

**BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI**

(Through Video Conference)

**Original Application No.08 of 2016 (SZ) &
I.A. Nos.107 & 109 of 2022 (SZ)**

With

Original Application No.152 of 2016 (SZ)

With

Original Application No.198 of 2016 (SZ)

IN THE MATTER OF:

R. Ravimaran (Died) & Ors.

...Applicant(s)

Versus

Union of India & Ors.

...Respondent(s)

WITH

Meenava Thanthai K.R. Selvaraj Kumar
Meenavar Nala Sangam

...Applicant(s)

Versus

The Chief Secretary
Government of Tamil Nadu,
Chennai & Ors.

...Respondent(s)

WITH

Meenava Thanthai K.R. Selvaraj Kumar
Meenavar Nala Sangam

...Applicant(s)

Versus

The Chief Secretary
Government of Tamil Nadu,
Chennai & Ors.

...Respondent(s)

O.A. No.08/2016 (SZ):

For Applicant(s):

Mr. A. Yogeshwaran & Ms. B. Poonguzhali.

For Respondent(s):

Mr. G.M. Syed Nurullah Sheriff for R1.
Mr. Vijay Mehanath for R2, R3.
Mr. M.T. Arunan for R4.
Mr. S. Sai Sathya Jith for R5, R6.
Dr. D. Shanmuganathan for R7, R8.
Mr. R. Thirunavukarasu for CPCB.

O.A. No.152/2016 (SZ):

For Applicant(s): Mr. G. Stanley Hebzon Singh.

For Respondent(s): Dr. D. Shanmuganathan for R1, R2 & R4.
Mr. S. Sai Sathya Jith for R3, R5.
Mr. M.T. Arunan for R6.

O.A. No.198/2016 (SZ):

For Applicant(s): Mr. G. Stanley Hebzon Singh.

For Respondent(s): Dr. D. Shanmuganathan for R1 to R7, R9.
Mr. S. Sai Sathya Jith for R8, R10.
Mr. Vijay Mehanath for R11, R12.

Judgment Pronounced on: 05th July 2022.

CORAM:

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

HON'BLE Dr. SATYAGOPAL KORLAPATI, EXPERT MEMBER

ORDER

Judgment pronounced through Video Conference. All these Original Applications are disposed of with directions vide separate Common Judgment.

Today, Interlocutory Applications viz., I.A. No.107/2022 (SZ) & 109/2022 (SZ) are disposed of vide separate order.

**Sd/-
Justice K. Ramakrishnan, JM**

**Sd/-
Dr. Satyagopal Korlapati, EM**

**O.A. No.08/2016 (SZ),
O.A. No.152/2016 (SZ),
O.A.No.198/2016 (SZ),
05th July 2022. Mn.**

**BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI**

(Through Video Conference)

**Original Application No.08 of 2016 (SZ) &
I.A. Nos.107 & 109 of 2022 (SZ)**

With

Original Application No.152 of 2016 (SZ)

With

Original Application No.198 of 2016 (SZ)

IN THE MATTER OF:

1) R. Ravimaran (Died)
S/o. Ramachandran
No.42, Beach Road,
Thazhankuppam,
Ennore, Chennai – 600 057.

2) R.L. Srinivasan
S/o. R. Lakshmipathi
31/36 Porkali Amman Street,
Kattukuppam, Ennore,
Chennai – 600 057.

3) K. Saravanan
S/o. Kasinathan
Aged about 37 years
No.30, Urur Kuppam,
Besant Nagar, Chennai – 90.

*(Applicants No.2 & 3 were impleaded as per order in
I.A. No.77/2022 in O.A. No.08/2016 dated 25.04.2022)*

...Applicant(s)

Versus

1) Union of India
Represented by its Secretary
The Ministry of Environment, Forests and Climate Change,
Jorbagh, New Delhi.

**2) Tamil Nadu Generation and Distribution Corporation
(TANGEDCO)**
Represented by its Chairman cum Managing Director
10th Floor, NPKRR Maaligai,
144 Anna Salai, Chennai – 600 002.

- 3) **North Chennai Thermal Power Station**
Represented by its Chief Engineer
Athipattu, Chennai,
Thiruvallur District – 600 120.
- 4) **Kamarajar Port Limited (Erstwhile Ennore Port Limited)**
Represented by its Chairman cum Managing Director
4th Floor, Super Speciality Diabetic Centre (Erstwhile DLB Building)
Near Clive Battery Bust Stop
Rajaji Salai, Chennai – 600 001.
- 5) **The Tamil Nadu Pollution Control Board**
Represented by its Member Secretary
76, Mount Salai, Guindy, Chennai – 600 032.
- 6) **The District Environmental Engineer**
Tamil Nadu Pollution Control Board
77-A, South Avenue Road,
Ambattur Industrial Estate,
Ambattur Taluk, Thiruvallur District,
Chennai – 600 058.
- 7) **The Tamil Nadu Coastal Zone Management Authority**
Represented by its Member Secretary
Panagal Building, Chennai.
- 8) **The Public Works Department**
Represented by its Secretary
Fort St. George, Chennai.

...Respondent(s)

WITH

Meenava Thanthai K.R. Selvaraj Kumar
Meenavar Nala Sangam
Rep. by its President M.R. Thiyagarajan
S/o. Late C. Rajalingam
Office at No.15/8, A.J. Colony,
Royapuram, Chennai - 600 013.

...Applicant(s)

Versus

- 1) **The Chief Secretary**
Government of Tamil Nadu,
Secretariat, Chennai – 600 009.
(Respondent No.1 was deleted as per order of the Tribunal dt.27.02.2017)
...Deleted/
Original Respondent No.1
- 2) **The State of Tamil Nadu**
Represented by its Secretary to Government
Forest Department,
Fort St. George, Chennai – 600 009.

...Deleted/
Original Respondent No.2

3) The State of Tamil Nadu

Represented by its Secretary to Government
Fisheries Department,
Fort St. George, Chennai - 600 009.

...Deleted/
Original Respondent No.3

4) The State of Tamil Nadu

Represented by its Secretary to Government
Environment Department,
Fort St. George, Chennai - 600 009.

...Deleted/
Original Respondent No.4

5) The State of Tamil Nadu

Represented by its Secretary to Government
Public Works Department,
Fort St. George, Chennai - 600 009.

*(Respondents No.2 to 5 were deleted as per order of the
Tribunal dt.08.11.2016)*

...Deleted/
Original Respondent No.5

6) The District Collector

Thiruvallur District
Thiruvallur.

...Rearranged Respondent No.1/
Original Respondent No.6

7) The Revenue Division Officer,

RDO Office,
Ponneri, Thiruvallur District.

...Rearranged Respondent No.2/
Original Respondent No.7

8) The Chairman

Tamil Nadu Pollution Control Board
No.76, Mount Salai, Guindy,
Chennai - 600 032.

...Rearranged Respondent No.3/
Original Respondent No.8

9) The Executive Engineer

Water Resources Department
Araniaaru Irrigation Division,
Chennai Mandal, Chennai -600 005.

...Rearranged Respondent No.4/
Original Respondent No.9

10) The Joint Chief Environmental Engineer

(Monitoring)
77A, South Avenue Road,
Ambattur Industrial Estate,
Ambattur, Chennai - 600 058.

...Rearranged Respondent No.5/
Original Respondent No.10

11) M/s. Adani Ennore Container Terminal Private Limited

Represented by its Managing Director
Having its Principal Office at
No.23, P.T.Lee Chengalvarayan Building,
First Floor, Rajaji Salai,
George Town, Chennai – 600 001.

(Respondent No.11 was deleted as per order of the Tribunal dt. 20.03.2017)

**...Deleted/
Original Respondent No.11**

12) Kamarajar Port Limited

Represented by its Chairman
4th Floor, Super Speciality Diabetic Centre,
(Erstwhile DLB Building)
Rajaji Salai, Chennai – 600 001.

**...Rearranged Respondent No.6/
Original Respondent No.12**

13) M/s. International Seaport Dredging Private Limited

Represented by its Managing Director
Old No.62, New No.113,
Dr. Radhakrishnan Salai, Mylapore,
Chennai – 600 004.

*(Respondents No.12 & 13 were impleaded as per
Order dated 05.12.2016 in M.A. No.261/2016 in O.A. No.152/2016)*

**...Rearranged Respondent No.7/
Original Respondent No.13**

WITH

Meenava Thanthai K.R. Selvaraj Kumar

Meenavar Nala Sangam
Rep. by its President M.R. Thiyagarajan
S/o. Late C. Rajalingam
Office at No.15/8, A.J. Colony,
Royapuram, Chennai - 600 013.

...Applicant(s)

Versus

1) The Chief Secretary

Government of Tamil Nadu,
Secretariat, Chennai – 600 009.

2) The State of Tamil Nadu

Represented by its Secretary to Government
Forest Department,
Fort St. George, Chennai – 600 009.

- 3) **The State of Tamil Nadu**
Represented by its Secretary to Government
Fisheries Department,
Fort St. George, Chennai - 600 009.
- 4) **The State of Tamil Nadu**
Represented by its Secretary to Government
Environment Department,
Fort St. George, Chennai - 600 009.
- 5) **The State of Tamil Nadu**
Represented by its Secretary to Government
Public Works Department,
Fort St. George, Chennai - 600 009.
- 6) **The District Collector**
Thiruvallur District
Thiruvallur.
- 7) **The State of Tamil Nadu**
Represented by its Secretary to Government
Industries Department,
Fort St. George, Chennai - 600 009.
- 8) **The Chairman**
Tamil Nadu Pollution Control Board
No.76, Mount Salai, Guindy,
Chennai - 600 032.
- 9) **The Chief Engineer**
Water Resources Department
Chennai -600 005.
- 10) **The Joint Chief Environmental Engineer**
(Monitoring)
77A, South Avenue Road,
Ambattur Industrial Estate,
Ambattur, Chennai - 600 058.
- ...Original Respondents No.1 to 10
- 11) **Ennore Thermal Power Plant**
Representing by its Chief Engineer
Kathivakkam High Road,
Ennore, Chennai.
(Respondent No.11 deleted as per order of the Tribunal dt.13.01.2017)
...Deleted/
Original Respondent No.11
- 12) **North Chennai Thermal Power Station**
Representing by its Chief Engineer
Stage - I, Thiruvallur District,
Athipattu, Chennai.
...Rearranged Respondent No.11/
Original Respondent No.12

13)North Chennai Thermal Power Station

Representing by its Chief Engineer
Stage - II, Thiruvallur District,
Athipattu, Chennai.

**...Rearrayed Respondent No.12/
Original Respondent No.13**

14)NTECL

Represented by its Chief Engineer
Vallur Thermal Power Project
Vellivoyal Chavadi,
Ponneri Taluk, Tiruvallur,
Chennai - 600 103.

**...Rearrayed Respondent No.13/
Original Respondent No.14**

15)Lanco Infrastructure Limited

Represented by its Chief Engineer
Having its Office at Plot No.4,
Software Units Layout,
HITEC City, Madhapur,
Hyderabad, Andhra Pradesh.
Site Address: Ennore Thermal Power Station,
Ennore, Chennai - 600 057.

(Respondent No.15 deleted as per order of the Tribunal dt.13.01.2017)

**...Deleted /
Original Respondent No.15**

16)Geo Foundation and Structures Limited

Representing by its Chief Engineer,
Having its Office at 1st Main Road,
Gandhi Nagar, Adayar, Chennai - 600 020.

(Respondent No.16 deleted as per order of the Tribunal dt.05.10.2016)

**...Deleted /
Original Respondent No.16**

O.A. No.08/2016 (SZ):

For Applicant(s): Mr. A. Yogeshwaran & Ms. B. Poonguzhali.

For Respondent(s): Mr. G.M. Syed Nurullah Sheriff for R1.
Mr. Vijay Mehanath for R2, R3.
Mr. M.T. Arunan for R4.
Mr. S. Sai Sathya Jith for R5, R6.
Dr. D. Shanmuganathan for R7, R8.
Mr. R. Thirunavukarasu for CPCB.

O.A. No.152/2016 (SZ):

For Applicant(s): Mr. G. Stanley Hebzon Singh.

For Respondent(s): Dr. D. Shanmuganathan for R1, R2 & R4.
Mr. S. Sai Sathya Jith for R3, R5.
Mr. M.T. Arunan for R6.

O.A. No.198/2016 (SZ):

For Applicant(s): Mr. G. Stanley Hebzon Singh.

For Respondent(s): Dr. D. Shanmuganathan for R1 to R7, R9.
Mr. S. Sai Sathya Jith for R8, R10.
Mr. Vijay Mehanath for R11, R12.

Judgment Reserved on: 28th April 2022.

Judgment Pronounced on: 05th July 2022.

CORAM:

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

HON'BLE Dr. SATYAGOPAL KORLAPATI, EXPERT MEMBER

Whether the Judgment is allowed to be published on the Internet - Yes/No ✓

Whether the Judgment is to be published in the All India NGT Reporter - Yes/No ✓

COMMON JUDGMENT

Delivered by Justice K. Ramakrishnan, Judicial Member

O.A. No.08 of 2016(SZ)

1. The above application was filed by the Original Applicant alleging that the 3rd Respondent - North Chennai Thermal Power Station (hereinafter referred to as "NCTPS") and the 4th Respondent - M/s. Kamarajar Port Limited are causing damage to the Buckingham Canal and Kosasthalaiyar River on account of their activities.
2. It is alleged in the application that Buckingham Canal is a long fresh water navigational canal having a distance of 796 Kms running parallel to Coromandel Coast of South India from Kakkinada in East Godavari District, Andhra Pradesh to Villupuram District, Tamil Nadu. The canal connects most of the natural backwaters along the coast to the Port of Chennai. It was constructed during British rule and was an important

waterway during the late 19th & 20th Century. The 3rd Respondent - NCTPS owned by the 2nd Respondent - Tamil Nadu Generation and Distribution Corporation (hereinafter referred to as "TANGEDCO") is located on the Kattupalli Ennore Island between the Island and the mainland is the expansive backwater and Kosasthalaiyar River drains into this backwater. Buckingham Canal is a deeper channel cutting through this backwater. The backwater is contiguous to the Pulicat lagoon system and the backwaters are referred to as 'Paraval' in Tamil along with Ennore creek and the Pulicat Lagoon is of great ecological importance and serves as flood sink. Reclaiming this wetland by filling with fly ash and dredged material which adversely affect the large portion of North Chennai during high flood and cyclone, this expansive water spread is essential for reducing the impact of flooding in Manali industrial area and residential areas. The 3rd Respondent NCTPS is 1830 MW Coal-fired Thermal Power Station owned by the 2nd Respondent - TANDECO. It has three units of 210 MW, which were commissioned between 1994 and 1996 and as well as two 600 MW units commissioned in 2013. The TANGEDCO has applied for Terms of Reference for another 800 MW (Stage - III) in 2012 with a proposed completion date of December 2017.

3. It is further alleged in the application that they were dumping ash slurry into the Buckingham Canal and the backwaters for several years and though notices had been issued by the State Pollution Control Board in this regard, they were continuing with the same and doing illegal dumping, thereby polluting the Buckingham Canal which continues to run further partially joining Ennore Creek and continuing cities towards Chennai. The fly ash and bottom ash are serious pollutants apart from containing metals like Nickel, Cadmium, Antimony, Arsenic, Chromium, Lead and Mercury and they are radioactive substance and this fact was recognized by this Tribunal in *Krishi Vigyan Arogya Sangtha Vs. MoEF&CC* dated 20.09.2011. They are dumping the fly ash in violation of the conditions of Environmental Clearance granted and it has caused irreversible contamination of the environment and destruction of marine ecology. Further, it has affected the soil fertility and also contaminated

the surface and ground water. The 4th Respondent begun dumping of mud in Buckingham Canal and the backwater and also blocking it. The stretch along the Thermal Power Plant at Athipattu, Ennore around eight days ago and due to protest of the fishermen, the contractor had stopped the work at site. It was also understood that the officers of the 8th Respondent – Public Works Department visited the site and observed that dumping of soil and filling up of canal was illegal. Due to the filling of water body where mangroves were situated which was treated as CRZ – I area under the CRZ Notification and it may have impact on the same as well. The 4th Respondent also resorted to the illegal dumping and filling in the backwaters along the Kosasthalaiyar River which is water logged and has been classified as inter-tidal zone and they reserved the right to file an application against the 4th Respondent independently apart from claiming reliefs in this application. They are also doing the same against the conditions imposed in the CRZ Notification and also the Environmental Clearance granted to them.

4. Since no effective actions have been taken to prevent the same, the applicant filed this application seeking the interim as well as final relief:-

“Interim Reliefs

1. Direct closure of the 2nd Respondent run 3rd respondent Thermal Power plant for the illegal dumping of ash into the Buckingham canal and backwater

2. Direct respondent 1, 5, 6 to ensure immediate stoppage of discharge of ash from the 3rd Respondent into the canal and the backwater

3. Direct Respondents 1, 2, 3, 5, 6, 7, 8 to immediately clean up the canal and remove the ash illegally dumped into the canal.

4. Injunct the 4th Respondent, its agent, contractors etc from dumping soil or any material in the Buckingham Canal or any water body.

5. Direct the respondents 4, 5, 6, 7 and 8 to immediately remove the illegally dumped soil in the Buckingham canal at athipattu and restore status quo ante.

6. Pass such order or orders as may be necessary in the facts and circumstances of the case and thus render justice.

Final Relief

A. Direct closure of the 2nd respondent run 3rd respondent Thermal power plant for the illegal dumping of ash into the Buckingham canal.

B. Respondent 1 to commission a study into the damage caused by the 2nd and 3rd respondents by continued dumping of ash into the environment.

C. Direct the 2nd, 3rd and 4th respondent to pay compensation for the environmental harm caused.

D. Direct respondent No.8 to maintain the canal and the backwaters free of any filling in or encroachment

E. Direct respondents 1, 5, 6 to maintain the Buckingham Canal, Creek, Kosasthalayar and backwaters free of contamination or pollution.

F. And pass such further order or orders as may be fit, proper and necessary in the facts and circumstances of the case and thus render justice.”

O.A. No.152 of 2016(SZ):

5. The above application was filed by Meenava Thanthai K.R. Selvaraj Kumar originally against M/s. Adani Ennore Container Terminal Private Limited (Original 11th Respondent) which was later deleted and then allegations were made against M/s. Kamarajar Port Limited and M/s. International Seaport Dredging Private Limited who were later impleaded as Respondents No.12 & 13 as per order in M.A. No.261/2016 in O.A. No.152/2016 dated 05.12.2016, alleging that they were illegally dumping the dredged materials in the CRZ Zone and causing damage to the environment.
6. It is alleged in the application that the Original 11th Respondent had obtained contract for construction of a container terminal from M/s.Kamarajar Port Limited which is located on the Coromandel coast about 24 Kms North from Chennai Port. M/s. Kamarajar Port Limited is the only corporatize major port and registered as a company. Construction of container terminal is causing pollution and destroyed the Kosasthalaiyar River and has severely hampered fishing in the process of destroying the livelihood of the fishermen. The activities of the Original 11th Respondent for M/s. Kamarajar Port Limited has resulted in great damage to the environment due to the pollution caused on account of their activities. They are engaged in illegal dredging of sea sand from the Kamarajar Port and dumping into the Kosasthalaiyar River and grab that portion of the Kosasthalaiyar River by reclamation of the same. On account of dumping of dredged material in Kosasthalaiyar River, the riverine ecology has been affected and they are not entitled to do the same as well.
7. So, the Original Applicant filed by this application seeking the following interim as well as final reliefs:-

"Interim Reliefs

1. To appoint an advance commissioner to hold an enquiry at Kosasthalaiyar River where the 11th Respondent had made encroachment and had dumped soil over an extent of 50 Acres. So that to reinstate the river in its natural extent.
2. To grant ad interim injunction pending disposal of the above main petition restraining the 11th Respondent from dumping, drugging the sand in Kosasthalaiyar River originating from Arani to Pazhaverkadu Lake (via. Ennore).

Final Reliefs

To issue direction to the Respondent 1 to 10 to initiate appropriate action against the 11th Respondent for encroaching the Kosasthalaiyar River and dumping soil over an extent of 50 Acres and adversely affecting the livelihood of the fishing communities in the ends of justice and pass such other orders as this Hon'ble Tribunal may deem fit and proper in the facts and circumstances of the case and thus render justice."

O.A. No.198 of 2016(SZ):

8. The above application was also filed by the same Applicant in O.A. No.152/2016 (SZ) against M/s. NCTPS alleging violation of conditions of Environmental Clearance and CRZ Clearance granted by dumping fly ash and draining the waste water into the Buckingham Canal and Kosasthalaiyar River. Originally, it was alleged that illegal activities were done by M/s. NCTPS who were shown as Original 13th Respondent.
9. It was alleged that there was no proper pollution control mechanism provided in their units and they are emitting gases like Nox and Sox in excess of the standard provided, thereby causing damage to the environment by polluting air. On account of the release of waste water/effluents into the water bodies namely, Buckingham Canal and Kosasthalaiyar River, it causes damage to the water bodies and affecting the aquatic life and thereby affecting the livelihood and health of the people in that area.
10. Though complaints were made to the authorities, no effective steps have been taken. So, the Original Applicant filed this application seeking the following interim as well as main reliefs:-

"Interim Relief:

(i) To appoint an advocate commissioner to inquiry at Kosasthalaiyar river and in the Nettukuppam village, Thalankuppam, Ennore Kuppam, Mugathuvarakuppam area. So that to fix compensation on the basis of doctrine of "polluter pays"

(ii) To constitute expert committee in order to inspect and submit a report regarding the pollution caused by discharge effluent by the Respondents 11 to 14 in the Kosasthalaiyar river and Buckingham canal resulting in loss of resources and adoption methods of treating the water effluent in the respondent 11 to 14 Power Plant prior to the disposal of the same into the Kosasthalaiyar River and Buckingham canal in order to ascertain the compliance of the rules and norms of the respondents 11 to 14 and to Test the pollution level in the River water in the area where the respondent 11 to 14 power plant effluent is mixing.

(iii) To stay the operation of the respondents 12 and 13 had encroached and had constructed road and pipeline in the Kosasthalaiyar river and in the Buckingham canal until the disposal of the main Application.

(iv) To stay the operation of road and conveyer belt constructed by the 15th and 16th respondents on the basis of the contract from 11th respondent in the

Kosasthalaiyar river and in the Buckingham canal until the disposal of the main Application.

(v) To stay not to discharge effluent in the Kosasthalaiyar river and in the Buckingham canal by the 12, 13th and 14th respondents until the disposal of the main Application.

Main Relief:

To issue direction to the respondent 1 to 10 to initiate appropriate action against the respondents 11 to 16 not to pollute the environment at the Ennore area in the Kosasthalaiyar River and Buckingham canal thereby polluting the resources and direct the respondents to revamp the Estuary in the Ennore area in the ends of justice and pass such other order or orders as this Hon'ble may deem fit and proper in the circumstances of the case and thus render justice."

11. Since all these cases are relating to the damage caused to the water body (i.e., Buckingham Canal and Kosasthalaiyar River) on account of dumping of fly ash and discharge of waste/effluents and illegal reclamation of water body against the conditions imposed and thereby causing damage to the environment, all these cases were clubbed together for consideration.

Pleadings - O.A. No.08/2016:

12. The 4th Respondent filed reply affidavit denying the allegations made in the application and contending that since the land belonging to them lies between Buckingham Canal and road is a low lying area, they proposed to raise the level by filling with available earth inside the port for utilization in future. The dumping is being done along the side of the road leaving sufficient space from the boundary of the canal in order to ensure that the canal is not affected due to the dumping activity. They denied the allegation that water bodies were filled with fly ash. They purchased the land to an extent of about 683 Acres from the Salt Department adjoining either side of the Ennore creek. The same has been informed to the Public Works Department (Water Resource Department), Chennai Region with a request to demarcate the area. They planned to develop Multi - cargo, Container terminals, Coal Berth 3 and Coal Berth 4, LNG Terminal in phased manner for which Environmental Clearance has been obtained. They further contended that to avoid infiltration of sand particles into the creek, a separate bund was constructed along the creek and the dredged materials will be dumped only inside the bund with geo

- fabric protection. They relied on the communication of the MoEF & CC vide letter F.No.11-51 / 2012 / 1A3 dated 12.03.2015 at point 2 Sub - clause 9 states as follows "*The dredging material shall be reused for low level rising wherever possible and excess shall be in to sea at the designated areas identified based on the mathematical model studies.*" They further contended that the Kamarajar Port is not involved in contaminating the Ennore creek and will not entertain any such activities which will obstruct the natural flow of water at Ennore Creek. So, they prayed for dismissal of the application.

13. The 3rd Respondent filed counter affidavit denying the allegations made in the application and they denied the allegation that they are discharging fly ash into the Buckingham Canal and backwaters. In fact, the fly ash generated is being supplied to Cement factories and SSI units only, by closed trucks, while the unused Fly ash and Bottom ash are being pumped to the Ash pond allotted to NCTPS / Stage - I in a slurry form by transporting the same from Electro Static Precipitator (ESP) to Ash Dyke by means of exclusive cast basalt slurry disposal pipelines. As regards the fly ash generated in NCTPS - II is concerned, it is being disposed through major cement companies and SSI companies by closed trucks and the unused Fly ash in slurry form which is disposed through newly erected cast basalt lines upto Ash pond allotted to NCTPS II. Semi wet bottom ash is being disposed through trucks from bottom ash silos by selling to the external agencies for earth filling purposes. They have given the details of the two units as follows:-

NCTPS I

NCTPS Stage I comprising of 210 MW x 3 units.

Unit I - Commissioned on 25.10.94

Unit II - Commissioned on 27.03.95

Unit III - Commissioned on 24.02.96

and it is pertinent to point out that NCTPS Stage I is provided with separate ash disposal systems with ash dykes of adequate capacity for ash disposal.

NCTPS II

NCTPS Stage II comprising of 600MW x 2 units.

Unit I - Commercial operation declaration on 20.03.14

Unit II - Commercial operation declaration on 08.05.14

and it is pertinent to point out that NCTPS II is provided with separate ash disposal system with ash dyke of adequate capacity for ash disposal."

14. It is further contended that the pipeline passes through the Buckingham canal and Pulicat backwaters area. There are five pipelines, of which three pipelines are in service to pump ash from three units and the other two are kept as standby. The ash pond consists of primary pond and secondary pond. The collected wet ash is being taken out by private people for filling purposes etc. with the permission of NCTPS I. So, the wet ash pond is never filled up to its full capacity. So, the question of letting out from the pond to the Buckingham canal and backwater does not arise. There may be occasional leakages from the ash slurry pipelines through weak joints and the same is being continuously watched through exclusive patrolling of their unit. Whenever leakages were found from the pipeline, they were attended immediately within an hour or a couple of hours. However, in the interest of the public, desilting was carried out earlier in Pulicat backwater canal during April 2015 to ensure free movement of fishermen's boats in this area. The ash deposited through the leaky pipes were being removed by engaging earth moving machineries and tippers and certain photographs were produced to prove that fact. Each pipeline distance from NCTPS I to ash pond is more than 5200 meters and the width of the Buckingham canal and backwater canal are 20 meters and 100 meters, respectively. The dry fly ash generated from NCTPS - II is collected in Electro Static Precipitator (ESP) and then pumped through three pipes (one each for two units and the third pipe acts as a spare) to the Ash silo. The Fly Ash generated in NCTPS - II is being sold to major cement companies and SSI companies by closed trucks and the unused Fly ash in slurry form is disposed through newly erected cast basalt lines (more than 5200 meters) up to Ash pond allotted to NCTPS - II. Bottom semi wet ash is disposed through trucks from bottom ash silos by selling to the external agencies for various purposes. Since it is being sold immediately, there was no possibility of over flow of wet slurry fly ash from the ash pond or the possibility of being discharged into the water bodies as alleged. There was no possibility of leak in NCTPS - II slurry pipe lines, as they were new line. Here also, whenever any defect is noticed, the patrolling teams will immediately attend the same. They denied the allegation that they are letting out of fly ash into the water bodies and on account of their act, no

reduction in growth of marine vegetation has happened, no mangroves have been affected. They are taking all necessary precautions to avoid any damage being caused to the environment. So, they prayed for dismissal of the application.

15. The 5th Respondent/State Pollution Control Board filed a reply affidavit narrating the establishment of the Thermal Power Plant in three stages and they are using sea water for cooling purposes which is drawn from M/s. Kamarajar Port Limited Basin. After cooling, the sea water is then discharged into the cooling water channel facility which finally joins with Ennore creek. The coal required for the unit is received at M/s. Kamarajar Port Limited and conveyed to the plant through closed conveyors. They have allotted dedicated berths for receiving coal at M/s. Kamarajar Port Limited. They are using coal as fuel in the furnace and the steam generate in the boiler is being used for generation of Electric power. They also explained the procedure for collection of fly ash and bottom ash and how it is being disposed of as has been narrated by the TANGEDCO in their reply. They have obtained necessary clearance/permission under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981. The unit was inspected by the officials of the Board on 20.02.2016 and found that they have not provided recovery line in stage - II. Ash slurry was noticed along the pipeline route in one stretch of Buckingham Canal and in three stretches in the Kosasthalaiyar River enroute to the ash pond. It was informed by the officials of TANGEDCO that frequent punctures in the ash slurry pumping line passing across the Buckingham Canal and Kosasthalaiyar River is the cause for the deposition of ash slurry and they are taking action to remove the same. They also found lifting of ash from the ash pond by the private parties for land filling and road construction activities. They provided Pump house for stage -I for pumping the decanted water from the ash pond to the plant for ash slurry making and construction of Pump house and installation of machineries for pumping the decanted water from the ash pond to the ash slurry making for stage -II was under progress. Further discharge of decanted water partly from the ash pond into Kosasthalaiyar River was also

noticed. The unit was advised to stop the discharge of decanted water from the ash pond immediately and to make arrangements to pump the entire decanted water to the plant for ash slurry making. The problem of leakage of ash slurry from the ash slurry pipeline from the third respondent Thermal Power plant could be averted by providing recovery pipe lines for stage- II and replacing ash slurry pipelines of stage - I at the earliest possible time. As regard M/s. Kamarajar Port Limited is concerned, they obtained necessary consent under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 and they are having facilities to handle Coal - 16 MT / Year (CB1 & CB2), Petroleum Products - 0.5 MKL/Month & Chemicals - 1 MT / Year. No trade effluent is generated from the unit and they provided dust suppression system / fogging system for coal unloading from the ships. On seeing the newspaper report in "The Hindu" dated 31.12.2015 regarding destruction of Mangroves by M/s. Kamarajar Port Limited, the site was inspected on 02.01.2016 along with official of Department of Environment, Government of Tamil Nadu. M/s. Kamarajar Port Limited proposed to develop additional coal berths (CB3-9 MTPA capacity & CB4-9 MTPA capacity) adjacent to the existing Coal Berths (CB1 & CB2) to meet the coal requirement of the Thermal Power Plants of Tamil Nadu Electricity Board (TNEB) (reconstituted as Tamil Nadu Generation and Distribution Corporation Limited - TANGEDCO). They have given the details of the extent of dredging area and the quantity of dredged material. They have given the length and breadth of the proposal coal berths as 366 m long and 27.5 m respectively. The design of dredged level is (- 18 m) CD Chart Datum i.e., below mean sea level for CB3 & CB4. The coal will be transported to the Thermal power plant in an elevated conveyor system and also provide stacked in the stack yard. The conveyer system will be fully covered with galvanized sheets and translucent sheets at regular interval. The proposed coal berths are falling in CRZ - IVA & CRZ III and conveyer belts falling in CRZ IB, III & IVB. They obtained Environmental Clearance & CRZ clearances from the Ministry of Environment and Forest and Climate Change vide Letter No. 11-51/2012-1A-III dated

12.03.2015 for the above said project subject to certain conditions, inter alia as follows:

“(i). The dredged materials shall be reused for low level rising wherever possible and excess shall be dumped into the sea at the designated dumping areas identified based on mathematical model studies. (ii) Dredged material should be dumped on the landward side and should not be dumped into the sea (CRZ - IV), intertidal area CRZIB) of the Buckingham canal and also in the salt pan areas as the salt pan areas are declared as CRZ - IB (Inter tidal zone) as per the approved Coastal zone Management plan of Tamil Nadu.”

16. They have acquired 35 acres of salt pan area in Athipattu village and 647.663 Acres in Ennore, Puzhuthivakkam and Athipattu Villages of Ponneri Taluk, Tiruvallur District and proposed to dispose of the dredged material in this land, i.e. salt pan area by forming bunds, leaving 50 m setback from the High Tide Line of the Kosasthalaiyar River. These areas where they proposed to dispose the dredged material has been classified as CRZ -IB i.e., the area between Low Tide line and High Tide Line. During inspection of the site on 02.01.2016 along with officials of Department of Environment, Govt. of Tamil Nadu, it was noticed that the Port Authorities were carrying out Bund formation in the above said salt pan areas leaving only 50 m setback from the High Tide Line (HTL) contravening the conditions stipulated in the Environmental Clearance and CRZ clearances accorded to M/s. Kamarajar Port Limited for the development of additional coal berths in the Ennore Port by the MOEF & CC. GoI. The Tamil Nadu State Coastal Zone Management Authority has conducted a meeting on 05.01.2016 and formed a committee comprising of Dr. B.R Subramanian, Member, TNCZMA, Dr. Jayashree Venkatesan, Member, TNSCZMA and Er. Vasudevan, Convener, District Coastal Zone Management Authority (DCZMA), Tiruvallur District at Ambattur and the committee inspected the site on 22.01.2016 and submitted the report to the Government of Tamil Nadu/ Tamil Nadu State Coastal Zonal Management Authority (TNSCZMA) on 28.01.2016. The TNSCZMA in its 88th Meeting held on 15.02.2016 discussed the above said subject and resolved to direct the Environment Engineer, TNPCB / Convener, District Coastal Zone Management Authority to issue necessary instructions to the Ennore Kamarajar Port Trust to stop the work in the disputed sites. Accordingly, M/s. Kamarajar Port Trust Limited was addressed vide letter dated 26.02.2016 to stop the works in the disputed site i.e. bund formation to dump dredged material in the

inter tidal zone (CRZ - 1B). The said site was inspected on 20.02.2016 & 26.02.2016 and during inspection it was noticed that the unit of M/s. Kamarajar Port Trust had stopped the work related to bund formation in the inter-tidal zone of the Kosasthalaiyar River for disposal of the dredged material. M/s. Kamarajar Port Trust Limited in their letter dated 03.03.2016 stated that they have already stopped the work in the disputed site (CRZ - 1B) in the inter-tidal zone and that no work would be undertaken by them without Consent of the Tamil Nadu State Coastal Zone Management Authority. So, they prayed for accepting their contention and passing appropriate orders.

17. The 7th Respondent filed counter affidavit contending that they came to know about the dredging material being deposited in the CRZ Zone through a report published in "The Hindu" dated 31.12.2015 under the heading "Ennore Fishermen Protest - Destruction of Mangroves" and they also received several representations from the Fishermen Associations in this regard. The Kamarajar Port was granted Environmental Clearance cum CRZ Clearance by MoEF & CC vide their Letter No.F.No.11-51/2012 - IA.III dated 12.03.2015 for two additional Coal Berths at Kamarajar Port, under specific condition (ix) where it has been permitted that the dredged materials shall be reused for low level rising wherever possible and excess shall be dumped into sea at the designated dumping areas identified based on mathematical model studies. They have directed to comply with the conditions imposed under condition 6 (b) vide their Letter dated 16.12.2014. As per the said letter, the dredged material should be dumped on the landward side and should not be dumped into the sea (CRZ 1V), Inter tidal area (CRZ 1B) of the Buckingham canal and also in the salt plan areas as the salt plan area are declared as CRZ 1B as per the approved Coastal Zone Management Plan of Tamil Nadu. The MoEF&CC vide their Letter No.10-28/2005- IA - III dated 10.09.2007, by which original clearance was granted for development of Terminals for marine liquids, coal, iron and containers in second phase and associated capital dredging at Ennore Port, it has been instructed under para 6 (A) (i) that it should be ensured that no mangroves are destroyed during reclamation. A meeting was conducted on 05.01.2016 under the

Chairmanship of the Principal Secretary to Government, Environment and Forests Department, Government of Tamil Nadu and in the meeting, the Kamarajar Port Limited was informed that any development work should be taken up based strictly on the CRZ Notification and further work can be taken up after finalizing the issue. A committee of members as mentioned in the counter statement of the Tamil Nadu Pollution Control Board was formed and they inspected the area and vide letter dated 19.01.2016, Kamarajar Port Limited was directed not to undertake any work in the disputed sites. The committee had submitted the report before the authority and the authorities will be taking appropriate action in this regard. They prayed for accepting their contentions and passing appropriate orders.

18. The 8th Respondent filed counter more or less reiterating the contentions raised by the official respondents including the State Pollution Control Board. When they have come to know about the leakage of pipe and deposit of wet ash, they inspected the area and found that the problem of leak was immediately attended by the TANGEDCO. They also engaged in removal of the deposited fly ash from the Buckingham Canal and it is being disposed through trucks for usage by public agencies for filling purpose. They are not directly dumping any waste in the Buckingham Canal or other water body.

19. The 3rd Respondent filed status report regarding the work undertaken by them for removing the fly ash that is deposited in the Buckingham Canal area due to leakage from the pipelines. According to them, a total quantity of 9740 Cu.M. wet ash has been removed by two agencies viz., M/s. GVR Infra Project Limited, Chennai and M/s. Ashoka Buildcon Limited, Chennai. Though certain amounts were sanctioned for the purpose of removing the balance quantity found below the pipeline bridge and the below the HD Towers, the same could not be released due to code of conduct declared in connection with the election. Once approval is granted, the same also will be removed. They will be taking all steps to remove the fly ash deposited in the area at the earliest possible time. They also produced some documents in this regard.

20. They also filed further status report regarding the removal of fly ash. They have stopped the decanting water into Ennore creek by continuous operation of two numbers of recovery water pumps by NCTPS Stage - I and one number recovery water pump by NCTPS Stage - II. So, the leakage and discharge of decanted water to Ennore Creek were stopped.
21. The 4th Respondent filed counter affidavit in the form of additional grounds contending that they developed on the East Coast of India with an investment of Rs.1058 crore for handling thermal coal for power plants of Tamil Nadu Electricity Board (TNEB), presently TANGEDCO. It was declared as a Major Port under the Indian Ports Act, 1908 in March 1999 and it was incorporated under the Companies Act, 1956 originally as Ennore Port Limited (EPL) and later it was renamed as Kamarajar Port Limited (KPL). They have explained the nature of work undertaken by them and also the facilities provided. For the purpose of expansion of their activity, they have obtained 683 Acres from the Salt Department in March 2015 outside the Port main gate alongside of the Port access road between NCTPS railway line, NCTPS road and the area adjoining eastern side of Ennore creek (Kosasthalaiyar River) upto Buckingham canal. The Environmental Clearance for that was sought and the same was granted subject to certain conditions which inter - alia permits to dump the dredged material on the landward side. When they started formation of the bund in the area known as B, C & D, objections were raised by the local people. On the basis of the complaint, inspection was conducted by the committee appointed by the Tamil Nadu State Coastal Zone Management Authority and they have decided to inform the Kamarajar Port Limited not to dump the dredged material in CRZ - 1 B area. When they received the direction from the State Pollution Control Board, they immediately stopped the same. As per the conditions imposed by the Tamil Nadu Coastal Zone Management Authority, the dredged material should not be dumped into the sea, inter-tidal area of Buckingham canal and also salt pan areas. It was clarified that as per CMDA Master Plan, this particular area has been classified as Special and Hazardous Industrial area and not as Salt Pans and the salt is not cultivated for decades in that place. Certain port related activities are allowed as per the CRZ Notification, and the 4 Respondent intend to carry out only such

activities which are allowed, for which, they requested clarification from MoEF&CC, and it is being awaited. After utilizing the dredged material for the formation of road, if any excess material is found, it will be removed forthwith. The construction of road is likely to be started by end of 2016 and completed within a period of 6 months. They have not dumped any dredged spoils either inside the Kosasthalaiyar River or inside the Buckingham canal, blocking the flow of river / water. They dredged the material within the area purchased by them and permitted as per the clearance granted by the MoEF&CC. They recently built a new road across the Buckingham Canal by fixing three big pipes (approximate width 3 feet) for flowing of water connecting Kamarajar Port access road in the North-west back side of the 3rd Respondent. So, they prayed for recalling the interim order passed by this Tribunal on 17.08.2016 for the purpose of carrying out their further activities.

22. The 7th Respondent filed further counter thereby they have informed the action taken on the basis of the report of the committee in their meeting held on 15.12.2016.

23. The 4th Respondent filed additional counter wherein they have contended that the committee found location 3 identified for dumping is beyond 100 meters from Buckingham canal and dumping of dredged material was noticed. As it is beyond CRZ area, the activity was found to be in accordance with clearance given and no violation was noticed. But the location 1 & 2 identified for dumping were declared as disputed site and in the meeting held on 15.02.2016, it was unanimously resolved that the dumping of dredged material at the identified locations 1 & 2 is a CRZ - 1A area, and is a clear violation by the Kamarajar Port Limited against the clearances granted and decided to stop the work in the disputed area. So, they stopped the work in the disputed area and location 3 identified by the Kamarajar Port Limited is a permitted area as per the clearance granted. They continued to dump the dredged material only in location 3 in Survey No.354 part and on 24.10.2016 at about 16:45 hrs, the revenue authorities without any intimation to the port authorities visited the dumping yard and seized four vehicles involved in dumping the excavated earth owned by M/s. Sai Saravanan, one of the authorized sub

- contractor of M/s. ISDPL, the contractor for Phase - II dredging in the Kamarajar Port. They are doing dredging work after obtaining necessary requisite permission from various authorities viz. Environmental Clearance from TNPCB, MoS, Ministry of Environment, Forest and Climate Change, GOI etc. and this has been the procedure it was followed by the port authorities and the act of the Revenue came as a surprise for them. They also reiterated the conditions imposed in the Environmental Clearance as to how the dredged materials can be used. So, they prayed for passing appropriate orders, accepting their contentions.

24. The Tamil Nadu Pollution Control Board filed further report reiterating their contentions regarding the activities carried on by the TANDECO and the permissions obtained by them under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981. When they inspected the area subsequently it was revealed that emission standard of PM exceeded. So, a show cause notice was issued vide letters dated 17.06.2014, 20.05.2015, 05.08.2015, 07.09.2015 and 08.05.2016. They sent a reply to the show cause notices issued stating that they are complying with the norms and also the reason for the exceedance of PM level. They were directed to attend the personal hearing on 03.11.2016 at 11.00 a.m. to discuss about the issue and during the personal hearing, TANGEDCO officials have provided the nature of precautions taken to reduce the stack emission level as follows:-

"a.) All the unit's are more than 20 years old and operating with coals from different sources & ash content, the SPM levels also vary accordingly.

b.) The emission levels are monitored continuously online and data uploaded to CARE Air center, TNPCB.

c.) Round the clock maintenance works are carried out to ensure un - interrupted ash evacuation through PDFACS thereby preventing accumulation of ash in ESP hoppers thereby avoiding the carryover of fly ash in the flue gas.

d.) Replacement of worn out mixing apparatus, defective ash discharge lines and flushing nozzles has been carried out periodically to avoid accumulation in the hoppers, thereby avoiding the carryover of fly ash in flue gas.

e.) Viewing the complex parameters and factors involved in emission mitigation, OEM BHEL has been addressed to undertake a detailed study of the existing system.

f.) Also we are in to the process of complete revamping of ESP and all the related systems, to comply with the revised standards.

g.) Action taken for compliance of MoEF notification dt.07.12.15 Stack Emission Standards:

i) Revamping of ESP and all the related systems has been recommended and the vendors has been addressed to submit the offers for evolving an action plan.

ii) Modification of ESP, installation of desulphurization systems to control SOx, and SCR to control NOx would result in the compliance of standards."

25. The TANGEDCO officials also agreed to comply with the following decision of the Board namely,

“1. The unit shall submit proposal with time bound action plan to revamp the existing ESP and to provide additional APC measures such as existing ESP followed by reverse pulse jet - Bag house filter, desulphurization systems to control SO_x, and SCR to control NO_x.

2. The unit shall adhere to MoEF & CC Notification Dt: 02.01.2014 regarding supply and use of coal with ash content not exceeding 34% to coal based thermal power plant.

3. The unit shall increase the controlled rapping frequency to control the PM emission during rapping operation so as to reduce the load to ESP.

4. The unit shall adhere to MoEF & CC Notification Dt: 25.01.2016, Wherein it has been instructed that "All coal (or) lignite based thermal power plants shall comply with the provisions in addition to 100% utilization of fly ash before 31.12.2017." Hence, the unit shall provide adequate dry fly ash silos with pneumatic conveying system for storage of fly ash and the dumping of bottom ash into the ash dyke alone are to be followed.”

26. They have been directed to submit a time bound action plan to replace the new pipeline instead of all old pipelines carrying ash slurry across the entire cross section and stretch of Buckingham Canal and Kosasthalaiyar River with leakage detection sensor for automatic tripping of ash slurry pump motor as remedial and safety measure to avoid frequent rupture and puncture of old pipeline carrying ash slurry.

Pleadings - O.A. No.152 & 198 of 2016 (SZ)

27. In the connected cases also, the respective respondents filed counter more or less in tune with the contentions raised by them in O.A. No.08/2016 and as such we are not repeating the same.

28. All these cases were considered by this Tribunal on various occasions and different directions have been issued. Reference is necessary to some of the orders.

29. Vide Order dated 17.08.2016 in O.A. No.08/2016, the Public Works Department itself was directed to remove the ash slurry that has been deposited due to leakage of pipeline in the Buckingham Canal and realize the cost incurred from the 4th Respondent - Kamarajar Port Limited, if they did not do the same by themselves. As per order dated 09.09.2016, this Tribunal restrained the 4th Respondent - Kamarajar Port Limited from doing reclamation work or bund formation work in the disputed

site, as it comes under CRZ 1 B which is prohibited unless appropriate permissions are obtained.

30. As per the order dated 07.10.2016, this Tribunal noted the order passed on 17.08.2016, directing the TANGEDCO and M/s. Kamarajar Port Limited to remove the newly built up small bridge culvert and this Tribunal had also considered the report of the Public Works Department, wherein it was noticed that the TANGEDCO has started putting up the pipeline even before any permission was granted in violation of Para (7) and based on the directions issued by the Public Works Department, the TANGEDCO had stopped the work and further, they have been directed not to proceed with the work without obtaining No Objection Certificate from the Government. The Public Works Department also gave direction to the TANGEDCO to remove the culvert and passage.

31. On 27.10.2016, this Tribunal had considered the various reports submitted and the violations noted and the action taken and directed the State Pollution Control Board to take appropriate action against the erring units which were causing pollution. Vide Order dated 10.03.2017, this Tribunal had considered the submissions made by the learned counsel appearing for M/s. Kamarajar Port Limited that steps had been taken to remove the dredged materials in the CRZ area and that has been completed.

32. In O.A. No.152/2016, Original Respondents No.2 to 5 were deleted as per dated 08.11.2016 and Respondent No.11 was also deleted as per order dated 20.03.2017 and M/s. Kamarajar Port Limited and M/s. International Seaport Dredging Private Limited were impleaded as additional Respondents No.12 & 13 (Rearranged as Respondents No.6 & 7) as per order in M.A. No.261 of 2016 in O.A. No.152/2016 (SZ). Vide Order dated 13.07.2016, in O.A. No.152/2016 (SZ), there was an interim injunction granted against the Original Respondent No.11 from dumping sand or any other material in Kosasthaliyar River originating from Arani to Palaverkadu Lake until further orders. Subsequently, by order dated 27.02.2017, the Original Respondent No.1/Chief Secretary, Government of Tamil Nadu was also deleted from the party array.

33. In O.A. No.198/2016, the Original Respondent No.16 was deleted as per order dated 05.10.2016 and the Original Respondents No.11 & 15 were also deleted as per order dated 13.01.2017, based on the submissions made by the learned counsel appearing for the applicant. Vide Order dated 11.07.2017 in M.A. No.34/2017 in O.A. No.198/2016, after allowing the above said Miscellaneous Application, this Tribunal had appointed Mr. B. Lakshmi Narasimhan as Advocate Commissioner to inspect the area in question and submit a report.

34. Vide Order dated 31.05.2017, in O.A. No.152/2016 (SZ), this Tribunal had considered the contrary statements found in the Advocate Commissioner's Report and the memo and photographs produced by the applicant regarding the existence of mangroves and its destruction and the removal of dumped materials were not completed and directed the Advocate Commissioner to inspect the area again and file a report regarding the following aspects:- (i) whether the entire dumped materials had been removed by Kamarajar Port Limited, as per the directions issued by the Tribunal vide order dated 18.11.2016? and (ii) while removing the dumped materials, whether the Kamarajar Port had taken care of retaining mangroves and found out as to whether the mangroves had been removed/damaged and Mr. T. Sai Krishnan, Advocate was appointed as Advocate Commissioner for this purpose.

35. Thereafter, all these cases were tried together from 04.08.2017 onwards.

36. As per order dated 04.08.2017, this Tribunal had constituted a Joint Committee comprising of (i) Dr. Sultan Ahmed Ismail, Director, Eco-science Research Foundation, Chennai, (ii) Dr. Narasimhan, Retired Professor of Madras Christian College, Tamabaram and Expert in biodiversity, (iii) Dr. Balaji Narasimhan, Professor, IIT - Madras, Department of Hydrology, and (iv) Mr. K. Elangovan, Executive Engineer, Public Works Department (WRD), Chennai for the purpose of ascertaining the remediation process of damage caused to the Kosasthalaiyar River and Buckingham Canal on account of deposit of fly ash due to leakage from the pipelines carrying that wet fly ash (ash

slurry) to the ash dyke or silos by the TANGEDCO with following Terms of Reference:-

“1. Location of ash ponds, their storage capacity, present storage levels, their present condition and steps taken to avoid leakage and consequent pollution from the ash ponds.

2. Quantity of fly ash generated by both the units from the beginning of the production in the units, present quantity stored in the ash ponds and quantity utilized duly verifying the records.

3. Unaccounted quantity of fly ash.

4. Quantity of fly ash that leaked/discharged/dumped into the water bodies and present approximate quantity lying in the water bodies.

5. Environmental impacts resulting from the leakage/discharge/dumping of fly ash on the following:

- *Effect on flora and fauna and local biodiversity including Mangroves*
- *Effect on rare and endangered species, if any*
- *Reduction in species diversity, habitat loss*
- *Transformation of natural landscape*
- *Effect on human health*
- *Effect on use of land and resources for traditional purposes by local community*
- *Pollution of the water bodies i.e. rivers/streams/canals*
- *Effect on ground water*
- *Effect on hydrology in the area and it's surroundings*
- *Percolation of hazardous materials from the fly ash and consequent damage to the soil and land degradation*

6. Social and economic impact if any, on the local fishermen community

7. Method of Restitution/remediation, technology to be adopted time required approximate cost involved to restore the environment

8. Any afforestation is required to be undertaken in the affected areas, if so species, methodology extent of area and technique.

9. Present position of transport of fly ash slurry and condition of the pipelines transporting fly ash and action taken by the TANGEDCO in preventing leakage and replacing the pipelines.

10. Implementation of MoEF & CC Notification dated 14th September, 1999 amended in 2003, 2009 and 2016 on utilization of fly ash with present position with full particulars.”

37. The Executive Engineer, Public Works Department (WRD) was designated as the nodal officer for co-ordination and providing necessary logistics. The officials of the TANGEDCO, Public Works Department and State Pollution Control Board and other relevant departments were directed to assist the committee in carrying out the work. The committee was also permitted to have the opinion of Mr. S. Sampathkumar, Retired Director of TANGEDCO in this regard and the expenses were directed to be met by TANGEDCO. As far as Kamarajar Port Limited is concerned, this Tribunal had considered the report submitted by the Advocate Commissioner dated 11.07.2017 and found that the dredged materials are still found dumped to an extent of 2 to 3 feet depth, though it was in contradiction to the submissions made by the officer of the Kamarajar Port Limited in March 2017 that the entire dredged materials were removed. The learned counsel appearing for M/s. Kamarajar Port

Limited and one Mr. V. Krishnaswamy, General Manager (Operations) of the Kamarajar Port Limited were explained the steps taken by them for removal of remaining dredged material and the care taken for the purpose of preserving and spreading mangroves in that area. After accepting the undertaking given by the Port officials, this Tribunal directed them to remove the remaining dredged material carefully within 10 days without affecting the mangroves in that area. Mr. T. Sai Krishnan, Advocate Commissioner was directed to visit the place again and submit a further report.

38. On 06.09.2017, this Tribunal had considered the report submitted by the Advocate Commissioner viz., Mr. T. Sai Krishnan and thereafter, directed the Assistant Manager (Law) of Kamarajar Port Limited who was present in Tribunal to remove the remaining dredged material and ash content and ensure that the original soil layer is retained and report the same with photographs on the next hearing date to enable the mangroves to regenerate in that area. Further, this Tribunal had also considered the Preliminary Report submitted by the Expert Committee appointed and considered the submissions made by Dr. Sultan Ahmed Ismail, Director, Eco-science Research Foundation, Chennai one of the committee member who was present in Court about the further work to be done in that area.

39. Vide Order dated 11.09.2017, after considering the submissions made by Dr. Narasimhan, Retired Professor of Madras Christian College, Tamabaram and Dr. Balaji Narasimhan, Professor, IIT - Madras, Department of Hydrology (Expert Committee members appointed by this Tribunal), this Tribunal permitted the organization called M/s. Sakura Geo Information Software Research Private Limited for assisting them in carrying out the work and directed to consider the proposal given by M/s. Sakura Geo Information Software Research Private Limited, M/s. STRATUS Environment Inc., Chennai and M/s. Tamil Nadu Test House Pvt. Limited, Chennai and directed the TANGEDCO to accept the proposal and engage the said organization for the purpose of carrying out the work as suggested to be carried out by the Expert Committee. On that day, this Tribunal had also considered the submissions made by the

Expert Committee that M/s. Kamarajar Port Limited also dumped dredged materials in the area which affected the natural growth of mangroves which was subsequently removed and directed the Expert Committee to give their recommendations regarding the remediation process particulars relating to regeneration of mangroves and possibility of inundation with salt water during high tide which can be utilized to the maximum extent for the development of the mangroves in that area and also considered the report given by the Experts regarding the diversity of salt marshes of Ennore and Puttapalli and directed the Experts to include the same also in the final report. This Tribunal, by this order, directed M/s. Kamarajar Port Limited not to carry out any other activity except the routine maintenance work and further orders will be passed after receipt of the final report by the Experts.

40. As per order dated 21.12.2017, the Judicial Member, who alone was available had considered the various reports submitted by the Joint Committee as well as the State Pollution Control Board and also considered the impact of dumping of waste affecting the water quality and causing respiratory and thermal diseases and directed the TANGEDCO to provide necessary protective measures to the workers who were engaged in removal of fly ash in that area. By this order, this Tribunal had also directed the TANGEDCO to expedite the process of replacing the existing ash pipeline.

41. The matter was again taken up on 20.05.2019, and on that day, after considering the various orders passed earlier, this Tribunal directed a study to be conducted by an Expert body regarding the present status and the manner in which the fly ash is being disposed of by the polluting unit and assessment of damage caused to the environment and the remedial measures to be taken for restoring the damage caused to the environment and appointed a Joint Committee comprising of (i) Central Pollution Control Board, (ii) Indian Institute of Technology (IIT), Madras and (iii) Tamil Nadu Pollution Control Board and they were directed to inspect the unit and ascertain the present status of the unit in respect of fly ash disposal, damage caused to the environment, to the area in question and its surrounding, cost of restitution and assess the damage

caused to the environment on account of illegal act committed by the above unit. The committee was also directed to consider the earlier report submitted by another expert committee appointed by this Tribunal for the purpose of guidance for doing the exercise in the manner in which it had to be done. The expenses for conducting the study was directed to be met by the polluting unit, the Thermal Power Plant and directed them to give logistic support to the members of the Joint Committee in conducting inspection and preparation of the report. The CPCB was given the option to co-opt any expert person whom they feel necessary for the purpose of complying with the directions of this Tribunal in assessing compensation and also the remedial measures for restoration of damage caused to the environment. The applicant was also granted permission to make their submissions before the Joint Committee.

42. Vide Order dated 14.10.2019, the State Pollution Control Board was directed to file a detailed report regarding the action taken on the basis of the findings of the committee against the unit for violation found including imposition of compensation as directed by the Principal Bench of National Green Tribunal, New Delhi in *Shantanu Sharma Vs. Union of India & Ors. (Original Application No.117 of 2014)*, *Anupam Raghav & Anr. Vs. Union of India & Ors. (Original Application No.499 of 2014)* and *Sandplast India Limited & Ors. Vs. MoEF&CC & Ors. (Original Application No.102 of 2014)* dated 20.11.2018.

43. The matter was again taken up on 18.11.2019, and on that day, this Tribunal had considered the status report submitted by the Tamil Nadu Pollution Control Board received through e-mail dated 16.11.2019 narrating the compliance and non-compliance of the Thermal Power Plant in question which was extracted in Para (2) of the order which reads as follows:-

S. No	Recommendations of the committee	Units action taken reply dated: 11.11.2019	Observation noticed during the time of inspection on 11.11.2019.
(1)	The unit shall remove the fly	As suggested by the committee	Not complied.

	<p>ash deposited on the land in and around the ash carrying pipeline and ash disposed inside the premises quantity of 395979 Tonnes and shall store in temporary storage area and/ or sent directly for beneficial purposes</p>	<p>formed by Honourable NGT, a separate land area has to be identified for temporarily storing the Wet ash. In this regard a letter has been addressed from Chief Engineer/NCTPS-I to Chief Engineer/Civil Design/Chennai- 02 (Vide Lr.No.CE/NCTPS-I/ SE/ CM /EA/ F/D.553/19, dt.03.10.19 for identifying a land for the establishment of one more ash dyke in addition to the existing ash dyke. Since the existing ash dyke Level reached to minimum free board level.</p>	<p>The unit has not procured or identified temporary yard for the disposal of ash deposited on the land in and around the ash pipeline and ash inside the premises recommended by committee which is shown in the following Figures.</p>
(2)	<p>The unit shall completely remove the ash deposited in Buckingham canal for a quantity of 93096 m3 Tonnes and shall store in temporary storage area and/ or sent directly for beneficial purposes</p>	<p>The desilting work in the B' canal is being carried out by PWD. TANGEDCO prepared an estimate and is under sanction for removing the desilted ash deposited on bunds of B' Canal for clearing. The work will be completed</p>	<p>Being Complied. The desilting work is being carried out in Buckingham canal by PWD as their regular work. The Ash collected from Buckingham canal is dumped on the banks of Buckingham canal as shown in the following Figures. However the unit has furnished an estimate amount of Rs.16,07,750/- for the removal of ash deposited in the Buckingham canal which is under sanction.</p>

(3)	<p>The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 325000 Tonnes from NCTPS main gate to KPL main gate for a length of 2.4Kms for a average width of 130m and depth of 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes.</p>	<p>As directed by the Honourable NGT PWD has submitted an estimate for desilting of Kosathaliyar river for an amount of Rs.28.5 Crores and B' Canal for an amount of rupees 66 Lakhs.</p> <p>The above estimate has administratively approved by CMD / TANGEDCO</p> <p>Dt:12.09.2019.</p> <p>To transfer the fund to PWD, a letter has been addressed 25.10.2019 seeking the mode of payment.</p>	<p>Not complied.</p> <p>The unit has not removed the ash deposited in Kosathaliyar river as per the committee recommendation. However, the unit has furnished a copy of approval accorded by the CMD TANGEDCO for a sum of Rs. 66.23 Lakhs for desilting of B' Canal & 28.5 Crores for Dredging the Back waters of the Kosathaliyar river.</p>
(4)	<p>The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 468000 Tonnes from Ennore creek to NCTPS-I main gate for a distance of 1.7Km and from KPL Main gate to Kattupalli downstream for a distance of 1.9 Km for a average width of 130m and depth 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes.</p>	<p>The silt formation deposited in the upstream of the Kosathaliyar river is very far away from the NCTPS-I ash slurry pipeline crossing of the river about 1.5 to 3 Km. There is no possibility of ash deposited in the upstream of the river.</p> <p>Further, silt formation mentioned by the committee may due to tidal action of the sea , rain water flow , sewage and Industrial/Domestic waste from the surrounding areas.</p>	<p>Not complied.</p> <p>The unit has not removed the ash deposited in Kosathaliyar river as per the committee recommendation.</p>

(5)	The unit shall replace the existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a total length of 20523m length.	The replacement of Ash Slurry Disposal Line No.1 with ETPS pipe lines for the entire length of 5129 meters, tender was finalized and work is under progress and expected to be completed by Procurement of Cast Basalt Lined pipe lines for 15,394m length towards replacement of pipe line Nos. 2, 3 & 4 tender is under process and to be completed during Oct'2020.	Not Complied. The unit has not replaced existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a total length of 20523m and during inspection it was noticed that the Bottom ash slurry from NCTPS stage -I is being pumped in to Primary ash pond-II through 4 Nos. of ash slurry pipe lines. Out of 5 Nos. ash slurry pipe lines 4 nos. are in service and replacement of pipe line no.1 is in progress as stated by the unit. Ash slurry pipe lines are shown in the following Figures. It was reported that the indent has been raised for the replacement of pipe line Nos.2,3&4 and the replacement works will be completed before October 2020.
(6)	The unit shall provide impervious Toe drain around the Ash dyke for a length of 6000m for the collection of seepage water and to be existing Recovery water sump and reuse for Ash slurry making	An amount of rupees 18.17 Lakhs towards the Project wing/TANGEDCO consultancy for Comprehensive Rehabilitation/Re-construction and raising of NCTPS ash dyke visited the site on 31.08.2019. The soil exploration test has also been completed and	Not complied. The unit has not provided impervious Toe drain around the Ash dyke in the following Figures. However the unit has reported that the technical consultancy work for the rehabilitation / reconstruction and raising of Ash Dyke Bund has been entrusted to IITM. It was reported that the team of IITM has visited the Ash Dyke Bund on 31.08.2019 and an impervious toe drain around the Ash Dyke will be provided within one year from the date of receipt of report from an IITM.
(7)	The unit shall provide 6000 Nos. of trees in and around the ash dykes and grow it well so as to prevent the dust emission from the ash dyke.	Request has been made to the District Forest Officer, Teynampet, Chennai by the SE/CM/NCTPS-I (vide Lr.No. SE / CM /	Not fully complied. The unit has planted 50 Nos. of tree saplings in the eastern side of the primary ash pond-II as shown in the following Figures. However it was reported that the unit

		<p>NCTPS-I / F.49 / D.473/19,dt.16.09.19)</p> <p>for inspecting the ashdyke area and supply of 5000 Nos of Saplings that can be planted in the ash dyke area.</p> <p>In response to that, the staff of Forest Department visited the site on 07.11.2019 and they informed that they will plant the saplings around the ash dyke after discussing with their higher officials.</p> <p>In the meantime an area around the Ash has been cleared made ready for the length of about 3500m and nearly 110 Nos of saplings have planted (enclosed).</p>	<p>has taken steps for the plantation of tree saplings around the Ash Dykes as recommended by the committee through District Forest Officer, Chennai District for which letter received from the unit.</p>
(8)	<p>shall make existing ash ponds so as to prevent the seepages as per the consultancy of IITM, Chennai</p>	<p>An amount of rupees 18.17 Lakhs already been the Ennore wing/TANGEDCO towards the Comprehensive Rehabilitation/Re-construction and raising of NCTPS ash in the site visited the site exploration test completed and report is awaited.</p>	<p>Not complied. The unit has not made existing ash ponds (Primary Pond-II & Secondary Pond) impervious so as to prevent the seepages. The unit is still disposing the ash slurry in the pervious ash ponds as shown in the following Figures.</p>

(9)	The unit shall obtain technical study report from IITM Chennai for the remedial measures such as strengthening of Ash Dyke and other related works in Ash dyke and implement the recommendations	After receipt of the consultancy report from IITM, Chennai, the bund will be An amount of rupees 18.17 Lakhs has already been paid to IITM on 25.06.2019 by the Ennore SEZ Project wing/TANGEDCO towards the technical consultancy for Rehabilitation/Re-construction and raising	Being complied. The unit has reported that the technical consultancy work for the rehabilitation / reconstruction and raising of Ash Dyke Bund has been entrusted to IITM. It was also reported that the team of IITM has visited the Ash Dyke Bund on 31.08.2019 and the remedial measures such as strengthening of Ash Dyke and other related works in
		NCTPS ash dyke. The team of IITM has visited the site on 31.08.2019 and the soil exploration test also completed and the report is awaited. After receiving the report the work will be commenced and completed within 1 year from the date of receipt of report.	Ash dyke as recommended by the committee will be completed and commenced within 1 year from the date of receipt of IITM report.
(10)	The unit shall provide sufficient number of piezometric wells/monitoring wells around the dykes and upstream of the industry to monitor the ground water quality	Quotations have been received from various firms for carrying out the work for providing Piezometric wells / monitoring wells around the Ash dyke at 6 locations for monitoring the ground water quality. The work will be completed within 2 months.	Not complied. The unit has not provided piezometric wells/monitoring wells around the ash dykes and upstream of the industry to monitor the ground water quality.
(11)	The unit shall bring back Recovery water Pump No.3 in to service and to replace the existing worn-out Recover water pipe Line No.1 for a entire length of 2815 m	Decanted collected from the secondary pond is being re-circulated and utilized for ash slurry mixing in Bottom Ash Hopper and cleaning purpose in ESP areas. In Recovery Water Pump houses (RWP) 4 Nos pumps are installed for pumping the decanted water, out of which 2 nos are in service. Normally 2 Nos of RWP is sufficient for recirculation maintain the pond level. In Recovery Water Pump	Not complied. The unit has not yet rectified the repair in recovery water pump no.3. During inspection it was noticed that the recovery water pump No.2 is also not in service as showing in the following figures. The unit has not replaced existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a total length of 20523m and during inspection it was noticed that the Bottom ash slurry from NCTPS stage -I is being pumped in to Primary ash pond-II

		No.2 minor repairs have to be done. For Pump were finalized carrying out materials.	through 4 Nos. of ash slurry pipe lines. Out of 5 Nos. ash slurry pipe lines 4 nos. are in service and replacement of pipe line no.1 is in progress as stated by the unit. It was reported that the indent has been raised for the replacement of pipe line Nos.2,3&4 and the replacement works will be
(12)	The unit shall modify existing three Electrostatic precipitator or attached the 3 No. revised norms of particulate matter emission 100 mg/m3 as per MOEF & CC notification dated 07.12.2015	UNIT- I&II Administrative Approval has been accorded for R&M of ESP in Unit I&II on 18.09.2019 for amount of Rs. 82.50 Crores. Indent preparation under progress. Unit III: Administrative Approval has been accorded for R&M of ESP in Unit III on 09.02.2019 for amount of Rs. 41.25 Crores. Tender Specification to be prepared by SE/P&A vide Indent No. 29/ dt. 10.0.2019. Approved in indent committee meeting No. 224/ Dt. 29.08.2019. Tender specification preparation is under process. Time frame was issued by the CPCB vide notification dated 11.12.2017 for retrofitting ESP of Unit I is by 31st of December, 2022, for Unit II is	Being complied. The CPCB has directed vide dated:11.12.2017 under section 5 of the Environment(Protection) Act 1986 to the unit to retrofit / install Electrostatic precipitators (ESP) by December 31,2022, June 30,2022 and March 31, 2022 for unit's I, II & III respectively so as to comply with the revised norms of particulate matter

		30 th June, 2022 and for Unit III is by 31 st March, 2022.	emission 100 mg/m ³ as per MOEF & CC notification dated 07.12.2015. It was reported that the administrative approval has been accorded for R&M of ESP in Unit 1, 11 & the same will be completed as directed
(13)	The unit shall replace the worn-out boiler roof tubes in Unit-II and Unit-III so as to arrest the discharge of fugitive emission.	The worn out sagging boiler roof tubes already been replaced in Unit-I during January 2019 and in Unit II the roof tubes have been replaced during August 2019. On inspection during overhaul of Unit III in August 2019 no sagging of roof tubes have been observed and hence replacement of roof tubes are not required. However minor leaks in the tubes have been rectified.	Complied. The unit has replaced the worn-out boiler roof tubes in unit – II & III so as to arrest the discharge of fugitive emission.
(14)	The unit shall develop Mangroves plantations and other costal vegetation in both sides Kosasthaliyar river banks, Buckingham canal and nearby by affected coastal areas, in consultation with M.S.Swaminathan foundation (or) Annamalai University.	Only after removal of ash from Kosasthaliyar river and B' Canal area the plantation	Not Complied. The unit has not developed Mangroves plantations and other costal vegetation in both sides Kosasthaliyar river banks, Buckingham canal and nearby by affected coastal areas. However it was reported that the plantations will be developed after removal of ash deposited.
(15)	The unit shall ensure complete utilization of fly ash as per the Ministry of Environment, Forest & Climate Change fly ash notification of 2016.	Due to the expiry of MOU between the cement companies and TANGEDCO and due to lesser demand, the utilization of fly ash was in the falling trend from the year 2014-2015 (44.82%) and further due to installation of new plants of higher capacity in vicinity, the sale of fly	Being Complied. However, the unit shall ensure that the fly ash generated is completely utilized for further beneficial use without mixing in the bottom ash generated.
(16)	The unit shall carry out ground	Recently the committee appointed by the	Not complied. The unit has

<p>water, surface water monitoring once in six months through any NABL accredited laboratory in the affected areas. Further detailed study may be carried out by Ground water department or any reputed institution on the status of ground water, surface water quality once in year</p>	<p>Honourable NGT has conducted the ground and surface water survey in Aug' 2019. The next survey will be conducted during the month of March 2020.</p>	<p>not yet carried out ground water & surface water study through reputed institution and not furnished to the Board.</p>
---	---	---

It is further submitted that the compliance status of latest consent order conditions issued vide Proceeding dated 25.06.2014 are submitted as follows: -Under Air Act:

1.	<p>The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyer and junction towers.</p>	<p>Complied. The unit has maintained the coal handling conveyer system and junction towers and ensures that no coal dust is accumulated in the adjacent area of coal handling conveyer and junction towers.</p>
2.	<p>The unit shall operate and maintain Water sprinkling and cyclone separators provided at junction towers to control the dust emission.</p>	<p>Complied. The unit has operated and maintained water sprinkling and cyclone separators provided at junction towers to control the dust emission junction towers to control dust emission.</p>
3.	<p>The unit shall ensure the APC measures provided in the coal crushing area shall be under working condition so as to control the dust emission.</p>	<p>Complied. The unit has ensured the APC measures provided in the coal crushing area is under working condition so as to control the dust emission.</p>
4.	<p>The unit shall install Online Stack</p>	<p>Partially Complied.</p>

NGT

	<p>monitoring system for SO₂, NO_x and PM and to connect the same to CARE Air Centre, TNPCB, Chennai within three months.</p>	<p>The unit has provided Online Continuous Emission Monitoring System (OCEMS) for unit I, II, III of three stacks to monitor the parameters PM, SO_x, NO_x which was in operation (Except SO_x & NO_x in unit I) at the time of inspection and the same is connected with CAC, TNPCB, Guindy and CPCB server. It was reported that in the SO_x, NO_x sensor in unit-I, was not working which will be rectified within three months. The report of analysis of Stack Monitoring survey conducted through Board's lab on 15.04.2019 reveals that the parameters SO₂ in unit-II Boiler stack alone exceeded the stack emission standards prescribed by the MoEF & CC Notification dated 07.12.2015.</p>
	<p>5. The Unit shall provide continuous ambient air quality monitoring station and the same shall be connected to Care Air Centre TNPCB, Chennai within three</p>	<p>Partially Complied. The unit has provided Continuous Ambient Air Quality Station (2Nos) for the parameters PM₁₀, PM_{2.5}, SO_x & NO_x at the following location which are connected with the CAC, TNPCB, Guindy and CPCB server. NCTPS- stage-I Substation which is under operation from 05.03.2018 TNEB Staff Quarters (Vallur Camp) -Not in operation since one year due to fire incident.</p>
	<p>6. The unit shall operate the Air Pollution Control measures efficiently and continuously to achieve the National Ambient Air Quality Standards as per MOEF Notification.</p>	<p>Complied. The unit has provided the air pollution control measures such as Electrostatic Precipitator for Boiler, Dust Extraction and Dust Suppression for coal handling area which are being operated and maintained by the unit regularly so as to achieve the NAAQS standards. The unit has provided sampling port hole for the Boiler stacks to carry out the stack monitoring. The report of analysis of Ambient Air Quality Survey conducted through Board's lab on 15.04.2019, reveals that the parameters (Except PM₁₀ exceeded in one location due to civil works carried out nearby) are within the NAAQ Standards prescribed by the Board.</p>

7.	The unit shall conduct AAQ/SM survey through TNPC Board and furnish the survey report to Board within 3 months.	
8.	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	<p>Complied. As on July 2019 to September 2019 1277</p> <p>Nos. tree saplings were planted and for the month of October 2019 - 300 Nos. trees were planted. So far 17177 Nos. trees are available in NCTPS-I. Further action is being taken to plant trees periodically at 200 tree saplings per month. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 164 Acres (30% of the total area), hence, the shall further develop green belt of remaining 34 Acres.</p>

- Under Water Act:

1.	The unit shall complete and commission the common sewage treatment plant for Stage-I & Stage-II within a month time.	<p>Complied. STP provided at Stagedisunder operation.</p>
2.	The unit shall ensure that no water shall be discharged from the Ash pond or through the canal linking the pump house and ash pond to Ennore creek either directly or indirectly under any circumstances.	<p>Partially Complied. Ash pond recovery water is being utilized for bottom ash slurry preparation. unit has to improve the bottom ash slurry collection, recovery and disposal of recovery water including ash ponds as recommended by the committee.</p>

3.	The unit shall reconstruct/revamp existing spillway structure to ensure uniform distribution of water from the cooling water canal in to Encore creek to preserve the marine eco system within 6 months time.	Not Complied. Tender has been awarded by Stage II for widening of Hot water channel. Proposal reconstruct the existing spillway structure to ensure uniform distribution of water has been evolved by stage II which is under progress.
4.	The unit shall reconstruct/revamp the pipe line carrying the ash slurry to the ash pond and to ensure that no ash slurry shall be shed in to creek area under circumstance.	Not Complied. The unit has not replaced existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a total length of 20523m and during was noticed that the Bottom ash slurry from NCTPS stage -I is being pumped in to Primary ash pond-II through 4 Nos. of pipe lines. Out of 5 Nos. ash slurry pipelines 4 nos. are in service and replacement of pipe line no.1 progress as stated by the unit. It was reported that the indent has been raised for the replacement of line Nos.2,3&4 replacement works will be completed before October 2020 The unexpected line leaks occurring in the slurry lines are being attended then and there.
5.	The unit shall take immediate action for the removal of fly ash accumulated over the roads and around the ash dyke area.	The unit shall take immediate action for the removal of fly ash accumulated over the roads and around the ash dyke area.
6.	The unit shall conduct Marine Impact Study at where the cooling is being discharged in to creek/sea and furnish thereport within three months.	Not Complied. Marine Impact Study not yet conducted.
7.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyor and junction towers.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyor and junction towers.

8.	<i>The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust be accumulated in the adjacent area of coal handling conveyor and junction towers.</i>	<i>The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyor and junction towers.</i>
9.	<i>The unit shall remit the balance water access immediately.</i>	<i>The unit has not remitted the balance water cess.</i>
10.	<i>The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.</i>	Complied. <i>As on July 2019 to September 2019 - 1277 Nos. tree saplings were planted and for the month of October 2019 300 Nos. trees were planted. So far 17177 Nos. trees are available in NCTPS-I. Further action is taken to plant trees periodically at 200 tree saplings per month. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an area of 130 Acres.</i> <i>The green belt to be developed by the unit is 164 Acres (30% of the total area), hence, the unit shall further develop green belt of remaining 34 Acres.</i>

44. The State Pollution Control Board assessed the compensation of Rs.16.461 Crores and wanted this Tribunal to impose compensation, but this Tribunal reiterated the responsibility of the regulating authority to take action against the erring units in accordance with law which includes imposition of environmental compensation which must take note of the cost required for restoration of the damage caused to the environment and prosecution in appropriate cases. This Tribunal also expressed its displeasure regarding the lethargic attitude on the part of the regulating authority in not taking stringent action against the violator, in spite of the fact that violations were still continuing and most of the recommendations and directions earlier issued were not complied with by the Thermal Power Plant. It was also mentioned in the order that there was no action plan prepared either by the polluting unit or by the

regulating authority regarding the mechanism by which the remediation measures could be taken and also assess the damage caused to the environment as such because of the dumping of fly ash in the water body and canal and also keeping it for a longer time on ground. So, the State Pollution Control Board was directed to take action against the erring unit including imposition of environmental compensation. This Tribunal also considered the submissions made by the learned counsel appearing for M/s. Kamarajar Port Limited that they have already removed the damaged soil 1 ½ years back and also considered the submissions made by the learned counsel appearing for the applicant that no assessment has been made by the authorities regarding the damage caused to the soil and whether remediation methods adopted by M/s. Kamarajar Port Limited is sufficient to restore the damaged soil and environment to the original condition, especially in respect of mangrove forest in that area. The Committee earlier appointed by this Tribunal by order dated 20.05.2019 was directed to inspect the disputed area in the possession of M/s. Kamarajar Port Limited and ascertain as to whether any damage has been caused to the soil on account of violations committed by M/s. Kamarajar Port Limited and whether remediation methods adopted by them were sufficient to remedy the situation including damage caused to the mangroves and if not, what were the further remediation measures that have to be undertaken by them and also assess the environmental compensation for the past violation and damage caused to the environment and the amount required for restoring the damaged area to its original position and submit a report. The Joint Committee was directed to evolve an action plan in consultation with the Thermal Power Plant or any other Expert body as to how the damage caused to the environment could be remedied and mitigated. The Joint Committee was given liberty to co-opt any expert for that purpose.

45. Pursuant to the directions issued by this Tribunal, the Joint Committee filed the report through the Central Pollution Control Board and vide Order dated 20.01.2020, this Tribunal had considered the Joint Committee report and the portion relating to M/s. Kamarajar Port Limited was extracted in Para (5) of the order which reads as follows:-

“FINDING OF THE COMMITTEE

a. Assessment of Quantity of Dredged Materials Dumped details obtained from KPL

The total quantity of dredged material from CB-3 & CB-4 is 26,43,624 Cu.m, out of which 25,00,851 Cu.m is disposed on shore and 1,42,773 Cu.m is disposed off shore. Out of 1,42,773 Cu.m of dredged material disposed on land, 73,113 Cu.m was dumped in the CRZ notified area at nine different locations. The remaining quantity of dredged material was dumped in the land belonging to M/s Kamarajar Port Ltd within port area. In this regard, the Hon'ble NGT vide order dated 15/11/2016 directed M/s Kamarajar Port Ltd to remove the dumped dredged material lying in the CRZ area within 4 weeks and it should not be disposed in areas falling under CRZ. In response to the Hon'ble NGT order, the port authorities have awarded tender to remove 73,200 Cu.m of dredged materials dumped in KPL land falling under CRZ within a period of one month starting from 10.01.2017.

The port authority has submitted the document for proposed quantity of dredged material dumped at various locations (Part 1 to part 9) in the CRZ notified area is 73,113 Cu.m whereas the quantity mentioned while issuing the e-tender for removal of dredged material is 73200 Cu.m. Further they have submitted the document for quantity removal of dredged material dumped at various locations in the CRZ notified area is 83,533 Cu.m as per trip sheet submitted by the contractor and the removal of dredged material from old dump sites to new dump site is commenced on 10.01.2017 and completed on 10.03.2017.

b. Status of dumpsites by physical verification and using satellite images

To find out whether the dredged material is lying within the CRZ area, the committee visited all the dumpsites (part 1 to 9 and also new dumpsite). Historical satellite imagery is used to find out whether dredged material is removed and whether any mangroves are lost due to dumping/handing of dredged material at this location. The details of each dumpsite and current status based on satellite images are given below:-



NGT

Sl. No	Dumpsite	Geo-coordinates	Extent of area used for Dumping	Quantity of dredged material removed	Present status
			As per records available with M/s KPL		
1	Part 1	13°14'47.9"N 80°18'59.8"E	22361 Sq.m	24462 m ³	No heaps of sand or silt and present in site. Growth of mangrooves has started.
It is observed from satellite imagery that mangrooves were present in the dumpsite part 1 before dumping of dredged material and after dumping of material during 2016, the mangrooves in the area is lost. From historical satellite images it is observed that the dumping has taken place by February 9, 2016 and though measures has been taken to remove the dumped material but from satellite images, it is seen that the area is not fully cleared					
2	Part 2	13°15'0.12"N 80°18'58.48"E	3617 Sq.m	4041 m ³	As per the historical satellite imagery, the dumping is noticed during February 09, 2016 and cleared during 25-07-2017. The mangrooves may be lost due to dumping. Currently, the area of the dump appears as a patch of land and plantations has not developed as in the adjoining areas.
3a	Part 3	13°15'3.40"N 80°19'8.21"E	29919Sq.m (15938 Sq.m + 10074 sq.m + 3907 Sq.m +)	35000 m ³	Sandy deposition observed during visit. Mangrove Density was very thin in the area.
Based on the historical satellite images, the first dump is observed during February 9, 2016 and considering the latest satellite images of 2018 & 2019, it is noticed that the dredged material is not completely removed from dumpsite part 3					
3b	Part 7	13°15'38.6"N 80°19'20.6"E	10074 Sq.m		Dredged material is still found lying in the site. (The total quantity is 35000 M ³ including dumpsite part 3, 7 & 8)
3c	Part 8	13°15'53.35"N 80°19'31.87"E	3907 Sq.m		The dump is cleared during November 2017. Mangrooves may be lost due to dumping.
It is observed from historical satellite imagery, the dumping is noticed during February 09, 2016 and cleared during 8.11.2017. The mangrooves may be lost due to dumping.					
4	Part 4,5 & 6	13°15'28.0"N 80°19'22.3"E	6260 Sq.m (B1-878 Sq.m, B2-2254 sq.m, B3-128 sqm)	8310 m ³ (B1-4477, m ³ B2 - 3658m ³ , B3-175 m ³)	Traces of dump are still found in the site. Plantation in the site is very thin. Fly ash deposition is observed

5	Part 9	13°15'55.25"N 80°19'32.55"E	1928 Sq.m	1300 m ³	Mangrooves may be lost due to dumping. Most of the dump is cleared.
6	New dumpsite c .	13°15'24.21"N 80°18'33.74"E	361152 Sq.m	73,113 Cu.m	As the satellite images, it is clear that M/s KPL has Transferred the dredged material from five old dumped site. dumped site

Method of Soil Sampling and Analysis

Soil & sediment samples were collected from the dumpsites at following locations

Soil/ samples	Sediment	One Surface Soil samples were collected from every dumpsite. Sediment samples at each dumpsite at a depth of 0 cm, 25 cm, 50 cm, 75 cm and 100 cm below ground level at centre of dumpsite and in boundaries. <ul style="list-style-type: none"> • North: four sediment samples collected at a depth of 0cm, 25cm, 50 cm, 75 cm and 100 cm below ground level • South: five sediment samples collected at a depth of 0cm, 25cm, 50 cm, 75 cm, 100 cm and 125 cm below ground level • East: five sediment samples collected at a depth of 0cm, 25cm, 50 cm, 75 cm, 100 cm and 125 cm below ground level • West: four sediment samples collected at a depth of 0 cm, 25 cm, 50 cm, 75 cm and 100 cm below ground level • Centre: five sediment samples collected at a depth of 0 cm, 25 cm, 50 cm, 75 cm, 100 cm and 125 cm below ground level
Sample collection at the boundaries		At every dumpsite, four soil surface samples were collected from the boundaries at NE, NW, SE & SW directions so as to understand the soil characteristics.
Reference samples		Three reference Soil samples were collected at sites at a distance of 400 m away from dredged material part 1 dumpsite center point, 100 m away from dredged material part 2 dumpsite center point, 100 m away from dredged material part 3 center point, bottom ash collected from NCTPS ash dyke and fly ash collected from the NCTPS. Also one reference soil sample was collected 9 Km away from M/s.KPL (location photo is enclosed in Annexure F). However the sample collected from 9 Km is taken as a reference sample to that region.
Fresh dredged material		The fresh dredged materials were collected at inside of the KPL and also dredged materials dumped in the new dumpsite were analyzed for all parameters to understand the characteristics of dredged material.

Also the soil/sediment samples were collected inside the port area such as location of north yard container (location 1) and railway track west (location 2) on 13.12.2019 for analysis. The port authority has informed that as part of dredged open excavated materials were transported from container terminal area to old dredged material dump sites (part 1 to part 9 except part 3) and the reclaimed dredged material during the phase I port construction was removed to facilitate railway container yard and dumped in the old dredged material dump site part 3.

The samples were analysed for following parameters:

Physical Properties of dredged Marine Soil: Particle size distribution using sieve analysis

- Gravel (>2 mm)

- Sand (2 – 0.075 mm)
- Silt (0.075 – 0.002 mm)
- Clay (<0.002 mm)
- Moisture Content (%)
- Specific Gravity

Chemical Properties

- Loss on Ignition (%)
- pH
- Conductivity
- Aluminium Oxide (Al₂O₃)
- Calcium Oxide (CaO)
- Iron Oxide (Fe₂O₃)
- Potassium Oxide (K₂O)
- Magnesium Oxide (MgO)
- Silicon Dioxide (SiO₂)
- Arsenic (As)
- Chromium (Cr)
- Copper (Cu)
- Lead (Pb)
- Nickel (Ni)
- Zinc (Zn)
- Total Organic Carbon (TOC)
- Boron

RESULTS AND DISCUSSION

a) Physical and Chemical Analysis

The results of physical and chemical characteristics of the soil samples collected from dredged material dumpsites from part 1 to part 9 & new dumpsite were compared with the reference Soil samples collected at sites at a distance of 9 Km away from the M/s.KPL, bottom ash collected from NCTPS ash dyke. The complete chemical analysis result has been provided.

The average concentration of the chemical parameters in the soil samples collected in each dumpsite is presented in Table 1 to compare and understand the soil characteristics, soil samples were collected from a reference site around 5Km away from KPL, ash from fly ash dyke pond and dredged material is present in Table 2. Copy of the Sieve analysis results have been enclosed with the report.

Table 1: Average concentration of chemical characteristic of soil samples collected from dumpsites

Parameter in mg/Kg except pH	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8	Part 9	New dump site
No. of samples	28	18	60	8	20	15	21	16	4	43
pH	6.73 to 7.96	6.96 to 7.88	7.08 to 9.69	6.9 to 8.3	7.31 to 8.33	7.07 to 8.03	6.85 to 7.82	7.26 to 8.24	7.16 to 7.82	7.14 to 8.31
B	0.5	1.0	1.8	0.6	1.8	2.3	17.8	2.2	3.9	1.0
Mg	2054.2	3061.0	2956.1	965.6	585.9	1568.1	7352.3	1704.8	1729.7	1478.7
Al	4582.2	7806.1	4322.0	1179.2	1638.2	4271.5	11130.4	2976.1	2914.1	1746.7
K	932.9	1983.7	867.7	105.2	101.3	509.4	3537.5	327.2	399.1	245.1
CaO	347.2	308.4	8798.9	1240.1	699.2	526.3	605.3	2984.6	4116.8	10933.0
CaCO ₃	656.9	550.4	15661.3	2213.3	1247.9	939.3	1080.3	5327.0	7347.6	20636.9

Cr	27.3	32.1	27.1	18.7	9.3	10.1	22.5	19.9	17.1	17.2
Fe ₂ O ₃	4907.9	7908.9	5437.6	3501.1	3228.3	8769.3	11182.6	6672.0	7134.4	3621.9
Fe	3432.8	5531.8	3803.3	2448.9	2258.0	6133.6	7821.7	4666.7	4990.1	2533.3
Ni	10.7	13.2	8.7	5.0	7.1	8.0	9.4	4.9	3.6	4.7
Cu	9.0	11.8	7.2	8.6	6.0	11.7	9.8	3.3	4.0	3.3
Zn	28.1	33.4	15.2	35.8	16.1	16.7	14.8	15.4	24.8	10.3
As	4.1	6.0	6.3	3.0	3.4	5.0	3.9	4.7	3.7	5.4
Pb	12.7	12.5	10.5	10.9	5.7	7.7	11.1	8.5	8.3	9.0

Table 2: Chemical characteristics of reference soil sample, dipond ash and dredged material.

Parameters	Unit	Reference Soil	Dipond Ash	Dredged Material
PH	-	6.87	6.78	6.85
EC	uS/cm	2220	127.5	312
Specific gravity	-	1.15	1.21	1.2
Moisture %	%	12.50	20.5	3.28
Loss On Ignition %	%	5.60	7.6	1.02
B	mg/kg	1.73	10.45	0.38
MgO	mg/kg	576.28	1581.34	1500.536
Al ₂ O ₃	mg/kg	1437.05	5059.12	1381.662
K ₂ O	mg/kg	405.86	239.00	141.287
CaO	mg/kg	72.98	1241.75	1696.066
CaCO ₃	mg/kg	130.25	2216.28	3027.148
Cr	mg/kg	2.97	4.79	66.914
Fe ₂ O ₃	mg/kg	1359.48	19610.86	2639.294
Fe	mg/kg	950.88	13716.77	1846.05
Ni	mg/kg	0.88	3.80	38.816
Cu	mg/kg	1.22	7.32	89.058
Zn	mg/kg	2.45	7.35	50.012
As	mg/kg	0.28	2.40	12.942
Pb	mg/kg	1.70	2.11	22.042
TPH	mg/kg	0.00	0.00	0.000

b. Details of damage caused to the soil and status of remediation

During the year late 2015 to early 2016, M/s KPL has dumped the dredged material on land at nine different locations falling under CRZ. In response to the Hon'ble NGT order, the port authorities have awarded tender to remove 73,113 Cu.m of dredged materials dumped in KPL land within a period of one month starting from 10.01.2017. Mechanical excavators were used to remove dumped material and lorries & tippers were used to transfer the material to new dumpsite. The new dumpsite is falling outside the CRZ notified area and it is a low lying area and it is identified as free trade Warehousing zone as per Master Plan of M/s KPL.

Elements such as Magnesium, Aluminium, Iron, Potassium, Chromium, lead and calcium are present in soil with very high concentrations in all dumpsites. The concentration of these elements is found in high concentrations at a depth of 100cm below the ground indicating that the metals have leached from the dredged material dumpsite to a depth of 100cm below the ground level. Chromium, lead, Nickel, copper and Zinc are present in higher concentrations in dredged material as compared to dyke pond fly ash and reference site. Similarly in all nine dumpsites these five elements Chromium, lead,

Nickel, copper and Zinc are present in concentrations more than reference material & fly ash indicating that the dumpsites are not fully cleared and dredged material is still lying within the CRZ notified area. Further from sieve analysis of the soil samples also it can be concluded that dredged material is still lying in dumpsites. High concentrations of chemical elements are observed in the boundaries and as well as in the centre of the dumpsite indicating that the area in the vicinity of the dumpsite are affected due to dumping of dredged material. The dredged material is also having high concentration of these elements and when it's dumped, it may have concentrated over a period of time and also leached into soil. It is ascertained that higher concentration of metals in dredged material and in dumpsites may be due to the following reasons.

1. Improper handling of raw material/ Coal/ iron ore/ products etc by M/s.KPL
2. Fly ash handling in the area by M/s.NCTPS
3. Ennore creek is a recipient of domestic wastewater (sewage, service wastewater from small scale engineering industries/ garages etc is in the vicinity to the port) from Chennai city. Marine outfall from the industries located in the Manali industrial estate is located in the vicinity of the port. Due to these reasons the soil near to the shore may be contaminated with chemical elements and heavy metals. During dredging operations in the port the same contaminated soil may have been removed and dumped on land.
4. In a radius of 10KM from the ennore creek, major large scale industries like M/s NTECL, TANGEDCO power plants, Kamarajar Port, HPCL, BPCL, CPCL, M/s Coromandel Fertilizers and manali & ennore industrial estates are present. The pollution in the creek/ soil may be a cumulative effect of large scale industrial activity in the region.

From satellite images and analysis results it is observed that the dredged material dumped in the nine dumping sites falling under CRZ notified area not yet fully removed. The mangroves in the area may be lost due to dumping in the nine sites. Currently, the mangroves in the area are very thin. The port authority has not adopted any scientific methods to remediate the soil or to restore the soil / mangroves to regional conditions. Though efforts were made to remove the dump falling with CRZ area, it is observed that it is not fully removed and dredged material is still lying in the CRZ area.

ENVIRONMENTAL COMPENSATION (EC) CALCULATION

The environmental compensation is estimated based on the pollution index method developed by Central Pollution Control Board in the guidelines "Policy for levying Environmental Compensation (EC) for Industries" Vide Order no.: B-400(S)/IPC-III/2019- 20/1162 dated 4thSeptember, 2019 and action plan to utilize the fund. The following equation is used for estimating environmental compensation:

$$EC = PI \times N \times R \times S \times LF$$

Where,

EC = Environmental Compensation in INRPI = Pollution Index of industrial sector
 N = Number of days of violation took place
 R = A factor in Rupees for EC
 S = Factor for scale of operation
 LF = Location factor

- i. **Pollution Index of industrial sector (PI):** The Tamil Nadu State Pollution Control Board has categorized this industry into Large Red category of industries. For red category of industries, average pollution index is 80.
- ii. **Number of days of violation (N):**
 The number of days for which violation took place is considered as the period between the day of violation observed/due date of direction's compliance and the day of compliance verified by CPCB/SPCB/PCC.
 Based on satellite images the non-compliance was observed on 09-02-2016 and the port authority has submitted to Hon'ble NGT that the dredged material were removed from all old dump sites and dumped at new dump site. But during inspection on 30.11.2019 it was found that the dredged materials are not fully removed in the old dump sites. Hence the number days is considered from 09.02.2016 to 30.11.2019 for calculating period of violation for estimation of EC. Based on the criteria, 1391 days is considered for calculation of period of violation for estimating EC.
- iii. **Scale of operation (S):**
 The industry is considered as large scale as per consent issued by TNPCB. Thus, scale of operation (S) for EC estimation is considered as 1.5.

iv. Location factor (LF):

The industry is located in North Chennai and the total population within municipal boundary and up to 10 km distance from the municipal boundary of the city is 10 million and above. Thus location factor (LF) is considered as 2 for EC estimation

v. Factor in Rupees (R) (Rs):

As per the environmental compensation estimation guidelines, factor of rupees may be minimum of Rs 100/- and maximum of Rs 500/-. The factor of rupees is considered as Rs.250/- for estimating environmental compensation for Port.

Considering the above factors, the environmental compensation is estimated as follows:

$$EC = PI \times N \times R \times S \times LF$$

Sl. No	Period of non-compliance	PI	S	LF	R (Rs)	N (days)	Environmental compensation (Rs)
1	09.02.2016 to 30.11.2019	80	1.5	2	250/-	1391	8,34,60,000
Rupees Eight Crores Thirty Four Lakhs Sixty Thousand Only							

It is also submitted that the environmental compensation shall be extended to the M/s.Kamarajar Port Ltd up to/till the compliance of removal of dredged material and remediation of the site completed to the regional condition.

RECOMMENDATIONS OF THE COMMITTEE WITH RESPECT TO M/s.KAMARAJAR PORT LTD:

Dredging activity is continuous and essential for the working of ports but the dredged material should be properly handled. If the dredged material is contaminated proper scientific environmental management plan should be adopted while managing the disposal of dredged material.

In the present case it is observed that the soil in the dredged material is highly contaminated with chemical elements and there by the dredged material dumping area is contaminated with high concentrations of Magnesium, Iron, Calcium, Potassium, Aluminium, Chromium, Lead, Copper and Zinc up to depth of 100 cm below the ground. Due to dumping the mangroves may have been lost in that area.

Since such high concentrations are present in the soil, there is a possibility of ground water contamination and also surrounding surface water bodies. Hence, it is submitted that the following direction shall be issued to M/s.Kamarajar Port Ltd.

- The identified dredged material dumpsites from part 1 to 9 and new dumpsite including dredged material storage area inside the M/s.Kamarajar Port Ltd required to be remediated with suitable scientific method by carrying our detail study by the reputed agencies/Institutions (soil remediation) after necessary approval from TNPCB and restored to the regional conditions.
- The unit shall carry out detailed studies such as status of soil/sediments, ground water and surface water body quality in the surrounding area.
- It is accessed that from the report of analysis of soil, approximate quantity of dredged material available in dumpsites part 1 to 9 is 22031 Cu.m. The unit shall physically remove this materials after conducting a detail study and find out the proper disposal method (or) reuse methodology for disposal of the material.
- The unit shall submit a time bound action plan to carry out detail study for remediation, to remediate the affected area so as to restore it to regional conditions and to find out the proper disposal method (or) reuse methodology for disposal of material available in the new dumpsite and inside the port area.
- To deposit 10% of the amount required for restoration of dredged dumpsites after calculation of cost for restore to the regional conditions as security deposit with TNPCB.
- To ensure that the dredged material available in the new dumpsite and inside the port area and further dredged material from sea are to be studied to find out the proper disposal method (or) reuse methodology and it should be handled after obtaining necessary approval from TNPCB and MOEF.

- *The unit shall remit the Environmental Compensation (EC) of Rs.8,34,60,000/- to TNPCB, calculated up to the period 30.11.2019. The unit shall also pay the environmental compensation when it is claimed up to the date of completion.*
- *As a corporate social responsibility, the Port authorities shall undertake mass plantation of mangroves and other plants specific to that region (33% of their total area).*
- *It is also submitted that all the other port activity in that region has to carried out detailed environmental management plan for handling dredged materials and approval has to be obtained from TNPCB before disposal."*

46. After considering the report submitted by the Joint Committee, this Tribunal directed M/s. Kamarajar Port Limited to pay an amount of Rs.8,34,60,000/- (Rupees Eight Crore Thirty Four Lakhs and Sixty Thousand only) as interim compensation within two months with the Central Pollution Control Board and the Central Pollution Control Board was given the liberty to utilize the amount for remediation process to restore the environment to its original position along with the cost to be incurred by the Project Proponent for this purpose. The Joint Committee was directed to conduct subsequent inspection to find out whether the entire dumped material had been removed and assess further environmental compensation till the dredged material was completely removed as directed by this Tribunal. As regards the remediation process was concerned, the Committee was directed to go into the question regarding the study to be conducted and suggest the nature of remedial measures to be taken to restore the damage caused to the environment and cost required for remediation. They had been given liberty to co-opt any further expert body for that purpose and they were directed to complete the study and submit a detailed report along with the timeline including both short-term measures and long-term measures required for implementation of the same.

47. As regards the non-compliance of M/s. North Chennai Thermal Power Station (M/s. NCTPS) was concerned, the observations made by the Joint Committee was extracted in Para (8) of the order which reads as follows:-

"Action Point 1:

The unit shall remove the fly ash deposited on the land in and around the ash carrying pipeline and ash disposed inside the premises for quantity of 395979 Tonnes and shall store in temporary storage area and/or sent directly for beneficial purposes.

967
~~955~~

Action Plan	Time period of work	
	Commencement	Completion
<p>➤ The ash Deposited on the land in and around the ash carrying pipe lines will be temporarily stored by the NCTPS in the following areas with geo thermal lining at the bottom and Bunds will be formed around the temporary storage areas as detailed below.</p> <p>Zone:(i) Southern and Northern side of ash pipe lines from Harbor road to Pulicat bridge area.</p> <p>On the southern side fly ash spread in area of 108549 m² to a volume of 58508 m³. On the Northern side fly ash spread in area of 28890 m² to a volume of 6247 m³.</p> <p>a) Estimation, approval, Tendering and awarding of work.</p> <p>b) Formation of Temporary storage of size at southern side of the ash pipeline between harbor road and pulicat bridge (length 60m X Width 60m X Height 3m)= 10800 m³</p> <p>c) Removal of ash from the above Zone.(i), Storing in the temporary storage, Lifting and utilization by beneficiaries.</p> <p>d), soil testing Study by competent Agency/ Institution and suggestion for remedial measures.</p> <p>e) Implementation of remedial measures.</p> <p>Zone:(ii) Southern and Northern side of ash pipe lines from Pulicat Bridge to Railway crossing Bridge area.</p> <p>On the southern side fly ash spread in area of 108428 m² to a volume of 34697 m³. On the Northern side fly ash spread in area of 122107 m² to a volume of 25032m³.</p> <p>a) Estimation, approval, Tendering and awarding of work.</p> <p>b) Formation of Temporary storage of size at southern side of the ash pipeline between Pulicat bridge and Railway crossing bridge (length 60mXWidth 60m X Height 3m)= 10800m³</p> <p>C) Removal of ash from the above Zone.(ii), Storing in the temporary storage, Lifting and utilization by</p>	<p>Dec -2019</p> <p>May-2020</p> <p>Sep-2020</p> <p>Jul-2021</p> <p>Dec-2021</p> <p>Dec-2019</p> <p>May-2020</p>	<p>Apr -2020.</p> <p>Aug-2020</p> <p>June-2021</p> <p>Aug-2021</p> <p>May-2022</p> <p>Apr-2020</p> <p>Aug-2020</p>

9/68

beneficiaries.	Sep-2020	June-2021
d) Study, soil testing by competent Agency/ Institution and suggestion for remedial measures.	July-2021	Aug-2021
e) Implementation of remedial measures.	Dec-2021	May-2022
<u>Zone:(iii)</u>		
Southern and Northern side of ash pipe lines from NCTPS stage-II pipe line to Railway crossing area.		
On the southern side fly ash spread in area of 23770 m ² to a volume of 5943m ³ .		
On the Northern side fly ash spread in area of 62265 m ² to a volume of 36814m ³ .		
a) Estimation, approval, Tendering and awarding of work.	Dec-2019	Apr-2020
b) Formation of Temporary storage of size at Northern side of NCTPS stage II ash pipe lines between Railway crossing bridge and Recovery water pump house (length 60mXWidth 60m X Height 3m)= 10800m³	May-2020	Aug-2020
C) Removal of ash from the above Zone.(iii), Storing in the temporary storage, Lifting and utilization by beneficiaries.	Sep-2020	June-2021
d) Study, soil testing by competent Agency/ Institution and suggestion for remedial measures.	July-2021	Aug-2021
e) Implementation of remedial measures.	Dec-2021	May-2022
<u>Zone:(iv)</u>		
A). Southern and Northern side of ash pipe lines at adjacent side of NCTPS stage-II Recovery Pump House area.		
On the adjacent side of recovery water pump house fly ash spread in area of 50028 m ² to a volume of 54530 m ³ .		
B). Western side of ash dyke adjacent to ash slurry pipe lines area.		
On the western side of ash dyke adjacent to ash slurry pipe line fly ash spread in area of 141858 m ² to a volume of 18442 m ³ .		
C). Western side dyke Cheppakkam ramp area.		
On the western side of ash dyke adjacent to Cheppakkam ramp area fly ash spread in area of 219221m ² to a volume of 150166m ³ .		
a) Estimation, approval, Tendering and awarding of work.	Jan-2020	July-2020

969
956

<p>b) Formation of Temporary storage of size at North eastern area of 90° bend of the pipelines in front of Zuari cement factory (length 60mXWidth 40m X Height 3m)= 7200m³</p>	<p>Aug-2020</p>	<p>Sep-2020</p>
<p>c) Removal of ash from the above Zone.(iv), Storing in the temporary storage, Lifting and utilization by beneficiaries.</p>	<p>Sep-2020</p>	<p>June-2021</p>
<p>d) Study, soil testing by competent Agency/ Institution and suggestion for remedial measures.</p>	<p>July-2021</p>	<p>Aug-2021</p>
<p>e) Implementation of remedial measures.</p> <ul style="list-style-type: none"> ➤ The TNRDC and NHAI have been addressed and also contacted in person to utilize the fly ash generated from NCTPS-I and they have obliged their request. TNRDC have assured to lift 10-15 Lakh Tonnes of ash for their upcoming project of Minjur to Kattupalli and the ash will be utilized by June 2021. ➤ The Chief Engineer State Highways & The Project Director, Chennai peripheral ring road were also addressed for lifting the fly ash and it will be followed up by NCTPS. ➤ Competent Agency /Institution will be addressed to test the soil quality after removal of the ash and the remedial measures will be taken as per the suggestions of the Agency /Institution. (Enclosed in Annexure I). 	<p>Sep-2021</p>	<p>Feb-2022</p>

Action Point 2:

The unit shall completely remove the ash deposited in Buckingham canal for a quantity of 93096 m³ Tonnes and shall store in temporary storage area and/ or sent directly for beneficial purposes

Action Plan	Time period of the work	
	Commencement	Completion
<p>The PWD has already commenced the dredging of the Buckingham canal and deposited the dredged ash and silt in the Banks of the canal. Technical sanction has been accorded by NCTPS for an amount of Rs.16 lakhs for removing the deposited ash from the banks of the Buckingham canal for a quantity of 9667m³. Administrative approval has been accorded to transfer an amount Rs.66 lakhs to PWD on Deposit Contributory Works (DCW basis) for desilting the Buckingham canal. Fund was transferred to PWD on 13.12.2019. After the dredging work is carried out by PWD, the ash removal work will be carried out by M/s.TANGEDCO (Enclosed in</p>		

970

Annexure II & III).		
➤ Removal of 9667 m ³ ash includes storing in a temporary storage area in existing ash dyke and used for beneficial purposes (tendering, awarding, commencement and completion).	Jan- 2020	Aug -2020
➤ Desilting the balance quantity of 83429 m ³ for length of 2.6km at a cost of Rs.66 Lakhs by PWD (Tendering, awarding, commencement and completion).	Mar-2020	Dec-2020
➤ Removal of desilted Ash of 83429m ³ includes storing in a temporary storage area in existing ash dyke and used for beneficial purposes. (Estimate sanction, tendering, awarding, commencement and completion).	Oct-2020	Mar-2021
➤ For removing silt from NCTPS-1 main gate to Ennore creek (1.67km), Letter has been addressed to PWD for carrying the work on DCW basis vide letter dated 16.12.19.		
➤ Receipt of estimate from PWD administrative approval by TANGEDCO includes payment.	Jan-2020	Jun-2020
➤ Desliting by PWD (sanction, tendering, award)	Jul-2020	Nov-2020
➤ commencement and completion	Dec-2020	Mar-2021
➤ Removal of desilted Ash of 15765m³ (The quantity was arrived based on the volume of ash desilted by PWD and kept in the banks of Buckingham canal) includes storing in a temporary storage area in existing ash dyke and used for beneficial purposes. (Estimate sanction, tendering, awarding, commencement and completion).	Feb-2021	Jun-2021
➤ Soil testing Study by competent Agency/ Institution and suggestion for remedial measures.	Jun-2021	Aug-2021
➤ Implementation of remedial measures.	Aug-2021	Mar-2022

Action Point 3:

The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 325000 Tonnes from NCTPS main gate to KPL main gate for a length of 2.4Kms for a average width of 130m and depth of 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes

Action Plan	Time period of the work	
	Commencement	Completion
➤ Administrative approval has been accorded to transfer of amount Rs.28.5 crores to PWD on Deposit Contributory Works (DCW basis) for dredging of Kosasthalaiyar river for a quantity of 325000 Tonnes (2400 meters length and various		

971

957

width of 130-140 meters and depth of 1 meter)		
➤ Fund was transferred to PWD on 13.12.2019	Jan-2020	Jun-2020
➤ Obtaining CRZ clearance for desilting		
➤ Desilting by PWD sanction of working estimate, Tendering, Awarding, commencement and completion	Mar-2020	Oct-2020
Reach(i) (Ch 0 to 1.2km)	Jan-2021	Oct-2021
Reach (ii) (Ch 1.2 km to 2.4 km)	Mar-2021	Dec-2021
➤ Removal by TANGEDCO (Estimate sanction, tendering, awarding), commencement and completion	Nov-2020	Mar-2021
➤ Soil testing study by competent agency /institution and suggestion for remedial measures	Apr-2021	Mar-2022
➤ Implementation of remedial measures	Apr-2022	Jun-2022
	Jun-2022	Dec-2022

Action Point 4:

The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 468000 Tonnes from Ennore creek to NCTPS-I main gate for a distance of 1.7Km and from KPL Main gate to Kattupalli downstream for a distance of 1.9 Km for a average width of 130m and depth 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes

Action Plan	Time period of the work	
	Commencement	Completion
➤ For removing silt from Ennore creek to NCTPS-I for a distance of 1.7 Km and a width of 130m and depth of 1m for a approximate quantity of 2,21,000T. A letter has been addressed on 06.12.2019 to PWD for carrying out the work on Deposit Contributory Works (DCW basis). After the receipt of detailed estimate from PWD and approval from our headquarters, the funds will be arranged and transferred to PWD by NCTPS (Enclosed in Annexure III).		
➤ Receipt of estimate from PWD within 31.01.2020		
➤ Administrative approval by TANGEDCO including Payment	Feb-2020	Jun-2020
➤ Obtaining CRZ clearance	July-2020	Dec-2020
➤ Desilting by PWD 1700m length sanction of working estimate Tendering and awarding. commencement and completion.	Oct-2020	Mar-2021
➤ Removal of settled ash by TANGEDCO (Estimate sanction, tendering, awarding, commencement and completion).	Apr-2021	Dec-2021
➤ But the ash and silt formation deposited in the upstream of the Kosasthalaiyar river i.e from KPL main gate to kattupalli to a distance of 1.9 Km is very far away from the NCTPS-I	Jul-2021	Mar-2022

9.72

<p>ash slurry pipeline crossing of the river. This area is 1.1km away from slurry line crossing on upstream side. Hence the ash carry over in this stretch will be minimum. So, the unit is requesting restudy so as to assess the exact length, width, depth and volume of ash deposit</p> <p>➤ Accumulated ash will be removed based on the Findings.</p>		
---	--	--

Action Point 5:

The unit shall replace the existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a total length of 20525m length

Action Plan	Time period of the work	
	Commencement	Completion
<p><u>Ash slurry disposal line No:1</u></p> <p>➤ For line No.1 entire length of 5129 metres of Ash Slurry Disposal Line is being replaced. At present, erection of 3510 metres was completed and work is under progress for the balance length of 1619 metres and it will be completed by Jan'2020.</p>	Under progress	Jan-2020.
<p><u>Ash slurry disposal line Nos:2 & 3</u></p> <p>➤ For procurement of new ash slurry pipe lines and consumables purchase order (P.O) have been placed for a length of 10452 metres vide P.O.No:174/30.11.2019 for an value of Rs.8.36 Crores & 175/30.11.2019 for an value of Rs.13.88 Lakhs with a delivery period of 10 months. (Enclosed in Annexure IV).</p> <p>➤ Delivery period of pipe lines</p> <p>➤ The Erection and Commissioning of pipe lines</p>	Jan-2020 Oct-2020	Sep-2020 Mar-2021.
<p><u>Ash slurry disposal line No:4</u></p> <p>➤ For procurement of new ash slurry pipe lines for a length of 4944metres for a value of Rs. 4.32 Crores. Tender floating is under process.</p> <p>➤ Tender processing and placing P.O.</p> <p>➤ Delivery period for pipes (10 months).</p> <p>➤ Erection and Commissioning.</p>	Jan-2020 May-2020 Mar-2021	Apr-2020 Feb-2021 June-2021

Action Point 6:

The unit shall provide impervious toe drain around the Ash dyke for a length of 6000m for the collection of seepage water and connected to the existing Recovery Water sump and reuse for Ash slurry making

973
958

Action Plan	Time period of the work	
	Commencement	Completion
<p>➤ An amount of Rs 18.17 Lakhs has already been paid to IITM on 25.06.2019 towards the technical consultancy for the Comprehensive / Rehabilitation/Re-construction and raising of NCTPS ash dyke. The team of IITM has visited the site on 31.08.2019 and the soil exploration test also completed and IITM have confirmed to furnish the report by Dec-2019.</p> <p>(a) Receipt by study report from IITM/ Chennai within 31.12.2019</p> <p>(b) Estimation, Approval, tender specification approval ,E-tendering ,and awarding of work</p> <p>(c) Execution of agreement and getting necessary approvals from statutory agencies.</p> <p>(d) Execution of bund raising and strengthening works in accordance with IITM/Chennai recommendation complete including impervious Toe drain around the ash dyke for length of 6000m.</p>	<p>Jan -2020</p> <p>Oct-2021</p> <p>Jan-2022</p>	<p>Sep-2021</p> <p>Dec-2021</p> <p>Dec-2023</p>

Action Point 7:

The unit shall provide 6000 numbers of trees in and around the ash dykes and grow it well so as to prevent the dust emission form the ash dyke.

Action Plan	Time period of the work	
	Commencement	Completion
<p>➤ In the Ash dyke area 540 Nos. of sapling have been planted by NCTPS-I and for further plantations, M/s. Swaminathan Foundation have been addressed for suggesting suitable plants and they have inspected the site on 07.12.19 and they have informed to furnish the report during January 2020. Based on the report, after strengthening of bund the plantation of tree will be taken up.</p> <p>➤ Every year during the summer period water sprinkling arrangements was carried out through the tractor (7 trips per day, 4000 Litres per trip. Estimate amount 1 Lakh per month). (Enclosed in Annexure V).</p>	<p>Jan-2022</p>	<p>Dec-2023.</p>

Action Point 8:

The unit shall make existing ash pond impervious so as to prevent the seepages as per the technical consultancy of IITM, Chennai

Action Plan	Time period of the work	
	Commencement	Completion
➤ An amount of rupees 18.17 Lakhs has already paid to IIT Madras on 25.06.2019 towards the technical consultancy for the Comprehensive / Rehabilitation/Re-construction and raising of NCTPS ash dyke. The team of IIT Madras has visited the site on 31.08.2019 and the soil exploration test also completed and they have confirmed to furnish their report by Dec 2019 (Enclosed in Annexure VI). (a) Receipt by study report from IITM/ Chennai within 31.12.2019 (b) Estimation, Approval, tender specification approval, E-tendering and awarding of work (C) Execution of agreement and getting necessary approvals from statutory agencies. (D) Execution of bund raising and strengthening works in accordance with IITM/Chennai recommendations	Jan-2020	Dec-2023
	JAN -2020	SEP-2021
	OCT-2021	DEC-2021
	JAN-2022	DEC-2023

Action Point 9:

The unit shall obtain technical study report from IITM Chennai for the remedial measures such as strengthening of Ash Dyke and other related works in Ash dyke and implement the recommendations

Action Plan	Time period of the work	
	Commencement	Completion
➤ After receipt of the consultancy report from IITM, Chennai, the bund will be made impervious and other related work will be implemented as per the directions. An amount of rupees 18.17 Lakhs has already paid to IITM on 25.06.2019 towards the technical consultancy for the Comprehensive / Rehabilitation/Re-construction and raising of NCTPS ash dyke. (Enclosed in Annexure VI). ➤ The team of IITM has visited the site on 31.08.2019 and the soil exploration test also completed and the report is expected by Dec-2019. Detailed report will be submitted latter on. (a) Receipt by study report from IITM/ Chennai within 31.12.2019 (b) Estimation, Approval, tender specification approval, E-tendering and awarding of work (C) Execution of agreement and getting necessary approvals from statutory agencies.	JAN -2020	SEP-2021
	OCT-2021	DEC-2021

(D) Execution of bund raising and strengthening works in accordance with IITM/Chennai recommendations	JAN-2022	DEC-2023
---	----------	----------

Action Point 10:

The unit shall provide sufficient number of piezometric wells/monitoring wells around the dykes and upstream of the industry to monitor the ground water quality

Action Plan	Time period of the work	
	Commencement	Completion
➤ The piezometric wells have been provided at 12 locations around the ask dyke area as per the CPCB Guidelines. (Enclosed in Annexure VII).	Work fully Completed on 09.12.2019	

Action point 11

The unit shall bring back Recovery water Pump No.3 in to service and to replace the existing worn-out Recover water pipe Line No.1 for a entire length of 2815 m

Action Plan	Time period of the work	
	Commencement	Completion
<u>A).Recovery Water Pump No:3</u>		
➤ It is proposed to convert the Vertical pump to horizontal pump for better maintenance and low cost and budgetary offers have been obtained.		
➤ Administrative approval.	Dec-2019	Mar-2020
➤ Indent & Tender Processing.	Apr-2020	Sep-2020
➤ Purchase order and supply.	Oct-2020	Dec-2020
➤ Erection & Testing and commissioning.	Jan-2021	Mar-2021
<u>B).Recovery Water Pump No:2</u>		
➤ In recovery water pump no.2 minor repairs have to be attended. Purchase Order (P.O) of the above pump have been placed with a delivery period of 4 months.		
➤ Delivery period of spares.	Dec-2019	March-2020
➤ Erection & Testing and Commissioning.	April-2020	June-2020
<u>C).Recovery Water pipe line No:1(R1)</u>		
➤ The existing wornout Recovery Water Pipe line no.1 is proposed to be replaced with fabricated MS pipe of 362mm outer diameter and 12mm thickness out of 12mm thickness MS plate for the entire length of 2815 metres.		
➤ For the above work, Tender was finalized and K2 Agreement has been entered with a contractor. 12mm thick MS plates are required for the above works, for which tender have been already opened and rate negotiation is under process.		

➤ Supply of MS Plates.	Jan-2020	Mar-2020
➤ Fabrication of MS pipes.	Apr-2020	Sep-2020
➤ Erection & commissioning of Recovery Water Pipeline No.1. (Enclosed in Annexure VIII).	Oct-2020	Dec-2020

Action Point 12:

The unit shall modify existing three Electrostatic precipitator attached to the 3 No. boilers so as to achieve revised norms of particulate matter emission 100 mg/m³ as per MOEF & CC notification dated 07.12.2015

Action Plan	Time period of the work	
	Commencement	Completion
➤ Administrative Approval is accorded for Renovation & Modernization (R&M) of Electro Static Precipitators (ESP) in Units I, II & III to achieve the desired PM level below 100 mg/Nm ³ . So as to achieve the norms as per MOEF&CC. The work will be commenced and completed as follows: Unit I Unit II Unit III	Jun- 2022 Jan- 2022 July-2021	Dec-2022 Jun-2022 Dec-2021

Action Point 13:

The unit shall replace the worn-out boiler roof tubes in Unit-II and Unit-III so as to arrest the discharge of fugitive emission

Action Plan	Time period of the work	
	Commencement	Completion
➤ In Unit I and II Boiler, radiant roof tubes along with skin casing sheets were renewed. In each unit 120 Nos of tubes of size Ø51 mm x 5mm thick, of length -11 metres grade SA213T11 were renewed. The work was commenced on 02.01.19 and completed on 26.02.19 in Unit I and in Unit II the work was commenced on 01.08.19 and completed on 20.08.19. ➤ In unit III, the Boiler radiant roof tubes were found intact and hence only renewal of skin casing sheets was commenced on 14.09.19 and completed on 30.09.19. ➤ Now there is no discharge of fugitive emission in all the three units. (Enclosed in Annexure IX).		Work fully Completed.

977
960

Action Point 14:

The unit shall develop Mangroves plantations and other costal vegetation in both sides Kosasthaliyar river banks, Buckingham canal and nearby by affected coastal areas, in consultation with M.S.Swaminathan foundation (or) Annamalai University

Action Plan	Time period of the work	
	Commencement	Completion
<ul style="list-style-type: none"> ➤ Only after removal of ash from Kosasthalaiyar River and B'Canal area, the plantation of mangroves and other vegetation's will be taken up on both sides of Kosasthalaiyar river and Buckingham canal. ➤ M.S Swaminathan Foundation, Taramani Chennai, have been addressed to suggest suitable plants and they inspected the site on 07.12.2019 and they informed to furnish the report during Jan-2020 based on the report, the plantation of trees will be carried out to an extent of 15 Hectares along Kosasthalaiyar river and Buckingham Canal. (Enclosed in Annexure X). 	June-2022	June-2023

Action Point 15:

The unit shall ensure complete utilization of fly ash as per the Ministry of Environment, Forest & Climate Change fly ash notification of 2016

Action Plan
<ul style="list-style-type: none"> ➤ Orders have been issued for lifting of 12 lakhs tonnes of fly ash to 8 major cement companies and 6 other fly ash based product manufactures and ready mix concrete plants and lifting of fly ash is under progress from Feb-2019 ➤ During the year 2018-19 the fly ash utilization is 3.19 lakh tonnes out of the total fly ash generation of 6,05 lakh tonnes which is about 52.85%. A quantity of 6.72 lakh tonnes of total ash utilized including the wet ash lifted from ash dyke have been utilized against the total ash generation of 10.16 lakhs tonnes which is about 66%. The cement companies have been requested to increase their off take of fly ash from NCTPS-I in order to achieve 100% fly ash utilization (enclosed in Annexure). ➤ During the current 2019-20 up to November-2019 the fly utilization is 2.25 lakh tonnes out of the total fly ash generation of 3.15 lakh tonnes which is about 71.38%. A quantity of 4.97 lakh tonnes of total ash have been utilized against the total ash generation of 5.29 lakhs tonnes. which is about 94.03% ➤ Efforts are on to improve the fly ash utilization to 100% in the coming months. (Enclosed in Annexure XI).

Action Point 16:

The unit shall carry out ground water, surface water monitoring once in six months through any NABL accredited laboratory in the affected areas. Further detailed study may be carried out by Ground water department or any reputed institution on the status of ground water, surface water quality once in year

Action Plan
<p>➤ The unit will carry out next ground water, surface water monitoring in Jan-2020 through any NABL accredited laboratory in the affected areas and subsequently the ground and surface water study will be carried out once in every six months time. (Enclosed in Annexure XII).</p>

Action Point 17:

The unit shall adhere the consent order condition issued by Tamil Nadu Pollution Control Board.

The compliance status of latest consent orders conditions issued vide Board's Proc.dated.25.06.2014 submitted by Joint Chief Environmental Engineer (monitoring), Chennai is enclosed in **Annexure XIII**

From the analysis of mitigation and remediation of action plan submitted by the NCTPS, the following is observed

- The ash deposited on the land in and around the ash carrying pipe lines will be temporarily stored at different zones with geo thermal lining at the bottom and Bunds will be formed around the temporary storage areas and the work will be completed along with remedial measures at the end of May 2022
- The PWD has already commenced the dredging of the Buckingham canal and deposited the dredged ash and silt in the Banks of the canal. Technical sanction has been accorded by NCTPS for an amount of Rs.16 lakhs for removing the deposited ash from the banks of the Buckingham canal for a quantity of 9667m³.Administrative approval has been accorded to transfer an amount Rs.66 lakhs to PWD on Deposit Contributory Works (DCW basis) for desilting the Buckingham canal. Fund will be transferred to PWD before 31/12/19. After the dredging work is carried out by PWD, the ash removal work will be carried out by M/s.TANGEDCO and the work will be completed along with remedial measures at the end of March 2022
- The administrative approval has been accorded to transfer of amount Rs.28.5 crores to PWD on Deposit Contributory Works (DCW basis) for dredging of Kosasthalaiyar river for a quantity of 325000 Tones and the work will be completed along with remedial measures at the end of March 2022

- The removal of ash deposited in Kosthalaiyar river for a quantity of 2,21,000 Tonnes approximately from Ennore creek to NCTPS-I main gate for a distance of 1.7km will be completed at the end of March 2022. Towards ash removal from M/s.KPL main gate to Kattupalli downstream for a distance of 1.9 Km, the unit is requesting restudy so as to assess the exact length, width, depth and volume of ash deposit.
- The replacement of existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a total length of 20523 m length is under progress and will be completed at the end of June 2021
- The unit has provided sufficient number of piezometric wells/monitoring wells around the dykes and upstream of the industry to monitor the ground water quality
- It is proposed to convert the Vertical pump to horizontal pump for better maintenance and low cost and budgetary offers have been obtained. In recovery water pump no.2 minor repairs have to be attended. Purchase Order (P.O) of the above pump has been placed with a delivery period of 4 months. The existing wornout Recovery Water Pipe line no.1 is proposed to be replaced with fabricated MS pipe of 362mm outer diameter and 12mm thickness out of 12mm thickness MS plate for the entire length of 2815 metres.
- Administrative Approval is accorded for Renovation & Modernization (R&M) of Electro Static Precipitators (ESP) in Units I, II & III to achieve the desired PM level below 80 mg/Nm³. So as to achieve the norms as per MOEF&CC and the work will be completed at the end of December 2021. **The online continuous emission and effluent monitoring system for the parameters stipulated by CPCB & TNPCB shall be complied with and ensure proper working of the same and ensure continuous data transfer to CPCB & TNPCB.**
- The unit has replaced the worn-out boiler roof tubes in Unit-II and Unit-III so as to arrest the discharge of fugitive emission
- Only after removal of ash from Kosasthalaiyar River and B'Canal area, the plantation of mangroves and other vegetation's will be taken up on both sides of Kosasthalaiyar River and Buckingham canal.
- Orders have been issued for lifting quantity 12 lakhs tonnes of fly ash to a 8 major cement companies and 6 other fly ash based product manufactures and ready mix concrete plants and lifting of fly ash is under progress from Feb-2019
- During the year 2018-19 the fly ash utilization is 3.19 lakh tonnes out of the total fly ash generation of 6,05 lakh tonnes which is about 52.85%. A quantity of 6.72 lakh tonnes of total ash utilized including the wet ash lifted from ash dyke have been utilized against the total ash generation of 10.16 lakhs tonnes which is about 66% and **plans for achieving 100%**
- During the current year 2019-20 up to N.member-2019 the fly utilization is 2.25 lakh tonnes out of the total fly ash generation cif 3. 15 lakh tonnes which is about 153.8%. A quantity of 4.97 lakh tonnes of total ash has e been utilized against the total ash generation of 5.29 lakhs tonnes. w'hich is about 94.03%.
- The unit will carry out next around water, surface water irionitoring in Jan-2020 through NABL accredited laboratorv in the a flecked areas and subsequently the ground and surface water study xvill be carried out once in every six months time."

48. This Tribunal had observed after considering the report in respect of Thermal Power Plant that they did not consider about the remediation measures to be taken and they had only reiterated the timeline given by M/s. NCTPS for removal of fly ash and replacement of pipelines and no attempt was made by the Committee to assess the real damage caused on

account of dumping of waste in the water bodies and continuously polluting the water body, affecting the quality of the water which in turn affect the aquatic life in the water body and cause harm to the public as well, since the water quality in the river had been severely affected and contaminated. Though it was mentioned in the report that on account of dumping of fly ash, damage had been caused to mangroves and though direction had been given for restoration of the same, no effective steps had been taken by the Thermal Power Plant to restore the same as so as to protect the environment.

49. It was also seen from the satellite images in the report that there was complete destruction of mangrove forest in many areas which was alarming as these were ecologically fragile areas and these aspects were completely overlooked by the committee while making assessment of compensation. Further, there was failure on the part of the M/s. NCTPS in disposal of fly ash in compliance with the fly ash disposal notification, 2017 issued by the MoEF&CC and the Principal Bench of National Green Tribunal, New Delhi had prepared a slab on environmental compensation to be fixed on the basis of the production capacity of the units as an interim measure till the actual amount of compensation has to be calculated by the Committee for that purpose and that exercise was also not done by the State Pollution Control Board in this case. So, this Tribunal directed the committee to file a further report and then, passed the following order:-

“10) So, under such circumstances, we feel it appropriate to adjourn the case for the purpose of enabling the Committee to give proper action plan after evolving a method of remediation required for this purpose and submit a consolidated and cumulative report with the recommendations of the Committee in respect of the extent of damage caused to environment, the measure of remediation that is to be undertaken and also to ascertain the time line for removal of the fly ash already deposited as keeping the fly ash for such a longer period will result in further environmental degradation on account of reaching which cannot be tolerated. The standard time line will have to be fixed by the Committee instead of relying on time line given by the Project Proponent and if that is not complied with then they are directed to impose additional environmental compensation for violation committed by them in this regard. They are also directed to evolve a mechanism as to how the environmental compensation needs to be calculated in such areas where the contamination of water is more and contamination of water and soil is a continuous one and it continues to affect the water quality throughout the stretch during monsoon due to the flow of water in the water body as this contamination will carry to other areas also and likely to contaminate the water quality in that area. Certain metals found such as Chromium and Arsenic in the dump site is carcinogenic in nature and that aspect will have to be taken note of seriously by the Committee while assessing the environmental compensation. The

Committee is given time to complete this exercise within a period of four months and submit a detailed report by email at ngtszfiling@gmail.com.

11) The Pollution Control Board is directed to file the action taken report on the basis of the findings of the Committee in this regard and also compliance of directions given by this Tribunal in similar matters. We may like to mention here that whenever stringent actions are required, the Regulating Authorities are vested with the power under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention of Control of Pollution) Act, 1981 to impose the same. Though they are the machineries under the Government as far as the pollution is concerned, they are the protector of the environment and they should not be afraid of exercising their power in discharging their duties in this regard. As per the Pollution Control legislation, the Pollution Control Boards are expected to act as advisers to the Government as to how the environment will have to be protected and there is a duty cast on the Government under Article 48-A of the Constitution of India to protect the environment. This aspect has to be considered whenever the advisory jurisdiction has been exercised by the Pollution Control Board. We also feel that Public Sector under takings must act as a role model for other industries regarding following of environmental norms. If the State owned industries itself are not complying with the directions and if they are violating the norms under the hope that they will not be proceeded against and only directions will be issued to rectify the deficiencies then it will give a wrong message to other industries as well who may be tempted to violate the norms."

50. On 15.06.2020, this Tribunal had considered the action taken report filed by the Committee extracted in Para (3) of the order which reads as follows:-

"ACTION TAKEN REPORT BY THE COMMITTEE IN THE MATTER OF O.A. No. 08/2016 (SZ) & O.A. No.152/2016 (SZ) & 198/2016(SZ), AS PER HON'BLE NGT ORDER DATED 20.01.2020.

- In the matter of O.A. No. 08/2016(SZ) & O.A. No. 152/2016(SZ) & O.A. No.198/2016(SZ), Ravivarman Vs Union of India and Meenava Thanthai Vs the Chief Secretary, Govt of Tamil Nadu & Others and Meenava Thanthai Vs The State of Tamil Nadu & Others, the applications were filed in Hon'ble NGT regarding dumping of ash slurry by M/s. North kamarajar Port Limited in the surrounding area. According to the applicant, damage is caused to Buckingham Canal, Kosathalaiyar river and area surrounding M/s NCTPPS due to dumping of ash slurry. The applicant also indicated that M/s. Kamarajar Port Ltd (KPL) had dumped dredged waster within the CRZ area.

- In compliance to Hon'ble NGT order dated 20.05.2019 the committee comprising of Smt. Mahima T. Senior Environmental Engineer, Central Pollution Control Board, Dr. Ligy Philip, Professor, Dept of Civil Engineering, IIT Madras, Chennai and Shri. R. Ramasubbu, Joint Chief Environmental Engineer, TNPCB was constituted to ascertain the status of fly ash disposal, damage caused to the environment and cost of restitution by M/s. NCTPS. The committee inspected the area, carried out detailed sampling & monitoring and submitted the report to Hon'ble NGT.

- The Hon'ble NGT, Principal Bench (through Video Conferencing) vide its order dated 18.11.2019 directed the committee to find out whether any damages has been caused to the soil on account of the violation committed by M/s. Kamarajar Port Ltd. and whether remediation method adopted by them are sufficient to remedy the situation including the damage cost to the mangroves and amount required for restoring of the damaged area to the regional conditions. The committee was also directed to evolve the action plan in consultation with the Thermal Power Plant or any other expert body as to how the damage caused can be remediated and or mitigated.

- The committee had submitted the report before the Hon'ble NGT after the evaluation of action plan submitted by Ms. NCTPS and inspection of the area/dumpsites where M/s. Kamaraj Port Ltd had previously dumped the dredged material that was falling under CRZ zone.

- The Hon'ble National Green Tribunal vide its order dated 20.01.2020 directed the committee to assess the real damage caused on account of dumping of ash in water bodies by M/s. NCTPS and damage caused on account of dumping of dredged material by M/s. KPL.

- Further, NGT directed the committee to submit the proper action plan after evolving the method of remediation required and submit a consolidated and cumulative report in respect of the extent of damage caused to environment, the measure of remediation that is to be undertaken and also to ascertain the time line for removal of the fly ash already deposited instead of relying on the time line given by the project proponent.

- The committee held detailed discussion and decided to engage expert agency to carry out an independent assessment (sampling & monitoring) in the area and to assist the committee to comply with Hon'ble NGT directions. The committee vide letter & Email dated 14.02.2020 invited several expert agencies working in the field of environment for preliminary discussion and site inspection at TNPCB Head Office, Chennai.

- The committee convened the meeting with expert agencies such as M/s. ERMS consultancy Pvt. Ltd, M/s. M.s. Swaminathan Research Foundation, M/s. Startus Environmental Pvt. Ltd. followed by site visit. With reference to Hon'ble NGT order dated 20.01.2020, the committee derived scope of work and invited quotations from expert agencies for carrying out the work as per scope to comply with the direction/order of the Hon'ble NGT. The committee invited separate technical and financial bids for M/s. NCTPS and M/s. KPL. The scope of work was divided into three parts namely:

Part -A (Investigation): Conducting sampling & monitoring

Part-B: based on the results of part-A if the sites are identified as probably contaminated site then the expert agency shall assist committee and identify different remediation measures.

Part-C: based on the result of part-A if the site is identified as not a contaminated site or if measured values are less than SSDL and only clean-up is required the expert agency shall assist committee in identifying different clean up measures.. {Copy of minutes of meeting dated 24.02.2020 enclosed in **Annexure-A**}

- The committee has conducted the meeting and opened the bids on 12.03.2020 for co-opting expert agencies to comply with the direction/order of the Hon'ble NGT based on technical and financial evaluation of bids submitted by the expert agencies. {Copy of minutes of meeting dated 12.03.2020 enclosed in **Annexure-B**}.

- After technical & financial evaluation of the bids, M/s. Status Environmental Pvt Ltd was qualified and the committee decided to issue work order to M/s. Startus Environmental Pvt. Ltd to assist the committee in carrying out part-A of the study. The committee issued Work orders to M/s. Startus Environmental Pvt Ltd to carry out part-A of the study separately for M/s. NCTPS & M/s. Kamaraj Port Ltd and to submit the report within 30 days from date of issue of work order. {Copy of work order dated 12.03.2020 enclosed in **Annexure-C1,C2**}.

- Also the committee has communicated the decision taken in the meeting held on 12.03.2020 to M/s. NCTPS and M/s. KPL to make advance payment of 10% of total cost required for study of Part-A work to M/s. Startus Environmental Pvt. Ltd as per the Hon'ble NGT order dated 20.01.2020 so as to start the work {Copy of letter dated 20.03.2020 enclosed in **Annexure-D1,D2**}.

- M/s. KPL vide letter dated 06.05.2020 has informed that during hearing on 20.01.2020, the NGT has passed an order without giving the opportunity to hear the views of M/s. KPL to raise its objections of the report submitted by the committee before the NGT. In order to present the actual facts before the Hon'ble NGT, the M/s. KPL filed a review application before the tribunal on 24.02.2020. Further informed that the case was listed in the Hon'ble NGT on 23.03.2020 and the case was not come up for hearing due to outbreak of COVID-19 and finally requested the committee to wait for the Hon'ble NGT further order in this case before proceeding further i.e commencement of study {Copy enclosed in **Annexure-E**}.

- M/s. NCTPS vide letter dated 04.05.2020 has informed that NCTPS is accepted the work order issued by the committee to carry out the study and further informed that 100% payment will be disbursed to expert agency after completion of study and submission of final report {copy enclosed in **Annexure-F**}.
- M/s. Startus Environmental Pvt. Ltd is not able to complete the study of part-A work due to COVID-19 issues and requested the additional time for completion of study and to submit the final report.
- The committee submits and requests from Hon'ble NGT to permit three months time to carry out study by the expert agency and to submit the action taken report after completion of the part-A study report by the expert agency."

51. Considering the fact that they wanted three months time, this Tribunal granted time and posted the case to 23.09.2020 for consideration of further report. The case was taken up on 23.09.2020, and on that day, this Tribunal had considered the further action taken report filed by the Committee, extracted in Para (3) of the order which reads as follows:-

"ACTION TAKEN REPORT BY THE COMMITTEE IN THE MATTER OF O.A. No. 08/2016(SZ) & O.A. NO.152/2016(SZ) & O.A.NO.198/2016 (SZ), AS PER HON'BLE NGT ORDER DATED 20.01.2020 AND 15.06.2020

The Hon'ble National Green Tribunal (NGT), Principal Bench vide its order dated 15.06.2020 directed the following (copy of the NGT order is enclosed in Annexure A)

In Para 4

"In the conclusion portion of the action taken report they wanted 3 months time to submit the final report. Considering the circumstances, we grant 3 months time to the committee to submit the report".

- The committee has issued the work order to M/s.Startus Environmental Pvt Ltd to carry out the Part-A study (Investigation: Conducting sampling & monitoring) to assess the real damage caused on account of dumping of fly ash by M/s.NCTPS and submit the report within 30 days from date of issue of work order. Also the same communicated to M/s.NCTPS to issue the purchase order to carry out the study.
- The purchase order was issued to M/s.Startus Environmental Pvt Ltd by M/s.NCTPS on 4.5.2020 to carry out the sampling activity of Part-A study. Due to COVID-19 pandemic, M/s.Startus Environmental Pvt Ltd was not able to execute the sampling activity immediately. After the State Government partially lifted the pandemic restrictions, M/s.Startus Environmental Pvt Ltd has collected the samples between 23.05.2020 and 28.05.2020 and handed over to Hubert Enviro Care Systems Laboratory.
- Mean while the lab was closed few days because the person working in the lab was affected by COVID. The samples were analyzed and the results were compared with MoEF screening levels and submitted before the committee on 11.07.2020 by M/s.Startus Environmental Pvt Ltd.
- Further the committee has requested the M/s.Startus Environmental Pvt Ltd to collect the sample from the plant (primary ash) to compare the results with other locations on 14.07.2020 after studied the report.
- M/s.Startus Environmental Pvt Ltd has discussed the revised report with updated data on 01.08.2020 with committee members over phone. After discussion, M/s.Startus Environmental Pvt Ltd has prepared and submitted a figure illustrating the Mercury quantity on 19.08.2020 before the committee.
- The committee had a meeting with the expert on 08.09.2020 and recommended to collect additional samples to further characterize the lateral and vertical extent of impact to sediments at locations where high mercury impact was observed.
- M/s.Startus Environmental Pvt Ltd has collected the additional samples as recommended by the committee on 15.09.2020 and 16.09.2020 and forwarded to the laboratory for analysis. M/s.Startus Environmental Pvt Ltd has requested one

week time to submit the final report of Part-A study along with results of additional samples before the committee.

- Also M/s. Startus Environmental Pot Ltd has attempted to evaluate the reduction in flora and fauna via readily available aerial pictures available in the internet. Then M/s. Startus Environmental Pot Ltd has retained the services of a reputable biologist on 14.09.2020 based on committee recommendation to evaluate the impact of flora and fauna due to ash deposition. Also requested two weeks time to submit the results for impact of flora and fauna due to ash deposition (Copy of expert letter enclosed in Annexure B).
- The committee expect the Part-A study report from the expert M/s. Startus Environmental Pot Ltd within 30.09.2020.
- After obtaining Part-A study report, the results have to be compared with the screening values of MoEF&CC to declare the site as contaminated or not, based on which further actions will be suggested by the committee and the scope of work was divided into three parts namely

Part-A (Investigation): Conducting sampling and monitoring

Part-B: Based on the results of Part-A if the sites are identified as probably contaminated site then the expert agency shall assist committee and indentify different remediation measures.

Part-C: Based on the result of Part-A if the site is identified as not a contaminated site or if measured values are less SSTL and only clean-up is required the expert agency shall assist committee in identifying different clean up measures.

- *Based on results of Part-A study only, either the study of Part-B (if site is identified as probably contaminated site) or Part-C (If the site is identified as not a contaminated site or if measured values are less than SSTL) has to be carried out by the expert agency after recommendation of committee. As per the timeline prescribed by the CPCB is 3 months to complete the further study.*
- *The committee has decided to evaluate the timeline required for removal of deposited fly ash and remediation of soil and damage caused on account of dumping of dredged material and remediation after completion of study by expert agency.*
- *Also the committee is submitted and requesting the Hon'ble NGT that shall permit three months time up to 31.12.2020 to submit the proper action plan after evolving a method of remediation required and submit a consolidated and cumulative report in respect of the extent of damage caused to environment and the measure of remediation that is to be undertaken.*

In Para 6

"The committee is also directed to go in to the question as to whether the violation still continues and whether deposit of fly ash has been caused in the water bodies on the part of the project proponent on account of any further break of pipe or non-repair of the same as directed. This aspect also to be considered by the committee while submitting the report and suggest for further remedial measures to avoid the same".

- *The committee member Thiru.R.Ramasubbu, JCEE, TNPCB has inspected the M/s.NCTPS on 19.09.2020 to ascertain the violation and deposit of fly ash on account of any further break of pipe or non-repair of the same and the inspection observation was shared with the other committee members.*
- *During inspection it was found that there are five numbers of ash slurry disposal lines of 406mm OD MS pipes with cast basalt liners of thickness 20mm extending to a length of 5000 meters each totalling to about 25000 meters. These pipelines are transport the ash slurry discharged from the ash handling pump house to the ash dyke situated at a distance of about 5KM from the power plant. These lines are in continuous service for the past 2 decades and are exposed to the saline atmospheric condition, the erosion and corrosion of pipes are inevitable and necessitate replacement as and when wants.*
- *The unit of M/s.NCTPS has put forth to avoid leakage of slurry in the lines leading from ash slurry pump house to ash dyke by welding the punctures with patch plates, renewal of wornout 'O' rings and gaskets providing leak arresting clamps and replacing the pipes with the second-hand pipes retrieved from ETPS.*
- *The status of ash slurry disposal lines are as follows:*
 - Ash slurry disposal line no.1*

The entire length of 5129 meters of ash slurry disposal line has been erected with the pipes retrieved from ETPS.

Ash slurry disposal line no.2 &3

For the procurement of new pipes and consumables, the unit of M/s.NCTPS has issued the purchase order for a length of 10452 meters of pipe line and 1050 meters of new pipe lines have been supplied and the balance quantity is being delayed due to COVID-19. For line no.3, the erection work has been commenced from the worst worn-out area i.e. Cheppakam Village. Also the unit has informed that about 3500 meters of pipes are expected to be received by the end of October 2020 and after receipt of balance quantity of material, the erection will be completed for the entire length of 10.45 Kms by June 2021.

Ash slurry disposal line no.4

About 1000 meters length of heavily damaged slurry pipe lines from ash slurry pump house to stage-II compound wall have been replaced by NCTPS with SH pipes retrieved from ETPS. The worn-out pipes from stage-II compound to ash dyke are being replaced with the second hand pipes retrieved.

Ash slurry disposal line no.5

The entire line has been replaced to a length of 5342 meters with the second hand pipes retrieved from ETPS by NCTPS.

- Also found that the periodical maintenance contracts are being awarded for the upkeep of the ash slurry pipe lines and occasional leakages in the pipe lines are attended then and there like replacement of wornout gaskets, 'O' rings, sleeve coupling and eroded pipe.*
- From the records, it was found that there are 22 occurrences of leaks in the past 4 months and a total leakage time is 2 hours 36 minutes and the ash leak quantity is 2418 Cu.m (copy of unit letter is enclosed in Annexure C). During inspection no leakage was observed.*
- The committee has decided to include the suggestion for further remedial measures to avoid the deposition of fly ash on account of break of pipeline or non repair of pipeline while preparing the final report after completion of Part-A study by the expert agency."*

52. This Tribunal, after considering the objections filed by M/s. Kamarajar Port Limited in O.A. No.08/2016 (SZ), directed the Committee to go through the objections filed and file a further report on that aspect as well.

53. As against the order dated 20.01.2020 imposing interim compensation of Rs.8,34,60,000/- (Rupees Eight Crore Thirty Four Lakhs and Sixty Thousand only), M/s. Kamarajar Port Limited has filed Review Applications viz., R.A. No.03 of 2020 and 04 of 2020 and this Tribunal allowed the Review Application in part and modified the interim compensation, re fixing the amount to **Rs.4,00,00,000/-** instead of **Rs.8,34,60,000/-** by order dated 06.11.2020 and the same was challenged by M/s. Kamarajar Port Limited before the Hon'ble Apex Court by Civil Appeal as **Civil Appeal No.4238 - 4241 of 2020** and interim stay was granted by the Hon'ble Apex Court and this was so submitted by the learned counsel appearing for M/s. Kamarajar Port Limited when the matter was taken up on 06.01.2021. When this Tribunal made a query as to whether the Hon'ble Apex Court had only granted stay in respect of

implementation of imposition of environmental compensation or the entire proceedings of this Tribunal, they wanted time to produce the order of the Hon'ble Apex Court in that Civil Appeals mentioned above.

54. Vide Order dated 02.03.2021, this Tribunal had considered the interim order produced by M/s. Kamarajar Port Limited in Civil Appeal No.4238 - 4241 of 2020, staying the impugned orders dated 20.01.2020 and 06.11.2020 of this Tribunal against M/s. Kamarajar Port Limited and this Tribunal also considered the Joint Committee report dated Nil, received on 12.03.2021 on the basis of the order dated 14.12.2020 in respect of the issue raised in the newspaper report referred to in the order dated 14.02.2020 viz., Dinamani Daily dated 25.08.2020 titled as "குழாய் உடைப்பால் ஊருக்குள் புகுந்த அனல் மின்நிலைய சாம்பல் கழிவுநீர்". To ascertain the nature of stay order passed, based on the reliefs claimed by M/s. Kamarajar Port Limited before the Hon'ble Apex Court, this Tribunal directed M/s. Kamarajar Port Limited to produce the copies of the appeal memorandums filed before the Hon'ble Apex Court as well.

55. In the meantime, another case was filed by the applicant in O.A. No.08/2016 in respect of further breach of pipeline and consequential spilling of fly ash in the water body as **Original Application No.122 of 2021 (SZ)** against proceeding with the work of their new project through CRZ area without obtaining CRZ Clearance and also another case was Suo Motu registered by this Tribunal on the news item published in The Times of India, Chennai Edition dated 01.07.2021 under the caption "*Another pipeline leak at Ennore Power Plant*" as **Original Application No.162 of 2021 (SZ)** and all these cases were considered together along with these applications.

56. The matter was again taken up on 22.11.2021 and on that day, this Tribunal had considered the inspection report submitted by the Joint Committee constituted in O.A. No.162/2021 (SZ) as per order dated 27.10.2021, e-filed on 14.09.2021 and extracted in Para (5) of the order which reads as follows:-

1. Preamble

It is respectfully submitted that a case, O.A.No.162 of 2021, has been Suo-Motu registered by the Hon'ble National Green Tribunal(SZ), Chennai on the basis of the newspaper report published in the "Times of India" Chennai Edition dated 01.07.2021, under the caption "**ANOTHER PIPELINE LEAK AT ENNORE POWER PLANT**" Residents suffering from Air Pollution, Water Contamination and also another newspaper report published in the "New Indian Express" Chennai edition, dated 13.07.2021 and 15.07.2021 under the caption "**TANGEDCO VIOLATING RULES IN Ennore**" and "**TANGEDCO's Ennore SEZ Project deviating from approved alignment**" respectively.

In all these newspaper report, the allegation was that the Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) has deviated the pipeline alignment in violation of the rules and carrying out the project against the conditions imposed in the clearances granted. Also, TANGEDCO constructing the bridge for supporting coal conveyor and sea water pipeline for proposed Ennore SEZ and for conveying bottom ash slurry from Stage III project to existing ash pond by dumping construction debris along the river course without getting CRZ clearance. Further, it has been alleged that there was leaks in the bottom ash slurry conveyance lines from NCTPS I which resulted large scale spillage into water bodies causing air pollution and water contamination. Also stated that the Controller and Auditor General's report had mentioned about the ash dumping is contaminating the ground water in those areas.

It is respectfully submitted that the Hon'ble Tribunal in the order dated.30.07.2021 directed vide,

Para 9 - In order to ascertain the genuineness of the allegations made in the newspaper report and also the alleged violations, the Hon'ble Tribunal appointed a joint committee comprising of (1) The District Collector, Tiruvallur District (2) a Senior Officer from Ministry of Environment, Forests and Climate Change (MoEF & CC), Integrated Regional Office, Chennai, (3) a Senior Office/Scientist from Central Pollution Control Board (CPCB), Integrated Regional Office, Chennai, (4) The Superintending Engineer from Public Works Department (PWD) and Water Resources Organisation (WRO), Chennai, (5) a Senior Officer from Tamil Nadu Coastal Zone Management Authority (TNCZMA), Chennai and (6) a Senior Officer from Tamil Nadu Pollution Control Board as designated by its Chairman to inspect the area in question and submit a factual as well as action taken report if there is any violation found.

Para 10 - The Committee is directed to ascertain as to whether i) there are any violations of conditions imposed in the clearances and permissions granted for Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO), ii) whether there was any deviation from the proposed alignment of the pipe as permitted under the clearances granted without obtaining any approvals of modification of the same from the appropriate authorities, iii) whether there was any leakage of ash pipe resulting in spillage of fly ash in the neighbouring areas and if so, what is the nature of damage caused on account of the same, iv) whether there was any air pollution or water contamination caused on account of the spillage of fly ash due to leakage of pipe lines, v) whether any unlawful dumping of fly ash is being done in the nearby water bodies and if so, what is the nature of damage caused to the water bodies on account of the same and the remedial measures to be taken for restoring the damage caused to the water bodies.

Para 11 - The committee is also directed to assess the environmental compensation, if there is any damage caused to the environment on account of the alleged act of the Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) to be recovered from them including the expenses required for carrying out the remediation measures and restore the damage caused to the environment including the rectifying the contamination, if any, caused to the water body and water quality in that area.

It is submitted that in due compliance of the order of the Hon'ble Tribunal, the Joint Committee inspected the area in question and submitted a report to the Hon'ble Tribunal, during September 2021.

2. Orders of the Hon'ble Tribunal

It is respectfully submitted that the Hon'ble Tribunal, Chennai in the subsequent order dated.24.09.2021 directed vide,

Para 5 - In the mean time, the committee is directed "to inspect the area again and ascertain as to whether the recommendations have been made by the committee have been complied with by the respondents 9 and 10. If not, what is the stage of the remediation suggested by them to be carried out by the respondents 9 and 10 and they are directed to submit a further report as directed to this Tribunal on or before 27.10.2021".

The copy of the order is enclosed as Annexure-I.

3. Submissions made the by NCTPS Stage I,II, III and IV(Ennore SEZ) to the Committee

In due compliance of the order of the Hon'ble Tribunal, the joint committee inspected the area in question and convened a meeting with NCTPS Power Plants officials on 20.10.2021 and in response to Hon'ble NGT order dated.24.09.2021, the NCTPS Stage I, II, III and IV (Ennore SEZ) have furnished the following information to the committee.

Table 1: Submissions made by M/s NCTPS and Ennore SEZ to the committee

Sl. No	Recommendations of the Committee vide report submitted to Hon'ble NGT during September, 2021	Submissions by NCTPS
1.	The TANGEDCO shall resume the activities pertaining to the NCTPS Stage III and Ennore SEZ Power Plants within the CRZ area in Kosasthalaiyar River/ Buckingham Canal/Backwaters only after obtaining amendment to the existing CRZ Clearance from MoEF&CC.	<p>NCTPS –III</p> <p>During the meeting, it was submitted that the Ash slurry pipeline work for NCTPS Stage III Project has very well been depicted in the CRZ map coming in CRZ IV, and the same had been submitted to the MOEF on 27/10/2015 itself and that the nature of work is not involving waterfront or foreshore facility and it is a permitted activity as per CRZ Rules 2011 and that as per para 4(i)-(b) of above CRZ 2011, for those projects listed under this notification and also attract EIA notification 2006, for such projects clearance under EIA notification only shall be required subject to being recommended by the concerned State CZMA. Project Presentation was made by TNEB(TANGEDCO) in the State Level CZMA on 19/5/2015 wherein it had been informed that 100 % dry fly ash collection in silos of one day (24 hours) generation capacity and also that bottom ash would be disposed through dry bottom ash handling system and in case of emergency, bottom ash will be disposed in the Ash Dyke of NCTPS.</p> <p>Further, it was submitted that ash pipeline is an incidental/ancillary activity necessary</p>

	<p>for the operation of the thermal power plant and the same is permissible under the CRZ areas as per the notification of MOEF &CC and CRZ rules. Hence amendment to the existing CRZ clearance is not required.</p> <p>However, since the Committee has recommended to resume the activity only after obtaining amendment to the existing CRZ clearance from MOEF&CC, necessary action/ clarification in this regard will be arranged to be obtained by NCTPS Stage III (Respondent 10) through TANGEDCO HQ (Project & Environment wing), if necessary and that TANGEDCO will extend full cooperation to the Committee.</p> <p>NCTPS –IV (Ennore SEZ)</p> <p>It was reported that the construction works within the CRZ area has been stopped and the same will be resumed after getting necessary amendment from MoEF&CC as directed by the committee.</p>
2.	<p>The TANGEDCO shall expedite removal of debris and dredged material from Kosathalaiyar river and restore natural flow within October 31, 2021.</p>
	<p>NCTPS III</p> <p>Removal of the brickbat construction debris used to facilitate commencing piling for 8 nos. in the waterway area on both east and west side of the existing RCC bridge at the Kosasthalaiyar river back waters was started on 11/7/2021 itself and carried out during 8/2021 and about 15 m³cleared and stacked at a distance of about 100m and the same was shown to the Committee on 20/10/2021.</p> <p>Removal of balance brickbat construction debris of about 150 m³dumped in the land area was also requested to be cleared away from the site.</p> <p>The Committee informed to clear away the brickbat construction materials away from that area and utilized somewhere else for filling. It was submitted that the same will be cleared early and utilized for filling in low lying areas in the project plant premises. It was also informed to the Committee that there was no obstruction caused so far for the movement of fishing boats and during inspection also, fishermen boats were found ferrying through the back waters under the existing bridge without any obstructions.</p> <p>NCTPS –IV (Ennore SEZ)</p> <p>The ECHS works in the water body area has been temporarily stopped on 27.7.21.</p>

As requested by the Revenue Officials, removal of filling sand has been started on 4.8.21 and removal completed from Pier No.19 (19500/25000 cum) and removal of the filling sand in the balance area are under progress. Also, action is being taken to cut the already cast piles located in the water body up to the riverbed level including removal of dumped sand within October 31st 2021.

The Filling Sand Removal Status in Backwater Area as on 20.10.2021.

Sl. No	Qty of Filling sand dumped in the water body(Cum)	Qty of Filling sand removed from in the water body(Cum)	Start date of Removal	Date of Completion	Present Point of disposal of Filling sand
1	25000	19500	04.08.2021	Still in progress	Nearby Stack Re claimer SR 1B & 1D

Ultimate mode of utilization /disposal of Filling sand :- For Enabling Works of Ennore SEZ Project work inside Plant Area.

Total Length of Sand filled = 230.30 m (PR-09 to PR-19)

Total Length of Filling Sand Removed = 172.50 m (PR-12 to PR-19)

3.	The TANGEDCO shall strictly fulfill and comply with the conditions imposed in the Environmental Clearance under the EIA Notification as amended and CRZ Clearance under the CRZ Notification as amended without violations and deviations for NCTPS Stage III and Ennore SEZ Power Plants unlike the environmental damage already caused by the operation of NCTPS Stage-I & II Thermal Plants due to ash deposit in the water bodies and the air-borne fly ash in the nearby villages causing nuisance and air pollution.	Assured by NCTPS Stage III and Ennore SEZ Power Plants to comply with the conditions imposed in the Environmental Clearance under the EIA Notification as amended and CRZ Clearance under the CRZ Notification as amended without violations and deviations.
4.	The TANGEDCO shall procure and replace the existing ash slurry pipe lines 1, 2, 3, 4 & 5 pertaining to the NCTPS Stage I with new cast basalt pipe before December 2021 as already committed to the Hon'ble National Green Tribunal in Applications No.8 of 2016, 152 of 2016 & 198 of 2016.	Ash Slurry Disposal Line (ASDL) No.1 - (5129 mtrs) – Administrative approval for procurement of New cast basalt pipe has been submitted to HQ and it is under process and will be completed by June 2022. ASDL No.2 - (5511 mtrs) - 1160 meters of new cast basalt pipe lines have been replaced with available 3498 metres pipes and work is being carried out on emergency basis and will be completed by December 2021.

		<p>ASDL No.3 – (4942 mtrs) - New cast basalt pipe has been replaced successfully from ash dyke to NCTPS gate and there are no leaks developed in this pipeline.</p> <p>7390 meters of pipes have been supplied and being replaced out of 10452 meters of ordered quantity for Line 2 & 3 for a value of Rs.8.36 Crores .Supply of pipes has been delayed due to Covid-19& lock down.</p> <p>ASDL No.4 – (4942 mtrs) - Tender for procurement of 4942m of new cast basalt pipes for a value of Rs. 4.32 Crores has been lodged due to non-acceptance of validity by the bidders, exorbitant steel price hike and non acceptance of LD terms of TANGEDCO dated 06.01.2021. Fresh administrative approval has been accorded by TANGEDCO Head quarters for Rs.7.3 crores. Procurement action is under process with Board Level Tender Committee at HQ and will be completed by May 2022.</p> <p>ASDL No.5 – (5511 mtrs) - Administrative approval for procurement of New cast basalt pipe has been submitted to HQ and it is under process and will by completed on June 2022.</p> <p>Due to Covid pandemic, Nation wide lock down has been imposed from March 2020 to September 2020 as per the guidelines of Government of India. Afterwards partial lockdown was continued. At that time all the manufacturer have stopped/restricted their manufacturing activities.</p> <p>Hence procurement process got delayed and consequently works have also been delayed.</p>
5.	The TANGEDCO shall also procure and replace the retrieved pipes from ETPS utilized for ash slurry pipe lines 1 & 5 pertaining to the NCTPS Stage I with new cast basalt pipe to permanently resolve the slurry ash disposal into water bodies.	Administrative approval for procurement of New cast basalt pipe has been submitted to HQ and it will be completed by June 2022.

6.	<p>The TANGEDCO is stopping the pumps soon after identifying leaks, followed by flushing with water and replacing the damaged portion of the pipe. However, the TANGEDCO is not taking any measures to clean up the area, where leak has taken place. The committee suggests that in addition to stopping the pumps, repairing the pipes, the TANGEDCO shall also take measures to clean up the area, where ash slurry has leaked, and transfer the ash it into ash dyke.</p>	<p>Work has been awarded for cleaning the area where ash leak occurs and to transport the ash to ash dyke.</p>
7.	<p>From the log books, the committee observed that, pipeline leaks due to pipe burst/rupture of joints due to ageing of pipes are very common and frequently (average frequency of one leak/week) taking place in old pipelines. Apart from the leaks due to pipeline bursts/rupture, pinhole leakage is taking place in all three old pipelines. The TANGEDCO is not taking measures to rectify pinhole leakages. If timely action is not taken to rectify these pinhole leakages, it may lead to a major leakage. The committee submits that the TANGEDCO shall immediately rectify the pinhole leakages in the pipelines that are noticed by the patrolling team.</p>	<p>Whenever pinhole leakage occurs, timely action is being taken to stop the pump immediately as and when noticed and pinhole leakages are attended by providing patch plates.</p>
8.	<p>The TANGEDCO is replacing the portion of the old damaged pipeline with pipes retrieved from Ennore Thermal Power Plant to arrest leakage. After replacement, the damaged pipelines are laying at the place of leak itself. The committee submits that TANGEDCO shall take measures to remove all the old damaged pipelines laying in the ground and keep it in stores and subsequently dispose it.</p>	<p>The old damaged pipe after replacement are being devoluted to NCTPS Store and in addition steps have been taken to devolute all the old damaged scattered pipe to NCTPS stores. More than 95% of the retrieved pipes have been devoluted to stores. Balance 5% will be devoluted within two days.</p>

9. The TANGEDCO shall carry out patrolling of ash slurry disposal pipe lines round the clock to notice and avert the leakages of pipe lines, so as to prevent the disposal of ash into Kosasthalaiyar River, Buckingham Canal etc. till the replacement of existing pipe lines.

Separate gang (consisting of 12 Nos.) with Jeep for Patrolling of Ash slurry disposal line to a stretch of 5.5 KM is being carried out round the clock to avert leakage of pipe lines, so as to prevent the leakage of ash slurry to the Kosasthalaiyar River and Buckingham Canal.

10 During inspection, the committee observed that the ash previously removed from Kosasthalaiyar River and Buckingham canal was stored near the point of excavation. During rainfall, the ash will get into river & canal again. The committee submits that the TANGEDCO & PWD shall ensure that the removed ash shall be transferred to ash dyke.

Kosasthalaiyar river: The PWD had de silted 4.35 lakhs m³ of ash from the Kosasthalaiyar river and dumped the silt on the banks and this work was completed during the end of Dec'20. Out of which 2.5 lakhs m³ have already been removed by M/s.TPIPL. The removal of balance 1.85 lakhs m³ is under progress. The above removal work will be arranged to be completed before March 2022.

Buckingham Canal: The PWD has de silted the Buckingham canal and dumped the silt on the banks and this work was completed during the end of March 21. The total quantity de silted in Buckingham canal is about 89,600 m³. Out of which 70,000 m³ have already been removed by M/s.TPIPL. The removal of balance 19,600 m³ is under progress. The above removal work will be arranged to be completed before Mar'22.

Kosasthalaiyar river [NCTPS-I main gate (Ch.20.00) to KPL main gate(Ch.22.40)]							
Quantity of ash present in the river as assessed by the previous committee in OA 8/2016	Quantity of ash due to leakage post committee inspection	Total ash present in river	Quantity of ash desilted/dredged	Storage of dredged material	Start & Stop date of desiltation	Balance quantity to be removed from Banks of Kosasthalaiyar river	Ultimate utilization of desilted materials
3.25 lakhs m ³	1.10 lakhs m ³ (assessed by PWD)	4.35 lakhs m ³ (assessed by PWD)	4.35 lakhs m ³	4.35 lakhs m ³	15.06.2020 to Dec'20	Out of 4.35 lakhs m ³ ash 2.50 lakhs m ³ ash lifted by M/s.TPIPL. Balance 1.85 lakhs m ³ ash lifting work is under progress.	Used for land filling by TPIPL near NCTPS-I ash dyke

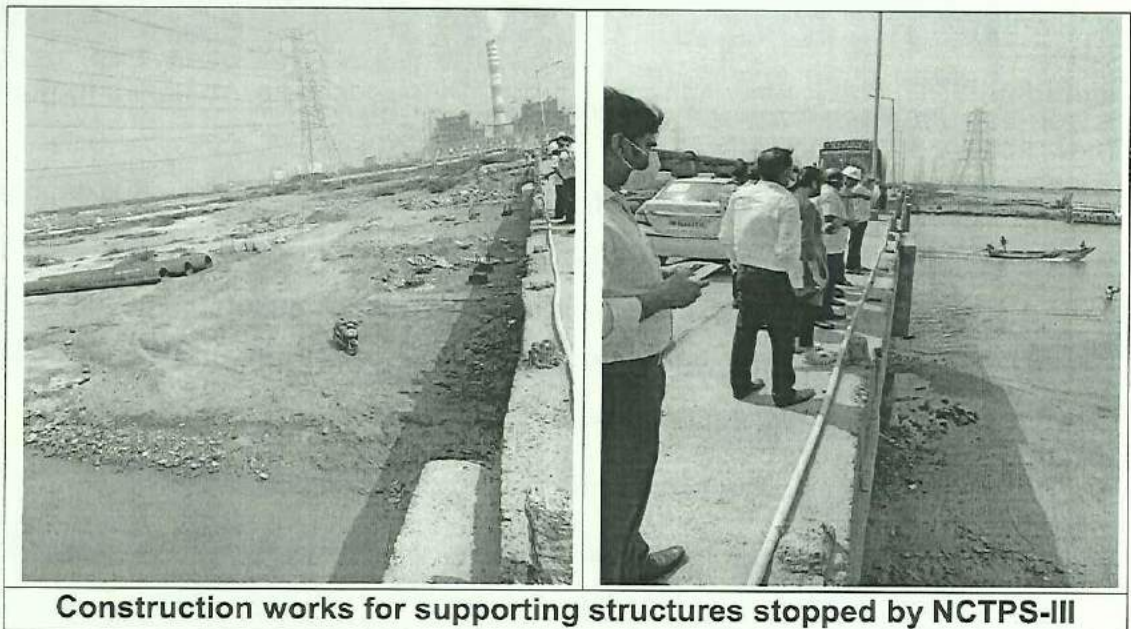
Buckingham canal [NCTPS-I main gate (Ch.20.00) to KPL main gate(Ch.22.40)]							
Quantity of ash present in the river as assessed by the previous committee in OA 8/2016	Quantity of ash due to leakage post committee inspection	Total ash present in river	Quantity of ash desilted/dredged	Storage of desilted material	Start & Stop date of desiltation	Balance quantity to be removed/ desilted from Banks	Ultimate utilization of desilted materials
77,331 m ³ (from Ch.20.00 to 22.40 Km)	56,669 m ³ (assessed by PWD) (From Ch.20.00 to 22.40 Km)	1,34,000 m ³ (assessed by PWD) (From Ch.20.00 to 22.40 Km)	89,600 m ³ (From Ch.20.80 to 22.40 Km)	89,600 m ³	Nov'20 to Mar'21	Out of 89,600 m ³ ash 70,000 m ³ ash lifted by M/s.TPIPL. Balance 19,600 m ³ ash lifting work is under progress.	Used for land filling by TPIPL near NCTPS-I ash dyke
Further an estimate has been evolved to remove 200 m length in 'B' Canal at pipeline crossing by NCTPS-II based on the letter received from the collector, Thiruvallur.							
11	The NCTPS Stage-I shall remit the environmental compensation of Rs.4,12,20,000/- (Rupees Four crore twelve lakhs & twenty thousand only) assessed by the Committee for continuing the disposal of ash slurry in water bodies.			The leakages through Ash slurry disposal lines have been minimized now and the leakages of ash slurry in water bodies have been averted to the maximum extent. It is submitted that as all we know, TANGEDCO is a service oriented organisation which provides free power supply to agriculture services, weavers, huts, and also provides power supply to domestic consumers at subsidiary rates. Moreover TANGEDCO is now facing severe financial crunch. Hence, it is prayed and submitted that the assessment by the committee to remit the environmental compensation of Rs. 4,12,20,000/-(Rupees four crore twelve lakhs & twenty thousand only) is very huge and a burden to TANGEDCO. Hence it is requested that NGT committee may please reconsider and recommend to waive off the Environmental compensation. It is also submitted that already TANGEDCO have remitted an environmental compensation of Rs.16.461 Crores for NGT OA No. 8 of 2016 for the same cause.			

12	The unit shall provide dust nets/mesh towards Seppakkam village to minimize the impacts of fly ash dust and stack emissions.	The work was awarded for providing dust net/mesh of size 2mm X 2mm near Seppakkam Village to a length of 324 m and height of 3 m is issued to the contractor and the work will be commenced shortly and completed before Nov-2021.
13	The unit shall augment the air pollution control devices installed in Stage-I & II and ensure that stack emissions are complying with notified standards. The units shall ensure that OCEMS installed in Stage-I & II are working properly and real time actual data is transmitted to CPCB and TNPCB servers.	For NCTPS-1, Maximum number of ESP fields is kept in service in all the three units so as to maintain the emission within the standard norms by close monitoring of ESP fields. Every year the ESP internals have been overhauled and Renewal/rectification works are carried out if any damaged /worn out spares during AOH and available shutdown period. Hence the stack emissions are being maintained with notified new standards most of the time. It is ensured that, the online continuous emission monitoring system (OCEMS) installed in stage I & II are working properly. Since, it has been reported by the TNPCB/CPCB whenever the exceedance of emission norms. For NCTPS-2, Renewal of field internals of 42 Nos. (Unit 1&2) is under progress and will be completed by May 2022. Tender for FGD is under process.
14	The unit shall strengthen the earthen bund laid towards Seppakkam village and ensure that runoff from ash dyke or ash depositions are not carried to villages. The unit shall provide a drain before the bund so that runoff water is collected in drains and can be lifted back to ash dyke.	A temporary bund has been formed adjacent to Seppakkam Village to prevent the entry of water into the Village. For strengthening the earthen bund and forming toe drain, IIT Chennai have been appointed as Consultant. The report is received and the work will be commenced by Ennore SEZ Project/TANGEDCO.

4. Observations of the Committee:

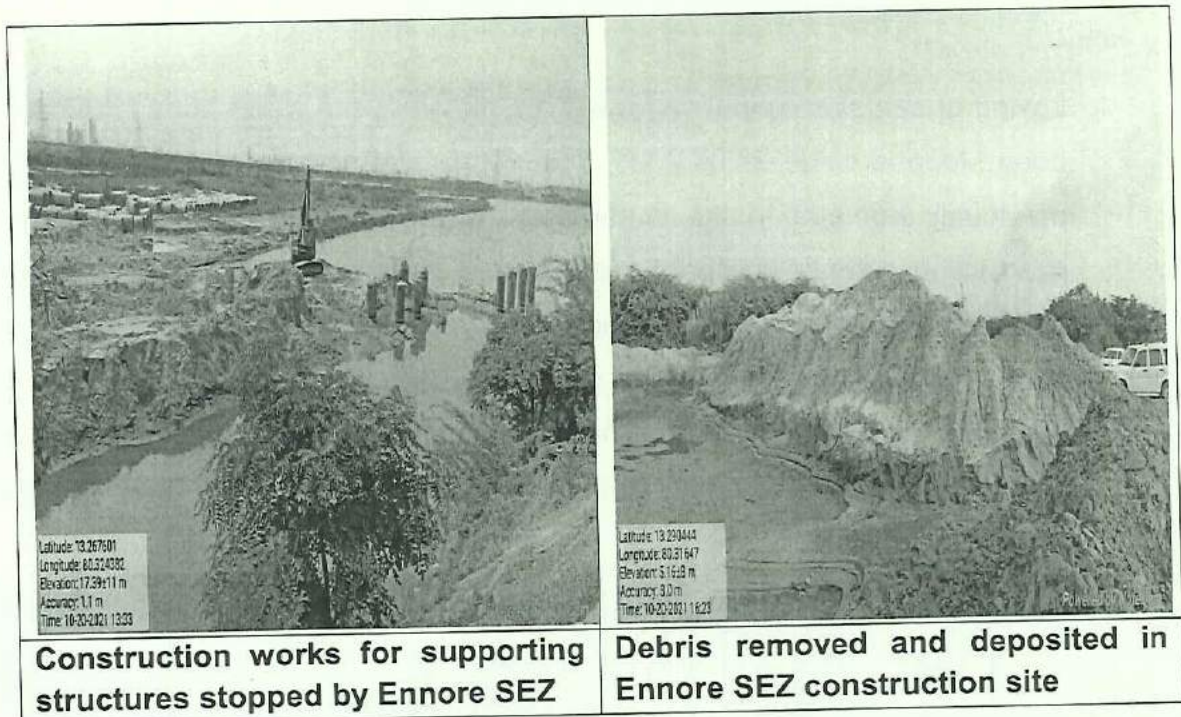
The Joint committee inspected the area in question on 20.10.2021 and the following are submitted:

1. Laying of ash slurry pipeline for NCTPS III within the water body (CRZ area) has been stopped since 27.07.2021. The debris and construction material that were previously dumped in the water body is removed and presently there is no obstruction and fishing boats are sailing in the water body. The debris that were removed from the water body are deposited around 100m away from the river bank. Though the debris are not obstructing flow of water but during rainy season it may be washed into the river, hence committee suggests that the debris may be utilized or disposed safely in M/s NCTPS own land away from the water body by November 30, 2021.



Construction works for supporting structures stopped by NCTPS-III

2. Construction work of piles for the supporting structure for laying of coal conveyor / pipelines of NCTPS IV (Ennore SEZ) in the water body has been stopped. It was reported that during construction activity about 25,000 m³ of silt / debris / dredged sand from M/s.KPL was dumped in the water body. In compliance to Hon'ble NGT orders M/s NCTPS stage-IV have started removal of silt / debris/ sand inside the water body since 04.08.2021. As on 20.10.2021 about 19,500 m³ of quantity is removed from the water body and about 5500 m³ of debris is yet to be removed. Removal of debris was in progress and by October 31, 2021 the unit shall completely remove the debris from water body as committed. The debris removed from the water body is stored in the premises of NCTPS IV (Ennore SEZ) construction site and it was reported that it would be used for leveling and land filling within the construction site.



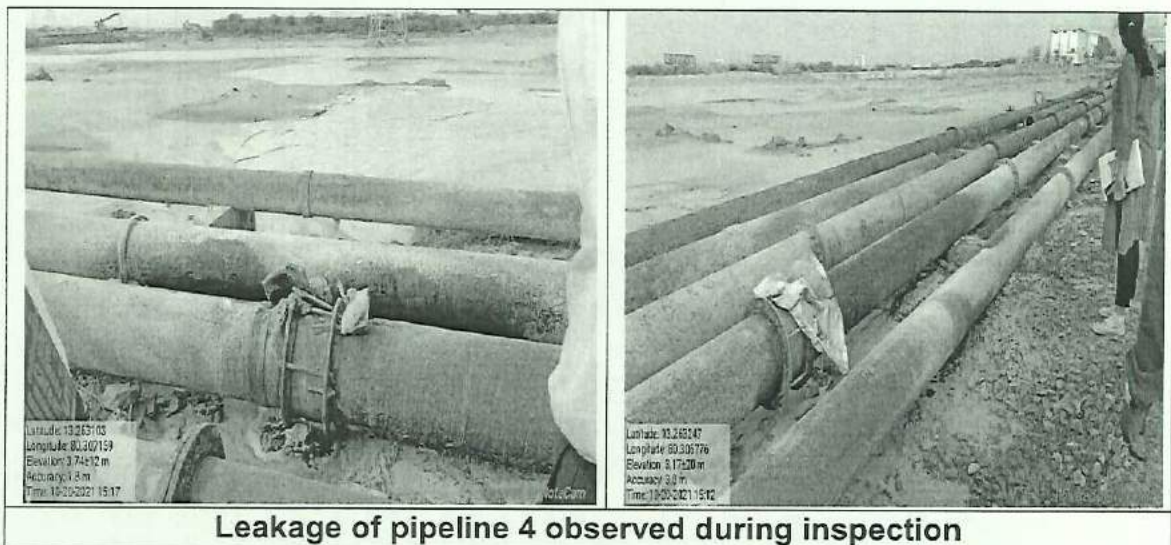
3. The ash slurry pipelines from NCTPS Stage-I cross Buckingham Canal, Backwaters and Kosasthalaiyar River and reach the Ash Pond. On the day of inspection, line -1 & 3 were in service, line -2 under replacement, line-4 was under maintenance and line-5 was standby. The current status of replacement of ash pipelines is given in table 2:

Table 2: Status of replacement of ash pipelines as on 20.10.2021

Sl. No.	Description of pipeline	Outer diameter	Pipe thickness	Length of pipeline	Present status
1	Ash slurry disposal line-1	406mm	6mm	5129m	Replaced with second hand pipes retrieved from ETPS.
2	Ash slurry disposal line-2	406mm	6mm	5511 m	Replacing with new pipe and reported to be completed before December 31, 2021.
3	Ash slurry disposal line-3	406mm	6mm	4942 m	Replacing with new pipe and reported to be completed before December 31, 2021.
4	Ash slurry disposal line-4	406mm	6mm	4942 m	Old pipeline. Tender invited for procuring new pipes.
5	Ash slurry disposal line-5	356 mm	6 mm	5511 m	Replaced with second hand pipes retrieved from ETPS.

4. Although minor leakages of ash slurry pipeline -4, at two places, were noticed at the time of inspection, no other major leakages were noticed. The unit is taking steps to arrest the leakages immediately so that the surrounding area is not contaminated. Measures taken by M/s NCTPS for early detection of leakages are as follows:

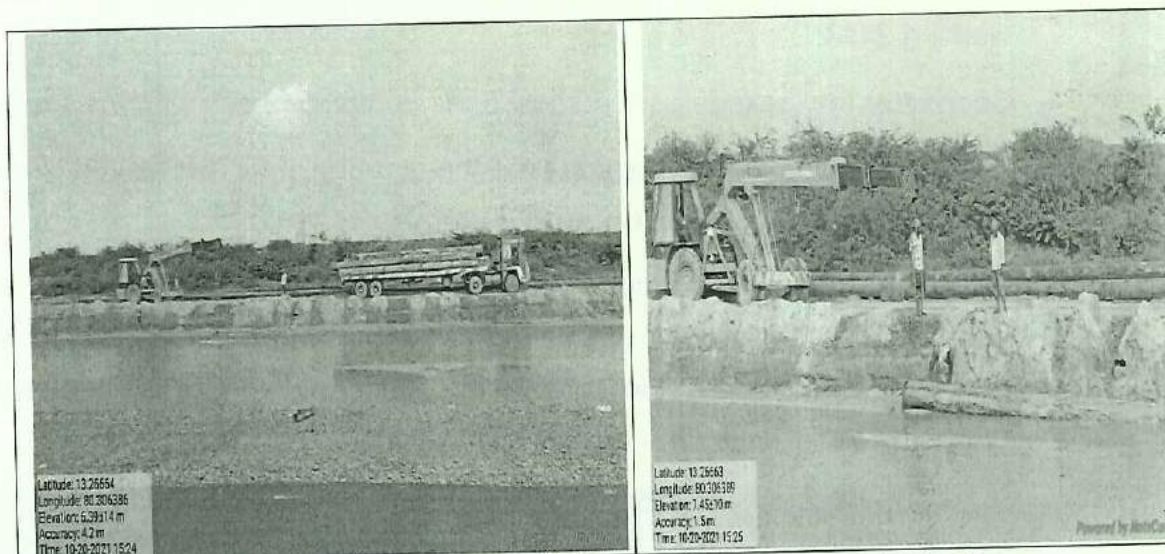
- A dedicated patrol team of 12 members (two vehicles) is appointed by M/s NCTPS to inspect/ watch the pipelines for any leakages. The patrol team is working 24x7.
- Soon after the leakages are detected, the pumping of ash slurry is stopped.
- The surrounding area is cleaned and the quantity of fly ash leaked is removed and transferred to ash dyke.
- During the meeting, the committee learnt that the top Management starting from Chief Engineer who is heading M/s NCTPS stage-I and senior officers are closely checking the records for leakages and to immediately take measures for arresting the leakages in the pipes



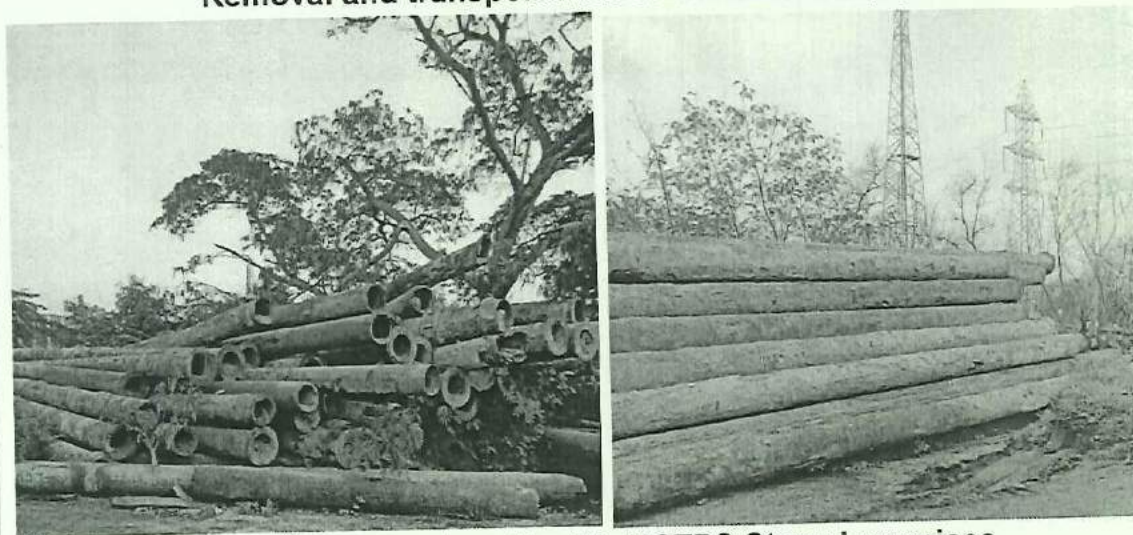
5. Removal of earlier deposition of ash from the leaky pipeline areas and transportation of the same to ash pond was going on.
6. Previously when the leaking portion of the pipes were replaced with new ones, the old pipes were left near point of replacement itself. Due to these, many old rusted pipelines were found laying along the pipeline route. In compliance to Hon'ble NGT orders, M/s NCTPS Stage-I started removing of old pipes and same were being collected and transported to the storage yard inside the NCTPS Stage I

Table 3: Details of removed pipes from ash handling area

Sl.No	Month	Length of old ash pipelines removed (in metres)	Remarks
1	August, 2021	951	-
2	September, 2021	-	
3	October, 2021	2877	As on 26.10.2021
Total		3828	



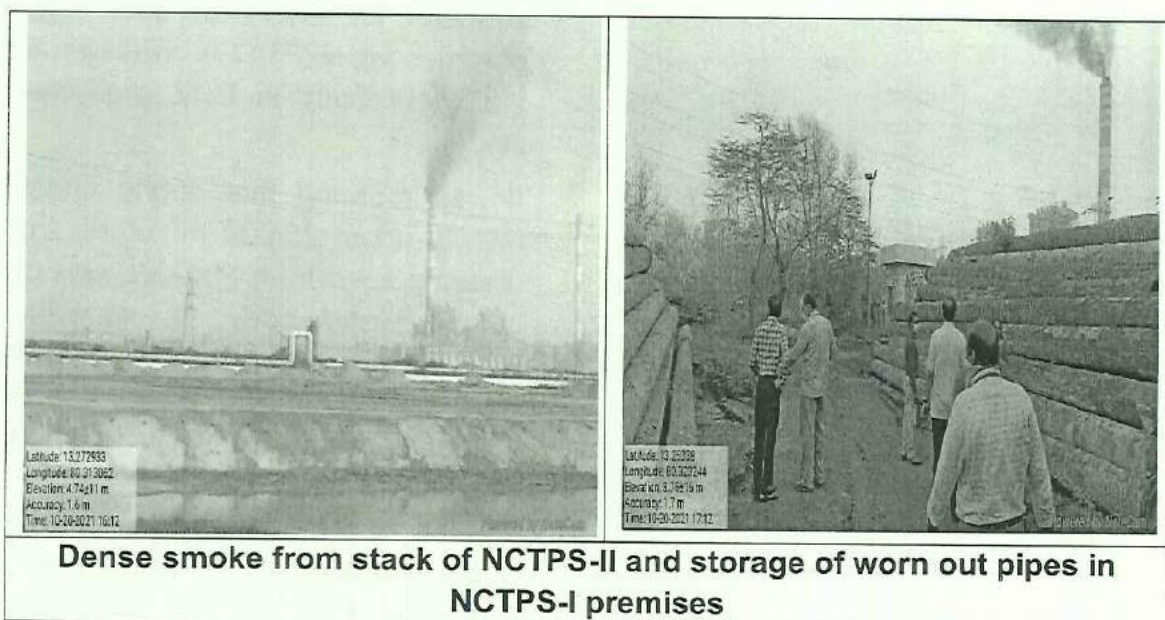
Removal and transportation of old worn out pipes



Removed pipes stored in M/s NCTPS Stage I premises

- Dense flue gas emission was noticed from the boiler stack of NCTPS Stage II at the time of inspection. Though the unit has installed Online Continuous Emission monitoring system to monitor PM, SOx and NOx emitted from the flue gas, it was observed that as per OCEMS readings, real time data is not transmitted to CPCB/ TNPCB and there is time delay. The committee observed that SMS alerts are

generated whenever exceedances are observed however the unit is yet to take corrective actions.



5. Remarks & Findings of the Committee :

Sl. No	Recommendation of the Committee during September 2021	Remarks of the Committee based on inspection on 20.10.21
1.	The TANGEDCO shall resume the activities pertaining to the NCTPS Stage III and Ennore SEZ Power Plants within the CRZ area in Kosasthalaiyar River/ Buckingham Canal/Backwaters only after obtaining amendment to the existing CRZ Clearance from MoEF&CC.	During inspection, no construction activities were carried out inside the water bodies in CRZ area by NCTPS Stage III and Stage IV (Ennore SEZ).
2.	The TANGEDCO shall expedite removal of debris and dredged material from Kosasthalaiyar river and restore natural flow within October 31, 2021.	Supporting structures for laying of pipeline for NCTPS III inside the water body in CRZ area have been stopped. The debris and construction material that were previously dumped in the water body is removed and presently there is no obstruction and fishing boats are sailing in the water body. The debris that were removed from the water body are deposited around 100m away from the river bank. Though the debris are not obstructing flow of water but during rainy season it may be washed into the river, hence committee suggests that the debris

		<p>may be utilized or disposed safely in M/s NCTPS own land away from the water body by November 30, 2021.</p> <p>Construction work for the supporting structure for laying of coal conveyor / pipelines of NCTPS IV (Ennore SEZ) in the water body in CRZ area has been stopped.</p> <p>It was reported that during construction activity about 25,000 m³ of silt / debris / dredged sand from M/s.KPL was dumped in the water body. In compliance to Hon'ble NGT orders M/s NCTPS stage-IV have started removal of silt / debris/ sand inside the water body since 04.08.2021. As on 20.10.2021 about 19,500 m³ of quantity is removed from the water body and about 5500 m³ of debris is yet to be removed. Removal of debris was in progress and by October 31, 2021 the unit shall completely remove the debris from water body as committed. The debris removed from the water body is stored in the premises of NCTPS IV (Ennore SEZ) construction site and it was reported that it would be used for leveling and land filling within the construction site.</p>
3.	<p>The TANGEDCO shall strictly fulfill and comply with the conditions imposed in the Environmental Clearance under the EIA Notification as amended and CRZ Clearance under the CRZ Notification as amended without violations and deviations for NCTPS Stage III and Ennore SEZ Power Plants unlike the environmental damage already caused by the operation of NCTPS Stage-I & II Thermal Plants due to ash deposit in the water bodies and the air-borne fly ash in the nearby villages causing nuisance and air pollution.</p>	<p>Assured by NCTPS Stage III and Ennore SEZ Power Plants to comply further with the conditions imposed in the Environmental Clearance under the EIA Notification as amended and CRZ Clearance under the CRZ Notification as amended without violations and deviations.</p>

4.	<p>The TANGEDCO shall procure and replace the existing ash slurry pipe lines 1, 2, 3, 4 & 5 pertaining to the NCTPS Stage I with new cast basalt pipe before December 2021 as already committed to the Hon'ble National Green Tribunal in Applications No.8 of 2016, 152 of 2016 & 198 of 2016.</p>	<p>Pipelines 1 and 5 were earlier replaced with the second hand pipes retrieved from Ennore Thermal plant (ETPS) in August 2020.</p> <p>It was reported by the NCTPS Stage- I officials that for pipeline 1 (5129 mtrs) and pipeline 5 (5511 mtrs) administrative approval for procurement of New cast basalt pipe has been submitted to Head Office and it is under process and will be completed by June 2022.</p> <p>For pipeline 2 (5511 mtrs), 1160 meters of new cast basalt pipe lines have been replaced with the available 3498 metres pipes and the remaining work is being carried out and reported to be completed by December 2021.</p> <p>For pipeline 3 (4942 mtrs), new cast basalt pipe has been replaced from ash dyke to NCTPS gate. Balance pipes of length of 1050 metres inside NCTPS premises to be replaced.</p> <p>It was reported by the NCTPS Stage-I officials that supply of pipes has been delayed due to Covid-19 & lock down. Afterwards partial lockdown was continued. At that time all the manufacturer have stopped/restricted their manufacturing activities. Hence procurement process got delayed and consequently works have also been delayed. The balance pipes of length of 1050 metres inside NCTPS premises will be replaced on receipt of balance materials.</p> <p>For pipeline 4 (4942 mtrs) no replacement works have been started.</p> <p>It was reported by the NCTPS Stage-I officials that tender for procurement of 4942m of new cast basalt pipes for a value of Rs.4.32 Crores has been lodged due to non-acceptance of validity by the bidders, exorbitant steel price hike and non acceptance of LD terms of TANGEDCO dated 06.01.2021. Fresh</p>
----	---	--

		administrative approval has been accorded by TANGEDCO Head office for Rs.7.3 Crores. Also, reported that procurement action is under process with Board Level Tender Committee at Head office and will be completed by May 2022.
5.	The TANGEDCO shall also procure and replace the retrieved pipes from ETPS utilized for ash slurry pipe lines 1 & 5 pertaining to the NCTPS Stage I with new cast basalt pipe to permanently resolve the slurry ash disposal into water bodies.	It was reported by the NCTPS Stage-I officials that for pipeline 1 (5129 mtrs) and pipeline 5 (5511 mtrs) administrative approval for procurement of New cast basalt pipe has been submitted to Head Office and it is under process and will be completed by June 2022.
6.	The TANGEDCO is stopping the pumps soon after identifying leaks, followed by flushing with water and replacing the damaged portion of the pipe. However, the TANGEDCO is not taking any measures to clean up the area, where leak has taken place. The committee suggests that in addition to stopping the pumps, repairing the pipes, the TANGEDCO shall also take measures to clean up the area, where ash slurry has leaked, and transfer the ash it into ash dyke.	Removal of earlier deposition of ash from the leaky pipeline areas and transportation of the same to ash pond was under progress.
7.	From the log books, the committee observed that, pipeline leaks due to pipe burst/rupture of joints due to ageing of pipes are very common and frequently (average frequency of one leak/week) taking place in old pipelines. Apart from the leaks due to pipeline bursts/rupture, pinhole leakage is taking place in all three old pipelines. The TANGEDCO is not taking measures to rectify pinhole leakages. If timely action is not taken to rectify these pinhole leakages, it may lead to a major leakage. The committee submits that the TANGEDCO shall immediately rectify the pinhole	The TANGEDCO has engaged a separate patrol team to identify the pipeline leaks for taking measures to arrest the leakages immediately. It was reported that measures to rectify pinhole leakages to avoid major leakage are also undertaken.

	leakages in the pipelines that are noticed by the patrolling team.	
8.	The TANGEDCO is replacing the portion of the old damaged pipeline with pipes retrieved from Ennore Thermal Power Plant to arrest leakage. After replacement, the damaged pipelines are laying at the place of leak itself. The committee submits that TANGEDCO shall take measures to remove all the old damaged pipelines laying in the ground and keep it in stores and subsequently dispose it.	Old removed worn out pipes were being collected and transported to the storage yard inside the NCTPS Stage-I.
9.	The TANGEDCO shall carry out patrolling of ash slurry disposal pipe lines round the clock to notice and avert the leakages of pipe lines, so as to prevent the disposal of ash into Kosasthalaiyar River, Buckingham Canal etc. till the replacement of existing pipe lines.	The TANGEDCO has engaged a separate patrol team to identify the pipeline leaks for taking measures to arrest the leakages immediately.
10.	During inspection, the committee observed that the ash previously removed from Kosasthalaiyar River and Buckingham canal was stored near the point of excavation. During rainfall, the ash will get into river & canal again. The committee submits that the TANGEDCO& PWD shall ensure that the removed ash shall be transferred to ash dyke.	Still, a part of excavated ash from Kosasthalaiyar River and Buckingham Canal is found to be stored near the point of excavation.
11.	The NCTPS Stage-I shall remit the environmental compensation of Rs.4,12,20,000/- (Rupees Four crore twelve lakhs & twenty thousand only) assessed by the Committee for continuing the disposal of ash slurry in water bodies.	Not yet remitted by NCTPS Stage-I.
12.	The unit shall provide dust nets/mesh towards Seppakkam village to minimize the impacts of fly	Not yet provided and it was reported that for providing dust nets/mesh, work was awarded and the same will be completed

	ash dust and stack emissions.	before November 2021. M/s NCTPS has finalized the specifications for the mesh. The pore size of the mesh is 2mm x 2mm. The mesh will be provided to a length of 400m and height of 10m thereby covering the Village.
13.	The unit shall augment the air pollution control devices installed in Stage-I & II and ensure that stack emissions are complying with notified standards. The units shall ensure that OCEMS installed in Stage-I & II are working properly and real time actual data is transmitted to CPCB and TNPCB servers.	It was reported that for NCTPS-I, every year, the ESP internals have been overhauled and renewal/rectification works are carried out if any damaged / worn out spares during Annual Overhaul (AOH) and available shutdown period. For NCTPS-II, Renewal of field internals of 42 Nos. (Unit 1&2) is under progress and will be completed by May 2022. Tender for FGD to control sulphur emission is under process. The Online Continuous Emission Monitoring System (OCEMS) for the parameters PM, SO _x & NO _x installed in Stage I (All three boilers) & II (All two boilers) are connected to TNPCB/CPCB server.
14.	The unit shall strengthen the earthen bund laid towards Seppakkam village and ensure that runoff from ash dyke or ash depositions are not carried to villages. The unit shall provide a drain before the bund so that runoff water is collected in drains and can be lifted back to ash dyke.	It was reported that for strengthening the ash pond earthen bund and forming toe drain, IIT Chennai has been appointed as Consultant. Also, reported that the report from IIT, Chennai has been received and the work will be commenced by TANGEDCO. Committee suggests that the height of the earthen bund shall be increased to 2m

6. Recommendations of the Committee

1. The TANGEDCO shall complete the recommendations of the committee constituted by the Hon'ble NGT in O.A.No.08 of 2016, 152 of 2016 & 198 of 2016, within the time line committed.
2. The TANGEDCO shall also complete the recommendations of the committee constituted by the Hon'ble NGT in O.A.No.162 of 2021.
3. The NCTPS Stage-I shall remit the Environmental Compensation of **Rs.4,12,20,000/- (Rupees Four crore twelve lakhs & twenty thousand only)** as

assessed by the committee constituted by the Hon'ble NGT in O.A.No.162 of 2021 and submitted to the Tribunal in September 2021.

4. The unit M/s NCTPS Stage-II shall augment the air pollution control devices installed and ensure that stack emissions are complying with the stipulated standards at all times.
5. The unit M/s NCTPS Stage-I shall increase the height of the bund near Seppakkam Village to 2m.
6. The construction debris removed from the water body by M/S NCTPS Stage-III shall be utilized or disposed safely in M/s NCTPS own land away from the water body by November 30, 2021

It is, therefore, prayed that this Hon'ble Tribunal may take on record the above status report based on the observations made by the Joint Committee and pass appropriate and further orders as this Hon'ble Tribunal may deem fit and necessary in the circumstances of the case and thus render justice.

57. The Tribunal had also considered the response submitted by the TANGEDCO dated 20.11.2021 to the Joint Committee report in O.A. No.162/2021 extracted in Para (9) of the order which is more or less similar to the compliance report submitted by the Joint Committee and as such, we are not extracting the same again. Thereafter, this Tribunal considered the Joint Committee report in O.A. No.122/2021 and the order passed on 27.10.2021 in that case, extracted in Para (10) of the order, and considered the statement filed by the TANGEDCO regarding the steps taken by them for replacement of ash slurry pipelines in Para (43) of their counter statement which was extracted in Para (11) of the order and also considered the report submitted by the Tamil Nadu Pollution Control Board signed by the officer on 02.11.2021, e-filed on 03.11.2021 in O.A. No.122/2021 and extracted in Para (13) of the order and also considered the submissions made by the learned counsel appearing for the applicants and TANGEDCO and directed the TANGEDCO to come with an action plan with shorter timeline for replacing the pipelines and stating the difficulties they were facing for the purpose of procuring funds and administrative sanction so that this Tribunal could issue necessary direction to the higher level officials to deal with the same and remedy the situation. Further, this Tribunal also directed the TANGEDCO to produce the report regarding the study (if any) conducted by themselves for the purpose of implementing the

remediation process through an independent agency as recommended by the Joint Committee in the year 2017.

58. In the meantime, the TANGEDCO has filed a Review Application as R.A. No.14 of 2021 (SZ) in O.A. No.08/2016 (SZ) and the same was also disposed of by separate order dated 24.12.2021.

59. Vide Order dated 30.11.2021, this Tribunal considered the report submitted by the Respondents No.9 & 10 in O.A. No.162/2021 (SZ) in the form of an undertaking dated 29.11.2021 which was extracted in Para (3) of the order which reads as follows:-

"3. I state that pursuant to the said order and in compliance of the directions therein, the following present status/action taken report is submitted as hereunder.

4. I state that In North Chennai Thermal Power Station-I, 60% of Ash generated is disposed as fly ash to Cement Companies through open tender. Rest of the Ash being handled as wet Ash and the same is disposed as Ash Slurry into the Ash Dyke. The wet Ash is also shipped to some extent for ground filling such as Road filling etc., utmost care is taken to dispose the Ash to maximum extent securely.

5. I state that in North Chennai Thermal Power Station-I (NCTPS-I), 5 Nos. Ash Slurry Disposal Lines (ASDL) were erected in the year 1994, for conveying Ash slurry from NCTPS-1 into Ash Dyke for about 5 km each.

6. I state that the above pipelines are being exposed in saline atmosphere and carrying Ash slurry which is in abrasive nature. Hence the above pipelines tend to get corrosion & erosion. The most damaged pipelines were identified and replaced in piece meal manner. All the above five pipelines have fully corroded since they have served its full lifetime.

The present status of action taken on replacement of eroded ASDL Pipelines:

ASDL No.1& 5 - (5129 mtrs each) - Administrative approval is under process and the replacement of entire length of both pipelines will be completed by June 2022. Meanwhile both the above pipelines have been replaced by using the released pipes from ETPS and it disposes Ash slurry reasonably.

ASDL No. 2 - (5511 mtrs) - 1728 meters of new cast basalt pipe lines have already been replaced with available 3498 metres pipes and work is being carried out on emergency basis and will be completed by December 2021.

ASDL No.3 - (4942 mtrs) - New cast basalt pipe has been replaced successfully from ash dyke to NCTPS gate and there are no leaks developed in this pipeline.

ASDL No.4 - (4942 mtrs) - Tender for procurement of 4942m of new cast basalt Pipes is under process and will be completed by May 2022.

7. I state that due to Covid-19 pandemic, Nationwide lock down has been imposed from March 2020 to September 2020 as per the guidelines of Government of India. Afterwards partial lockdown was continued. At that time all the manufacturer have stopped/restricted their manufacturing activities and hence the supply & erection works in ASDL 2 & 3 are getting delayed.

8. I state that the Ash deposits of about 4.35 Lakh Cum in the Kosasthalaiyar River for a length of 2.4 kms from NCTPS main Gate to KPL main Gate has been desilted at a cost of Rs. 28.5 Crore through PWD during the period from June to Dec' 2020.

9. I state that similarly Ash deposits of about 134 Lakh Cum in the Buckingham Canal for a length of 2.4 Kms NCTPS main Gate to KPL main Gate has been desilted at a cost of Rs. 66.23 Lakhs through PWD during the period from June to Dec' 2020.

10. I state that as per the direction of District Collector Thiruvallur, Ash deposits of about 8813 Cum in the Buckingham Canal on the northern and southern sides of the Ash Slurry Pipelines of NCTPS-I & II has been desilted for a length of about 200 mtrs at an expenditure of 17.7 Lakhs during the period from 24.10.2021 to 15.11.2021.

11. I state that ash dyke Bund and ASDL Bund strengthening works are being taken up continuously. Also ASDL supplying sleepers are replaced / repaired then and there to improve ASDL system.

12. I state that necessary steps are being taken by planting Bamboo Saplings for greening throughout the area of Ash Slurry Disposal Lines from North Chennai Thermal Power Stations (NCTPS-I & II), up to Ash Dyke through Social Forestry Scheme by outsourcing the works to Forest Department."

60. After considering the undertaking reproduced above, this Tribunal made it clear that all the pipes which are damaged have to be replaced by new pipes within the timeline mentioned by them in the present undertaking, at the most by June- 2022 and they will have to file a periodical compliance report before this Tribunal regarding the same. While the work of replacing the damaged pipelines was in progress, the TANGEDCO was directed to use only the fully completed replaced pipeline alone (ASDL-3) for carrying the fly ash slurry to the ash pond till the other pipeline work is completed. In the meantime, if they had to replace any of the lines by new pipeline, then the TANGEDCO was directed to approach this Tribunal for modification of this order to use that pipeline as well for that purpose.

61. This Tribunal had also considered the submissions made by the learned counsel appearing for the applicants in O.A. No.08/2016(SZ) that though certain remediation process was suggested by the Committee earlier appointed by this Tribunal even during 2017, no steps were taken and the study could be conducted only after removal of the entire fly ash deposited in that area and wanted a Committee to be appointed to study these aspects for the purpose of preparing the Detailed Project Report (DPR) to conduct the remediation study and suggested certain names who were expert in this field.

62. So, this Tribunal had appointed the Joint Expert Committee comprising of
(i) Santha Sheela Nair, I.A.S. (Retd.), Former Vice-Chairperson, State Planning Commission, Former Secretary, Municipal Administration and Water Supply, Government of Tamil Nadu, Former CMD, Metrowater,
(ii) Dr. Balaji Narasimhan, Head, Environment and Water Resources Engineering, Dept. of Civil Engineering, IIT-Madras (Water Resources Expert), (iii) Dr. Indumathi Nambi, Professor, Environment and Water Resources Engineering, Department of Civil Engineering, IIT-Madras, (Remediation Expert), (iv) Prof. D. Narasiman, Retired HOD, Department

of Botany, Madras Christian College, Member, Tamil Nadu Biodiversity Authority and (v) Dr. Jayshree Venkatesan, Care Earth, Restoration Ecologist, Former member, Tamil Nadu Coastal Zone Management Authority along with one Marine Biologist whose name will have to be furnished by the Tamil Nadu Pollution Control Board as suggested by us and official representatives of the Tamil Nadu Pollution Control Board and the Integrated Regional Office, Central Pollution Control Board, Chennai along with the Director - Department of Environment, State of Tamil Nadu as committee members and Mrs. Santha Sheela Nair, I.A.S. (Retd.) was designated as the Chairperson and the Director, Department of Environment, State of Tamil Nadu as Member Secretary for the Joint Expert Committee and the Director, Department of Environment was directed to co-ordinate and provide necessary logistics for inspection and submission of the report.

63. The Joint Expert Committee was directed to look into the following issues namely,

- (i) whether any damage has been caused to the soil, water and associated flora and fauna on account of deposit of fly ash in the Kosasthalaiyar River Basin in Ennore Back water complex,
- (ii) If there is any damage caused to the soil, what is the nature of remediation to be undertaken by the TANGEDCO to restore the damage caused to the environment,
- (iii) Assess environmental compensation payable for such damage caused and its impact on the marine biology,
- (iv) Suggest the possibility of providing green belt of such nature which can be possible to protect the riverine ecology in that area, so as to avoid further encroachment and further deterioration being caused on account of such unauthorized activities.

64. After finalizing the remediation methods, the Director - Department of Environment was directed to prepare the Detailed Project Report (DPR) for carrying out the remediation process with timelines. The TANGEDCO was directed to meet the expenses for conducting studies by the Joint Expert Committee and the Joint Expert Committee was directed to

prepare the report including the preparation of Detailed Project Report (DPR) for remediation process within a period of 4 (Four) months.

65. In the meantime, an interlocutory application [I.A. No.31/2022 (SZ)] has been filed by the Original Applicant in O.A. No.08/2016 (SZ) seeking clarification on the following aspects:-

- a. The Committee may finalize Terms of Reference (ToR) for preparation of DPR.
- b. A tender for appointment of a consultant for preparation of DPR would have to be floated by either the Department of Environment or TNPCB.
- c. The committee's inputs may be received in evaluating the consultants and a consultant organisation may be appointed to prepare the DPR.
- d. The committee will oversee the quality of the work and ToR compliance by the DPR consultant and approve the DPR thus prepared and submit it to this Hon'ble Court.
- e. TNPCB may be directed to pay the expenses incurred by the committee in the performance of its functions including costs incurred in conducting tests, analysis etc. This may be paid out of funds available with TNPCB for the restoration of this region, paid as penalty by NCTPS. Initial cost of the DPR preparation may also be paid by TNPCB and recovered from NCTPS, without waiting for NCTPS to make necessary payments."

66. After considering the interlocutory application, this Tribunal had passed the following order:-

"4. As according to the Government procedure, the committee cannot prepare the Detailed Project Report (DPR) and tenders will have to be floated to get the appropriate consultant for preparation of DPR and only thereafter, the DPR will be approved by the concerned authority and administrative sanctions will have to be given for carrying out the work on the basis of DPR prepared.

5. It may be mentioned here, that if Para (14) alone is read, there is a possibility of some confusion in this regard. If the entire order is read along with Para 12 & 13, there is no scope for any ambiguity in the directions issued. It was made clear that the expert committee was appointed only for the purpose of preparing a remediation plans and also to prepare a Terms of Reference (ToR) on the basis of which the DPR will have to be prepared and the responsibility of preparing the DPR was entrusted to the Director, Department of Environment and the said officials will have to take appropriate steps for preparation of DPR as provided under the respective rules in accordance with law as expeditiously as possible and avoiding unnecessary delay in completing the process.

6. The counsel appearing for the applicant submitted that the analysis expenses have to be met by the Tamil Nadu Generation and Distribution Corporation (TANGEDCO) as part of the expenditure. But if the amount is not released expeditiously, getting the results will be delayed which will further delay of filing the committee report. In order to avoid the same, a direction may be given to the Tamil Nadu Pollution Control Board (TNPCB) to meet the initial expenses for conducting the analysis etc., and to recover the amount from Tamil Nadu Generation and Distribution Corporation (TANGEDCO) by giving their demand. On getting the demand Tamil Nadu Generation and Distribution Corporation (TANGEDCO) can be directed to pay the amount without delay.

7. We feel it is not necessary to give such a direction as it was made clear in our order that the whatever expenses required for conducting the study which may includes taking samples and conducting analysis etc., has to be met by the Tamil Nadu Generation and Distribution Corporation (TANGEDCO).

8. However to avoid the delay, we direct the Tamil Nadu Pollution Control Board (TNPCB) to meet the expenses initially for conducting the analysis test and to recover the amount from Tamil Nadu Generation and Distribution Corporation (TANGEDCO) by sending a demand to them and on getting the demand, the Tamil Nadu Generation and Distribution Corporation (TANGEDCO) is directed to reimburse that amount without delay."

67. Accordingly, I.A. No.31 of 2022 (SZ) was disposed with the observations made above, vide order dated 16.02.2022, after advancing the case to that date by order in I.A. No.32 of 2022 (SZ).

68. The Joint Committee as well as the Joint Expert Committee appointed by this Tribunal have filed their respective reports and the case was posted to 25.04.2022 for consideration of the reports.

69. In the meantime, the Original Applicant in O.A. No.08/2016 (SZ) viz., R. Ravimaran died and two persons wanted to proceed with the matter, filed an interlocutory application [I.A. No.77/2022 (SZ) in O.A. No.08/2016 (SZ)] to get themselves impleaded and this Tribunal by order dated 25.04.2022, allowed that application and impleaded the applicants in I.A. No.77/2022 (SZ) as additional Original Applicants No.2 & 3 in O.A. No.08/2016 (SZ).

70. This Tribunal had also considered another interlocutory application [I.A. No.89 of 2022 (SZ)] filed by the TANGEDCO viz., Respondents No.2 & 3 in O.A. No.08 of 2016 (SZ) seeking permission to permit them to use ASDL-2 ash disposal pipeline and stop using of ASDL-5, as ASDL-2 has been replaced with new pipes as directed by this Tribunal and they also mentioned that they will have to provide the pumping system also for pumping the fly ash to the new pipeline. Once that is done, they may be able to use the ASDL-2 and that is also procured and installed and this Tribunal had passed the following order in I.A. No.89 of 2022 (SZ):-

"5. As per order dated 24.12.2021 in R.A. No.14 of 2021 (SZ) in O.A. No.08 of 2016 (SZ) filed by the TANGEDCO, this Tribunal had modified the following order passed by this Tribunal on 30.11.2021,

"4. It is seen from the undertaking that they have undertaken to replace the damaged pipes with new pipes, instead of replacing the same with the old pipes available from their decommissioned unit, as mentioned by them in the earlier report.

5. So, we make it clear that all the pipes which are damaged have to be replaced by new pipes within the time line mentioned by them in the present undertaking, at the most by June- 2022 and they will have to file a periodical compliance report before this Tribunal regarding the same.

6. While the work of replacing the damaged pipelines, the TANGEDCO is directed to use only the fully completed replaced pipeline alone (ASDL-3) for carrying the fly ash slurry to the ash pond till the other pipeline work is completed.

7. In the meantime, if they have replaced any of the lines by new pipeline, then the TANGEDCO is at liberty to approach this Tribunal for modification of this order to use that pipeline as well for that purpose."

6. Thereafter, this Tribunal had disposed of the Review Application with the following directions:-

"16. So under such circumstances, we feel that the review application is disposed of as follows:

(i) The order restricting the use of ASDL No.3 alone is modified and the review applicant is permitted to use ASDL No.1 and ASDL No. 5 also till the other pipelines are replaced by new pipes as undertaken by them.

(ii) The review applicant is directed to furnish a performance guarantee of Rs. 25 lakh in favour of Tamil Nadu Pollution Control Board for a period valid up to June, 2022 the upper time limit of timeline which was given by them to complete the process of replacement of damaged pipes with new pipes and if it is not complied with, then the amount will be forfeited pro-rata relating with the non- performance of the undertaking given by them.

(iii) As and when the ASDL No.2 pipeline is replaced with new pipes, then they will have to seek permission from this Tribunal to use that also so that one of the pipes that is now being permitted to use can be stopped (either ASDL No. 1 or ASDL No. 5).

(iv) Review applicant is also directed to take all precautionary measures to avoid breach of fly ash slurry from the pipeline which are being permitted to use at present and monitor the pipelines very closely and critically. If any neglect is found later and any breach occurs and is unattended immediately, then the TANGEDCO will have to face consequences of such breach including imposition of environmental compensation and other penal consequences.

(v) The registry is directed to communicate this order to the review applicant and other official respondents by e-mail immediately.

17. With the above directions and observations, the review application is disposed of."

7. Now, they have replaced the ASDL-2 with new pipe and also installed necessary pumping station for that purpose and they wanted permission from the Tribunal to use the ASDL-2 pipeline and stop usage of ASDL-5 line.

8. Considering the fact that they have complied with the directions issued by this Tribunal, we feel that permission can be granted to the TANGEDCO to use the newly replaced ASDL-2 pipeline and stop usage of ASDL-5 which was permitted by this Tribunal earlier, till the same is replaced by new pipeline. The other conditions issued by this Tribunal that they will have to keep monitoring of the functioning of the pipeline etc. will continue.

9. With the above observations and directions, I.A. No.89 of 2022 (SZ) is disposed of."

71. In the meantime, this Tribunal directed the TANGEDCO to consider the question as to whether the Electro Static Precipitator (ESP) used for monitoring the stack emission can be replaced by a new one instead of calibrating the same and also to file objection to the committee reports. Thereafter, the matter was heard on 28.04.2022 and reserved for Judgment.

72. Heard the learned counsel appearing for parties in all these cases.

73. This Tribunal is considering only the impact caused on account of the activities of the TANGEDCO alone at present, as M/s. Kamarajar Port Limited is concerned, against the order passed by this Tribunal imposing interim compensation of Rs. Rs.8,34,60,000/- (Rupees Eight Crore Thirty Four Lakhs and Sixty Thousand only), Civil Appeal Nos.4238 - 4241 of 2020 are pending before the Hon'ble Apex Court and there was an interim stay as regards the implementation of the orders passed against

M/s. Kamarajar Port Limited. So, the question regarding further remediation and further action to be taken against M/s. Kamarajar Port Limited can be considered after disposal of Civil Appeals pending before the Hon'ble Apex Court. As and when the Civil Appeal Nos.4238 - 4241 of 2020 are disposed, parties or the Registry is directed to bring the same to the notice of the Bench and thereafter, the matter can be taken up for consideration as regards M/s. Kamarajar Port Limited and further directions can be given in that case.

74. The learned counsel appearing for the applicants in all these applications argued that huge damage has been caused on account of the illegal activities of the TANGEDCO to the Kosasthalaiyar River Basin and the State Pollution Control Board also, though found lot of serious violations, including operation of the unit without consent, the compensation awarded is very less and they have not taken any stringent action against the TANGEDCO (NCTPS) for such continuous violation as well.

75. The learned counsel appearing for the applicants in O.A. No.08/2016 (SZ) also filed a memo regarding the key factors to be considered by this Tribunal in respect of damage and the remediation process in the Joint Expert Committee's report and also regarding the implementation of the DPR as follows:-

"2. For the convenience of this Hon'ble Tribunal, key portions of the report are indexed below:

- a. Key Findings- page 20*
- b. Environmental contamination - Page 22*
- c. Impacts - page 22 d. Recommendations - page 24*
- e. Recommendations for ToR for DPR - page 26*
- f. Report on Compliance of NCTPS Stage I - Mr. Malaiyandi , TNPCB - page 32*
- i. Recommendations - pg 66*
- g. Report of compliance - T.Mahima, CPCB - page 69 i. Recommendations - pg 84*
- h. Report on Hydrology - Dr. Balaji Narasimhan - page 86 i. Summary and conclusions & recommendations - pg 149*
- i. Report on contamination and target for remediation - Dr. Indumati Nambi - pg 152. i. Conclusions and recommendations - pg 190*
- j. Report on flora and suggested remediation - Dr. Narasiman*
- k. Impact on aquatic fauna - Dr. Deepak Samuel - page 228 i. Recommendations - page 231*
- l. Report on restoration - Dr. Jayashree Vencatesan - page 272*

3. However, despite the report being filed a few weeks ago, tender has not been issued and there has been no forward movement. In these circumstances, the following directions are required to ensure that the matter progresses towards its logical conclusion in a time-bound fashion.

4. It is prayed that this Hon'ble Tribunal be pleased to consider issuing the following direction for the preparation and implementation of the DPR for remediation:

- a. Direct the Department of Environment to issue a tender for the preparation of DPR in strict compliance with Terms of reference prescribed by the Expert committee in its report dated March, 2022 within a week, and complete the tender process in a time-bound manner in compliance with the applicable rules.*

b. Direct the Department of Environment to obtain the opinions and views of the expert members of the Committee in finalising consultant and award of tender.

c. Direct the Department of Environment, in coordination with TNPCB, to work with the DPR consultant to present the Draft DPR for expert opinion and public consultations, and to present the final DPR within six months of award of tender.

Implementation of DPR

d. Direct TNPCB to depute a dynamic full-time officer to strictly monitor the execution of the finalised DPR.

e. Direct the TNPCB to constitute a Local Area Environment Committee comprising representatives of active inland fishers dependent on the Ennore backwaters, including from the inland fishing villages of Kattukuppam, Sivanpadaiveethi and Mugathwara Kuppam, and nominees of Fisheries Department, TNPCB and Revenue Department. The fisher representatives can serve as the eyes and ears of the LAEC in the project area. The LAEC may conduct monthly site inspections, entertain field reports from fisher representatives, and be engaged in the day-to-day monitoring of remediation and restoration. The LAEC may be headed by a senior officer of the TNPCB.

f. Direct the Joint Expert Committee constituted by the Tribunal to carry out quarterly audits of the execution of the DPR for clean-up and remediation. The Committee may consult with the Local Area Environment Committee in the evaluation process.

g. Direct the JEC as well as TNPCB to submit quarterly reports on the progress of implementation of DPR, including remediation, restoration of site and post-remediation.

h. Direct TANGEDCO to dismantle the unused/unusable ash pipelines immediately, and use only the fully replaced, leak-proof pipes if necessary.

5. The Committee in its report has also made significant recommendations which will help address the issues at hand. This Hon'ble Tribunal may consider these directions in light of the recommendations of the Committee in the report dated March 2022.

a. Direct TANGEDCO to attain 100% ash utilisation within 12 months; TNPCB may be advised to include 100% ash utilisation as a specific direction in the Consent to Operate as and when it is renewed.

b. Direct the Government of Tamil Nadu to notify the unencroached extent of Ennore wetlands, including salt pans (which were originally salt marshes), as a wetland under the state government's wetlands mission, and develop a plan for its wise-use.

c. Direct the Government of Tamil Nadu to relocate the residents of Seppakkam village near the ash pond to a safe and habitable site with all amenities within 12 months. In the interim, they should be provided with clean water and accessible health care.

d. Direct the Government of Tamil Nadu to make immediate arrangements for provision of clean water to all residents in the area."

76. The learned counsel appearing for the applicants in O.A. No.08/2016 (SZ) also filed another memo dated 25.04.2022 for consideration of following aspects as well, while disposing the matter:-

"1. The TNPCB has filed a report dated April, 2022, containing violations of consent conditions and stack emission monitoring results (Pg. 14, 15). It is also seen that a show cause notice dated 05.04.2022 was issued by the TNPCB to NCTPS Stage 1 (See Pg. 25). Also assessment of "environmental compensation" has also been provided.

2. The seriousness of air pollution, its impact on health and environment need no elaboration. While excess So₂ and No_x emissions may be not be actionable in light of the Ministry's extension of time for compliance, the violation of stack emission parameters for particulate matter has to be taken seriously. Both Stage 1 and Stage 2 power plants have consistently been emitted particulate matter far and excess of standards prescribed.

3. It is seen from the EIA reports, documents pertaining to the environmental clearance obtained by these Thermal Power plants that the clearance was obtained based on EIA Reports which were prepared based on emission levels of 150 mg/m³. In fact, the entire modelling exercise and JLC calculation appears to be based on this emission level. The project proponent has stipulated that if emission standards are exceeded these plants will be shut down. Relevant pages of these documents have been annexed with this memo.

4. NCTPS Stage 1 and 2 have no right to continue their operations whilst habitually violating emission parameters for particulate matter. It is unfair and unjust to subject the people of the area to increased pollution simply because this thermal power plant refuses to operate its plant efficiently and in compliance with the law.

5. Imposition of so called environmental compensation is not a substitute for compliance with emission standards. In the case of NCTPS such penalties are also paid by the tax payer. It is thus legally necessary that as undertaken by the project proponent, operations are stopped until emission standards are adhered to.

6. The NCTPS Stage 1 and 2 use the same ash pond which is unlined (issue identified and flagged repeatedly by Committees constituted by this Court). Likewise the toe drain is also unlined. Both of these ought to have been designed as impervious to avoid

seepage. At least now immediate steps will have to be taken to ensure that further seepage and contamination on account of these installations. This issue was highlighted in the year 2017 by the previous Expert Committee constituted by this Tribunal itself. This use of the present non impervious ash pond is illegal. NCTPS has to construct a properly geomembrane lined ash pond if they wish to continue discharging ash into an ash pond. These issues need to be addressed by this Hon'ble Tribunal.

7. Show cause notice appears to have been issued only to Stage 1, giving the illusion that Stage 2 is in compliance with the law. Necessary action in this regard ought to be taken by TNPCB in this regard. Violation of emission parameters i.e emission of particulate matter far and excess of levels stipulated in EIA Reports falsifies the modelling exercise carried in the EIA report in order to access GLCs. It also renders the environmental clearances issued based on such clearances nugatory."

77. The learned counsel appearing for the TANGEDCO argued that most of the observations made by the Joint Expert Committee are all not in existence and lot of remediation measures have been taken by the TANGEDCO. Further, the change of Electro Static Precipitator is not required and updating the same by calibration will be sufficient and since certain new technologies have been provided for controlling Sox and No₂ and also control the pollution that is likely to be caused by the Gypsum that will take care of the other pollution control mechanism and that will arrest the stack emission as well. They also wanted this Tribunal to consider the objection filed by them to the Joint Committee report and also status report submitted by them, as part of their argument and they are prepared to abide by any directions issued by the Tribunal, as they are committed to protect environment and by virtue of replacement of the old pipelines with new pipes, most of the grievances raised by the applicants will be redressed and there will not be any further spillage of ash slurry will happen in future. They are also having continuous monitoring team for detecting such things and to take immediate steps to rectify the same to avoid damage being caused to the environment.

78. The learned counsel appearing for the State Pollution Control Board and the Central Pollution Control Board submitted that whenever complaints were received or during inspection, any deficiency was found, they were giving necessary directions to the TANGEDCO to rectify the same and on several occasions, environmental compensation was also imposed as directed by this Tribunal and they will continuously monitor the remediation process and also if any further directions are required, they will give necessary further directions to control pollution and mitigate the possible pollution that is likely to be caused on account of the operation

of the TANGEDCO. They will also abide by the directions issued by this Tribunal in this regard.

79. The learned counsel appearing for the MoEF&CC submitted that it is for the State Pollution Control Board to take appropriate action, if there is any violation of condition imposed under Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 are found. Even if there is any violation of conditions in the Environmental Clearance or CRZ Clearance, then it is for the SEIAA and the SCZMA to take appropriate action and the Regional Office, MoEF&CC will be monitoring the status of compliance of the conditions of the Environmental Clearance (EC) periodically and whenever there is any deficiency found, they will be taking appropriate action in this regard by giving suitable directions to rectify the deficiency.

80. We have considered the pleadings, various reports submitted by the Committee and also the submissions made by the learned counsel appearing for the parties and also written submissions made.

81. The points that arose for consideration are:-

(i) Whether there was any violation committed by M/s. NCTPS owned by the TANGEDCO in respect of conditions imposed in the Environmental Clearance and the Consent granted by the State Pollution Control Board?

(ii) Whether there was any pollution/ damage caused on account of the operation of the Thermal Power Plant and whether there was any damage caused to riverine environment on account of the spilling of fly ash due to leak in the ash slurry carrying pipeline?

(iii) Whether there is any remediation process required and if so, what is the nature of remediation process to be undertaken by the TANGEDCO to resolve the issue permanently?

(iv) Whether the TANGEDCO is liable to pay any environmental compensation for the damage caused to the environment and if so, what is the quantum of compensation to

be payable including the cost required for restoration of damage caused to the environment?

(v) What are all the further directions (if any) to be issued applying the principles of "*Precautionary Principle*" and "*Sustainable Development*" to be carried out by the regulator, TANGEDCO and other departments for the purpose of protecting the environment and mitigate the possible pollution that is likely to be caused on account of the operation of the TANGEDCO?

(vi) Relief and costs.

POINTS:-

82. The common grievance in these applications is regarding the damage caused to the environment on account of the operation of the NCTPS owned by TANGEDCO. The main allegation was that the pollution control mechanisms provided are not sufficient and they are not complying with the conditions of the Environmental Clearance and Consent granted. They are not properly maintaining the ash pond and the ash slurry carrying pipes and on account of the same, frequent leakage is being caused thereby, large scale spilling of ash slurry is happening in Kosasthalaiyar River Basin affecting the riverine environment.

83. The allegations were denied by the TANGEDCO by stating that they are not committing any violation of conditions. Whenever leakage was detected in the ash slurry carrying pipes, they were taking necessary steps to rectify the same immediately and they were taking steps to remove the ash slurry that had been deposited in the river basin periodically and they were taking steps to remove the old pipes with new pipes to avoid possibility of leak in future and remedy the situation permanently.

84. It is an admitted fact even by the TANGEDCO that series of incidents of leak in the ash slurry carrying pipelines happened and huge quantity of ash slurry was deposited on the river basin of Kosasthalaiyar River affecting its flow. It was also seen from the various reports submitted by

the earlier Joint Committee appointed by this Tribunal during 2017 and also the Joint Expert Committee appointed by this Tribunal subsequently and the report submitted by the State Pollution Control Board that there are certain violations committed by the TANGEDCO in respect of conditions of Consent and Environmental Clearance and huge quantity of ash slurry was deposited on the river basin and even certain damage had been caused to the mangrove plantation in that area.

85. It was also seen from the various reports that on account of deposit of fly ash in the river basin for a longer period, there is a possibility of pollution being caused and the presence of heavy metals like Nickel, Cadmium, Arsenic, Mercury, etc. are likely to have impact on riverine environment and even after removal of fly ash deposited, certain remediation process will have to be taken to restore the damage caused to the environment.
86. It is also seen from the various reports submitted by the State Pollution Control Board that whenever they were inspecting, finding out certain deficiencies and violations, they were issuing series of directions to rectify the same and there were non-compliance of such directions and on account of such non-compliance, as directed by this Tribunal and also applying the guidelines issued by the Central Pollution Control Board for imposing environmental compensation, they were imposing environmental compensation and some of such amounts imposed by them were deposited by the TANGEDCO as well. So, it is clear from this that on account of the act of the TANGEDCO, there is damage caused to environment and they are liable to pay environmental compensation for the damage caused and they are also liable to undertake the remediation process to restore the damage caused to the environment apart from steps being taken to remove the fly ash deposited in those areas.
87. Since we have already extracted the quantity of fly ash on the basis of the Joint Committee reports and the report submitted by the State Pollution Control Board in the earlier paragraphs, we are not re-extracting the same again while discussing about this aspect.

88. It is also seen from the earlier reports that there was a recommendation made by the Joint Committee appointed by this Tribunal even during 2017 itself that the leak is happening due to non-maintenance and old age of pipelines and the same is required to be replaced with new pipelines. But there was no steps taken by the TANGEDCO since 2017 till recently when this Tribunal had directed to replace the same with new pipes or otherwise this Tribunal will stop the usage of those pipelines for carrying the ash slurry to the fly ash dyke or fly ash pond.
89. Now, they have given timeline and also undertaken to replace all the five ASDL pipelines with new pipelines and they have completed the replacement of two pipelines viz., ASDL - 2 and ASDL - 5 and the remaining pipeline will be replaced with new one by 30th June 2022. This Tribunal also directed the TANGEDCO to furnish a Performance Guarantee of **Rs.25 Lakhs** in favour of Tamil Nadu Pollution Control Board for a period valid up to June 2022 vide Order dated 24.12.2021 in **R.A. No.14 of 2021 (SZ) in O.A. No.08 of 2016 (SZ)** for compliance of performance of undertaking given or otherwise if there is any failure in compliance within the timeline, then the Performance Guarantee will be forfeited in proportion of the non-compliance committed by them.
90. So, the fact that there was some damage caused to the environment on account of the act of the TANGEDCO due to the failure of maintenance and replacement of old pipes on account of which leakage happened which resulted in deposit of large quantity of ash slurry in the Kosasthalaiyar River basin and remediation is required for the purpose of restoration of damage caused to the environment are in a way admitted.
91. In order to ascertain the nature of damage caused and remediation process to be undertaken, this Tribunal had appointed a Joint Expert Committee comprising of (i) Santha Sheela Nair, I.A.S. (Retd.), Former Vice-Chairperson, State Planning Commission, Former Secretary, Municipal Administration and Water Supply, Government of Tamil Nadu, Former CMD, Metrowater, (ii) Dr. Balaji Narasimhan, Head, Environment and Water Resources Engineering, Dept. of Civil Engineering, IIT-Madras (Water Resources Expert), (iii) Dr. Indumathi

Nambi, Professor, Environment and Water Resources Engineering, Department of Civil Engineering, IIT-Madras, (Remediation Expert), (iv) Prof. D. Narasiman, Retired HOD, Department of Botany, Madras Christian College, Member, Tamil Nadu Biodiversity Authority and (v) Dr. Jayshree Venkatesan, Care Earth, Restoration Ecologist, Former member, Tamil Nadu Coastal Zone Management Authority along with one Marine Biologist whose name will have to be furnished by the Tamil Nadu Pollution Control Board as suggested by us and official representatives of the Tamil Nadu Pollution Control Board and the Integrated Regional Office, Central Pollution Control Board, Chennai along with the Director - Department of Environment, State of Tamil Nadu and that committee has filed a report mentioning various latches, pollution caused and the remedial measures to be taken.

92. While considering the report of compliance by NCTPS Stage - I & II by the Joint Chief Environmental Engineer, TNPCB, they have reiterated various conditions imposed in the Consent and compliance status which reads as follows:-

“Compliance of conditions imposed in the latest consent orders issued vide Board's Proc. dated.25.06.2014 to the unit of M/s. North Chennai Thermal Power Station Stage-I under section 25 of the Water (Prevention& Control of Pollution) Act, 1974 as amended and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 is furnished below.

S.No	Conditions	Compliance status
<u>Under Air Act:</u>		
1.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyer and junction towers.	Complied. The unit has maintained the coal handling conveyer system and junction towers and ensures that no coal dust is accumulated in the adjacent area of coal handling conveyer and junction towers.
2.	The unit shall operate and maintain water sprinkling and cyclone separators provided at junction towers to control the dust emission.	Complied. The unit has operated and maintained water sprinkling and cyclone separators provided at junction towers to control the dust emission.
3.	The unit shall ensure the APC measures provided in the coal crushing area shall be under working condition so as to control the dust emission.	Complied. The unit has ensured the APC measures provided in the coal crushing area is under working condition so as to control the dust emission.
4.	The unit shall install On line	Partially Complied.

	Stack monitoring system for SO ₂ , NO _x and PM and to connect the same to Care Air Centre, TNPCB, Chennai within three months.	The unit has installed Online Continuous Emission Monitoring System (OCEMS) for unit I, II & III of three stacks to monitor the parameters PM, SO _x , NO _x and the same is connected with CAC, TNPCB, Guindy and CPCB server.
5.	The Unit shall provide continuous ambient air quality monitoring station and the same shall be connected to Care Air Centre TNPCB, Chennai within three.	Not Complied. The existing Continuous Ambient Air Quality Station (2Nos) provided were not in operable condition and it was reported that the TANGEDCO has planned to install new 4 stations covering the units Stage-I, Stage-II, Stage-III (Proposed) and Ennore SEZ-IV (Proposed).
6.	The unit shall operate the Air Pollution Control measures efficiently and continuously to achieve the National Ambient Air Quality Standards as per MOEF Notification.	Not Complied. The unit has provided the air pollution control measures such as Electrostatic Precipitator for Boiler, Dust Extraction and Dust Suppression for coal handling area which are being operated and maintained by the unit regularly.
		However, the unit is not meeting the particulate matter standards of 100 mg/Nm ³ in all 3 boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31 st December 2003 hence, the unit shall augment the ESPs provided in all 3 boilers and also to provide Flue Gas Desulphurisation (FGDs) to achieve SO _x emission standards before 31.12.2022 as per the timelines permitted for TPPs (Category A) by MoEF&CC Notification dated 31.03.2021.
7.	The unit shall conduct AAQ/SM survey through TNPC Board and furnish the survey report to Board within 3 months.	Complied. The unit is conducting the AAQ/SM survey through TNPC Board yearly once.
8.	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further develop green belt of remaining 51 Acres.
<u>Under Water Act:</u>		
1.	The unit shall complete and commission the common sewage treatment plant for Stage-I & Stage-II within a month time.	Complied. STP provided at Stage-I is under operation.

2.	The unit shall ensure that no water shall be discharged from the Ash pond or through the canal linking the pump house and ash pond to Ennore creek either directly or indirectly under any circumstances.	Partially Complied. Ash pond recovery water is being utilized for bottom ash slurry preparation. However, the unit has to improve the complete recovery water collection and reuse for ash slurry preparation.
3.	The unit shall reconstruct/revamp the existing spillway structure to ensure uniform distribution of water from the cooling water canal in to Ennore creek to preserve the marine ecosystem within 6 month's time.	Not Complied. Tender has been awarded by Stage II for the widening of the Hot water channel. Proposal to reconstruct the existing spillway structure to ensure uniform distribution of water has been evolved by stage II which is in progress.
4.	The unit shall reconstruct/revamp the pipeline carrying the ash slurry to the ash pond and ensure that no ash slurry shall be discharged into the creek area under any circumstance.	Partially Complied. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.
5.	The unit shall take immediate action for the removal of fly ash accumulated over the roads and around the ash dyke area.	Not Complied. The unit has to remove the fly ash accumulated as per the Joint Committee findings.
6.	The unit shall conduct Marine Impact Study at where the cooling water is being discharged into creek/sea and furnish the report within three months.	Not Complied. Marine Impact Study not yet conducted.
7.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of the coal handling conveyer and junction towers.	Complied. The coal accumulation in the adjacent areas of the coal handling conveyer and junction towers of ICHS are being cleared then and there on regular basis.
8.	The unit shall obtain renewal of authorization under the Hazardous Waste (MH&T) Rules 2008.	Not Complied. Authorization for Hazardous waste obtained is valid up to April' 2020, renewal application is yet to file.
9.	The unit shall remit the balance water cess immediately.	The unit has not remitted the balance water cess.
10	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further

		develop green belt of remaining 51 Acres.
--	--	---

M/s North Chennai Thermal Power Station - II

TNPCB has issued first consent for operation under section 25 of the Water (Prevention & Control of Pollution) Act, 1974 as amended and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 as amended to M/s.NCTPS Stage-II vide Board's Proc. Dated: 19.03.2013 for the following.

Power Generation	2 X 600 MW	
Sewage	48 KLD	On industry Own Land
Trade Effluent I (Effluent from Plant Operation)	13,824 KLD	Partly on land and partly in to sea through Ennore creek.
Trade Effluent II (Reverse osmosis plant rejects)	22176.0 KLD	In to sea through Ennore creek
Trade Effluent III (Once through cooling water)	4896000.0 KLD	In to sea through Ennore creek
Boiler 2 nos. 2000T/hr each.	Individual ESP, with a common stack of 275m height.	

Latest consent was renewed vide Board's Proc. dated 18.12.2018 with validity up to 31.03.2019 and not renewed further due to non-compliance of consent order conditions.

Compliance of conditions imposed in the latest consent orders issued vide Board's Proc. dated.18.12.2018 to the unit of M/s. North Chennai Thermal Power Station Stage-II under section 25 of the Water (Prevention& Control of Pollution) Act, 1974 as amended and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 is furnished below.

S.No	Conditions	Compliance status
<u>Under Air Act:</u>		
1.	The unit shall operate and maintain the existing air pollution control measures efficiently and continuously so as to achieve the standards as prescribed by the Board.	Not Complied. The unit has provided the air pollution control measures such as Electrostatic Precipitator for Boiler, Dust Extraction and Dust Suppression for coal handling area which are being operated and maintained by the unit regularly.
		However, the unit is not meeting the particulate matter standards of 100 mg/Nm ³ in all two boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31 st December 2003 hence, the unit shall augment the ESPs provided in all 2 boilers and also to provide Flue Gas Desulphurisation (FGDs) to achieve SOx emission standards before 31.12.2022 as per the timelines permitted for TPPs (Category A) by MoEF&CC Notification dated 31.03.2021.

2.	The unit shall complete the commissioning of the Dust Extraction System comprising of bag Filters, and put the same in to operation, before 31.12.2018 as reported and operate the same efficiently and continuously.	Not complied. The unit authority reported that the OEM of the Project M/s. BHEL had failed to establish the DE system in complete shape. Hence, a separate proposal has been evolved by TANGEDCO to complete the left out part of the system and tendering process is in progress
3.	The unit shall complete the installation of dust suppression system, and put in to operation before 31.12.2018 as reported and operate the same efficiently and continuously.	Not complied. The unit authority reported that the OEM of the Project M/s. BHEL had failed to establish the DE system in complete shape. Hence, a separate proposal has been evolved by TANGEDCO to complete the left out part of the system and tendering process is in progress
4.	The unit shall continue to develop and maintain adequate green belts within the unit premises.	Partially Complied. The unit has reported that the total green belt to be developed is 67.65 acres out of 205 Acres and it was reported so for 51.39 acres of green belt have been developed. To date, a balance of 16.26 acres of green belt has to be developed.
5.	The unit shall furnish an action plan for the installation of FGD system.	Not complied. The unit has reported that FGD installation will be completed within 24-26 months from the date of tender awarded and tendering process is in progress
6.	The unit shall ensure that the installation of FGD system shall be completed before the stipulated time as assured by the unit.	Not complied. The unit has reported that FGD installation will be completed within 24-26 months from the date of tender awarded and tendering process is in progress
<u>Under Water Act:</u>		
1.	The unit shall operate and maintain the Sewage Treatment Plant efficiently and continuously so as to achieve the standards prescribed by the Board.	Complied. The unit has reported that the Sewage Treatment Plant is operated efficiently and continuously so as to achieve the standards prescribed by the Board
2.	The unit shall operate and maintain the ETP efficiently and continuously so as to bring the quality of the treated effluent to satisfy the standards prescribed by the Board.	Complied. Combined treated trade effluent from ETP at Stage II is partly disposed through once through cooling water in to Sea through Ennore creek with an EMFM & remaining quantity of trade effluent is being utilized in Stage-II for gardening without an EMFM. The unit has installed continuous effluent monitoring sensors for the parameters PH & Temperature at the outlet of ETP which has been connected to the "Water Quality Watch" TNPCB, Guindy & CPCB server.

3. ACTION TAKEN BY TNPCB

Based on the routine inspections carried out by the TNPCB officials, the unit of M/s NCTPS Stage-I has been frequently instructed to completely arrest the leakages from ash pipe lines in to water bodies by replacing with new pipes, remove the ash deposited in water bodies through PWD and maintain the ash ponds properly so as to improve the quality of surrounding environment. The Board has issued latest directions to the unit under section 33A of the Water Act and under section 31A of the Air Act vide Board's Proc. dated 12.10.2021 (**Copies attached as Annexure-II**). The details of compliance of directions issued by the Board is furnished below.

Sl. No	Directions issued vide Board Proc. dated 12.10.2021	Compliance Status
I	The TANGEDCO shall comply with the findings of the committee constituted by the Hon'ble National Green Tribunal order dated 20.05.2019 in O.A.No.8 of 2016, O.A.No.152 of 2016 & O.A.No.198 of 2016, communicated and agreed by the Hon'ble NGT within the time limit, as reported.	The details of compliance is submitted below
Sl. No	Findings of the committee	Report filed by the TANGEDCO before the NGT & included in the order dated 30.11.2021 and time schedule earlier given to NGT.
1.	The unit shall remove the fly ash deposited on the land in and around the ash carrying pipeline and ash disposed inside the premises for quantity of 395979 Tonnes and shall store in temporary storage area and/or sent directly for beneficial purposes	As deposits of about 2,42,040m³ on the land in and around the ash carrying by pipeline has been desilted. September 2022
		Partially Complied. The unit committed to comply before September 2022. In addition to the quantity arrived by the committee as on 31.03.2019 (395979 Tonnes), the unit has further disposed the ash on the land in and around the ash carrying pipeline in view of frequent bursting of aging pipes.
2.	The unit shall completely remove the ash deposited in Buckingham canal for a quantity of 93096 m ³ Tonnes and shall store in temporary storage area and/ or sent directly for beneficial purposes	Ash deposits of about 134 Lakh Cum in the Buckingham Canal for a length of 2.4 Kms NCTPS main Gate to KPL main Gate has been desilted at a cost of Rs. 66.23 Lakhs through PWD during the period from June to Dec' 2020.
		Partially Complied. The unit committed to comply before July 2022. In addition to the quantity arrived by the committee as on 31.03.2019 (93096m ³ Tonnes), the unit has further disposed the ash in Buckingham Canal in view of frequent bursting of aging pipes.

		As per the direction of District Collector Thiruvallur, Ash deposits of about 8813 Cum in the Buckingham Canal on the northern and southern sides of the Ash Slurry Pipelines of NCTPS-I & II has been desilted for a length of about 200 mtrs at an expenditure of 17.7 Lakhs during the	
		period from 24.10.2021 to 15.11.2021.	
		July 2022	
3.	The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 325000 Tonnes from NCTPS main gate to KPL main gate for a length of 2.4Kms for a average width of 130m and depth of 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes.	Ash deposits of about 4.35 Lakh Cum in the Kosasthalaiyar River for a length of 2.4 kms from NCTPS main Gate to KPL main Gate has been desilted at a cost of Rs. 28.5 Crore through PWD during the period from June to Dec' 2020.	Partially Complied. The unit committed to comply before June 2022. In addition to the quantity arrived by the committee as on 31.03.2019 (325000 Tonnes), the unit has further disposed the ash in Kosasthaliyar river in view of frequent bursting of aging pipes.
		June 2022	
4.	The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 468000 Tonnes form Ennore creek to NCTPS-I main gate for a distance of 1.7Km and from KPL Main gate to Kattupalli downstream for a distance of 1.9 Km for a average width of 130m and depth 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes.	-	Not Complied. The unit committed to comply before December 2022. In addition to the quantity arrived by the committee as on 31.03.2019 (468000 Tonnes), the unit has further disposed the ash in Kosasthaliyar river in view of frequent bursting of aging pipes.
		December 2022	
5.	The unit shall replace the existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a total length of 20523m length.	ASDL No.1& 5 - (5129 mtrs each) - Administrative approval is under process and the replacement of entire length of both pipelines will be completed by June 2022. Meanwhile both the above pipelines have been replaced by using the released pipes from ETPS and it disposes Ash slurry reasonably. ASDL No. 2 - (5511	Partially Complied. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.

		<p>mtrs) - 1728 meters of new cast basalt pipe lines have already been replaced with available 3498 metres pipes and work is being carried out on emergency basis and will be completed by December 2021.</p> <p>ASDL No.3 - (4942 mtrs) - New cast basalt pipe has been replaced successfully from ash dyke to NCTPS gate and there are no leaks developed in this pipeline.</p> <p>ASDL No.4 - (4942 mtrs) - Tender for procurement of 4942m of new cast basalt Pipes is under process and will be completed by May 2022.</p>	
		June 2022	
6.	The unit shall provide impervious Toe drain around the Ash dyke for a length of 6000m for the collection of seepage water and to be connected to the existing Recovery Water sump and reuse for Ash slurry making	The study report from IITM received on 13.10.2021 and estimate is under preparation by TANGEDCO.	Not Complied. The unit committed to comply before June 2023.
		June 2023	
7.	The unit shall provide 6000 Nos. of trees in and around the ash dykes and grow it well so as to prevent the dust emission from the ash dyke.	Quotation has been called from Annamalai University and the District Forest Officer.	Not Complied. The unit committed to comply before December 2023.
		December 2023	
8.	The unit shall make existing ash ponds impervious so as to prevent the seepages as per the technical consultancy of IITM, Chennai	The study report from IITM received on 13.10.2021 and estimate is under preparation by TANGEDCO.	Not Complied. The unit committed to comply before December 2023.
		December 2023	
9.	The unit shall obtain technical study report from IITM Chennai for the remedial measures such as strengthening of Ash Dyke and other related works in Ash dyke and implement the recommendations	The study report from IITM received on 13.10.2021 and estimate is under preparation by TANGEDCO.	Not Complied. The unit committed to comply before December 2023.
		December 2023	
10.	The unit shall provide sufficient number of piezometric wells/monitoring wells around the dykes and upstream of the industry to monitor the ground water quality	Work fully completed on 09.12.2019.	Complied. The TANGEDCO has provided 12 nos. of piezometric wells/monitoring wells around the dykes to monitor the ground water quality periodically.
		31.12.2019	

11.	The unit shall bring back Recovery water Pump No.3 in to service and to replace the existing worn-out Recover water pipe Line No.1 for a entire length of 2815 m	Works are in progress	Partially Complied. Works are in progress and the unit committed to comply before June 2022.
		June 2022	
12.	The unit shall modify existing three Electrostatic precipitator attached to the 3 No. boilers so as to achieve revised norms of particulate matter emission 100 mg/m ³ as per MOEF & CC notification dated 07.12.2015.	Administrative Approval accorded for Renovation & Modernization (R&M) of Electro Static Precipitators (ESP) in Units I, II & III to achieve the desired PM level below 100mg/Nm ³ , so as to achieve the norms as per MOEF&CC.	Not complied. The unit is not meeting the particulate matter standards of 100 mg/Nm ³ in all 3 boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31 st December 2003.
		December 2022	
13.	The unit shall replace the worn-out boiler roof tubes in Unit-II and Unit-III so as to arrest the discharge of fugitive emission.	Works fully completed	Complied. The unit has replaced the worn-out boiler roof tubes in Unit-II and Unit-III boilers and there is no fugitive emission at present in all 3 units.
		30.09.2019	
14.	The unit shall develop Mangroves plantations and other costal vegetation in both sides Kosasthaliyar river banks, Buckingham canal and nearby by affected coastal areas, in consultation with M.S.Swaminathan foundation (or) Annamalai University.	Quotation has been called for from Annamalai University and the District Forest Officer.	Not Complied. The unit committed to comply before June 2023.
		June 2023	
15.	The unit shall ensure complete utilization of fly ash as per the Ministry of Environment, Forest & Climate Change fly ash notification of 2016.	Efforts are made to comply the fly ash notification to 100% in the coming years.	Not Complied. The unit has not complied the 100% fly ash utilization as per MoEF&CC Notification.
		-	
16.	The unit shall carry out ground water, surface water monitoring once in six months through any NABL accredited laboratory in the affected areas. Further detailed study may be carried out by Ground water department or any reputed institution on the status of ground water, surface water quality once in year.	Ground water and surface water analysis conducted once in six months through NABL accredited lab. Detailed study has been carried out for ground water through reputed institution once in year.	Not Complied. The unit is yet to furnish the report for the financial years 2020-21 & 2021-22.
		Periodical work	
17.	The unit shall adhere to the latest consent order conditions dated 25.06.2014 issued by Tamil Nadu Pollution Control Board.		

<u>Compliance status of latest consent order conditions issued vide Proc.dated:25.06.2014.</u>	
<u>Air Act:</u>	
1. The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyer and junction towers.	Complied. The unit has maintained the coal handling conveyer system and junction towers and ensures that no coal dust is accumulated in the adjacent area of coal handling conveyer and junction towers.
2. The unit shall operate and maintain water sprinkling and cyclone separators provided at junction towers to control the dust emission.	Complied. The unit has operated and maintained water sprinkling and cyclone separators provided at junction towers to control the dust emission.
3. The unit shall ensure the APC measures provided in the coal crushing area shall be under working condition so as to control the dust emission.	Complied. The unit has ensured the APC measures provided in the coal crushing area is under working condition so as to control the dust emission.
4. The unit shall install On line Stack monitoring system for SO ₂ , NO _x and PM and to connect the same to Care Air Centre, TNPCB, Chennai within three months.	Partially Complied. The unit has installed Online Continuous Emission Monitoring System (OCEMS) for unit I, II & III of three stacks to monitor the parameters PM, SO _x , NO _x and the same is connected with CAC, TNPCB, Guindy and CPCB server.
5. The Unit shall provide continuous ambient air quality monitoring station and the same shall be connected to Care Air Centre TNPCB, Chennai within three.	Not Complied. The existing Continuous Ambient Air Quality Station (2Nos) provided were not in operable condition and it was reported that the TANGEDCO has planned to install new 4 stations covering the units Stage-I, Stage-II, Stage-III (Proposed) and Ennore SEZ-IV (Proposed).
6. The unit shall operate the Air Pollution Control measures efficiently and continuously to achieve the National Ambient Air Quality Standards as per MOEF Notification.	Not Complied. The unit has provided the air pollution control measures such as Electrostatic Precipitator for Boiler, Dust Extraction and Dust Suppression for coal handling area which are being operated and maintained by the unit regularly. However, the unit is not meeting the particulate matter standards of 100 mg/Nm ³ in all 3 boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31 st December 2003 hence, the unit shall augment the ESPs provided in all 3 boilers and also to provide Flue Gas Desulphurisation (FGDs) to achieve SO _x emission standards before 31.12.2022 as per the timelines permitted for TPPs (Category A) by

		MoEF&CC Notification dated 31.03.2021.
7.	The unit shall conduct AAQ/SM survey through TNPC Board and furnish the survey report to Board within 3 months.	Complied.
		The unit is conducting the AAQ/SM survey through TNPC Board yearly once.
8.	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further develop green belt of remaining 51 Acres.
<u>Water Act:</u>		
1.	The unit shall complete and commission the common sewage treatment plant for Stage-I & Stage-II within a month time.	Complied. STP provided at Stage-I is under operation.
2.	The unit shall ensure that no water shall be discharged from the Ash pond or through the canal linking the pump house and ash pond to Ennore creek either directly or indirectly under any circumstances.	Partially Complied. Ash pond recovery water is being utilized for bottom ash slurry preparation. However, the unit has to improve the complete recovery water collection and reuse for ash slurry preparation.
3.	The unit shall reconstruct/revamp the existing spillway structure to ensure uniform distribution of water from the cooling water canal in to Ennore creek to preserve the marine eco system within 6 months time.	Not Complied. Tender has been awarded by Stage II for widening of Hot water channel. Proposal to reconstruct the existing spillway structure to ensure uniform distribution of water has been evolved by stage II which is under progress.
4.	The unit shall reconstruct/revamp the pipe line carrying the ash slurry to the ash pond and to ensure that no ash slurry shall be discharged in to creek area under any circumstance.	Partially Complied. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.
5.	The unit shall take immediate action for the removal of fly ash accumulated over the roads and around the ash dyke area.	Not Complied. The unit has to remove the fly ash accumulated as per the Joint Committee findings.
6.	The unit shall conduct Marine Impact Study at where the cooling water is being discharged in to creek/sea and furnish thereport within three months.	Not Complied. Marine Impact Study not yet conducted.
7.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyor and junction towers.	Complied. The coal accumulation in the adjacent areas of coal handling conveyor and junction towers of ICHS are being cleared then and there on regular basis.

8.	The unit shall obtain renewal of authorization under the Hazardous Waste (MH&T) Rules 2008.	Not Complied. Authorization for Hazardous waste obtained is valid up to April' 2020, renewal application is yet to file.
9.	The unit shall remit the balance water cess immediately.	The unit has not remitted the balance water cess.
10	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further develop green belt of remaining 51 Acres.
II.	The TANGEDCO shall replace the existing ash slurry pipe lines no. 1, 2, 3, 4 & 5 with new cast basalt lined pipes for entire length instead of using retrieved pipes from ETPS on or before 31.12.2021 as reported to comply with the above Hon'ble NGT direction so as to curtail the leakage from pipes permanently to avoid deposition of ash in Buckingham Canal, Kosasthalaiyar River and near Seppakkam hamlet.	Not Complied. The TANGEDCO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.
III.	The TANGEDCO shall carry out the removal of deposited ash near the Seppakkam hamlet on priority basis within 15 days.	Not Complied. The TANGEDCO has not yet removed the deposited ash near the Seppakkam hamlet.

93. They also given the details of Environmental Compensation imposed for the violations noticed as follows:-

Sl. No	Reason for assessed interim Environmental Compensation	Period	Amount in Rs.	Remittance details
1.	Ash slurry disposal into Kosasthalaiyar river / Buckingham canal as reported by the earlier committee	01.11.2004 to 12.11.2019	16.461 Crores	Remitted to TNPCB
2.	Ash slurry disposal into Kosasthalaiyar river / Buckingham canal as reported by the committee	22.08.2020 to 06.01.2021	41.40 Lakhs	Not yet Remitted
3.	Ash slurry disposal on land near Seppakkam Village into Kosasthalaiyar river / Buckingham canal as reported by the committee.	07.01.2021 to 23.08.2021	4.122 Crores	Remitted to TNPCB

94. They have also mentioned in the report that for non-compliance of the pollution control mechanism regarding stack emission etc., they have imposed an environmental compensation of Rs.1,87,20,000/- for a period of violation of 208 days from 27.11.2020 to 07.03.2022 and a show cause notice has been issued in this regard.
95. It is also mentioned that the parameter of PM only was taken for assessing environmental compensation as the timeline for installation of FGD and low NOx burner to achieve Sox and Nox was extended till 31.12.2022 as well as vide MoEF&CC Notification 30.03.2021 and they shall levy environmental compensation on the non-retiring thermal power plant as the date specified in Column 4 of Table 1 as per the rates specified in Table 2.
96. As regards the violation in respect of NCTPS Stage - II, they have found certain violations for a period 791 days from 01.04.2019 to 07.03.2022 and calculated a compensation of Rs. 3,55,95,000/- and recommended to issue show cause notice under Section 5 of the Environment (Protection) Act, 1986. There also they have mentioned about the criteria taken is only in respect of parameter PM alone and other aspects will be taken for the non-compliance after the time line for compliance of 31.12.2022 is over.
97. As regards the ash calculation as on 28.02.2022 is concerned, they have considered the following compliance and non-compliance status as regards Stage - I and Stage - III proposed and Ennore SEZ Proposed vide final order 31.01.2022 in O.A. No.162/2021 and O.A. No.122/2021 as follows:-

"It is further submitted that the Hon'ble NGT in OA.No.122 of 2021 & 162 of 2021 in respect of TANGEDCO NCTPS Stage-I (Existing), Stage-III (Proposed) & Ennore SEZ-IV (Proposed) vide its final order dated 31.01.2022 directed the TANGEDCO to comply the following and compliance of the same is furnished below.

Sl. No	Directions issued by the Hon'ble NGT in OA.No.122 of 2021 & 162 of 2021	Status of the compliance
1	<i>The TANGEDCO is directed not to proceed with the work of laying the pipeline through the CRZ zone and also in the other area in violation of the Environment Clearance and CRZ</i>	Complied. <i>The TANGEDCO stopped construction activity in CRZ area for not having EC under the CRZ Notification pertaining to Stage-</i>

	<p>Clearance granted to them in 2016, without getting necessary further clearances in this respect by filing afresh application in accordance with law and the same will have to be considered by the authorities strictly in accordance with law and the direction given for this purpose cannot be treated as a direction to the authorities to grant the permission, if it is not otherwise feasible or permissible under law. This must be strictly in compliance with the decision Hon^{ble} Supreme Court in Key stone realtors private limited vs. Anil V. Tharthare and ors.</p>	<p>III & Ennore SEZ-IV as directed. Amendment to be obtained by TANGEDCO in the EC already obtained under CRZ Notification for Stage-III & Ennore SEZ-IV.</p>
2	<p>The TANDGECO is directed to pay an Environmental Compensation of Rs. 4,12,20,000/- fixed by the Joint Committee and approved by this Tribunal to Tamil Nadu Pollution Control Board for the damage caused to environment on account of the deposit of fly ash slurry in the Kosasthalaiyar River region, over and above the compensation already remitted by them as directed by the Pollution Control Board in O.A. No. 08 of 2016 and other connected cases.</p>	<p>Complied. The TANDGECO has remitted the Environmental Compensation of 4,12,20,000/- to the Board through NEFT Dated 27.12.2021.</p>
3	<p>The TANDGECO is also directed to pay an additional compensation of Rs. 50 lakhs with the Tamil Nadu Pollution Control Board for the violation committed i.e. preparation constructing the pipeline and making some attempts for that purpose in violation of the Environmental Clearance and CRZ Clearance granted and this is in addition to the compensation already directed to be paid by them for damage caused to the environment on account of deposit of fly ash.</p>	<p>Not Complied. Not yet remitted by the TANGEDCO.</p>
4	<p>The TANDGECO is directed to carry out the replacement of the old pipes as undertaken by them and directed by this Tribunal in O.A. No. 08 of 2016 and other connected cases within the time line fixed by the Tribunal, on the basis of</p>	<p>Works are in progress. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed</p>

	<p style="text-align: center;"><i>the</i></p> <p><i>undertaking given by them to avoid future breaches.</i></p>	<p><i>accepted by the Hon'ble NGT in O.A. No. 08 of 2016.</i></p>
5	<p><i>The TANDGECO is directed to carry out recommendations made by the Joint Committee in both the cases in its letter and spirit to avoid future breaches of fly ash into the riverine area. The question regarding steps to be taken for remediation process of damage caused to the environment on account of deposit of fly ash in that area for longer period will be considered by this Tribunal including any further compensation to be paid on the basis of the recommendations to be made by Committee already</i></p>	<p><i>The Joint Expert Committee appointed by the Hon'ble NGT in O.A. No. 08 of 2016 is yet to file report.</i></p>
	<p><i>appointed by this Tribunal in O.A. No. 08 of 2016 and other connected cases.</i></p>	
6	<p><i>The TANDGECO is also directed to take steps to remove the fly ash already deposited in that area, as directed by the Joint Committee as well as the Pollution Control Board at the earliest possible time to reduce the impact of damage to riverine environment any further.</i></p>	<p><i>Works are in progress.</i></p> <p><i>The TANDGECO has to complete the removal of fly ash as already deposited in Kosasthalaiyar river, Buckingham canal & on land adjacent to ash conveying pipe lines as committed to Hon'ble NGT.</i></p>
7	<p><i>The TANDGECO is also directed to take necessary steps to avoid leakage through pipes and they must hold vigil by regular inspection of the old pipe lines till such time their replacement is completed and take immediate steps to arrest breaches, if any, during the interregnum. The amount of compensation directed to be paid on two counts are to be deposited by TANDGECO with Tamil Nadu Pollution Control Board which they can utilise for the purpose of protecting Kosasthalaiyar River as well Ennore creek in that area to restore the damage caused to environment and also to provide necessary protection to prevent encroachments in that areas in future and avoid further environmental damage as well as riverine damage in that area.</i></p>	<p><i>As per the review application no.14 of 2021 (SZ) in O.A.No. 08 of 2016, the unit shall utilize the pipe line no.3 (Replaced with new pipes) and pipe line no.1 & 5 (Replaced with retrieved pipes from ETPs) for conveying the ash slurry to ash ponds.</i></p> <p><i>The TANDGECO is taking necessary steps to avoid leakage through pipes by conducting regular inspection of the old pipes.</i></p> <p><i>The Joint Expert Committee constituted in O.A.No.08 of 2016 is yet to file a report to the Hon'ble NGT, hence for the purpose of protecting Kosasthalaiyar River as well as Ennore creek in that area and to restore the damage caused to environment and also to provide necessary protection to prevent encroachments in that areas in future and avoid further environmental damage, as well as riverine damage in that area, EC paid by the TANGEDCO, may be utilized based on the recommendation by the Joint Expert Committee.</i></p>

8	As regards the action to be taken for violations committed by TANDGECO in violation of Environmental Clearance and CRZ Clearance, the respective regulators, namely, MoEF&CC and State Coastal Zone Management Authority are directed to	Not applicable for TNPCB.
	take necessary action against TANDGECO in accordance with law.	
9	As regards O.A.No.122 of 2021 is concerned, since it is filed by a private person in order to protect environment, we feel that TANDGECO can be directed to pay a cost of Rs. 25,000/- to the applicant in that case.	Not applicable for TNPCB.
10	If the above amounts including the compensations and costs are not paid within three months from today, then the Pollution Control Board and the applicant are entitled to initiate proceedings for recovery of the same under Section 25 of the National Green Tribunal Act, 2010 or through District Collector for recovery of the amount invoking Revenue Recovery Act, 1890 in accordance with law.	<p>Partially Complied.</p> <p>The TANDGECO has remitted the Environmental Compensation of 4,12,20,000/- to the Board through NEFT Dated 27.12.2021.</p> <p>The TANDGECO has to remit Rs.50 Lakhs within three months from the date of order (31.01.2022) i.e before 30.04.2022.</p> <p>The TANDGECO has to Rs.25,000/- to the applicant within three months from the date of order (31.01.2022) i.e before 30.04.2022.</p>

98. The State Pollution Control Board also made certain recommendations which reads as follows:-

“1. The TANGEDCO shall ensure 100% utilization of fly ash as per Fly Ash Notification 1999 (as amended) issued under the Environmental (Protection) Act 1986 for utilization of fly ash.

2. The TANGEDCO shall replace the existing ash slurry pipelines no.1, 2, 4 & 5 with new cast basalt lined pipes for entire length instead of using retrieved pipes from ETPs on or before 30.06.2022 as committed to comply with the Hon'ble NGT direction dated 24.12.2021 so as to curtail the leakage from aging pipes permanently to avoid deposition of ash in Buckingham Canal, Kosasthalaiyar River and near Seppakkam Village. If failure to comply, the TANGEDCO shall restrict the production accordingly.

3. The TANGEDCO shall completely remove the fly ash deposited on the land in and around the ash carrying pipeline, in the Buckingham Canal and in the Kosasthalaiyar River (Quantity assessed by the committee is 78,81,309 Tonnes) and shall dispose either to dyke or sent directly for beneficial purpose.

4. The TANGEDCO shall deposit required funds that is to be assessed by PWD for the evacuation, transport and disposal of entire fly ash quantity to District Administration (Tiruvallur District Collector) and execution works shall be carried out by the District Administration through tenders as the TANGEDCO has not carried out the removal of fly ash as directed by the Hon'ble NGT in time. The above process shall be completed within a year.

5. The TANGEDCO shall engage reputed agency to remediate the contaminated soil in and around the ash ponds as suggested by the Joint Expert Committee and shall be completed within six months from the date of completion of removal of fly ash.

6. The TANGEDCO shall use desulfurized coal containing ash content less than 30% so that quantity of ash generation can be controlled at source itself.

7. The TANGEDCO shall establish silo of atleast 5 days storage capacity and dry fly ash shall be loaded into the trucks directly from the silos into the vehicles and it shall ensure that only wet bottom ash is conveyed through the pipelines into the ash dyke.

8. The TANGEDCO shall take immediate measures to collect the entire recovery water from ash dyke and to fully utilize it within the premises for making bottom ash slurry and shall ensure that no recovery water from ash dyke is allowed to overflow / seepage into the river or canal.

9. The TANGEDCO shall increase the height of bund to 2m provided between Seppakkam Village and land adjacent to ash dyke to prevent runoff from the ash dyke to join the village and to provide adequate height of wind net towards Seppakkam Village immediately.

10. The TANGEDCO shall establish the infrastructure facilities including primary health center required for Seppakkam Village in coordination with the District Administration by utilizing CSR funds within 6 months.

11. The TANGEDCO shall install Flue Gas Desulphurisation (FGD) System based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO₂ emissions standard of 600mg/Nm³ (Power Plants smaller than 500MW installed before 31st December 2003) as per MoEF&CC's Notification S.O. 3305(E) dated: 07.12.2015 before 31st December 2022.

12. The TANGEDCO shall ensure that the Particulate Matter (PM) emission in each 3 boiler stacks is within the standard of 100mg/ Nm³ at all times (Power Plants smaller than 500MW installed before 31st December 2003) as per MoEF&CC's Notification S.O. 3305(E) dated: 07.12.2015 by augmenting the ESPs within 6 months.

13. The TANGEDCO shall ensure that the OCEMS for the emission parameters SPM, SO_x & NO_x are provided to each three Boiler stacks which are calibrated regularly and operated at all times and ensure that the output of the sensors are connected to CAC, TNPCB & CPCB server at all times.

14. The TANGEDCO shall provide Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for the parameters PM₁₀, PM_{2.5}, SO₂ & NO₂ in the nearby villages and real time results shall be displayed to the public to sensitize the public.

15. The TANGEDCO in coordination with other industries shall develop green belt along the bunds of Buckingham canal, around the ash dyke, in and around Seppakkam Village and other places after removal and remediation of soil."

99. The State Pollution Control Board also submitted a report of compliance of Fly ash Notification, 1999, 2003, 2016 and 2022 and its current obligations under CPCB norms in the report submitted by the CPCB and the following non-compliances were noted:-

"NON-COMPLIANCES OBSERVED BY CPCB

- TNPCB has not renewed the Consent orders issued to M/s NCTPS and currently unit is operating without valid consent.
- TNPCB had stipulated conditions to M/s. NCTPS while issuing first consent on handling of ash but the unit has overseen these Rules and proper precautions were not exercised to prevent damage due to fly ash handling.
- The applicable emission standards as per the MoEF Notification dated 07.12.2015 are as follows:

S.No	Thermal power plant capacity	Height of stack	Standards in mg/Nm ³		
			PM	SO ₂	NO _x
1	Unit-1 210MW	275m	100	600	600
2	Unit -2210MW	275m	100	600	600
3	Unit-3 210MW	275m	100	600	600

Unit has installed 3-field Electro-static Precipitators to control PM but are not effective and as a result stacks are not complying with TNPCB standards

Stack attached to	PM measured value	TNPCB standards	SO2 measured value	TNPCB standards
Unit-II	182.2 mg/Nm ³	100 mg/Nm ³	788 mg/Nm ³	600 mg/Nm ³
Unit-III	157.8 mg/Nm ³	100 mg/Nm ³	832 mg/Nm ³	600 mg/Nm ³

- The fly ash generated from the boiler (about 60% of total ash generated) after passing through ESP's are collected using pressurized dense fly ash collection system and sent to ash silos (3 no.s X 1000tonnes capacity= 3000tonnes).
- The fly ash collected in the ESP is evacuated and disposed to the Silos(3 Nos x 1000T capacity)located outside the plant boundary of about 1.8 Km through Pressurized Dense-Phase Fly Ash Conveying System (PDFACS) and from the Silos the fly ash is utilised for further beneficial use through Closed trucks.
- The heavier particles called the Bottom Ash(40% of the total ash generated) which comprises traces of combustibles embedded in forming clinkers is collected at the Bottom of the furnace quenched, cooled to manageable temperature and disposed in the form of slurry to Ash Pond located at about 5.2 kms from the Power Plant.
- Water is being used for pumping out the ash slurry, generated by burning of coal in Stage I and Stage II of North Chennai Thermal Power Plants, into the ash pond, which is filtered and put into reuse.
- Everyday about 48,000 Tons of wet ash slurry is being pumped into ash pond which contributes 3,300 Tons of Fly ash. Both the Stage-I&II Thermal Power Plants have been designed for 40% Wet bottom and hence generation of ash slurry is inevitable.
- Fly Ash generated per day is 3500 tonnes against silo capacity of 3000 tonnes. The electro-static precipitators are designed for wet bottom and bottom ash generated from the unit has to conveyed into the dyke in the form of ash slurry. Unit has to transfer only the bottom ash and the entire flyash has to utilized in the dry form. Since the unit is not able to achieve 100% utilization of flyash and is not having adequate facility for storage of dry flyash that is generated in one day, flyash slurry is sent to dyke and then lifted for other beneficial purposes.
- Currently, the percentage utilization of dry fly ash is varying between 25% to 30% and it is stored in silos and directly loaded into vehicles and sold to cement industries/ brick manufacturers. Though the power plant is having agreement with eight cement industries, four construction & service industry and two transport companies for lifting of dry fly ash but from 2020 onwards the utilization of flyash has reduced to 25% to 30%.
- Silos are not even having one day storage capacity due to which flyash is sent to dyke and again lifted from dyke for beneficial utilization.
- The five ash slurry pipelines were designed to carry only bottom ash (40% of the total ash generated) but however unit has pumped both flyash & bottom ash through the pipelines over and above the permitted quantities. In early 2004, pipelines have started to leak and flyash deposition has started in adjoining areas and leaks are continuing till date. From 2004 to 2021 unit has taken measures to repair the leaks but proper corrective measures to prevent the leaks were not taken. Since, 2021 unit has made efforts to replace leaking pipelines.
- The Ash Slurry Disposal System envisages identical streams (3series) of Ash Slurry Pumps of 930 M³/Hr capacity connected to 5 Nos , disposal pipe lines (M.S Cast Basalt lined pipes). Out of the five Nos Slurry Disposal Lines 3 Nos are in continuous service during 100 % plant availability and 2 Lines will be kept as standby for maintenance reserve. The Decanted water is collected in the concrete lined Recovery water sump of capacity 4500 M³ and Basin capacity of 650 m³ and pumped back to the power plant for reuse in Ash Handling System through 4 Nos Recovery water Pumps (2 Nos service and 2 Nos Stand by) and 3 Nos Recovery water lines. The Ash Slurry Disposal Lines are running to a stretch of about 5.2 kms from the Power Plant up to Ash Dyke. The tanks used to collect the recovery water is broken and recovery water is overflowing into adjacent area which ultimately joins Buckingham canal.
- The ash pond is located about 5kms from the Thermal Plant sprawling at an area of about 115 Hectares. The total height of the earthen bund of the ash pond is 7 metre of which 3 metre free board is available now. The total quantity of ash deposited was 65 Lakh cu.m, out of which 22 Lakh cu.m has been already removed and disposed. Hence

43 Lakh cu.m of ash is present in the ash dyke.

- The pipelines of Stage-I were commissioned during 1994-95 and hence more than 25 years old. They have become rustic, corroded and brittle with numerous cracks. There are total 8 Nos. of series of pipelines of which 5 Nos. carry ash slurry and 3 Nos. being used for recycling the filtered water. The pipelines of both NCTPS stage I & II starts near the Stage-2 Entrance Gate outside, cross the adjoining Buckingham Canal, Backwaters and Kosasthalaiyar river by supporting bridges to reach ash dyke. Pipelines laid for NCTPS stage-II are in good condition.
- Currently, out of 5 Nos. of ash slurry pipelines, Line 1 & 5 were replaced with old used Cast Basalt-lined pipelines (having an outer diameter of 406 mm and Inner diameter of 356mm) brought from Ennore Thermal Power Station (ETPS) during August 2020. Replacement of Line 2 is in progress with new Cast Basalt pipes, Line 3 is replaced with new pipeline. but for Line 4, the unit is yet to procure new pipes. Currently unit is having only one new pipeline and remaining four old pipelines which are leaking. When ash slurry is transferred through the old pipelines, it is leaking into the adjoining areas.
- Whenever leaks are detected, unit is taking actions to stop leakage. TANGEDCO is operating a patrol team round the clock to check for pipeline leakages. Soon after leakages are noticed, pumps are stopped immediately, the left over ash slurry in the pipeline is flushed outside, fresh water is transported through pipelines, leaks are repaired and pipes are put back into operation. Though unit is taking measures to monitor & repair the leakages but the ash slurry that has leaked into the environment is not cleaned. Due to incidences of repeated leaks from the pipelines, the area surrounding the pipelines such as Buckingham canal, Kosasthalaiyar river are deposited with ash.
- In compliance to Hon'ble NGT orders, TNEB paid an amount of Rs 28.5 crores to PWD to desilt the ash from Kosasthalaiyar river. PWD has desilted 4.35 lakhs cubic metre qty. Out of which 2.5 lakhs cubic metre qty was taken away by M/s. Tamilnadu polymer Industries Private Limited (TPIPL) for their land filling and not stored in dyke. Balance qty of 1.85 lakhs cubic metre that was desilted by PWD was dumped along the boundary of the river and during rains, the same is washed back into the river. Hence 1.85 lakhs CBM of flyash that was desilted by PWD is again redeposited into the river.
- TNEB paid to PWD an amount of Rs 66 lakhs to desilt the ash from Buckingham canal. PWD has desilted 89600 cubic metre qty. Out of which 70000 cubic metre quantity was taken away by M/s. Tamilnadu polymer Industries Private Limited (TPIPL) for their land filling and not stored in dyke. Balance qty of 19600 cubic metre has to be removed and transported to dyke"

100. They have given the following recommendations:-

"The committee submits to Hon'ble NGT to direct M/s NCTPS, stage-I to stop its operation still the unit complies with the following:

1. Unit shall obtain valid consent to operate under the Air Act, 1981 The Water Act, 1986 and Hazardous Waste Authorization from TNPCB
2. Unit shall use desulphurized coal containing ash content less than 30% so that quantity of ash generation can be controlled at the source itself.
3. Unit shall augment the air pollution control devices so that stacks comply with the standards stipulated by TNPCB.
4. Unit shall ensure 100% flyash utilization as per Fly Ash Notification 1999 (as amended) issued under the Environmental (Protection) Act 1986 for utilization of flyash.
5. Unit shall install silo of at least 5 days storage capacity and dry flyash shall be loaded into the trucks directly from the silos into the vehicles. Unit shall ensure that only bottom ash is conveyed through the pipelines into the dyke.
6. Unit shall replace pipelines 1, 2, 4 & 5 with new cast basalt pipelines.
7. Unit shall take adequate measures to collect the entire recovery water and to fully reuse it. Unit shall ensure that no recovery water is allowed to overflow into the river or canal.
8. Unit shall ensure that ash deposited in the Buckingham canal, Kosasthalaiyar river deposited upto 1m depth shall be removed by desiltation and transported to the dyke immediately.

9. All units in the Ennore industrial area shall collectively construct a health care facility in Ennore for the public and the workers/ employees of the industries.

10. Unit shall strengthen the bund laid across the Sepakkam village.

11. OCEMS has tampered and it is observed that actual results are not transferred to CPCB and TNPCB servers.

12. Unit shall develop and maintain a minimum 33% green belt in the unit area and around the ash dyke."

101. In the report submitted by Dr. Balaji Narasimhan, Professor, Dept. of Civil Engineering, IIT Madras regarding the effects of fly ash on the Hydrology and Hydrodynamics of Kosasthalaiyar River near North Chennai Thermal Power Station, Ennore, after making a detailed study on the aspect, he has given the following summary and conclusions along with recommendations:-

- As the ash generated is not directly measured, but estimated as a percentage of coal consumed, there seems to be a large disparity between the mass balance on the ash that should be theoretically remaining in the dyke and actual quantity of ash present in the ash dyke.
- This disparity in estimates could also be due to inaccuracies in the measurement of actual amount of dry ash and wet ash lifted (presently estimated based on the number of lorry loads lifted)
- Due to the lack of accurate measurements of pollutant (ash) generated, the amount of ash cumulatively lost to the environment is not known
- Based on the historical analysis of high-resolution satellite imagery available in the public domain, fugitive emissions of flyash could be observed from as early as 2000 (with 6 years of commissioning of NCTPS)
- The DPR prepared for the restoration of the Ennore Creek clearly show that the natural drainage patterns have been considerably altered due to the fly ash pond construction and fugitive emissions
- In addition to the fugitive emissions directly from the fly ash pipeline, the macro drain for stormwater runoff from the fly ash pond area also seems to be a major carrier of fly ash into the Ennore backwaters
- Within the critical domain selected for analysis, fly ash was found to be prevalent to the extent of 3.51 sq. km (1.51 sq. km within the water bodies). This is only a conservative estimate. The actual extent could be much larger.
- The total volume of fly ash deposition in the study area is **39,83,002** cubic meters (approx. 5.67 million Metric Tons) of which **19,11,830** cubic meters (approx. 2.67 million Metric Tons) are present in the backwater and the remaining in the flood plains.
- The tidal fluctuation is considerably damped due to the fly ash deposits. The fluctuation is very limited beyond the fly ash pipeline. This has significant implication on the flora and fauna of the region. Dredging of the fly ash deposits from the flood plain and the thalweg seems to restore the tidal dynamics.
- The impact of tidal dynamics in the flood plain could be even more severe due to the heavy deposits of fly ash

Recommendations

- The ash generated should be directly measured at the premises itself
- The dry ash lifted should be directly measured through weigh bridges
- The wet ash lifted should be directly measured through weigh bridges and adjusted for moisture content for accurate bookkeeping.
- As the natural drainage in the area is severely and irreparably affected, the restoration efforts must ensure delineation of alternate pathways for stormwater drainage from the west of the ash pond area towards the Ennore backwaters.
- Due to accessibility issues, the western side of dyke and area between coal yard and eastern bund of dyke was not assessed for flyash deposits in current study and should be included in the DPR
- Only tidal dynamics were studied in this report. The 2018, Ocean Engineering

Department, IITM study clearly showed that considerable amount of flood waters from Kosasthaliyar in the south is pushed through the Ennore back waters due to Ennore creek mouth closure from sand bar formation ⁽²⁾. Hence, the DPR for remediation should also look at the influence of ash deposits and their removal on the flood dynamics in the Ennore back waters.

- The tidal fluctuations at the thalweg portion of the backwaters seem to get restored even with 0.5m removal (dredging) of the flyash. However, for restoration of tidal dynamics on the flood plain, much deeper dredging than 0.5m would be needed at the flood plain area. The results show that a fly ash dredging at least to a depth of 1m would be necessary to restore the full tidal fluctuation, while a complete removal of the fly ash is desirable.
- It is not merely tidal dynamics that needs to be restored, but that to wholly restore the region hydrologically and biologically, targets and ambitions must be set with a holistic view and dredging to a depth of native soil/sediment may be required to create conditions suitable for return of native flora/fauna.

102. The individual report submitted by Dr. Indumathi Nambi, Professor, Environment and Water Resources, IIT Madras on contamination of air, water, sediments with recommendations and suggested target(s) for remediation, after conducting a detailed evaluation, following conclusions and recommendations were made:-

“Fly ash deposition: From the deep drilling exploration in the study area, fly ash deposits were observed to be found up to 2 km upstream and 4 km downstream of ash pipeline along Kosasthaliyar river shore with depth ranging from 1 to 8 feet and near maximum deposit was observed in the immediate downstream of ash pipe line.

Along the shore of Buckingham canal, contamination due to fly ash extended from a depth of 1 ft to 7 ft with maximum depth at the location of ash pipeline. Fly ash deposits in the Buckingham canal shore extended even up to 1 km upstream of ash pipe line and 0.7 km in the downstream. It is also observed that alarming levels of fly ash deposits has been carried to the upstream reaches of Kosasthaliyar river due to the incoming back water currents but the spill in the stretch between Buckingham canal and Kosasthaliyar river is still intact with maximum depositions in the downstream of pipe towards the creek.

Sediment quality: Shallow sediment samples has high concentrations of cadmium all over the study area and is exceptionally high in the downstream stretch along the Buckingham Canal where visual leaks of fly ash can be seen and is in correlation with the depth of fly ash deposits and the concentration in deeper samples.

As heavy metals are beyond the permissible limits in deeper samples, adverse biological effects are induced in benthic aquatic organisms which include increased mortality, decreased benthic invertebrate abundance and diversity, and abnormal development among others.

Chromium and copper are beyond the permissible guideline values in the stretch between Kosasthaliyar river and Buckingham canal downstream of NCTPS pipeline, however the same has not leached into deeper sediments.

Lead is beyond the permissible guideline values in the stretch between Kosasthaliyar river and Buckingham canal downstream of NCTPS pipeline and but is within permissible values along the Kosasthaliyar river and Buckingham canal stretch. However, deeper sediments shows elevated concentration of lead along this stretch pointing out the leaching effect. Same is the case with Zinc as well.

Deeper sediments are found to be moderately enriched by arsenic, chromium, copper and nickel and severely enriched by lead and Zinc.

The concentration of heavy metals in underwater sediment samples are lower than the surface sediment samples collected along the shore which may due to dilution effect or washing off of pollutants along with the stream. Peak concentrations of lead, copper and zinc were found 500m u/s of pipeline in correlation with fly ash depth.

From leachability studies, it is inferred that aluminium, copper and chromium would leach back into water under wide pH range and the resultant heavy metal concentration in leachate would be above permissible standards posing a threat to the humans, livestock and aquatic life depending on the water source.

Hence it is recommended to remove the deposited fly ash along with the deep sediments up to a depth of 10m, 2 km u/s and 4 km d/s of NCTPS pipeline, along the Kosasthaliyar river. Buckingham canal has to be dredged for 10m, 1 km u/s and 1 km d/s of NCTPS pipeline. Also, the stretch between Kosasthaliyar river and Buckingham canal u/s and d/sof pipeline should also be cleared.

The following table compares the top sediment with the agri standards across the globe. From the table, it is evident that the dredged sediment is not fit to be disposed on land.

Element	Min – Max in deep sediment samples mg/kg	Agricultural Soil quality guidelines for metals			
		WHO	India	USEPA	China
Arsenic	BDL-6	2.9	-	-	-
Cadmium	0.9-6	0.8	3-6	0.48	0.3-0.6
Chromium	5.8-86.7	100	150	11.0	150-300
Copper	7.3-169.6	36	135	-	-
Lead	9.5-94.2	85	250	200	80
Nickel	9.2-45.8	35	-	72	-
Zinc	24.8-480.1	50	300	124	-

Hence it is recommended to dispose off the dredged soil in the hazardous management facility.

Groundwater quality: Groundwater has high concentrations of dissolved salts apart from contamination by aluminium, arsenic, lead, manganese and zinc. As the deeper sediments are severely enriched with lead and aluminium (from Enrichment factor analysis), they would have leached into the water and caused groundwater contamination. It is necessary that centralized treatment plant has to be set up to treat the water before distributing it to the public. Meanwhile, potable water has to be supplied to the residents on daily basis.

Surface water quality: Surface water is not fit for consumption by humans nor for irrigation due to elevated concentrations of heavy metals. However, for the measured parameters, it doesn't pose any threat to aquatic life or livestock and complies with MOEF class-I use case for coastal waters (Salt pans, Shell fishing, Mariculture and Ecologically Sensitive Zone).

Leaching experiments: Leaching experiments conducted at different pHs indicated that sediments can release the heavy metals such as Chromium, Copper and Lead even at neutral range due to desorption. Under slightly acidic conditions due to biological activity and alkaline conditions of flyash leaching is enhanced.

Human Health Risk: The data indicate that the incremental human health risk is very high compared to the background risk. Cadmium and Chromium being the leading causative agents. The results presented the risk quantification taking the lowest levels of contamination for each metal. The cumulative effects of other metals can have an additive effect on the same target organ. The risk estimations can be used to calculate standards that has to be met so that the Hazard index is below 1 and cancer risk is below 1×10^{-6} . In recent years, risk based environmental standards and clean-up goals are set for remediation in all countries and MOEFCC has also developed a guideline document for the same.

Health of aquatic organisms: A more detailed ecotoxicological study has to be conducted to determine the health risk to aquatic organism. Flyash deposits in the river bottom indicates a very hostile environment which has led to loss of benthic life forms like shrimp and crabs and other phytoplankton. Literature indicates that fish species show severe toxicity to heavy metals at concentrations in the range of 1ppb. They also respond differently with high toxicity response to copper compared to other heavy metals. There can be biomagnification in the food chain from benthic organisms to fish to humans which has to be studied. Human health risk can increase several fold if fish intake is included.

Remediation of the Site: Flyash deposits found on the river bottom, banks, flood plains from a depth of 2 ft to 8 ft have to be removed. Sediments below the flyash are loaded with higher concentrations of metals due to long term accumulation and adsorption.

This may lead to long term leaching of heavy metals from sediments even after the flyash is removed. A more detailed depth wise assessment of sediments is recommended which will enable to what depth sediment has to be removed or remediated. Sediments can be stabilized to prevent metal leaching and can be used in filling hollow concrete embankments, coastal structures for preventing erosion, construction industry after proper testing."

103. In the report submitted by Dr. D. Narasimhan, Associate Professor of Botany (Retd.) Madras Christian College (Autonomous) on the effect of fly ash on flora and suggested remediation, after conducting a detailed study, following remediation and summary was made:-

“Remediation

The most important activity that is needed to bring back the ecology to its near original condition is to establish the traditional water channels that could be reconstructed using native knowledge of the community. Restoration of salt pans is an important step to revive the original character as salt marshes. This is important to restore both the salt marshes and Mangroves. A list species has been suggested for restoration and the same has been shared with Dr. Jaysree Vencatesan to facilitate the planting design which is done by her. Creating a near original vegetation could help the habitat to rejuvenate and restore the traditional and fresh livelihood options especially for the fishermen community.

Summary

This study indicates that the natural vegetation is acutely affected by the fly ash dumping at Ennore. Field investigation and perusal of early botanical literature shows that the characteristic and indicator species have vanished from the region and several invasive weeds and non-habitat species have increased. Mangrove area has undergone a drastic reduction and only a few remnant patches occur at present. Salt marsh vegetation which play a critical role in nutrient cycle and in regulation of salinity is also severely affected. Sand dunes that supported the Tropical Dry Evergreen Forest vegetation have completely eroded except in Kamarajar Port. Salt pans, which were originally halophytic wetlands, need to be restored, not for salt, but for bringing the water into the affected area to rejuvenate the ecosystem and to restore the habitats for native plants to establish. A list of plants are suggested for planting in different habitats of the area.”

104. In the report submitted by Dr. Deepak Samuel. V, Scientist E – Marine Biologist, Conservation of Coastal and Marine Resources Division, National Centre for Sustainable Coastal Management, MoEF&CC, Anna University, Chennai, on impact of fly ash on aquatic fauna, recommendations and suggested remediation target(s), after making elaborate detailed study, he has given the following recommendations and suggested remediation targets:-

“Recommendations

Economic evaluation of the Ennore creek in terms of the goods and services provided

Short-term and long-term monitoring of bio-accumulation of heavy and trace metals is various estuarine trophic levels

*Molluscs, especially bivalves such as *Magallana bilineata*, *Perna viridis*, *Merertrix* spp. to be chosen as bio-indicator species for estuarine environment and *Astruca annulipes* for intertidal area.*

Mapping of degraded mangrove areas as potential sites for future plantation

Dumping of dredged material on the banks of creek or Buckingham canal to be avoided as they destroy fiddler crab habitats

Enumeration of fishers dependent on the backwaters for livelihood – Assessment of livelihood impact covering fishermen (also the SC/ST fishers), including women, who depend on the creek and backwater

Estimation of compensation to be paid to the fishers for loss of livelihood.

Regulated/ Monitored exploitation of polychaete worms in the creek as it has now become a livelihood to the Irula community.

Suggested remediation targets

*Restoration of oyster beds/ reefs (edible oyster *Magallana bilineata*) in the Ennore creek.*

Restoration of mangrove and halophytic vegetation on the banks of creek and Buckingham canal."

105. Dr. Jayshree Vencatesan, Managing Trustee, Care Earth Trust in their report on impact of fly ash and ecology, and recommendations ecological characterisation and restoration strategy for Ennore Landscape, after conducting detailed study and evaluation, gave the key principle for habitat restoration as follows:-

"Key principles of Habitat Restoration

1. Develop long-term shared visions and from these, quantifiable objectives and constraints. Identify the best management options to achieve a particular goal and minimize the risk of unacceptable failure.

2. Principles are contingent and have to be considered within management goals, type of landscape', and spatial and temporal scale. What applies in one landscape or type of system may not be immediately transferable to another without careful initial assessment of the similarities and differences between the two situations.

3. Habitat patches can only be assessed and managed within the context of the whole landscape to deal with emergent landscape properties such as flows of biota, water and nutrients, and interactions among mosaic elements. It should be acknowledged that landscapes and its components are dynamic.

4. Conservation outcomes are dependent as much on socioeconomic and political issues as on scientific understanding. Restoration plan should be flexible.

5. Time lags between events and consequences are almost inevitable. This applies to both the adverse effects of human activities and attempts to restore damaged systems.

6. Maintain the ability of a system/landscape to recover from disturbance and adapt to changing circumstances. This includes maintaining processes and flows and the ability of the system to cope with extreme events such as droughts.

7. Manage in an experimental framework to continuously improve the understanding of the system being managed. This involves some careful considerations of design and monitoring to ensure that the results are maximized.

8. The amount of native vegetation cover remaining in an area is often the key factor in determining persistence of the biota. A key principle will be to avoid low levels of native vegetation cover. Many factors will assume increasing importance when levels of native vegetation cover are low. Threshold effects, regimes shifts, etc. are more likely to occur under these conditions.

9. Patches vary in their size, shape and relative habitat value, depending on the amount and quality of the habitat elements that they contain for particular species. Some patches may be disproportionately important because of their provision of key scarce resources such as water or nutrients.

10. Any landscape conservation strategy should start by identifying and protecting the most important patches in the landscape in terms of their habitat value and current condition.

11. Identify disproportionately important species, processes and landscape elements. As complexity is constant it is necessary to focus on key drivers/threats/species/habitat features.

12. Integrate aquatic and terrestrial."

106. They also submitted the checklist for the possible contents of restoration plan as follows:-

"Checklist for the possible contents of a Restoration Plan

Background to the project, stakeholders involved Restoration goals, targets and milestones

Site location and project boundaries Rainfall and other climatic considerations

Physical properties of the soil and landforms over the site

Physical features (including infrastructure) and their location

Land use history and prior disturbance at and adjacent to the site

Current location, state and 'trajectory' of native vegetation (if present) Condition and distribution of other relevant habitat features currently present Proximity to other habitat/remnant vegetation

Current and potential future threats that need to be addressed in order to reach the restoration goal (include site threats and project risks)

Management unit locations and their management context (maintain, improve, reconstruct or works exclusion zone)

Desired habitat goal state (e.g. vegetation composition and structure)

Management actions, with an implementation schedule prioritized over time and space (with flexibility for adjustment according to adaptive management as the project progresses)

Standard operating procedures and access to the site

Indicative resource requirements

Monitoring and evaluation goals, indicators and schedule

Location of reference sites (if applicable)

The process of reporting and review

Contacts and references (including previous reports)"

107. They also suggested the restoration strategy as follows:-

"Restoration Strategy

Habitat Assessment

Through multiple field visits, the landscape has been delineated into zones based on the extent of fly ash dumping and the presence and condition of degraded vegetations. It is readily evident and also substantiated by geospatial analysis that the landscape is significantly affected that complete restoration seems beyond plausibility. However, through sustained and phased interventions, the area can be dislodged off the ash sediments. Ennore landscape is also affected with other chemicals like crude oil refuse in the nearby Buckingham canal. Based on the aforementioned criteria and the restoration principles detailed in the previous section, the landscape is categorized into

1. **Areas beyond remediation (ABR)**
2. **Areas of high intense remediation (AHI)**
3. **Areas of light intervention (ALI).**

It is to be noted that the water in all the affected areas is polluted directly or with leachate.

Grid method:

Each grid is of an area of 0.25 sq km i.e 25 ha and was produced by dividing the area using a grid of dimensions 500 metres by 500 metres.

S.No	Category	Number of grids	Area in ha
1	ABR	11 grids	275 ha
2	AHI	5 grids	125 ha
3	ALI	4 grids	100 ha
4	Total		500 ha

It is to be noted that the 500 ha does not include water courses but is only of those patches where flora based restoration can be implemented. The following map provides a grided demarcation of the three categories of restoration strategies and the grids have been designated using alpha-numeric codes. Maps of supportive attributes are also provided in the following section (fig 11-15).

Elevation

Elevation (m)	Area in (Hec.)	%
0.7 to 1.96	386.93	18.95
1.96 to 3.16	727.38	35.63

3.16 to 5.86	724.55	35.49
5.86 to 11.92	193.57	9.48
11.92 to 25.54	9.26	0.45
<i>Grand Total</i>	2041.69	100

To understand the topography, elevation data was generated from Google Earth, the package associated with GPS Visualizer online was downloaded as GPX data; that has been converted to GIS supported file format. This format has been interpolated with IDW (Interpolated Distance Weighted) technique as DEM with 1m resolution.

Triangulation method has been used to interpolate the elevation of the mass points in the TIN (Triangulated irregular method) model. then the TIN model converted to a raster format with a pixel resolution of 5x5 meters. That data was categorised using the geometric interval approach in order to visualize and understand its distribution in and around the focus area

The elevation of the study area varies from a minimum of -0.7 to a maximum of 25.54.

Slope:

Slope (°)	Area (Hec.)	%
-0.73 to 1.96	575.59	28.19
1.96 to 3.16	126.35	6.19
3.16 to 5.86	595.33	29.16
5.86 to 11.92	694.26	34.00
11.92 to 25.54	50.16	2.46
<i>Grand Total</i>	2041.69	100

Slope map has been generated from elevation data. Slope is expressed in units of degrees. It shows overall terrain as mostly flat with minimum undulations with the slope varying between a minimum of -0.73 degree to a maximum of 25.54 degree and a mean value of 0.40 degree.

The slope level of the seashore area is essentially flat, with a modest inclination of 0.73 to 25.54. Grid G7 has a higher amount of slope, however it only covers 2.4 percent of the land due to the existence of industry infrastructure. According to the slope study, 70 to 80 percent of the area is flat. Flowing water performs both erosion and deposition.

Drainage:

The region is drained by two seasonal rivers, the Araniar River to the north and the Kosasthalaiyar River to the south. Both rivers do not flow directly to the sea, but instead meet in brackish water areas, mangroves on the creek's outskirts, and the Buckingham Canal. The Kosasthalaiyar River flows into the Ennore backwaters before reaching the sea through a stream. Littoral currents travelling in a northerly direction for 9 months from February to October move sediments and deposit them a few kilometres offshore, forming strand plains in areas of emergence.

Habitat Map:

Habitat types	Area (Hec.)	%
Construction	114.78	16.33
Invasive	2.2419	0.32
Mangrove	75.228251	10.70
Marsh type wetland	59.71894	8.50
Mixed Invasive veg / Scrub	10.350823	1.47
Mixed veg / Scrub	21.46524	3.05

Open space	13.1763	1.87
River	207.316	29.49
Shallow water	108.04231	15.37
water	90.609516	12.89
Grand Total	702.92928	100

The latest Google Earth satellite image is used to map habitat categories. The digitization approach traced all of the vegetation and other important types of land area. The sample habitat information gathered from the GPS sites was used to categorise all of the habitat present in the study area.

ii. Areas beyond remediation

The area heavily polluted by fly ash and boiler sludge that reached depths up to 4 metres is considered for this zonation. This area requires immense man power and machinery to desilt the sludge apart from plugging the pollutant source. Weak, rusted and leaking iron conduit lines pass through this area polluting en route. The pollution here is wet when the sludge spills, but when dry, the fine particles of fly ash get dispersed into the air causing numerous health hazards. The pollution is so intense that even the drought enduring plants and invasives have forsaken the habitat. Only after removing large quantum of fly ash, boiler sludge, coal or soil soaked with viscous oil, bioremediation activities could be taken up. To monitor the process and succeed in restoration principle, arresting the pollution source and ensuring no more spillage or dumping of fly ash is important. The study found almost no species or bioindicators thriving in this polluted area. The areas near conveyor belt and near ash pond come under this category.

iii. Areas of high intense remediation

This area demarcated in the map is also heavily polluted, which needs careful planning and excavation of the dumped fly ash. Immediate and intensive plantation activity needs to be taken up with suitable species to rehabilitate this part of the landscape. If this area is not restored and arrested of further pollution, the dense mangrove patches nearby will be destroyed forever. Already the mangrove in this patch is quite degraded with loss of habitat to ash pollution. The habitat is encroached upon by invasive species like Lead tree and Mesquite. Legacy ash is deposited here, i.e., and the area continues to be further polluted. Considerable time and energy are required for restoring the area. Eradication of invasive alien species should be taken up alongside the de-siltation process.

5. Areas of light intervention

The habitat is laden with layers of ash, but there are few indigenous plants and saplings that can be seen sporadically. The landscape quality is assessed by the occurrence of habitat-specific organisms or indicator species. The affected area requires slight desiltation of deposited fly ash and removal of invasive plants. Restoration activities could be taken up in parallel while the ash deposits are being removed. The native vegetation stands should be conserved as such; leaving the saplings undisturbed for growth. Natural regeneration of *Avicennia* mangrove should be allowed to proliferate, as there are many saplings sprouting; although the mortality rate is high in younger ones of this species. Avoidance of heavy machinery during restoration need to be adhered to. Suitable plant species need to be planted to conserve the soil. This region boasts good population of Fiddler crabs and Horn snails.

6. Plantation for restoration

Indigenous plants that can survive the harsh local-coastal weather conditions should be used for restoring the landscape. The specifications and plantation protocols would be defined in the Detailed Project Report. A grid based choice of species is provided using the list of suitable species provided by Dr D Narasimhan, Expert Member of the Committee and the field biologists. For instance, there are some habitat specific species that can do well when planted in suitable habitat; like riparian, halophyte, psammophyte, etc. *Avicennia* mangrove should be raised in dedicated nurseries and planted in all the affected regions, as the plant grows well in the habitat."

108. On the basis of the various individual reports, the Joint Expert Committee had noted the following findings and recommendations for the purpose of preparation of the DPR:-

"FINDINGS

A summary of key findings from various reports and observations of the JEC members is presented below:

General Findings

- TANGEDCO's NCTPS Stage I has operated without a valid Consent under Air and Water Acts since 31.03.2015, and without a valid hazardous waste authorisation since April 2020.
- TANGEDCO's NCTPS Stage II has operated without a valid Consent under Air and Water Acts since 31.03.2019 due to non-compliance with statutory requirements.
- An inspection by CPCB/TNPCB found Online Continuous Emission Monitoring System (OCEMS) to have been tampered so that actual results are not transferred to CPCB and TNPCB.
- As against a legal requirement of 100 percent flyash utilisation, TANGEDCO's flyash utilisation was less than 50% in 2020-21.
- Besides fly ash contamination of the Ennore wetlands, ash has also been emitted into air.
- Despite the tampering of OCEMS, between 01.04.2019 and 07.03.2022 (1071 days), NCTPS Stage 1 is recorded to have emitted particulate matter (including ash) in excess of permissible levels for 481 days.
- Between 27.12.2020 and 07.03.2022 (1071 days), NCTPS Stage II is recorded to have emitted particulate matter (including ash) in excess of permissible levels for 791 days.
- Mandatory greenbelt conditions prescribed in Consent have not been complied with.
- The ash dyke is unlined and has no geomembrane lining, exposing groundwater to contaminants from the structure.

Flyash Details

- The figures for unaccounted flyash and the quantum of flyash present in river and backwaters are presented below.
 - The 2019 estimate by NGT expert committee pegs the quantum of unaccounted for coal ash at 13.58 lakh MT, with 7.93 lakh MT in river, 3.95 lakh MT in surrounding areas.
 - TNPCB and CPCB in the current report estimate unaccounted for ash at 65.96 lakh tonnes, of which an unquantified portion is in river/backwater/surrounding areas.
 - The JEC member from IIT-Madras estimates ash quantum in river and surrounding areas at 56.7 lakh MT.
 - A more precise estimate and fly ash balance is to be made available at DPR stage.
- Flyash deposits range in depth from 1 ft to 8 ft.
- Within the critical domain selected for analysis, fly ash was found to be prevalent to the extent of 3.51 sq. km (1.51 sq. km within the waterbodies). This is only a conservative estimate. The actual extent could be much larger. This does not include areas to the west of the ash pond.
- In addition to fugitive emissions directly from the fly ash pipelines, the natural macro drain for storm water run-off connected to the fly ash pond area also seemed to be a major carrier of fly ash into the Ennore backwaters.

Environmental Contamination

- Surface sediments are heavily contaminated with levels of cadmium, chromium, copper, lead, nickel and zinc well in excess of safe levels as per Canadian sediment quality guideline for protection of aquatic life.
 - Cadmium level is high all over study area, and extremely high downstream of Buckingham Canal.
 - Chromium and lead levels are high in surface sediment samples taken downstream of NCTPS

ash pipeline.

- Deep sediments also show elevated levels of cadmium, copper, lead, zinc, nickel, suggesting that contaminants have leached and penetrated deep into the sediment.
- Earlier reports including the 2017 expert committee report include evidence of bioaccumulation of heavy metals in vegetables, fish, prawns, crab and oysters (**Annexure 6**).
- River sediment: Levels of cadmium are high in the entire study area. Cadmium, zinc, lead are high 50 m downstream of pipeline. Lead, copper and zinc found at high levels 500 m upstream of pipeline.
- Groundwater heavily contaminated with dissolved salts, aluminium, arsenic, lead, manganese and zinc.

Impacts

- In the Ennore region, area under wetland, including salt pans, mangroves and other waterbodies, has shrunk from 855.69 ha in 1996 to 277.92 ha in 2022. Meanwhile, during the same period, built-up land increased from 0 ha to 259.87 ha and area covered by fly ash increased from 0 ha to 260.28 ha.
- Natural drainage patterns have been considerably altered due to fly ash pond construction and ash contamination. This will have an impact on local hydrology and flooding.
- Tidal flow near the severely ash-impacted areas has been compromised.
- The flyash deposits in the river bed present a hostile environment which has led to loss of benthic (river-bed) lifeforms like shrimps and crabs.
- Estuarine vegetation, including seagrass and mangroves in Kosasthalai's backwaters, and the thick vegetation along Buckingham Canal has been lost due to dumping of ash and dredged material.
- Oyster reef area, including oysters such as protected Windowpane oysters (a protected species listed in Schedule IV of Wildlife Protection Act), has drastically declined due to contamination.
- According to local fishers, several fish species have either disappeared or diminished. These include: White prawn, black prawn, sand prawn, tiger prawn, green crab (*Scylla serrata*), *Flotosus canius*, *Mugil cephalus*, Silver Bidy (*Gerres sp.*), sand whiting (*Sillago sihama*), *Terrapon jarbua*, sea bass (*Lates calcarifer*), and other fishes locally called Kalavan, Udupathi, Panna, Oodan.
- Despite its degraded state, the existing mangrove cover in Ennore provides ecological services worth Rs. 12.36 crores every year in terms carbon sequestration, disaster mitigation and fisheries.
- Adults face a high cancer and non-cancer risk due to cadmium and lead exposure.
- Cancer and non-cancer risk due to cadmium, lead and copper is much higher for children than for adults. The risk calculation is without factoring in exposure due to consumption of contaminated food, including fish, prawns and crab.
- Damage to the river and reduction in fish catch has drastically affected fisher livelihoods, including of women fishers from SC/ST community who hand-pick shrimp and crab from the river bed.
- The impacts of pollution on livelihoods and health has eroded the economic status of affected people due to lost income, lost work days and increased health care expenditure (Public consultation).

RECOMMENDATIONS

A DPR must be prepared in line with ToR suggested separately below:

- TNPCB may depute a full-time dynamic officer stationed in Ennore for day-to-day monitoring and enforcement of compliance by TANGEDCO, and for overseeing the process leading up to and during the course of remediation and restoration. Costs may be recovered from penalty amount levied from TANGEDCO.
- Considering the nationwide relevance of the proposed remediation/restoration at a landscape

level, the project must be viewed as a one of exemplary importance and carried out under the supervision of this Hon'ble Tribunal.

- The entire unencroached extent of Ennore wetlands, including salt pans which were originally salt marshes, may be notified as a wetland under the state government's wetlands mission, and a plan developed for its wise-use.
- TANGEDCO must be allowed to function only with valid licenses, including Consent to Operate and Hazardous Waste Authorisation.
- The ash dyke should be properly lined with geomembrane; the ash pond should not be used until it is properly lined and the groundwater is protected.
- The damaged pipelines should not be used until they are replaced with new ones.
- TNPCB/CPCB may submit quarterly reports on TANGEDCO's compliance with Air Act, Water Act and Flyash Notification.
- TNPCB may issue appropriate conditions as part of consents to operate under Air and Water Act to enforce 100% compliance with emission norms and obligations under Flyash Notification, 2022.
- TANGEDCO must ensure 100% utilisation of flyash within one year.
 - Considering the state-wide nature of the flyash problem, the state government may consider appointing a state-level mission with Secretary (Environment & Forests) and CMD, TANGEDCO, for flyash utilisation, remediation of ash-contaminated sites and removal and utilisation of ash from "legacy sites."
- A Local Area Environment Committee comprising local stakeholders, including fisherfolk, representatives of industrial and salt workers and women may be formed with officers from TNPCB, fisheries department and revenue department to regularly monitor the wetlands, and to oversee the remediation/restoration efforts as and when such an exercise unfolds.
- Residents of Seppakkam may be relocated to a safe site and provided with all amenities in a time-bound manner within 12 months. In the interim, they should be provided with clean water and accessible health care.
- Immediate arrangements may be made both within CMWSSB's limits and in Thiruvallur district for provision of clean water to all residents in the area.
- The historical impact of pollution and contamination of the Ennore wetlands on livelihoods of local people should be assessed, and people should be compensated for past damage, including due to occupational exposure.
- Health impact assessment and assessment of the adequacy of health infrastructure should be carried out, and immediate measures taken to provide health care to local residents and occupationally affected persons."

109. They also made recommendations for Terms of Reference for preparation of DPR as follows:-

"RECOMMENDATIONS FOR ToRs for DPR

Appointment of DPR Consultant

- An independent project management consultant with experience in environmental assessment and eco-restoration should be engaged to prepare the pre-remediation assessment and Detailed Project Report and EIA for remediation.
- The DPR and EIA may be subject to a public consultation and finalised.

Objectives of DPR

- To develop a Comprehensive DPR for complete removal of ash, remediation and eco-restoration for lands and wetlands, including main channel of Kosasthalai River, its backwaters, riparian wetlands such as salt marshes, salt pans, mangroves and tidal mudflats that are affected by coal ash from TANGEDCO's NCTPS Stage I and Stage II.
- To ensure effective abatement of and protection from pollution of Ennore wetlands from existing and in-the-pipeline thermal power plants.
- To restore the ecological and hydraulic integrity of the wetlands, including Kosasthalai River, its backwaters, riparian wetlands such as salt marshes, salt pans, mangroves and

- tidal mudflats, and other damaged environs.
- To assess damage to environment, livelihood and health of exposed populations, and estimate compensation.

Scope of Study

1. *Area of Study: Develop study area based on historical maps, and Government of India-approved Coastal Zone Management Plan maps from 1996, and areas considered by the Joint Expert Committee (Ref. Balaji Narasimhan's study), and other potentially impacted areas including:*
 - *area along the ash pipeline alignment from western edge of JEC study area to the northern end of ash dyke area to the west of the ash dyke affected by ash and salt water leached out of dyke.*
 - *Area between coal yard and the eastern bund of the dyke*
 - *Any other areas affected by ash or slurry or dyke leachings.*
 - *All areas wetlands, including floodplains, river channel, salt pan, salt marshes and mangroves within larger study area.*
2. *For the purposes of assessing impact on health, study area shall be defined as areas falling within 5 km of boundaries of above-defined study area.*

TERMS OF REFERENCE

1. Assess the state of the Ash Dyke

- *Structural integrity*
- *Storage capacity, including original capacity and any subsequent enhancement; current storage levels*
- *Environmental integrity – impact on groundwater, surface water, ambient air*
- *Environmental integrity – impact on surface hydrology and flooding*
- *Measures to be taken to prevent continued impact on groundwater, surface water, ambient air*
- *Disaster risk assessment and management: Ash dyke breach*

2. Coal Ash Generation and Disposal; Measures to Prevent Ash Pollution, Ensure Compliance

- *Current state of record-keeping of coal ash mass balance, daily coal ash generation and disposal, including storage in ash dyke*
- *Measures to improve record-keeping of coal ash generation, disposal and mass balance*
- *Quantity of Coal ash generated, disposed, quantity stored in dykes and unaccounted for by all units in NCTPS from beginning of production.*
- *Quantity of unaccounted-for fly ash leaked/discharged/present in (into) wetlands and nearby areas in study area.*
- *Quantity of unaccounted-for fly ash discharged to air through stack and fugitive emissions (extrapolated estimate based on measurements and TNPCB emission data)*
- *Report on compliance of Stage I and Stage II with Fly Ash Notification, 1999 as amended*
- *Proposal to ensure compliance with Fly Ash Notification, 2022, including time-bound proposal for utilisation of legacy ash stored in Ash Dyke*

3. Detailed baselines to be drawn up for:

- *Assessment of depth and spread of fly ash distribution in area of study (See Scope of Study above), including a detailed depth wise assessment of sediment quality to assess the depth of sediment that has to be removed and remediated; and the disposal options for dredged sediment.*
- *Leachability test for metals may be performed on sediment samples*
- *Surface water, groundwater and sediment quality assessment for heavy metals and other physico-chemical characteristics*
- *Historical data and current baseline of flora in study area, with an emphasis on aquatic, salt marsh and estuarine flora*
- *Historical data and current baseline of fauna in study area, with an emphasis on aquatic, salt marsh and estuarine fauna*
- *Bioaccumulation of metals at various trophic levels of flora and fauna in aquatic food chain*
- *Economic evaluation of Ennore wetlands in terms of goods and services, including ecological services, provided*

- Air quality in study area with an emphasis on identification of contribution to Particulate Matter pollution load by NCTPS and other thermal power plants in area
- Health of residents and occupationally exposed persons in the study area
- Health Infrastructure Assessment: Carry out an assessment of adequacy of available health infrastructure, including in public and private sectors, to cater to general health needs and needs specific to pollution impacted communities. Recommend measures to improve health infrastructure.
- Enumeration of fishers, including SC/ST women fishers, and persons engaged in other impacted occupations dependent on Ennore wetlands/backwaters for livelihood
- Availability and quality of drinking water
- Regulatory infrastructure, mechanisms and challenges for enforcement of environmental laws.
- State of ash dyke and impact of ash dyke on air, water.
- Land-use, land cover
- Comparison of baselines with historically available data regarding land- use, land cover including from traditional and community knowledge

4. Impact and Damage Assessment Studies

- Detailed Impact and Damage Assessment as a result of current state of pollution on Environment – flora, fauna and environmental medium
- Eco-toxicological study to determine risk to aquatic organisms;
- Detailed assessment of impact on drainage including identification of areas made vulnerable due to compromised drainage
- Health Impact Assessment: Carry out an assessment of health impacts of pollution due to NCTPS/TANGEDCO among local communities including women, children, power plant worker and fishers that are exposed coal toxins through inhalation, ingestion and dermal contact.
- Carry out health risk assessment (cancer and non-cancer risk) for different sub-populations including children, fishers that are in contact with contaminated sediment and water, and others exposed through multiple routes
- Livelihood impacts on vulnerable population, including factory workers, fishers (including SC/ST and women fishers), farmers
- Assessment of compensation and liability

110. They also suggested the remediation and restoration as follows:-

“Remediation and Restoration

- Develop risk-based environmental standards and remediation goals for air, water, land.
- Remediation target levels to be holistic and based on biological, hydrological and livelihood criteria.
- Restoration criteria to consider the multiple habitats in the study area, the measures to be taken to bring back target species, habitat resilience, ecological functionality.
- Explore, in consultation with local fishers, and recommend on the option of restoring oyster beds/reefs (edible oyster *Magallena bilineata*) as a suggested remediation target for Ennore wetlands
- Develop remediation and restoration plans, with costs and recommendations, for groundwater, surface water, sediment and flora/fauna/health and livelihood
- Present plan for restoring native vegetation, including mangroves, in various habitats
- Present a plan for flood mitigation in upstream areas, and improving drainage (of rain floods, storm surges, and daily tidal flows), including by re-opening channels that have been lost due to contamination or encroachment
- Present plan for habitat-specific restoration including of backwater channel, Buckingham Canal, salt marshes, salt pans etc.
- Prepare a detailed waste handling, management and disposal plan
- Present a detailed cost breakdown covering pre-remediation, remediation and long-term post-remediation works.
- Steps to be taken to prevent pollution from ash ponds, including lining of ash dyke; decommissioning options in line with Flyash Notification, 2022
- Present a plan to strengthen technical and regulatory measures to prevent future contamination due to ash handling from TANGEDCO’s thermal plants in Ennore region.

5. Post-Remediation

- Detailed plan for post-remediation monitoring with community involvement
- Identify bioindicator species, and develop protocol for short and long-term monitoring of bioaccumulation of heavy and trace metals in various trophic levels
- Proposal for documentation of pre-remediation, remediation and post-remediation interventions to serve as a guide or manual for other similar initiatives"

111. The Tamil Nadu Pollution Control filed an independent report signed by the officer on 15.04.2022, e-filed on 16.04.2022 with annexure as follows:-

1. Preamble

M/s North Chennai Thermal Power Station Stage-I is a coal based power plant located at SF.No.44, 45 etc., Puzhudiavakkam Village, Ponneri Taluk, Thiruvallur District (13°15'09.3" N 80°19'36.8" E) with total installed capacity of 630 MW in a total area of 220 hectares.

M/s North Chennai Thermal Power Station was established in a phased manner and stages of expansion is briefed below:

Stage	Unit Number	Installed capacity		Date of commissioning	Status
Stage-I	Unit-I	210 MW	630 MW	25.10.1994	Operational
	Unit-II	210 MW		27.03.1995	
	Unit-III	210 MW		24.02.1996	
Stage-II	Unit-I	600 MW	1200 MW	20.03.2014	Operational
	Unit-II	600 MW		08.05.2014	

The cooling water for the Thermal Power Plant is being drawn from the sea and condenser outlet (once through cooling water) is discharged in to the Ennore Creek. Both Indigenous and imported coal is being blended and utilized.

The fly ash (60%) collected in the ESP is evacuated and disposed to the Silos (3 Nos x 1000 T capacity) located outside the plant boundary through Pressurized Dense-Phase Fly Ash Conveying System (PDFACS) and from the Silos the fly ash is utilised for further beneficial use through closed trucks. The heavier particles called the Bottom Ash(40%) which comprises traces of combustibles embedded in forming clinkers is collected at the Bottom of the furnace quenched, cooled to manageable temperature and disposed in the form of slurry to Ash Pond located at about 5.2 kms from the Power Plant.

The Ash Slurry Disposal System envisages identical streams (3series) of Ash Slurry Pumps of 930 M3/Hr capacity connected to 5 Nos , disposal pipe lines (M.S Cast Basalt lined pipes). Out of the five Nos of Slurry Disposal Lines, 3 Nos are in continuous service during 100 % plant availability and 2 Lines will be kept as stand by for maintenance reserve. The Decanted water is collected in the concrete lined Recovery water sump of capacity 4500 M3 and Basin capacity of 650 M3 and pumped back to the power plant for reuse in Ash Handling System through 4 Nos Recovery water Pumps(2 Nos service and 2 Nos Stand by) and 3 Nos Recovery water lines . The Ash Slurry Disposal Lines are running to a stretch of about 5.2 kms from the Power Plant up to Ash Dyke.

The ash pond is sprawling at an area of about 115 Hectares. The total height of the earthen bund of the ash pond is 7 metre of which 3 metre free board is available now. The total quantity of ash deposited was 65 Lakh cu.m, out of which 22 Lakh cu.m has been already removed and disposed. Hence 43 Lakhcu.m of ash is present in the ash dyke.

The pipelines of Stage-I were commissioned during 1994-95 and hence more than 25 years old. They have become rustic, corroded and brittle with numerous cracks. There are total 8 Nos. of series of pipelines of which 5 Nos. carry ash slurry and 3 Nos. being used for recycling the filtered water. The pipelines of both NCTPS stage I & II starts near the Stage-2 Entrance Gate outside, cross the adjoining Buckingham Canal, and Kosasthalaiyar river Backwaters by supporting bridges to reach ash dyke. Pipelines laid for NCTPS stage-II are in good condition.

Out of 5 Nos. of ash slurry pipelines, Line 1 & 5 were replaced with old used Cast Basalt-lined pipelines (having an outer diameter of 406 mm and Inner diameter of 356mm) brought from Ennore Thermal Power Station (ETPS) during August 2020. Replacement of Line 2 is in progress with new Cast Basalt pipes, Line 3 is replaced with new pipeline, but for Line 4,

the unit is yet to procure new pipes. Currently, the unit is having only one new pipeline, when ash slurry is transferred through the old pipelines, it is leaking into Buckingham Canal, Kosathalaiyar River back water and land near Seppakkam hamlet.

Whenever leaks are detected, the unit is taking actions to stop leakage. TANGEDCO is operating a patrol team round the clock to check for pipeline leakages. Soon after leakages are noticed, pumps are stopped immediately, the left over ash slurry in the pipeline is flushed outside, fresh water is transported through pipelines, leaks are repaired and pipes are put back into operation. Though unit is taking measures to monitor & repair the leakages but the ash slurry that has leaked into the environment is not cleaned. Due to incidences of repeated leaks from the pipelines, the area surrounding the pipelines such as Buckingham Canal, Kosathalaiyar River and land near Seppakkam hamlet are deposited with ash.

During the year 2016 in O.A.No.08/2016 & O.A.No.152/2016 & O.A.No.198/2016, R.Ravimaran Vs Union of India and Meenava Thanthai Vs The Chief Secretary, Govt. of Tamil Nadu & Ors and Meenava Thanthai Vs The State of Tamil Nadu & Ors, the applicant has brought to the notice of the Hon'ble National Green Tribunal (SZ) that M/s. North Chennai Thermal Power Station, Stage-I (NCTPS), Puzhuthivakkam Village, Ponneri Taluk, Thiruvallur District is dumping ash slurry into Buckingham canal and back waters for several years due to which the entire area is polluted. According to the applicant, the ash generated by Thermal Power Plant (fly ash and bottom ash) are serious pollutants apart from containing metals like Nickel, Cadmium, Antimony, Arsenic, Chromium, Lead, Mercury etc. Considering the application, the Hon'ble NGT constituted an expert committee to study the area. The report submitted by the expert committee during December, 2017 identified deficiencies in handling the fly ash by M/s NCTPS, hence Hon'ble NGT directed M/S NCTPS to take steps to remediate the area as per the findings in the report.

Further, the applicant again brought to the notice of Hon'ble NGT that M/s NCTPS has not taken any measures to remediate the area. Under these circumstances, Hon'ble NGT constituted an another committee vide its order dated 20.05.2019 comprising of Central Pollution Control Board, IIT Madras, Chennai and Tamil Nadu Pollution Control Board to get the present status, the manner in which the fly ash is being disposed by the TANGEDCO and assessment of the damage caused to the environment in that area & its surrounding area and remedial measures to be taken for restoring the damage caused to the environment.

The Joint committee has submitted the action taken reports as and when directed by the Hon'ble National Green Tribunal (SZ) in its various orders.

2. Orders of the Hon'ble Tribunal

It is respectfully submitted that the Hon'ble National Green Tribunal (SZ) in its order dated 30.11.2021 in O.A.No.08/2016, O.A.No.152/2016 & O.A.No.198/ 2016 noted and directed the following vide para

“4. It is seen from the undertaking that they have undertaken to replace the damaged pipes with new pipes, instead of replacing the same with the old pipes available from their decommissioned unit, as mentioned by them in the earlier report.

5. So, we make it clear that all the pipes which are damaged have to be replaced by new pipes within the time line mentioned by them in the present undertaking, at the most by June-2022 and they will have to file a periodical compliance report before this Tribunal regarding the same.

6. While the work of replacing the damaged pipelines, the TANGEDCO is directed to use only the fully completed replaced pipeline alone (ASDL3) for carrying the fly ash slurry to the ash pond till the other pipeline work is completed.

7. In the meantime, if they have replaced any of the lines by new pipeline, then the TANGEDCO is at liberty to approach this Tribunal for modification of this order to use that pipeline as well for that purpose.

11. The Joint Expert Committee is directed to look into the issues namely, a. whether any damage has been caused to the soil, water and associated flora and fauna on account of deposit of fly ash in the Kosasthalaiyar River Basin in Ennore Back water complex, b. If there is any damage caused to the soil, what is the nature of remediation to be undertaken by the TANGEDCO to restore the damage caused to the environment, c. Assess environmental compensation payable for such damage caused and its impact on the marine biology, d. Suggest the possibility of providing green belt of such nature which can be possible to protect the riverine ecology in that area, so as to avoid further encroachment and further deterioration being caused on account of such unauthorized activities.

12. Mrs. Santha Sheela Nair, I.A.S (Retd.) will be the Chairperson and the Director, Department of Environment, State of Tamil Nadu will be the Member Secretary for the Joint Expert Committee and the Director, Department of Environment is directed to co-ordinate and provide necessary logistics for inspection and submission of the report. After finalizing the remediation methods, the Director, Department of Environment is directed to prepare the Detailed Project Report (DPR) for carrying out the remediation process with time lines.

14. The Joint Expert Committee is directed to prepare the report including the preparation of Detailed Project Report (DPR) for remediation process within a period of 4 (Four) months and submit the same before this Tribunal on or before 18.04.2022”.

The copy of the order is enclosed as Annexure-I.

3. Status of consent orders issued by TNPCB.

M/s North Chennai Thermal Power Station I

TNPCB has issued first consent for operation under section 25 of the Water (Prevention & Control of Pollution) Act, 1974 as amended and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 as amended to M/s.NCTPS Stage-I vide Board's Proc. Dated: 07.12.1993 for the following.

Electricity	400 Million Units/Month	
Sewage	1200 KLD	On industry Own Land
Trade Effluent I (DM Plant waste, Boiler Blow Down & Ash pond slurry)	55,800 KLD	To be recycled.
Trade Effluent II (Cooling Water)	2,37,6000 KLD	Into Sea
Boiler (690TPH) – 3 Nos.	Individual ESP, with individual flue with a common stack of 275m height.	
DG Sets (500 KVA) – 3 Nos.	Individual stacks of 15m height each	

Latest consent was renewed vide Board's Proc. dated 25.06.2014 with validity up to 31.03.2015 and not renewed further due to non compliance of consent order conditions. Compliance of conditions imposed in the latest consent orders issued vide Board's Proc. dated.25.06.2014 to the unit of M/s. North Chennai Thermal Power Station Stage-I under section 25 of the Water (Prevention & Control of Pollution) Act, 1974 as amended and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 is submitted below.

Sl. No	Conditions	Compliance status
<u>Under Air Act:</u>		
1.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyer and junction towers.	Complied. The unit has maintained the coal handling conveyer system and junction towers and ensures that no coal dust is accumulated in the adjacent area of coal handling conveyer and junction towers.
2.	The unit shall operate and maintain water sprinkling and cyclone separators provided at junction towers to control the dust emission.	Complied. The unit has operated and maintained water sprinkling and cyclone separators provided at junction towers to control the dust emission.
3.	The unit shall ensure the APC measures provided in the coal crushing area shall be under working condition so as to control the dust emission.	Complied. The unit has ensured the APC measures provided in the coal crushing area is under working condition so as to control the dust emission.
4.	The unit shall install On line Stack monitoring system for SO ₂ , NO _x and PM and to connect the same to Care Air Centre, TNPCB, Chennai within three months.	Partially Complied. The unit has installed Online Continuous Emission Monitoring System (OCEMS) for unit I, II & III of three stacks to monitor the parameters PM, SO _x , NO _x and the same is connected with CAC, TNPCB, Guindy and CPCB server.
5.	The Unit shall provide continuous ambient air quality monitoring station and the same shall be connected to Care Air Centre TNPCB, Chennai within three.	Not Complied. The existing Continuous Ambient Air Quality Station (2Nos) provided were not in operable condition and it was reported that the TANGEDCO has

		planned to install new 4 stations covering the units Stage-I, Stage-II, Stage-III (Proposed) and Ennore SEZ-IV (Proposed).
6.	The unit shall operate the Air Pollution Control measures efficiently and continuously to achieve the National Ambient Air Quality Standards as per MOEF Notification.	Not Complied. The unit has provided the air pollution control measures such as Electrostatic Precipitator for Boiler, Dust Extraction and Dust Suppression for coal handling area which are being operated and maintained by the unit regularly. However, the unit is not meeting the particulate matter standards of 100 mg/Nm ³ in all 3 boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31 st December 2003 hence, the unit shall augment the ESPs provided in all 3 boilers and also to provide Flue Gas Desulphurisation (FGDs) to achieve SO _x emission standards before 31.12.2022 as per the timelines permitted for TPPs (Category A) by MoEF&CC Notification dated 31.03.2021.
7.	The unit shall conduct AAQ/SM survey through TNPC Board and furnish the survey report to Board within 3 months.	Complied. The unit is conducting the AAQ/SM survey through TNPC Board yearly once.
8.	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further develop green belt of remaining 51 Acres.
<u>Under Water Act:</u>		
1.	The unit shall complete and commission the common sewage treatment plant for Stage-I & Stage-II within a month time.	Complied. STP provided at Stage-I is under operation.
2.	The unit shall ensure that no water shall be discharged from the Ash pond or through the canal linking the pump house and ash pond to Ennore creek either directly or indirectly under any circumstances.	Partially Complied. Ash pond recovery water is being utilized for bottom ash slurry preparation. However, the unit has to improve the complete recovery water collection and reuse for ash slurry preparation.
3.	The unit shall reconstruct/revamp the existing spillway structure to ensure uniform distribution of water from the cooling water canal in to Ennore creek to preserve the marine eco system within 6 monthstime.	Not Complied. Tender has been awarded by Stage II for widening of Hot water channel. Proposal to reconstruct the existing spillway structure to ensure uniform distribution of water has been evolved by stage II which is under progress.
4.	The unit shall reconstruct/revamp the pipe line carrying the ash slurry to the ash pond and to ensure that no ash slurry shall be discharged in to creek area under any circumstance.	Partially Complied. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.

5.	The unit shall take immediate action for the removal of fly ash accumulated over the roads and around the ash dyke area.	Not Complied. The unit has to remove the fly ash accumulated as per the Joint Committee findings.
6.	The unit shall conduct Marine Impact Study at where the cooling water is being discharged in to creek/sea and furnish the report within three months.	Not Complied. Marine Impact Study not yet conducted.
7.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyer and junction towers.	Complied. The coal accumulation in the adjacent areas of coal handling conveyer and junction towers of ICHS are being cleared then and there on regular basis.
8.	The unit shall obtain renewal of authorization under the Hazardous Waste (MH&T) Rules 2008.	Not Complied. Authorization for Hazardous waste obtained is valid up to April' 2020, renewal application is yet to file.
9.	The unit shall remit the balance water cess immediately.	The unit has not remitted the balance water cess.
10	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further develop green belt of remaining 51 Acres.

M/s North Chennai Thermal Power Station - II

TNPCB has issued first consent for operation under section 25 of the Water (Prevention & Control of Pollution) Act, 1974 as amended and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 as amended to M/s.NCTPS Stage-II vide Board's Proc. Dated: 19.03.2013 for the following.

Power Generation	2 X 600 MW	
Sewage	48 KLD	On industry Own Land
Trade Effluent I (Effluent from Plant Operation)	13,824 KLD	Partly on land and partly in to sea through Ennore creek.
Trade Effluent II (Reverse osmosis plant rejects)	22176.0 KLD	In to sea through Ennore creek
Trade Effluent III (Once through cooling water)	4896000.0 KLD	In to sea through Ennore creek
Boiler 2 nos. 2000T/hr each.	Individual ESP, with a common stack of 275m height.	

Latest consent was renewed vide Board's Proc. dated 18.12.2018 with validity up to 31.03.2019 and not renewed further due to non compliance of consent order conditions. Compliance of conditions imposed in the latest consent orders issued vide Board's Proc. dated.18.12.2018 to the unit of M/s. North Chennai Thermal Power Station Stage-II under section 25 of the Water (Prevention & Control of Pollution) Act, 1974 as amended and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 is submitted below.

Sl. No	Conditions	Compliance status
<u>Under Air Act:</u>		
1.	The unit shall operate and maintain	Not Complied.

	<p>the existing air pollution control measures efficiently and continuously so as to achieve the standards as prescribed by the Board.</p>	<p>The unit has provided the air pollution control measures such as Electrostatic Precipitator for Boiler, Dust Extraction and Dust Suppression for coal handling area which are being operated and maintained by the unit regularly. However, the unit is not meeting the particulate matter standards of 50 mg/Nm³ in all two boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31st December 2003 hence, the unit shall augment the ESPs provided in all 2 boilers and also to provide Flue Gas Desulphurisation (FGDs) to achieve SOx emission standards before 31.12.2022 as per the timelines permitted for TPPs (Category A) by MoEF&CC Notification dated 31.03.2021.</p>
2.	<p>The unit shall complete the commissioning of the Dust Extraction System comprising of bag Filters, and put the same in to operation, before 31.12.2018 as reported and operate the same efficiently and continuously..</p>	<p>Not complied. The unit authority reported that the OEM of the Project M/s. BHEL had failed to establish the DE system in complete shape. Hence, a separate proposal has been evolved by TANGEDCO to complete the left out part of the system and tendering process is in progress</p>
3.	<p>The unit shall complete the installation of dust suppression system, and put in to operation before 31.12.2018 as reported and operate the same efficiently and continuously.</p>	<p>Not complied. The unit authority reported that the OEM of the Project M/s. BHEL had failed to establish the DE system in complete shape. Hence, a separate proposal has been evolved by TANGEDCO to complete the left out part of the system and tendering process is in progress</p>
4.	<p>The unit shall continue to develop and maintain adequate green belt within the unit premises.</p>	<p>Partially Complied. The unit has reported that the total green belt to be developed is 67.65 acres out of 205 Acres and it was reported so for 51.39 acres of green belt has been developed. As on date, a balance of 16.26 acres of green belt has to be developed.</p>
5.	<p>The unit shall furnish action plan for the installation of FGD system .</p>	<p>Not complied. The unit has reported that FGD installation will be completed within 24-26 months from the date of tender awarded and tendering process is inprogress</p>

6.	The unit shall ensure that the installation of FGD system shall be completed before the stipulated time as assured by the unit.	Not complied. The unit has reported that FGD installation will be completed within 24-26 months from the date of tender awarded and tendering process is in progress
Under Water Act:		
1.	The unit shall operate and maintain the Sewage Treatment Plant efficiently and continuously so as to achieve the standards prescribed by the Board.	Complied. The unit has reported that the Sewage Treatment Plant is operated efficiently and continuously so as to achieve the standards prescribed by the Board.
2.	The unit shall operate and maintain the ETP efficiently and continuously so as to bring the quality of the treated effluent to satisfy the standards prescribed by the Board.	Complied. Combined treated trade effluent from ETP at Stage II is partly disposed through once through cooling water in to Sea through Ennore creek with an EMFM & remaining quantity of trade effluent is being utilized in Stage-II for gardening without an EMFM. The unit has installed continuous effluent monitoring sensors for the parameters PH & Temperature at the outlet of ETP which has been connected to "Water Quality Watch" TNPCB, Guindy & CPCB server.

4. Assessment of air pollution control measures provided by the units of NCTPS Stage-I & NCTPS Stage-II.

The TANGEDCO has installed Electrostatic Precipitators in each boiler to control PM value but are not effective and often received complaints for the emission generated from the boiler stacks. TANGEDCO has also installed Online Continuous Emission Monitoring Sensors (OCEMS) for the parameters SO₂, NO₂ & PM in each boiler stacks and connected to Care Air Centre (CAC), TNPCB, Chennai and CPCB.

The prevailing stack emission standards as per the MoEF Notification dated 07.12.2015 are as follows:

M/s. North Chennai Thermal Power Station, Stage-I (Thermal power plant established before 31st December 2003)

Sl. No	Thermal power plant capacity	Height of stack	Standards in mg/Nm ³		
			PM	SO ₂	NO _x
1	Boiler unit-1 210 MW	275m	100	200	300
2	Boiler unit -2 210 MW	275m	100	200	300
3	Boiler unit-3 210 MW	275m	100	200	300

M/s. North Chennai Thermal Power Station, Stage - II (Thermal power plant established after 1st January 2003, up to 31st December 2016 & capacity of 500MW and above)

Sl. No	Thermal power plant capacity	Height of stack	Standards in mg/Nm ³		
			PM	SO ₂	NO _x
1	Boiler 2 nos. 2000T/hr each	275m	50	200	300

M/s North Chennai Thermal Power Station I

The stack emission survey was conducted by the TNPCB in coordination with the CPCB on 02.02.2022 and the results are furnished below which are not complying with standards prescribed by MoEF Notification dated 07.12.2015.

Stack emission results			
Sampling Location	PM mg/m ³	SO ₂ mg/m ³	NO ₂ mg/m ³
Thermal Power Plant-Unit-I	Not in operation during the survey		

Thermal Power Plant-Unit-II	182.2	788	472
Thermal Power Plant-Unit-III	157.8	832	537
Stack Emission standards for TPPs installed before 31 st December, 2003	100	600	600

M/s North Chennai Thermal Power Station II

The stack emission survey was not conducted by the TNPCB in coordination with the CPCB on 02.02.2022. However, TNPCB has conducted stack emission survey on 20.08.2021 through NABL accreditation laboratory and the results are furnished below which are not complying with standards prescribed by MoEF Notification dated 07.12.2015.

Stack emission results			
Sampling Location	PM mg/m ³	SO ₂ mg/m ³	NO ₂ mg/m ³
Boiler - 1- 2000T/hr	866	1330	497
Boiler - 2- 2000T/hr	1254	1123	488
Stack Emission standards for TPPs installed after 1 st January 2003, up to 31 st December 2016 & capacity of 500MW and above	50	200	300

M/s North Chennai Thermal Power Station - I {Exceedance of the pollutant parameters (stack emission)}

Further, the Online Continuous Emission Monitoring Sensors (OCEMS) for the parameters SO₂, NO₂ & PM monitored data for the period from 01.04.2019 to 26.12.2020 along with the number of exceedance for the same period were obtained from Care Air Centre (CAC) of TNPCB. From the data obtained as above, the details of exceedance of the pollutant parameters are ascertained as below.

Sl. No	Stack Monitored Parameter	No. of Exceedance for the period from 01.04.2019 to 26.12.2020		
		PM	SO ₂	NO _x
1	NCTPS UNIT1	14265	930	399
2	NCTPS UNIT2	16937	6748	7706
3	NCTPS UNIT3	10112	13079	2757

Hence, Environmental Compensation has been assessed based on the above OCEMS data for the above period for the exceedance for the pollutant parameter PM. From the data, it was ascertained that the number of days of exceedance of the pollutant particulate matter for the period from 01.04.2019 to 26.12.2020 is calculated as 273 days and the EC has been assessed as **Rs.1,22,85,000/-** and Show cause Notice under Section 5 of the Environment Protection Act, 1986 had also been issued to the unit vide Board's Proc. Dated 25.08.2021 (Copy attached as Annexure-II) as to why Environmental compensation computed as mentioned in the Board's Proc above should not be imposed against the unit as per the guidelines issued by the Hon'ble NGT & CPCB for the violations caused by the unit as mentioned above.

Also, the Online Continuous Emission Monitoring Sensors (OCEMS) for the parameters SO₂, NO₂ & PM monitored data for the period from 27.12.2020 to 07.03.2022 along with the number of exceedance for that period were also obtained from Care Air Centre of TNPCB.

From the data obtained as above, the details of exceedance of the pollutant parameters are ascertained as below.

Sl. No	Stack Monitored Parameter	No. of Exceedance for the period from 27.12.2020 to 07.03.2022		
		PM	SO ₂	NO _x
1	NCTPS UNIT1	6522	15172	478
2	NCTPS UNIT2	4029	4602	-
3	NCTPS UNIT3	3467	3942	9

Hence, Environmental Compensation has been assessed based on the above OCEMS data for the above period for the exceedance for the pollutant parameter PM. From the data, it was ascertained that the number of days of exceedance of the pollutant particulate matter for the period from 27.12.2020 to 07.03.2022 is calculated as 208 days and the EC has been assessed as **Rs.1,87,20,000/-** and recommended to Board to issue show cause notice under Section 5 of the Environment Protection Act, 1986 as to why Environmental compensation computed above should not be imposed against the unit as per the guidelines issued by the CPCB for the violations caused by the unit as mentioned above.

The parameter PM only has been taken for assessing the Environmental Compensation as the timeline for the installation of FGD & Low NO_x burner to achieve SO_x & NO_x extended till 31.12.2022 as well as vide MoEF&CC Notification dated 31.03.2021 (Copy attached as Annexure-III)

mentioned (Paragraph 2 sub-paragraph-iii) that there shall be levied environment compensation on the non-retiring thermal power plant, after the date as specified in column (4) of Table-I, as per the rates specified in the Table-II.

M/s North Chennai Thermal Power Station II {Exceedance of the pollutant parameters (stack emission)}

Further, the Online Continuous Emission Monitoring Sensors (OCEMS) for the parameters SO₂, NO₂ & PM monitored data for the period from 01.04.2019 to 07.03.2022 along with the number of exceedance for the same period were obtained from Care Air Centre (CAC) of TNPCB. From the data obtained as above, the details of exceedance of the pollutant parameters are ascertained as below.

Sl. No	Stack Monitored Parameter	No. of Exceedance for the period from 01.04.2019 to 07.03.2022		
		PM	SO ₂	NO _x
1	NCTPS -II (Boiler-I)	19586	--	--
2	NCTPS -II (Boiler-II)	15279	29138	14659

Hence, Environmental Compensation has been assessed based on the above OCEMS data for the above period for the exceedance for the pollutant parameter PM. From the data, it was ascertained that the number of days of exceedance of the pollutant particulate matter for the period from 01.04.2019 to 07.03.2022 is calculated as **791 days** and the Environmental Compensation has been assessed as **Rs.3,55,95,000/-** and recommended for issue of Show cause Notice under Section 5 of the Environment Protection Act, 1986 as to why Environmental compensation computed as mentioned above should not be imposed against the unit as per the guidelines issued by the Hon'ble NGT & CPCB for the violations caused by the unit as mentioned above.

The parameter PM only has been taken for assessing the Environmental Compensation as the timeline for the installation of FGD & Low NO_x burner to achieve SO_x & NO_x extended till 31.12.2022 as well as vide MoEF&CC Notification dated 31.03.2021 (**Copy attached as Annexure-III**) mentioned (Paragraph 2 sub-paragraph-iii) that there shall be levied environment compensation on the non-retiring thermal power plant, after the date as specified in column (4) of Table-I, as per the rates specified in the Table-II.

5. Action taken by TNPCB

Based on the routine inspections carried out by the TNPCB officials, the unit of M/s NCTPS Stage-I has been frequently instructed to completely arrest the leakages from ash pipe lines in to water bodies by replacing with new pipes, remove the ash deposited in water bodies through PWD and maintain the ash ponds properly so as to improve the quality of surrounding environment. The Board has issued latest directions to the unit of M/s.North Chennai Thermal Power Station Stage-I under section 33A of the Water Act and under section 31A of the Air Act vide Board's Proc. dated 12.10.2021 (**Copies attached as Annexure-IV**). The details of compliance of directions issued by the Board is furnished below.

Sl. No	Directions issued vide Board Proc. dated 12.10.2021	Compliance Status	
I	The TANGEDCO shall comply with the findings of the committee constituted by the Hon'ble National Green Tribunal order dated 20.05.2019 in O.A.No.8 of 2016, O.A.No.152 of 2016 & O.A.No.198 of 2016, communicated and agreed by the Hon'ble NGT within the time limit, as reported.	The details of compliance is submitted below	
Sl. No	Findings of the committee	Report filed by the TANGEDCO before the NGT & included in the order dated 30.11.2021 and time schedule earlier given to NGT.	Details of compliance as on 15.04.2022
1.	The unit shall remove the fly ash deposited on the land in and around the ash carrying pipeline and ash disposed inside the premises for quantity of 395979 Tonnes and shall store in temporary storage area and/or sent directly for beneficial purposes	As deposits of about 2,42,040m³ on the land in and around the ash carrying by pipeline has been desilted.	Partially Complied. The unit committed to comply before September 2022. In addition to the quantity arrived by the committee as on 31.03.2019 (395979 Tonnes), the unit has further disposed the ash on the land in and around the ash carrying pipeline in view of frequent bursting of aging pipes.
		September 2022	

2.	The unit shall completely remove the ash deposited in Buckingham canal for a quantity of 93096 m3 Tonnes and shall store in temporary storage area and/ or sent directly for beneficial purposes	Ash deposits of about 134 Lakh Cum in the Buckingham Canal for a length of 2.4 Kms NCTPS main Gate to KPL main Gate has been desilted at a cost of Rs. 66.23 Lakhs through PWD during the period from June to Dec' 2020. As per the direction of District Collector Thiruvallur, Ash deposits of about 8813 Cum in the Buckingham Canal on the northern and southern sides of the Ash Slurry Pipelines of NCTPS-I & II has been desilted for a length of about 200 mtrs at an expenditure of 17.7 Lakhs during the	Partially Complied. The unit committed to comply before July 2022. In addition to the quantity arrived by the committee as on (93096m3 Tonnes), the unit has further disposed the ash in Buckingham Canal in view of frequent bursting of aging pipes.
		period from 24.10.2021 to 15.11.2021.	
3.	The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 325000 Tonnes from NCTPS main gate to KPL main gate for a length of 2.4Kms for a average width of 130m and depth of 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes.	Ash deposits of about 4.35 Lakh Cum in the Kosasthalaiyar River for a length of 2.4 kms from NCTPS main Gate to KPL main Gate has been desilted at a cost of Rs. 28.5 Crore through PWD during the period from June to Dec' 2020.	Partially Complied. The unit committed to comply before June 2022. In addition to the quantity arrived by the committee as on 31.03.2019 (325000 Tonnes), the unit has further disposed the ash in Kosasthaliyar river in view of frequent bursting of aging pipes.
4.	The unit shall completely remove the ash deposited in Kosathaliyar river for a quantity of 468000 Tonnes from Ennore creek to NCTPS-I main gate for a distance of 1.7Km and from KPL Main gate to Kattupalli downstream for a distance of 1.9 Km for a average width of 130m and depth 1m and shall store in temporary storage area and/ or sent directly for beneficial purposes.	-	Not Complied. The unit committed to comply before December 2022. In addition to the quantity arrived by the committee as on 31.03.2019 (468000 Tonnes), the unit has further disposed the ash in Kosasthaliyar river in view of frequent bursting of aging pipes.
5.	The unit shall replace the existing Ash Slurry pipe lines No. 1,2,3&4 with new Cast Basalt Lined pipe lines for a	ASDL No.1& 5 - (5129 mtrs each) - Administrative approval is under	Partially Complied. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to

	total length of 20523m length.	process and the replacement of entire length of both pipelines will be completed by June 2022. Meanwhile both the above pipelines have been replaced by using the released pipes from ETPS and it disposes Ash slurry	complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.
		reasonably. ASDL No. 2 - (5511 mtrs) - 1728 meters of new cast basalt pipe lines have already been replaced with available 3498 metres pipes and work is being carried out on emergency basis and will be completed by December 2021. ASDL No.3 - (4942 mtrs) - New cast basalt pipe has been replaced successfully from ash dyke to NCTPS gate and there are no leaks developed in this pipeline. ASDL No.4 - (4942 mtrs) - Tender for procurement of 4942m of new cast basalt Pipes is under process and will be completed by May 2022.	
		June 2022	
6.	The unit shall provide impervious Toe drain around the Ash dyke for a length of 6000m for the collection of seepage water and to be connected to the existing Recovery Water sump and reuse for Ash slurry making	The study report from IITM received on 13.10.2021 and estimate is under preparation by TANGEDCO.	Not Complied. The unit committed to comply before June 2023.
		June 2023	
7.	The unit shall provide 6000 Nos. of trees in and around the ash dykes and grow it well so as to prevent the dust emission from the ash dyke.	Quotation has been called from Annamalai University and the District Forest Officer.	Not Complied. The unit committed to comply before December2023.
		December 2023	
8.	The unit shall make existing ash ponds impervious so as to prevent the seepages as per the technical consultancy	The study report from IITM received on 13.10.2021 and estimate is under preparation by	Not Complied. The unit committed to comply before December2023.

		of IITM, Chennai	TANGEDCO.	
			December 2023	
9.	The unit shall obtain technical study report from IITM Chennai for the remedial measures such as strengthening of Ash Dyke and other related works in Ash dyke and implement the recommendations	The study report from IITM received on 13.10.2021 and estimate is under preparation by TANGEDCO.		Not Complied. The unit committed to comply before December 2023.
			December 2023	
10.	The unit shall provide sufficient number of piezometric wells/monitoring wells around the dykes and upstream of the industry to monitor the ground water quality	Work fully completed on 09.12.2019.		Complied. The TANGEDCO has provided 12 nos. of piezometric wells/monitoring wells around the dykes to monitor the ground water quality periodically.
			31.12.2019	
11.	The unit shall bring back Recovery water Pump No.3 in to service and to replace the existing worn-out Recover water pipe Line No.1 for a entire length of 2815 m	Works are in progress		Partially Complied. Works are in progress and the unit committed to comply before June 2022.
			June 2022	
12.	The unit shall modify existing three Electrostatic precipitator attached to the 3 No. boilers so as to achieve revised norms of particulate matter emission 100 mg/m ³ as per MOEF & CC notification dated 07.12.2015.	Administrative Approval accorded for Renovation & Modernization (R&M) of Electro Static Precipitators (ESP) in Units I, II & III to achieve the desired PM level below 100 mg/Nm ³ , so as to achieve the norms as per MOEF&CC.		Not complied. The unit is not meeting the particulate matter standards of 100 mg/Nm ³ in all 3 boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31 st December 2003.
			December 2022	
13.	The unit shall replace the worn-out boiler roof tubes in Unit-II and Unit-III so as to arrest the discharge of fugitive emission.	Works fully completed		Complied. The unit has replaced the worn-out boiler roof tubes in Unit-II and Unit-III boilers and there is no fugitive emission at present in all 3 units.
			30.09.2019	
14.	The unit shall develop Mangroves plantations and other costal vegetation in both sides Kosasthaliyar river banks, Buckingham canal and nearby by affected coastal areas, in consultation with M.S.Swaminathan foundation (or) Annamalai	Quotation has been called for from Annamalai University and the District Forest Officer.		Not Complied. The unit committed to comply before June 2023.
			June 2023	

	University.		
15.	The unit shall ensure complete utilization of fly ash as per the Ministry of Environment, Forest & Climate Change fly ash notification of 2016.	Efforts are made to comply the fly ash notification to 100% in the coming years.	Not Complied. The unit has not complied the 100% fly ash utilization as per MoEF&CC Notification.
		-	
16.	The unit shall carry out ground water, surface water monitoring once in six months through any NABL accredited laboratory in the affected areas. Further detailed study may be carried out by Ground water department or any reputed institution on the status of ground water, surface water quality once in year.	Ground water and surface water analysis conducted once in six months through NABL accredited lab. Detailed study has been carried out for ground water through reputed institution once in year.	Not Complied. The unit is yet to furnish the report for the financial years 2020-21 & 2021-22.
		Periodical work	
17.	The unit shall adhere to the latest consent order conditions dated 25.06.2014 issued by Tamil Nadu Pollution Control Board.		
<u>Compliance status of latest consent order conditions issued vide Proc.dated:25.06.2014.</u>			
<u>Air Act:</u>			
1.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyer and junction towers.	Complied. The unit has maintained the coal handling conveyer system and junction towers and ensures that no coal dust is accumulated in the adjacent area of coal handling conveyer and junction towers.	
2.	The unit shall operate and maintain water sprinkling and cyclone separators provided at junction towers to control the dust emission.	Complied. The unit has operated and maintained water sprinkling and cyclone separators provided at junction towers to control the dust emission.	
3.	The unit shall ensure the APC measures provided in the coal crushing area shall be under working condition so as to control the dust emission.	Complied. The unit has ensured the APC measures provided in the coal crushing area is under working condition so as to control the dust emission.	
4.	The unit shall install On line Stack monitoring system for SO ₂ , NO _x and PM and to connect the same to Care Air Centre, TNPCB, Chennai within three months.	Partially Complied. The unit has installed Online Continuous Emission Monitoring System (OCEMS) for unit I, II & III of three stacks to monitor the parameters PM, SO _x , NO _x and the same is connected with CAC, TNPCB, Guindy and CPCB server.	

5.	The Unit shall provide continuous ambient air quality monitoring station and the same shall be connected to Care Air Centre TNPCB, Chennai within three.	Not Complied. The existing Continuous Ambient Air Quality Station (2Nos) provided were not in operable condition and it was reported that the TANGEDCO has planned to install new 4 stations covering the units Stage-I, Stage-II, Stage-III (Proposed) and Ennore SEZ-IV (Proposed).
6.	The unit shall operate the Air Pollution Control measures efficiently and continuously to achieve the National Ambient Air Quality Standards as per MOEF Notification.	Not Complied. The unit has provided the air pollution control measures such as Electrostatic Precipitator for Boiler, Dust Extraction and Dust Suppression for coal handling area which are being operated and maintained by the unit regularly. However, the unit is not meeting the particulate matter standards of 100 mg/Nm ³ in all 3 boiler stacks as prescribed by MoEF&CC Notification dated 07.12.2015 for TPPs installed before 31 st December 2003 hence, the unit shall augment the ESPs provided in all 3 boilers and also to provide Flue Gas Desulphurisation (FGDs) to achieve SOx emission standards before 31.12.2022 as per the timelines permitted for TPPs (Category A) by MoEF&CC Notification dated 31.03.2021.
7.	The unit shall conduct AAQ/SM survey through TNPC Board and furnish the survey report to Board within 3 months.	Complied. The unit is conducting the AAQ/SM survey through TNPC Board yearly once.
8.	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further develop green belt of remaining 51 Acres.
<u>Water Act:</u>		
1.	The unit shall complete and commission the common sewage treatment plant for Stage-I & Stage-II within a month time.	Complied. STP provided at Stage-I is under operation.
2.	The unit shall ensure that no water shall be discharged from the Ash pond or through the canal linking the pump house and ash pond to Ennore creek either directly or indirectly under any circumstances.	Partially Complied. Ash pond recovery water is being utilized for bottom ash slurry preparation. However, the unit has to improve the complete recovery water collection and reuse for ash slurry preparation.

3.	The unit shall reconstruct/revamp the existing spillway structure to ensure uniform distribution of water from the cooling water canal in to Ennore creek to preserve the marine eco system within 6 months time.	Not Complied. Tender has been awarded by Stage II for widening of Hot water channel. Proposal to reconstruct the existing spillway structure to ensure uniform distribution of water has been evolved by stage II which is under progress.
4.	The unit shall reconstruct/revamp the pipe line carrying the ash slurry to the ash pond and to ensure that no ash slurry shall be discharged in to creek area under any circumstance.	Partially Complied. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.
5.	The unit shall take immediate action for the removal of fly ash accumulated over the roads and around the ash dyke area.	Not Complied. The unit has to remove the fly ash accumulated as per the Joint Committee findings.
6.	The unit shall conduct Marine Impact Study at where the cooling water is being discharged in to creek/sea and furnish the report within three months.	Not Complied. Marine Impact Study not yet conducted.
7.	The unit shall maintain the coal handling conveyer system and junction towers and ensure that no coal dust shall be accumulated in the adjacent area of coal handling conveyer and junction towers.	Complied. The coal accumulation in the adjacent areas of coal handling conveyer and junction towers of ICHS are being cleared then and there on regular basis.
8.	The unit shall obtain renewal of authorization under the Hazardous Waste (MH&T) Rules 2008.	Not Complied. Authorization for Hazardous waste obtained is valid up to April' 2020, renewal application is yet to file.
9.	The unit shall remit the balance water cess immediately.	The unit has not remitted the balance water cess.
10	The unit shall develop green belt in and around the unit premises at the rate of 400 trees/hectare.	Not Complied. The total area of the unit is 549.10 Acres and it was reported that the unit has planted tree sapling to an extent of 130 Acres. The green belt to be developed by the unit is 181 Acres (33% of the total area), hence, the unit shall further develop green belt of remaining 51 Acres.
II.	The TANGEDCO shall replace the existing ash slurry pipe lines no. 1, 2, 3, 4 & 5 with new cast basalt lined pipes for entire length instead of using retrieved pipes from ETPS on or before 31.12.2021 as reported to comply with the above Hon'ble NGT direction so as to curtail the leakage from pipes permanently to avoid deposition of ash in Buckingham Canal, Kosasthalaiyar River and near Seppakkam hamlet.	Not Complied. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and accepted by the Hon'ble NGT in O.A. No. 08 of 2016.
III.	The TANGEDCO shall carry out the removal of deposited ash near the Seppakkam hamlet on priority basis within 15 days.	Not Complied. The TANGEDCO has not yet removed the deposited ash near the Seppakkam hamlet.

Further, it is respectfully submitted that the unit of M/s.North Chennai Thermal Power Station Stage-I, SF.No.44, 45 etc., Puzhuthivakkam Village, Ponneri Taluk, Tiruvallur District was inspected by the TNPCB officials on 24.03.2022 & 31.03.2022 and issued show cause notice under the provisions

of section 25 of the Water (P&CP) Act, 1974 as amended to the unit vide Proc. dated 05.04.2022 **“as to why penal action for offence punishable under Section 44 of the water (P&CP) Act 1974 as amended should not be initiated against you as occupier for operating the unit without valid consent of the Board under Section 25 of the Water (P&CP) Act 1974 as amended and also why direction should not be issued under Section 33 A of the Act for closure of the unit, etc”** for the following violations observed.

1. The unit was under operation without valid consent of Board.
2. The unit has not fully complied the conditions stipulated in the latest renewal consent orders issued to the unit vide Board's Proc. dated 25.06.2014 under the Water Act.
3. The unit has not fully complied the latest directions issued to the unit under section 33A of the Water Act vide Board's Proc. dated 12.10.2021.
4. The unit has not complied the most of the directions of the Hon'ble NGT (SZ) issued then and there in various original application / review application.
5. The unit is using coal containing ash content more than 40%.
6. The unit is not able to achieve 100% utilization of fly ash and is not having adequate facility for storage of dry fly ash that is generated in one day.
7. Thus the unit is not complying the Fly Ash Notification 1999 (as amended) issued under the Environmental (Protection) Act 1986 for utilization of fly ash.
8. The unit has not replaced the existing ash slurry pipelines no.1, 2, 4 & 5 with new cast basalt lined pipes for entire length so as to curtail the leakages from aging pipes permanently to avoid deposition of ash in Buckingham Canal, Kosasthalaiyar River back water and on land adjacent to pipelines as well as near Seppakkam Village.
9. The unit has informed that there was a leak in the slurry pumping line No.5, within the NCTPS Stage-1 premises at 11.00 A.M on 23.03.2022 for 5 minutes and pumping was stopped immediately and necessary action was taken to arrest the leak in the pipe within half an hour and no ash slurry was discharged outside the premises.
10. On verifying the logbook at the time of inspection, it was ascertained that the last leak in the same 5th pipe line had occurred on 17.03.2022 and repair work had been attended by changing the O-ring.
11. The unit has not completely remove the fly ash deposited on the land in and around the ash carrying pipeline, in the Buckingham Canal and in the Kosasthalaiyar River back water.
12. The unit has not collected the entire quantity of recovered water from ash dyke and not fully utilized within the premises for making bottom ash slurry as recovery water from ash dyke is allowed to overflow into the earthen canal leading to Kosasthalaiyar River back water.

Also, it is respectfully submitted that the show cause notice under the provisions of section 21 of the Air (P&CP) Act, 1981 as amended was issued to the unit vide Proc. dated 05.04.2022 **“as to why penal action for offence punishable under Section 37 of the Air (P&CP) Act 1981 as amended should not be initiated against you as occupier for operating the unit without valid consent of the Board under Section 21 of the Air (P&CP) Act 1981 as amended and also why direction should not be issued under Section 31A of the Act for closure of the unit, etc”** for the following violations observed.

1. The unit was under operation without valid consent of Board.
2. From the data received from the Care Air Centre (CAC) of TNPCB, the Online Continuous Emission Monitoring Sensors (OCEMS) for the parameters PM monitored for the period from 01.04.2019 to 26.12.2020 and 27.12.2020 to 07.03.2022, it was ascertained that the number of days of exceedance of the pollutant particulate matter is 273 & 208 days respectively which shows that the air pollution control measures attached to the boilers were not in effective operation.
3. The unit has not fully complied the conditions stipulated in the latest renewal consent orders issued to the unit vide Board's Proc. dated 25.06.2014 under the Air Act.
4. The unit has not fully complied the latest directions issued to the unit under section under section 31A of the Air Act vide Board's Proc. dated 12.10.2021.
5. The unit has not complied the most of the directions of the Hon'ble NGT (SZ) issued then and there in various original application / review application.
6. The unit is using coal containing ash content more than 40%.
7. The unit is not able to achieve 100% utilization of fly ash and is not having adequate facility for storage of dry fly ash that is generated in one day.
8. Thus the unit is not complying the Fly Ash Notification 1999 (as amended) issued under the Environmental (Protection) Act 1986 for utilization of fly ash.
9. The unit has not completely remove the fly ash deposited on the land in and around the ash carrying pipeline, in the Buckingham Canal and in the Kosasthalaiyar River back water.
10. The Particulate Matter (PM) emission let out from each 3 boiler stacks are not meeting the standards of 100mg/Nm³ at all times (Power Plants smaller than 500MW installed before 31st December 2003) as per MoEF&CC's Notification S.O. 3305(E) dated: 07.12.2015.
11. The unit has not yet taken concrete action/furnished proposal for the installation of Flue Gas Desulphurisation (FGD) System based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO₂ emissions standard of 600mg/Nm³ (Power Plants smaller

than 500MW installed before 31st December 2003) prescribed in MoEF&CC's Notification S.O. 3305(E) dated: 07.12.2015 as the unit has to complete the same before 31.12.2022 as per MoEF&CC Notification dated 31.03.2021.

12. The unit has not calibrated the OCEMS for the emission parameters SPM, SO_x & NO_x provided to each three Boiler stacks and not ensuring the connectivity of sensors to CAC, TNPCB & CPCB server at all times.

13. The unit has not repaired the Continuous Ambient Air Quality Monitoring Stations (CAAQMS) for the parameters PM₁₀, PM_{2.5}, SO₂ & NO₂ installed within the unit premises and outside the premises.

The copy of the show cause notices issued to the unit vide TNPCB Proc. dated 05.04.2022 are attached as **Annexure-V**.

6. Assessment of Environmental Compensation by the TNPCB.

As the unit of M/s. North Chennai Thermal Power Station, Stage - I, has not complied the consent order conditions and leakage of ash slurry pipelines is regular phenomena and causing damage to the water bodies, the TNPCB has levied the Environmental Compensation then and there for the violations noticed.

The details of Environmental Compensation levied so far by the TNPCB as per CPCB guidelines are furnished below.

Sl. No	Reason for assessed interim Environmental Compensation	Period	Amount in Rs.	Remittance details
1.	Ash slurry disposal into Kosasthalaiyar river / Buckingham canal as reported by the earlier committee	01.11.2004 to 12.11.2019	16.461 Crores	Remitted to TNPCB
2.	Ash slurry disposal into Kosasthalaiyar river / Buckingham canal as reported by the committee	22.08.2020 to 06.01.2021	41.40 Lakhs	Not yet Remitted
3.	Ash slurry disposal on land near Seppakkam Village into Kosasthalaiyar river / Buckingham canal as reported by the committee.	07.01.2021 to 23.08.2021	4.122 Crores	Remitted to TNPCB

It is respectfully submitted that the Hon'ble NGT in OA.No.122 of 2021 & 162 of 2021 in respect of TANGEDCO NCTPS Stage-I (Existing), Stage-III (Proposed) & Ennore SEZ-IV (Proposed) vide its final order dated 31.01.2022 directed the TANGEDCO to comply the following and compliance of the same is submitted below.

Sl. No	Directions issued by the Hon'ble NGT in OA.No.122 of 2021 & 162 of 2021	Status of the compliance as on 15.04.2022
1	The TANGEDCO is directed not to proceed with the work of laying the pipeline through the CRZ zone and also in the other area in violation of the Environment Clearance and CRZ Clearance granted to them in 2016, without getting necessary further clearances in this respect by filing afresh application in accordance with law and the same will have to be considered by the authorities strictly in accordance with law and the direction given for this purpose cannot be treated as a	Complied. The TANGEDCO stopped the construction activity in CRZ area for not having EC under the CRZ Notification pertaining to Stage-III & Ennore SEZ-IV as directed. Amendment to be obtained by TANGEDCO in the EC already obtained under CRZ Notification for Stage-III & Ennore SEZ-IV.
	direction to the authorities to grant the permission, if it is not otherwise feasible or permissible under law. This must be strictly in compliance with the decision of Hon'ble Supreme Court in Key stone realtors private limited vs. Anil V. Tharthare and ors.	

2	The TANDGECO is directed to pay an Environmental Compensation of Rs. 4,12,20,000/- fixed by the Joint Committee and approved by this Tribunal to Tamil Nadu Pollution Control Board for the damage caused to environment on account of the deposit of fly ash slurry in the Kosasthalaiyar River region, over and above the compensation already remitted by them as directed by the Pollution Control Board in O.A. No. 08 of 2016 and other connected cases.	Complied. The TANDGECO has remitted the Environmental Compensation of Rs. 4,12,20,000/- to the Board through NEFT Dated 27.12.2021.
3	The TANDGECO is also directed to pay an additional compensation of Rs. 50 lakhs with the Tamil Nadu Pollution Control Board for the violation committed i.e. preparation for constructing the pipeline and making some attempts for that purpose in violation of the Environmental Clearance and CRZ Clearance granted and this is in addition to the compensation already directed to be paid by them for damage caused to the environment on account of deposit of fly ash.	Complied. The CE/Electrical, NCTPP stage -III has reported vide their letter Lr.No.CE/NCTPP Stg-III/SE/Civil/EE/C2/F.NGT/D.141/22 dated 30.03.2022 received through mail stating that the unit has remitted an additional compensation of Rs. 50 lakhs to the Board through online to the TNPCB account vide UTR No.IOBAN222087324859 dated 28.03.2022.
4	The TANDGECO is directed to carry out the replacement of the old pipes as undertaken by them and as directed by this Tribunal in O.A. No. 08 of 2016 and other connected cases within the time line fixed by the Tribunal, on the basis of the	Works are in progress. The TANDGECO has replaced old pipes with new pipes for line no 3 fully, whereas it has to complete the replacement of old pipes (1, 2, 4 & 5) with new pipes on or before 30.06.2022 as committed and
	undertaking given by them to avoid future breaches.	accepted by the Hon'ble NGT in O.A. No. 08 of 2016.
5	The TANDGECO is directed to carry out recommendations made by the Joint Committee in both the cases in its letter and spirit to avoid future breaches of fly ash into the riverine area. The question regarding steps to be taken for remediation process of damage caused to the environment on account of deposit of fly ash in that area for longer period will be considered by this Tribunal including any further compensation to be paid on the basis of the recommendations to be made by Committee already appointed by this Tribunal in O.A. No. 08 of 2016 and other connected cases.	The Joint Expert Committee appointed by the Hon'ble NGT in O.A. No. 08 of 2016 filed their report.
6	The TANDGECO is also directed to take steps to remove the fly ash already deposited in that area, as directed by the Joint Committee as well as the Pollution Control Board at the earliest possible time to reduce the impact of damage to riverine environment any further.	Works are in progress. The TANDGECO has to complete the removal of fly ash as already deposited in Kosasthalaiyar river, Buckingham canal & on land adjacent to ash conveying pipe lines as committed to Hon'ble NGT.

7	<i>The TANDGECO is also directed to take necessary steps to avoid leakage through pipes and they must hold vigil by regular inspection of the old pipe lines till such time their replacement is completed and take immediate steps to arrest breaches, if any, during the interregnum. The amount of compensation directed to be paid on two counts are to be deposited by TANDGECO with Tamil Nadu Pollution Control Board which they can utilise for the purpose of protecting Kosasthalaiyar River as</i>	<i>As per the review application no.14 of 2021 (SZ) in O.A.No. 08 of 2016, the unit shall utilize the pipe line no.3 (Replaced with new pipes) and pipe line no.1 & 5 (Replaced with retrieved pipes from ETPs) for conveying the ash slurry to ash ponds. The TANDGECO is taking necessary steps to avoid leakage through pipes by conducting regular inspection of the old pipes.</i>
	<i>well Ennore creek in that area to restore the damage caused to environment and also to provide necessary protection to prevent encroachments in that areas in future and avoid further environmental damage as well as riverine damage in that area.</i>	
8	<i>As regards the action to be taken for violations committed by TANDGECO in violation of Environmental Clearance and CRZ Clearance, the respective regulators, namely, MoEF&CC and State Coastal Zone Management Authority are directed to take necessary action against TANDGECO in accordance with law.</i>	<i>Not applicable for TNPCB.</i>
9	<i>As regards O.A.No.122 of 2021 is concerned, since it is filed by a private person in order to protect environment, we feel that TANDGECO can be directed to pay a cost of Rs. 25,000/- to the applicant in that case.</i>	<i>Not applicable for TNPCB.</i>
10	<i>If the above amounts including the compensations and costs are not paid within three months from today, then the Pollution Control Board and the applicant are entitled to initiate proceedings for recovery of the same under Section 25 of the National Green Tribunal Act, 2010 or through District Collector for recovery of the amount invoking Revenue Recovery Act, 1890 in accordance with law.</i>	Partially Complied. <i>The TANDGECO has remitted the Environmental Compensation of Rs. 4,12,20,000/- to the Board through NEFT Dated 27.12.2021. The CE/Electrical, NCTPP stage -III has reported vide their letter Lr.No.CE/NCTPP Stg-III/SE/Civil/EE/C2/F.NGT/D.141/22 dated 30.03.2022 received through mail stating that the unit has remitted an additional compensation of Rs. 50 lakhs to the Board through online to the TNPCB account vide UTR No.IOBAN222087324859 dated 28.03.2022. The TANDGECO has to pay Rs.25,000/- to the applicant within three months from the date of order (31.01.2022) i.e. before 30.04.2022."</i>

112. It is also seen from the annexures produced that the SPCB had issued show cause notice by their Proceedings No.F.1081/01/RL/JCEE(M)/TNPCB/CHN/Zone/A/2022 dated 05.04.2022 narrating the non-compliance of certain directions issued by this Tribunal and also the Pollution Control Board and why action should not be taken against them.

113. Respondents No.2 & 3 have filed their compliance cum objection to the report and also to the query placed by the Tribunal as to whether the Electro Static Precipitator (ESP) can be replaced with new latest technology, which reads as follows:-

"2. It is submitted that during the hearing on 25.04.2022, this Hon'ble Court was pleased to direct the TANGEDCO to file its report on the following points.

a. To produce documents with regard to emission standards ie., whether the unit is stopped as and when emission exceeds the limits and reports thereof.

It is humbly submitted that the exceedance of norms is only momentarily and not in a persisting manner. However online mechanism such as rapping and hammering of ESP fields is being done round the clock for which AMC works have been awarded.

Also, it is submitted that steps are being taken to ensure all the ESP fields are in service. It can be seen that the monthly average of SPM Norms is within Norms.

In every Annual overhaul, ESP is being overhauled and worn out/Defective internals if any, are being replaced and the following works are being carried out to maintain the design efficiency of ESP

1. Water washing of ESP

2. Renewal of Inner Arm, Outer Arm, Pin wheel, Shock bar pad, Shock bar angle, emitting coil, and collecting plate.

3. Topping up of gear box oil in CERM & EERM.

4. Rectification works carried out such as field short and CERM & EERM gear box problem.

b. Replacement of the existing E.S.P with modern and advanced equipment and to state the period required for the same:

FGD (Flue Gas Desulfurization) is proposed to be commissioned for achieving the emission standard for SO_x. As per the recommendation of the consultant M/s.Mecon.Pvt.Ltd who has been engaged in the commissioning of FGD, the additional dust burden will be taken care of by FGD and the SPM level will be further reduced and hence refurbishment of ESP will be decided accordingly.

c. Objections for DPR as stated in the Joint Expert Committee Report.

Findings:

It has been stated that the OCEMS have been tampered so that actual results are not transferred to CPCB and TNPCB.

In NCTPS-I whenever there is momentary exceedance, an alarm message is being received from Care Air Center/TNPCB through mail and SMS. The mail copies are enclosed for reference. As soon as emission levels resume to the limits, the reset message "site returned to normalcy" is also being received. The copies are enclosed. Hence it is evident that no Tampering at NCTPS-I stack emission has been made.

Findings

As against a legal requirement of 100% of fly ash utilisation, TANGEDCO's fly ash utilization was less than 50% in 2020-21.

It is submitted that 29.96% fly ash has been lifted to cement companies, the remaining 70.04% of ash has been wet sluiced and transported to the ash dyke and has been lifted.

NCTPS-I was initially designed for complete wet sluicing. As an improvement work, the PDFACS was installed on 50% of ESP hopper in all three units. The dry fly ash is conveyed through PDFACS to silos and disposed to Cement Companies and other Brick Manufacturing Companies. Whenever there is no demand for Cement Companies or during rainy seasons, the dry fly ash is wet sluiced into slurry, and pumped to Dyke. Further as an additional improvement, now it is proposed to install a 100% PDFAC System in all the three units. The procurement process is in progress. Hence, it is stated that 100% ash is utilized either dry form or wet form. It is also ensured that, after 100% installation of the PDFAC System, 100% dry fly ash will be evacuated.

Findings:

Despite the tampering of OCEMS, between 01.04.2019 and 07.03.2022 (1071days), NCTPS Stage 1 is recorded to have emitted particulate matter (including ash) in excess of permissible levels for 481days.

During the year 2019, the SPM level has exceeded for which the following works have been carried out to reduce the emission level of SPM

The overhauling of ESP which comprises of

1. Water washing of ESP

2. Renewal of Inner Arm, Outer Arm, Pinwheel, Shock bar pad, Shock bar angle emitting coil and collecting plate.

3. Topping up of gear box oil in CERM & EERM.

4. Rectification works carried out such as field short and CERM & EERM gear box problem.

Overhaul works carried out pent house area:

1. Renewal of entire sagged Radiant roof tubes.
2. Renewal of Skin casing sheets.
3. Renewal of refractory.
4. Replacement of Air pre heater elements.

5. Complete replacement patch welding and renewal of Metallic expansion bellow in flue gas, secondary Air, and Hot air ducts. After completion of the above works, SPM level has been reduced.

It is also submitted that the exceedances are momentary not in a persisting manner. Whenever exceedance of Norms is observed, online Mechanism of Rapping and hammering is being done round the clock for which works contract has been awarded as already stated above.

Findings:

Mandatory green belt conditions prescribed in consent have not been complied with.

The total area of the plant- 549 acres.

Green belt area already developed -116 acres

Balance to be developed- 65 acres.

During 2022-23 35 acres will be developed.

In 2023-24-30 acres will be developed.

Findings:

The ash dyke is unlined and has no geomembrane lining, exposing ground water to contaminants from the structure.

Consultancy work entrusted to IIT-Madras and interim report received and further evaluation is under process.

Findings:

TNPCB and CPCB in the current report estimate unaccounted for ash at 65.96 lakh tonnes, of which an unquantified Portion is in river/backwater/surrounding areas.

The above said quantity of 65.96 lakhs MT which was stored in the primary pond(180 Hect) was handed over to SEZ project and has been effectively utilized for site grading and for developing the Ennore SEZ Thermal Power project only.

Findings

Estuarine vegetation, including sea grass and mangroves in Kosasthalai's backwaters, and the thick vegetation along Buckingham Canal has been lost due to the dumping of ash and dredged material.

Cleaning of wet ash from the land areas is under process and after completion, the growth of estuarine vegetation will be ensured.

Finding:

Surface sediments are heavily contaminated with levels of cadmium, chromium, copper, lead, nickel, and zinc well in excess of safe levels as per Canadian sediment quality guidelines for the protection of aquatic life.

It is submitted that as per the direction of Hon'ble NGT, marine Impact study at Ennore Creek and the sea was carried out by M/s National Institute of Ocean Technology and a draft report on the above study has been received.

In the above report, it has been mentioned that various development projects utilizing the creek system have altered the bathymetry and changed the creek system's flow.

Inputs from Manali Industrial belt and North Chennai Industries in addition to frequent interference in the creek morphology.

Further, NCTPS-I alone is not responsible for heavy contamination with surface sediments.

Finding:

Ground water heavily contaminated with dissolved salts, aluminum arsenic lead, manganese, and zinc.

In respect of Case No.162/2021, (which has been disposed of vide NGT order Dated 31.01.22) as per direction of Joint committee constituted by the Hon'ble NGT, TNPCB arranged a survey to assess ground water contamination if any due to the spillage of ash from the leakages of pipelines and seepage from Ash pond, subsurface water samples were collected from the bore well nearby to ash pond (about 400m away from chepakkam village) and the piezometric wells provided near the ash ponds. It can be seen from the report that the results are within tolerance limits. In the report, it is found that the parameters are within the standards.

Ambient air quality monitoring survey was conducted by TNPCB at Chepakkam village (24 hours sampling on 31.08.21) and Athipattu village (24 hours sampling on 26.08.21) at NCTPS near substation (24 hour sampling on 02.09.2021).

It has been mentioned in the report as below

"The result revealed that the parameter PM10 value (152 Kg/m³) at Athipattu village alone exceeded the ambient Air quality standards (100kg/m³) prescribed."

It is submitted that Zuari Cement factory is located nearby Athipattu Village.

It is humbly submitted that it clearly shows that the ambient air quality is not affected by NCTPS-I.

3. It is also submitted that, even though TANGEDCO is facing a severe financial crunch, TANGEDCO is striving hard to meet the Power Demand by taking all possible steps to comply with the Emission norms and adhering to TNPCB directions.

4. It is respectfully submitted that this Respondent is complying with the directions issued by this Hon'ble Tribunal and also the environmental norms without any default to protect the environment."

114. It is also seen from the reports that NCTPS units are functioning without renewing the Consent to Operate which is impermissible in law and it is a continuing violation, for which, the State Pollution Control Board is expected to take stringent action against them, including imposition of further compensation till the violation is rectified.

115. From the overall discussions made above and also considering the various reports and objections filed by the TANGEDCO, it is clear that there were some breaches which resulted in damage caused to the environment and that requires remediation. The TANGEDCO which has caused the damage is liable to pay compensation for the damage caused to the environment, apart from compensation payable for the violation committed by them of conditions imposed.

116. In order ascertain the nature of damage and remediation process, this Tribunal had appointed a Joint Expert Committee and they have filed a report which was extracted above with Terms of Reference for preparation of DPR for the remediation process. All these things will take longer time and it is not possible to keep the case till the remediation process is completed. It is for the regulators to monitor the implementation of the remediation process, further study (if any) required after removal of the ash to ascertain the nature of contamination and further remediation to be conducted and before certifying that the place has been completely remediated beyond contamination, they will have to satisfy that the soil quality and the water quality in that area has been restored to its original position.

117. Further, it is for the TANGEDCO to carry out the recommendations made by the Joint Committee as well as Joint Expert Committee appointed by this Tribunal who have suggested certain remediation measures including development of mangroves on the side of coastal zone, a

portion of which was damaged on account of the activities of the TANGEDCO, apart from creating further tree cover of nature of species suggested by the Joint Expert Committee appointed by this Tribunal and also which is conducive for the riverine coastal ecology.

118. So under such circumstances, this Tribunal feel that instead of keeping the cases pending, the same can be partially disposed of with the following directions in respect of TANGEDCO alone and as regards M/s. Kamarajar Port Limited, the same can be considered after the appeal filed by them before the Hon'ble Apex Court viz., **Civil Appeal No.4238 - 4241 of 2020** are disposed of:-

- a. The TANGEDCO is directed to carry on their activities strictly in accordance with law and complying with the conditions imposed in the Environmental Clearance and the Consent granted by the State Pollution Control Board.
- b. The TANGEDCO is directed to replace the old ash slurry carrying pipes as undertaken by them within the time frame fixed and also take all necessary precautions of providing necessary sensor system to detect the leak immediately and also the mechanism by which production and pumping of ash slurry through the damaged pipeline can be stopped immediately, so that further pumping can be avoided so as to minimize the leak if at all if it happens in future.
- c. The TANGEDCO is liable to pay the compensation already assessed by the State Pollution Control Board on various occasions for the violations noticed by them and also compensation directed to be paid by this Tribunal in other related connected matters viz., **Original Application Nos.122 of 2021 (SZ) and 162 of 2021 (SZ)** which were already disposed of this Tribunal by giving certain directions.
- d. The TANGEDCO is also liable to pay environmental compensation which is likely to be assessed on the basis of the study to be conducted by the agency which is going to conduct study for remediation process, apart from the compensation already imposed by various proceedings of the Tamil Nadu Pollution Control Board and directed to be paid by this Tribunal.

- e. The State Pollution Control Board is directed to monitor the functioning of the NCPTS owned by the TANGEDCO periodically and if there is any violation found, then they are directed to take appropriate action against the TANGEDCO including prosecution and imposition of environmental compensation apart from other directions to be issued as contemplated under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.
- f. The State Pollution Control Board is also directed to take action against the TANGEDCO for operating the unit without obtaining renewal of Consent to Operate, including imposition of compensation and prosecution, apart from issuing directions as required to be issued under Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981 and Environment (Protection) Act, 1986.
- g. The Additional Chief Secretary, Environment through Director - Department of Environment is directed to take steps to identify the agency by issuing tender process for the preparation of DPR at the earliest and while calling for the tender, they are directed to include the Terms of Reference suggested by the Joint Expert Committee appointed by this Tribunal to be considered by the agency for preparation of DPR and after finalizing the agency, complete the remediation process to be conducted and after finalizing the remediation process, take steps to implement the same through TANGEDCO by providing necessary technical guidance, if any, required without delay. They are directed to expedite the process of finalizing the agency for preparation of DPR **within a period of six months** and completion of study **within a period of nine months** and thereafter, undertake to complete the remediation process at the earliest possible time through TANGEDCO.
- h. The expenses for conducting the study through the agency to be identified for preparation of DPR and also the expenses for remediation has to be undertaken by the TANGEDCO.
- i. On finalizing the study to be conducted by the agency in respect of remediation, the TANGEDCO is directed to undertake the

remediation process and complete the same at the earliest possible time, as delay in implementation will result in further damage to the environment.

- j. After the preparation of DPR, the implementation of the recommendations and the nature of study to be conducted is directed to be monitored jointly by (i) a Senior Officer from the Central Pollution Control Board, Regional Office, Chennai and (ii) a Senior Officer from the Tamil Nadu Pollution Control Board so as to effectively implement the remediation process in a scientific manner. During the course of monitoring, if the above said committee feels that further study will have to be conducted then that also will have to be carried out by the TANGEDCO in co-ordination with the committee appointed by this Tribunal viz., the Additional Chief Secretary to Government - Department of Environment, Principal Secretary to Government - Department of Energy and Director - Department of Environment.
- k. The TANGEDCO is directed to carry out the recommendations made by the Joint Expert Committee regarding creating green cover, including plantation of mangroves and other species suggested which are conducive to environment and that will not affect the riverine and coastal zone ecology.
- l. On the basis of the study to be conducted, based on the DPR consultants identified and if further environmental compensation has been assessed by the agency, then the CPCB as well as the SPCB are directed to take further action in this regard for assessment of further environmental compensation for the damage caused to environment and take steps to recover the amount from the TANGEDCO strictly in accordance with law.
- m. The TANGEDCO is also directed to take immediate steps to remove the fly ash already deposited in that area due to the breach of fly ash slurry carrying pipes without delay and after removal of the same, soil analysis will have to be conducted by the CPCB and SPCB and if further remediation will have to be conducted or further steps will have to be taken by TANGEDCO for removal of further fly ash

deposit found in that area, then that also will have to be carried out by the TANGEDCO.

- n. After completion of the remediation process as suggested by the agency identified on tender basis before certifying the same as contamination free, the CPCB and SPCB are directed to conduct further analysis of soil and water and only after satisfaction that the contamination has been completely removed and the damage caused to the environment has been eliminated and the environment is restored to its original position, they must stop the remediation process till then they will have to continue with the study subject to their satisfaction.
- o. The TANGEDCO is directed not to cause any act which is likely to affect the riverine and coastal ecology on account of their act and not to cause further damage to the environment by violations of conditions noticed by the regulators earlier.
- p. The Chairman, Tamil Nadu Pollution Control Board is also directed to closely monitor the execution of the finalized DPR.
- q. The TANGEDCO is also directed to achieve 100% ash utilization as per the notification issued by the MoEF&CC and the Tamil Nadu Pollution Control Board is directed to monitor proper ash utilization and a condition must be imposed in the Consent to be issued as and when it is renewed.
- r. While undertaking the remediation process, the Joint Expert Committee appointed by this Tribunal to assess the points to be considered for preparation of DPR to restore the environment in view of the damage caused, can be consulted and the Joint Expert Committee appointed by this Tribunal is directed to provide necessary assistance and further suggestions (if any) and that also will have to be considered by the TANGEDCO and the committee appointed by this Tribunal viz., CPCB and SPCB while implementing the finalized DPR.
- s. The TANGEDCO is directed to remove the old pipes which are to be replaced with new pipes immediately and that can be used only after the new pipelines are laid as directed by this Tribunal and

undertaken by them. Till then they can use only those pipelines which are permitted to be used by this Tribunal.

- t. The Additional Chief Secretary for Environment, Forest and Climate Change is directed to conduct a study regarding the unutilized Ennore Wetland on the basis of the 1996 CZMP as directed by this Tribunal in similar matter of this nature and protect that area against further development and declare the same as part of Ennore Wetland under the Government Wetland Mission and develop a plan for restoration of the fragile Ennore creek ecosystem and the wetland complex of Ennore.
- u. The Chief Secretary, State of Tamil Nadu is also directed to consider the grievance of the residents of Chepaukkam village situated near the ash pond and if there is any relocation required for their safety, then that may also to be considered and necessary steps may be taken in this regard in accordance with law, if it is feasible and practicable. If the water quality in that area has been affected on account of the activities of the NCTPS owned by the TANGEDCO, then the TANGEDCO is directed to provide potable water to the residents in that area of the required quantity till the water quality in that area reaches the potable level.
- v. The Chief Secretary is directed to constitute a permanent grievance committee headed by the District Collector of the concerned area, State Pollution Control Board, a Senior Officer (not below the rank of Superintending Engineer) of TANGEDCO and nominee of Commissioner - Greater Chennai Corporation and that committee can convene a meeting once in three months and consider the grievance of the local people on account of the operation of the TANGEDCO and if any remedial measures to be taken, then they are directed to take appropriate steps to redress their grievance in accordance with law.
- w. The right of the applicant to approach this Tribunal or any other forum, if there is any breach occurred or violation committed and pollution caused is left open.
- x. As regards M/s. Kamarajar Port Limited is concerned, further steps to be taken against them will be considered after disposal of the

Civil Appeal viz., **Civil Appeal No.4238 - 4241 of 2020** filed by M/s. Kamarajar Port Limited pending before the Hon'ble Apex Court.

119. The points are answered accordingly.

120. **In the result, all these Original Applications are partially disposed of with the following directions in respect of TANGEDCO alone and as regards M/s. Kamarajar Port Limited, the same can be considered after the appeal filed by them before the Hon'ble Apex Court viz., Civil Appeal No.4238 - 4241 of 2020 are disposed of:-**

(i) The TANGEDCO is directed to carry on their activities strictly in accordance with law and complying with the conditions imposed in the Environmental Clearance and the Consent granted by the State Pollution Control Board.

(ii) The TANGEDCO is directed to replace the old ash slurry carrying pipes as undertaken by them within the time frame fixed and also take all necessary precautions of providing necessary sensor system to detect the leak immediately and also the mechanism by which production and pumping of ash slurry through the damaged pipeline can be stopped immediately, so that further pumping can be avoided so as to minimize the leak if at all if it happens in future.

(iii) The TANGEDCO is liable to pay the compensation already assessed by the State Pollution Control Board on various occasions for the violations noticed by them and also compensation directed to be paid by this Tribunal in other related connected matters viz., **Original Application Nos.122 of 2021 (SZ) and 162 of 2021 (SZ)** which were already disposed of this Tribunal by giving certain directions.

(iv) The TANGEDCO is also liable to pay environmental compensation which is likely to be assessed on the basis of the study to be conducted by the agency which is going to conduct study for remediation process, apart from the compensation already imposed by various proceedings of the Tamil Nadu

Pollution Control Board and directed to be paid by this Tribunal.

(v) The State Pollution Control Board is directed to monitor the functioning of the NCPTS owned by the TANGEDCO periodically and if there is any violation found, then they are directed to take appropriate action against the TANGEDCO including prosecution and imposition of environmental compensation apart from other directions to be issued as contemplated under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981.

(vi) The State Pollution Control Board is also directed to take action against the TANGEDCO for operating the unit without obtaining renewal of Consent to Operate, including imposition of compensation and prosecution, apart from issuing directions as required to be issued under Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981 and Environment (Protection) Act, 1986.

(vii) The Additional Chief Secretary, Environment through Director - Department of Environment is directed to take steps to identify the agency by issuing tender process for the preparation of DPR at the earliest and while calling for the tender, they are directed to include the Terms of Reference suggested by the Joint Expert Committee appointed by this Tribunal to be considered by the agency for preparation of DPR and after finalizing the agency, complete the remediation process to be conducted and after finalizing the remediation process, take steps to implement the same through TANGEDCO by providing necessary technical guidance, if any, required without delay. They are directed to expedite the process of finalizing the agency for preparation of DPR **within a period of six months** and completion of study **within a period of nine months** and thereafter, undertake to complete the remediation process at the earliest possible time through TANGEDCO.

- (viii) The expenses for conducting the study through the agency to be identified for preparation of DPR and also the expenses for remediation has to be undertaken by the TANGEDCO.
- (ix) On finalizing the study to be conducted by the agency in respect of remediation, the TANGEDCO is directed to undertake the remediation process and complete the same at the earliest possible time, as delay in implementation will result in further damage to the environment.
- (x) After the preparation of DPR, the implementation of the recommendations and the nature of study to be conducted is directed to be monitored jointly by (i) a Senior Officer from the Central Pollution Control Board, Regional Office, Chennai and (ii) a Senior Officer from the Tamil Nadu Pollution Control Board so as to effectively implement the remediation process in a scientific manner. During the course of monitoring, if the above said committee feels that further study will have to be conducted then that also will have to be carried out by the TANGEDCO in co-ordination with the committee appointed by this Tribunal viz., the Additional Chief Secretary to Government - Department of Environment, Principal Secretary to Government - Department of Energy and Director - Department of Environment.
- (xi) The TANGEDCO is directed to carry out the recommendations made by the Joint Expert Committee regarding creating green cover, including plantation of mangroves and other species suggested which are conducive to environment and that will not affect the riverine and coastal zone ecology.
- (xii) On the basis of the study to be conducted, based on the DPR consultants identified and if further environmental compensation has been assessed by the agency, then the CPCB as well as the SPCB are directed to take further action in this regard for assessment of further environmental compensation for the damage caused to environment and take steps to

recover the amount from the TANGEDCO strictly in accordance with law.

(xiii) The TANGEDCO is also directed to take immediate steps to remove the fly ash already deposited in that area due to the breach of fly ash slurry carrying pipes without delay and after removal of the same, soil analysis will have to be conducted by the CPCB and SPCB and if further remediation will have to be conducted or further steps will have to be taken by TANGEDCO for removal of further fly ash deposit found in that area, then that also will have to be carried out by the TANGEDCO.

(xiv) After completion of the remediation process as suggested by the agency identified on tender basis before certifying the same as contamination free, the CPCB and SPCB are directed to conduct further analysis of soil and water and only after satisfaction that the contamination has been completely removed and the damage caused to the environment has been eliminated and the environment is restored to its original position, they must stop the remediation process till then they will have to continue with the study subject to their satisfaction.

(xv) The TANGEDCO is directed not to cause any act which is likely to affect the riverine and coastal ecology on account of their act and not to cause further damage to the environment by violations of conditions noticed by the regulators earlier.

(xvi) The Chairman, Tamil Nadu Pollution Control Board is also directed to closely monitor the execution of the finalized DPR.

(xvii) The TANGEDCO is also directed to achieve 100% ash utilization as per the notification issued by the MoEF&CC and the Tamil Nadu Pollution Control Board is directed to monitor proper ash utilization and a condition must be imposed in the Consent to be issued as and when it is renewed.

(xviii) While undertaking the remediation process, the Joint Expert Committee appointed by this Tribunal to assess the points to be considered for preparation of DPR to restore the

environment in view of the damage caused, can be consulted and the Joint Expert Committee appointed by this Tribunal is directed to provide necessary assistance and further suggestions (if any) and that also will have to be considered by the TANGEDCO and the committee appointed by this Tribunal viz., CPCB and SPCB while implementing the finalized DPR.

(xix) The TANGEDCO is directed to remove the old pipes which are to be replaced with new pipes immediately and that can be used only after the new pipelines are laid as directed by this Tribunal and undertaken by them. Till then they can use only those pipelines which are permitted to be used by this Tribunal.

(xx) The Additional Chief Secretary for Environment, Forest and Climate Change is directed to conduct a study regarding the unutilized Ennore Wetland on the basis of the 1996 CZMP as directed by this Tribunal in similar matter of this nature and protect that area against further development and declare the same as part of Ennore Wetland under the Government Wetland Mission and develop a plan for restoration of the fragile Ennore creek ecosystem and the wetland complex of Ennore.

(xxi) The Chief Secretary, State of Tamil Nadu is also directed to consider the grievance of the residents of Chepaukkam village situated near the ash pond and if there is any relocation required for their safety, then that may also to be considered and necessary steps may be taken in this regard in accordance with law, if it is feasible and practicable. If the water quality in that area has been affected on account of the activities of the NCTPS owned by the TANGEDCO, then the TANGEDCO is directed to provide potable water to the residents in that area of the required quantity till the water quality in that area reaches the potable level.

(xxii) The Chief Secretary is directed to constitute a permanent grievance committee headed by the District Collector of the concerned area, State Pollution Control Board, a Senior Officer

(not below the rank of Superintending Engineer) of TANGEDCO and nominee of Commissioner - Greater Chennai Corporation and that committee can convene a meeting once in three months and consider the grievance of the local people on account of the operation of the TANGEDCO and if any remedial measures to be taken, then they are directed to take appropriate steps to redress their grievance in accordance with law.

(xxiii) The right of the applicant to approach this Tribunal or any other forum, if there is any breach occurred or violation committed and pollution caused is left open.

(xxiv) As regards M/s. Kamarajar Port Limited is concerned, further steps to be taken against them will be considered after disposal of the Civil Appeal viz., **Civil Appeal No.4238 - 4241 of 2020** filed by M/s. Kamarajar Port Limited pending before the Hon'ble Apex Court.

(xxv) As and when the Civil Appeals (i.e. **Civil Appeal No.4238 - 4241 of 2020**) are disposed of, the Registry is directed to brought to the notice of the Bench for further consideration in respect of the steps to be taken and remediation process (if any) to be undertaken by M/s. Kamarajar Port Limited and further compensation (if any) to be imposed against them. Parties are also at liberty to bring this aspect after disposal of the civil appeals pending before the Hon'ble Apex Court.

(xxvi) Considering the fact that the applicants in these cases have taken much pain in protecting the environment in that area and conducting the litigations since 2016 onwards, in order to meet the expenses incurred by them for conducting the cases, the TANGEDCO is directed to pay a cost of **Rs.50,000/- each** to the applicants in the above three cases **within a period three months** and if the amount is not paid, then the applicants are at liberty to recover the amount adopting the procedure provided under the National Green Tribunal Act, 2010 after the period is over.

(xxvii) The Registry is directed to communicate this order to the Chief Secretary, State of Tamil Nadu, Additional Chief Secretary for Environment, Director - Department of Environment, Chairman - Tamil Nadu Pollution Control Board, Regional Director - Integrated Regional Office, CPCB, Chennai, the District Collector, members of the Joint Expert Committee appointed by this Tribunal for their information and compliance of directions.

(xxviii) The Additional Chief Secretary for Environment and the committee appointed by the Tribunal namely, CPCB and SPCB and Director - Department of Environment, TANGEDCO are directed to file their periodical reports **once in six months** till the remediation process is completed.

(xxix) As and when such reports are received, the Registry is directed to place the same before the Bench for consideration and also for issuing necessary directions, if any, required in this regard.

121. With the above observations and directions, all these Original Applications are disposed of partially in respect of TANGEDCO alone, leaving open the liability of M/s. Kamarajar Port Limited to be considered after disposal of the Civil Appeal (i.e. **Civil Appeal No.4238 - 4241 of 2020**) filed by them and pending before the Hon'ble Apex Court.

Sd/-
Justice K. Ramakrishnan, JM

Sd/-
Dr. Satyagopal Korlapati, EM

O.A. No.08/2016 (SZ),
O.A. No.152/2016 (SZ),
O.A.No.198/2016 (SZ),
05th July 2022. Mn.