the infrastructure as the Plants have been shut down instantaneously without following due steps required for safe mothballing of the Plant.
- b. India is facing delays in receipt of fertilisers and key raw materials like Phos Acid due to unrest in Red Sea Area which is the major transit point for all incoming shipments to India. This may lead to scarcity of fertilisers to the farming community and also high priced alternate fertilisers which will impact the livelihood of farmers.
- c. The Ennore Unit caters to close to 36% of the Tamil Nadu production of Phosphatic fertilisers and disruption can potentially affect the supplies in key southern states.
- d. Amidst uncertainty associated with the unavailability of key raw materials, the resumption of PA and SA Plant (which are independent of Ammonia handling) at Ennore can help in Fertiliser production in other locations of the Company thereby temporarily fulfilling the needs of Southern states especially Tamil Nadu.

M. J. S. S.



- 19) Therefore, the permission of the Respondent No.3, TNPCB, has been sought by the Respondent No. 7, for the resumption of operations of PA and SA Plants which does not involve usage of ammonia. Resuming PA and SA Plants will help the Respondent No.7 in bringing some normalcy back to the lives of its treasured employees and their livelihood and would also ensure that no harm is caused to the infrastructure of the Plants due to prolonged closure.
- 20) In view of the above additional submissions, it is therefore respectfully prayed that this Hon'ble National Green Tribunal may be pleased to close the O.A No. 195 of 2023 and pass such other orders as may be deemed fit and proper under the circumstances and thus render justice.



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DEPONENT

Solemnly affirmed and signed
This the 5th day of March, 2024
And signed in my presence.

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24/3/2024

ADVOCATE, CHENNAI

*100-7, Law Chambers.
High Court Building,
Ch-10A*

BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE BENCH AT CHENNAI

APPLICATION No. 195 of 2023 (SZ)

Tribunal on its own motion- Suo Motu

..... Applicant

Versus

The Principal Secretary to

Government of Tamil Nadu and 10 others

.. Respondents

**ADDITIONAL AFFIDAVIT ON
BEHALF OF RESPONDENT NO.7**

M/S PRASAD VIJAYAKUMAR (Ms. No. 1254/1999)

VIGNESH SEKAR (Ms. No. 3281/2018)

PRANAV. R (Ms. No. 3700/2023)

No. 52 Law Chambers, High Court Buildings

Chennai- 600 104

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COUNSEL FOR RESPONDENT No. 7