



## **Science, Non-Science and the Dubious Role of “Experts” in Environmental Due Diligence:**

**A Case Study of Cheyyur Ultra Mega Power Plant, Tamil Nadu**



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For

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**Photos –**

- Top left & Middle left:** Land in Gangadevankuppam, proposed to be acquired for about 6 km long coal conveyor belt connecting the coal yard at the port in Panaiyur to the main plant in Vedal.
- Top right & Middle right:** Shore front between Panaiyur Chinnakuppam and Panaiyur Periyakuppam proposed for the port for the Cheyyur UMPP.
- Bottom left:** Mudaliarkuppam Estuary located at about 2 km north of the proposed coal yard and port at Panaiyur coast.
- Bottom right:** Odaiyur lake located less than 200 mts at north east of the Cheyyur UMPP.

**Cover photo: Shweta Narayan, 2013**

**Tamil Translation: J Muthuvel**

## Background

The Government of India has identified Cheyyur in Kanchipuram district, Tamil Nadu, as one of several sites for a 4000 MW ultra mega power plant (UMPP) using imported coal and super-critical technology. Super-critical technology claims to attain far higher thermal-electrical conversion efficiencies than sub-critical plants, thereby maximising the conversion of coal's embedded thermal energy into electricity.<sup>1</sup> The coal would be brought in through a captive jetty-cum-port located between the fishing villages of Panaiyur Periakuppam and Panaiyur Chinnakuppam. The port will occupy a 650 metre shorefront. A coal stocking yard capable of storing 310,000 tonnes of coal will be constructed on 83 acres of coastal land abutting the two fishing villages. A 6.5 km conveyor belt running over dunes, fields, orchards, densely wooded areas and waterbodies would carry the coal to the power plant. Various documents provide varying figures -- between 415 and 489 hectares -- for the land requirements of the power plant and its ash dyke.

The Ministry of Power aims to develop the UMPPs on a Build Own Operate (BOO) basis, through the Power Finance Corporation Ltd (PFC), a public sector unit. For the Cheyyur project, PFC has set up a Special Purpose Vehicle (SPV) called the Coastal Tamil Nadu Power Limited, based in New Delhi. The SPV is solely meant to acquire land, perform the EIA, obtain the various clearances and hand over the project to a private party who wins the bid for the project, thus saving the private party the trouble of land acquisition, impact assessment, public consultation and environmental clearances.

Public hearing for the Power Plant and Ash Dyke area was held on July 30, 2010. The Expert Appraisal Committee (Thermal projects) recommended the project for clearance at its 74th meeting on May 20-21, 2013. As of July 20, 2013, the Ministry of Environment & Forests' website had no mention of Environmental Clearance having been granted for the project.<sup>2</sup>

Public hearing for the Captive jetty, port and coal stocking yard was held on December 27, 2011. The Expert Appraisal Committee (Infrastructure and CRZ) recommended the project for clearance at its 115th meeting held on August 16-17, 2012. The Ministry of Environment & Forests issued CRZ clearance for the project on November 30, 2012.

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<sup>1</sup> Conventional coal-fired power plants, which make water boil to generate steam that activates a turbine, have efficiency of about 32%. Supercritical (SC) and ultra-supercritical (USC) power plants operate at temperatures and pressures above the critical point of water, i.e. above the temperature and pressure at which the liquid and gas phases of water coexist in equilibrium, at which point, there is no difference between gaseous water and liquid water. This results in higher efficiencies – above 45 percent. <http://www.greenfacts.org/glossary/pqrs/supercritical-ultra-supercritical-technology.htm>. Downloaded July 24, 2013.

<sup>2</sup> environmentclearance.nic.in. Checked on July 20, 2013.

## Clearances Based on False Claims

The project has cleared many statutory environmental checks based on several false claims made by EIA consultants and the project proponents. Because the company that obtains the environmental clearances is different from the company that will eventually set up and operate the plant, many crucial project details – such as coal composition, size of the electricity generation units (8 x 500 MW, 5 x 800 MW, or 6 x 660MW), technology for desalination (Reverse Osmosis or Mechanical Vapour Compression) – are not known. Environmental impact, therefore, cannot be assessed. This exposes a crucial flaw in the UMPP process in terms of environmental decision-making.

As such, this case exposes how the procedures under the EIA Notification, 2006, are rendered meaningless by corrupt consultants, uncaring project proponents, intellectually dishonest experts and crony regulators.

Members of the Expert Appraisal Committee, and officials of the Tamil Nadu Pollution Control Board, State Coastal Zone Management Authority and the Ministry of Environment & Forests have endorsed the project despite the glaring inconsistencies between claims and reality. Of all the bodies that considered the project, the EAC, which has a number of non-government “experts” is tasked with applying its expertise to cross-check the scientific validity of claims made. The failure of the EAC to take an independent decision highlights the extent of the rot in the system. A list of all the EAC members involved in vetting this project is in **Annexure 1**.

## Dirty Dozen: False Claims

False information was furnished on several aspects. However, the following 12 claims stand out for their brazenness, and for their potential ramifications on life, livelihood and environment.

1. There are no sensitive ecosystems, including estuaries, in the vicinity of the project;
2. There are no areas containing scarce resources (such as rare minerals, surface or ground water etc) in the vicinity.
3. There are no mangroves, seagrass beds near the project area.
4. The number of “migratory birds” in Cheyyur Lagoon is “negligible.”
5. The current site is the site visited by the site selection committee of the Central Electricity Authority.
6. Cheyyur plant is proposed to be developed on “undeveloped, barren land.” Acquisition of minimum agricultural land was a key criterion for selection of this site.
7. Panaiyur was chosen as the site for the port based on an inspection by a multi-departmental team.
8. The 650 metre shorefront proposed to be used for the port is empty and unused by local fisherfolk.
9. There are no sand dunes in the project area for the port, and the land where the port is set to come up is entirely flat.
10. Nesting of Olive Ridley sea turtles is only sporadic, and no nests were observed in the nesting season of 2010-2011 in the Panaiyur beaches, according to a study conducted by NIOT.
11. The shoreline at Panaiyur is “fairly stable.”
12. Mercury emissions to air are 1.1 mg per day.

**Annexure 2** provides the citations for each false claim.



## Claims v. Reality

***Claim 1. There are no sensitive ecosystems, including wetlands, watercourses or other waterbodies, in the vicinity of the project.***

***Claim 2. There are no areas containing scarce resources (such as rare minerals, surface or ground water etc) in the vicinity.***

***Claim 3. There are no mangroves, seagrass beds near the project area.***

### Reality

- The study area has tidal mudflats, seagrass beds, mangroves, and sand dunes, all of which are identified as “ecologically sensitive” in the CRZ Notification, 2011.
- 27.49 percent of the land-use in the study area is classified as waterbodies. The region is dotted with numerous freshwater bodies that store rainwater, mitigate floods, and recharge groundwater.
- The study area has endangered habitats, including Tropical Dry Evergreen Forests. These important ecosystems are preserved within Reserve Forests and Sacred Groves, some of which are found in the study area.

### Waterbodies

Fig. 1 is a map of the power plant, ash dyke and port location and 15 km around the same. The map shows that the area is dotted with fresh water bodies called *eris*. *Eris* (or tanks) are unique man-made water reservoirs constructed along a gradient. A crescent shape bund down-gradient traps flowing rainwater, and releases it to fields further down-gradient using merely gravity to channel the flow. *Eris* in Kanchipuram district are ancient, some dating back to the 7th Century AD, and were constructed for irrigation, flood control and groundwater recharge.

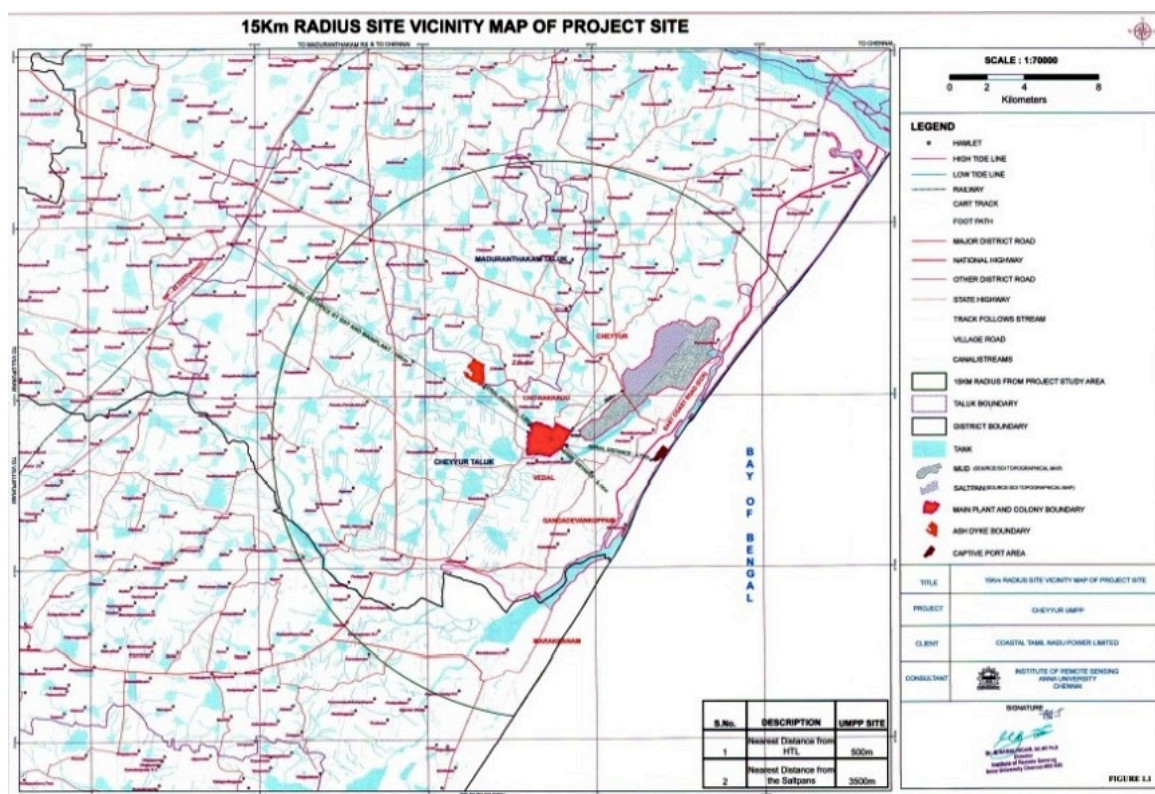


Fig 1

According to the CTNPL's own EIA study for Cheyyur power project, Sithampur block, within which the entire project is located, has the maximum number of non-system tanks.<sup>3</sup> System tanks receive waters from larger up-gradient reservoirs or water works, in addition to rain waters from their catchment. Non-system tanks, also called isolated tanks, receive waters solely from their rainwater catchment areas.<sup>4</sup>

Waterbodies are the second largest land-use, after agriculture, accounting for 27.49 percent of the study area (10 km radius around the plant site). See Table 1.

**Table 1: Land use pattern of the study area as per satellite data**

Category	Area(ha)	Percentage of study area
Vegetation	6313	13.48
Agriculture	22744	48.58
Barren	4808	10.27
Water body	12868	27.49
Settlements	87	0.19
<b>Total</b>	<b>46820</b>	<b>100.00</b>

Source: Cheyyur Ultra Mega Power Plant: Comprehensive Environmental Impact Assessment Report. WAPCOS, December 2012. p. 4-49

These waterbodies, that includes *eris*, lagoons and estuaries, are sensitive from a hydrological, agricultural, historical, cultural, ecological and flood management perspective. The presence of such a large water spread and ground water recharge capacity should have qualified the project area to be considered a place containing important, high-quality and scarce resources.

In its submissions for CRZ clearance<sup>5</sup>, CTNPL has denied the existence of the surface and groundwater resources, and this claim has been accepted by the Expert Appraisal Committee (Infrastructure, CRZ and Miscellaneous) despite evidence to the contrary being available in other project documents such as maps and tables.

According to the Tamil Nadu Public Works Department, Cheyyur taluk has more than 80 non-system tanks irrigating 16357 acres, and capable of storing 35.15 million cubic metres (3500 crore litres) of water, in addition to recharging groundwater. See **Annexure 3**.

### **Tropical Dry Evergreen Forests**

Tropical dry evergreen forests are found in patches along the Coromandel coast, and are under severe stress due to population pressures. The study area of the project has a number of such patches – under varying levels of stress. The Kurumburam Reserve Forest, which is considered to be a reasonably healthy remnant of this forest type, falls within the study area, and has been declared a Medicinal Plant Conservation Area by the Government of Tamil Nadu.

Pondicherry-based FERAL conducted a preliminary survey of 77 TDEF sites along Tamil Nadu coast. Six of the 77 locations -- including Vembanoor, Kadapakkam, Panaiyur, Vennangupattu, Urani and Vadaagaram -- fall within the study area.<sup>6</sup>

3 WAPCOS Ltd. Undated. Rapid Environmental Impact Assessment Study for the Proposed Cheyyur Ultra Mega Power Project (4000 MW). p. 4-23.

4 U.S. Sreeramulu. "Management of Water Resources in Agriculture." New Age International (P) Ltd, 2005. New Delhi. p. 9

5 Coastal Tamil Nadu Power Ltd. "Submissions for CRZ Clearance for Captive Marine Terminal off Panaiyur, Kanchipuram Distt. For Handling Coal Imports for the Proposed 4000MW Cheyyur UMPP at Cheyyur Taluk, Kancheepuram Distt." June 2011. p.17

6 Bhalla, R.S., Ram. S., and V. Srinivas, eds. 2008 "Studies on vulnerability and habitat restoration along the Coromandel Coast." 1st ed. Pondicherry, India: FERAL, UNDP-UNTRS (See Annexure D. Page 223)

## Estuaries and Lagoons

Towards the Northeast, about 500 metres from the plant site lie the tidal mudflats of Odiyur Lake (a.k.a Cheyyur Lagoon) which drain into the Mudaliarkuppam estuary. The latter is connected to the sea about 2km North of the port site. Four kilometres to the south is another estuary called Yedaianthittu. [See Fig.1] In fact, a major portion of the study area falls within the Idaikazhinadu Panchayat. Idaikazhinadu literally means, the land between two backwaters. The Yedaianthittu estuary is an integral part of the Kalivelli Tank Complex. With its 776 square km waterspread, the Kalivelli is the second largest brackish water body in South India.<sup>7</sup>

## Mangroves and Seagrass

*Halophila ovalis* (a seagrass) and mangroves such as *Avicennia marina* and *Rhizophora sp.* are well documented in the Yedaianthittu estuary.<sup>8</sup> The mangroves, though, are under stress due to anthropogenic pressures. A February 2013 study by the Centre for Advanced Studies in Marine Sciences, Parangipettai, for CTNPL reports the presence of *Halophila ovalis* and mangroves in the Odiyur Lagoon and estuary too.

Seagrass beds are important breeding and feeding grounds for several marine and estuarine fauna, besides playing an important role in sequestering carbon.

## Dunes

It is widely acknowledged that the Kanchipuram coast, in general, and the proposed port area is home to a long stretch of well-established sand dunes. (See section below on Dunes)

Seagrass beds, tidal flats, sand dunes and mangroves are all specifically mentioned in the CRZ Notification, 2011 as “ecologically sensitive. . . geomorphological features which play a role in maintaining the integrity of the coast.” On the strength of these qualities, areas containing these are categorised as CRZ I, and offered the greatest protection under law. Contrary to claims that this region is devoid of ecosensitive areas, the study area has 4 out of 11 features identified as “ecologically sensitive” by the CRZ Notification, 2011.<sup>9</sup>

### **Claim 4. The number of “migratory birds” in Cheyyur Lagoon is “negligible.”**

#### **Reality**

- Annual bird counts at Cheyyur lagoon from 2004 to 2013 confirmed consistent visitations by birds, including migratory threatened waterfowl such as spot-billed pelicans, at the lagoon.
- The Yedaianthittu-Kalivelli tank complex south of the project site is a declared “International Bird Area.”

The minutes of the EAC's (Thermal) meeting of May 2013, where environmental clearance is recommended, states that the numbers of migratory birds are "negligible" in the Cheyyur Lagoon. According to primary data of water birds at Cheyyur lagoon collected by Dilip Patel, Pondicherry, between 2004 and 2013, the waterbody has recorded visitations of waterfowl -- including migratory species -- numbering from a low of 1491 (2008) to 22,016 (2009). This data has been submitted to the Annual Census of Waterfowl ([www.wetlands.org](http://www.wetlands.org)). The near-threatened “Spot-billed pelican”

7 Gopinath, S.; Srinivas, R. “Kativelli Wetlands” Foundation for Ecological Research, Advocacy and Learning. Pondicherry. 2004.

8 Ramanujam, M.E.; Anbarasan, R. “A preliminary report on the ichthyofauna of Yedayanthittu Estuary (Tamil Nadu, India) and rivulets draining into it.” Journal of Threatened Taxa, 2009. Vol. 1. No.5. pp.287-294. See also “Seagrasses: The Oxygen Pumps in the Sea.” Wealth of India Division, CSIR – National Institute of Science Communication and Information Resources. p. 8.

9 Section 7(i)(A), CRZ Notification, 2011. Ministry of Environment & Forests.

has also been observed in hundreds in the Cheyyur lagoon.<sup>10</sup>

The Yedaianthittu estuary, which is part of the Kalivelli tank complex, is not mentioned anywhere in the project documents or proforma submissions. The Kalivelli Tank and Yedaianthittu Estuary are identified as an "Important Bird Area" by Birdlife International and the Bombay Natural History Society with recorded presence of "near threatened" and "vulnerable species."<sup>11</sup>

The study area can, by no means, be described as ornithologically insignificant.

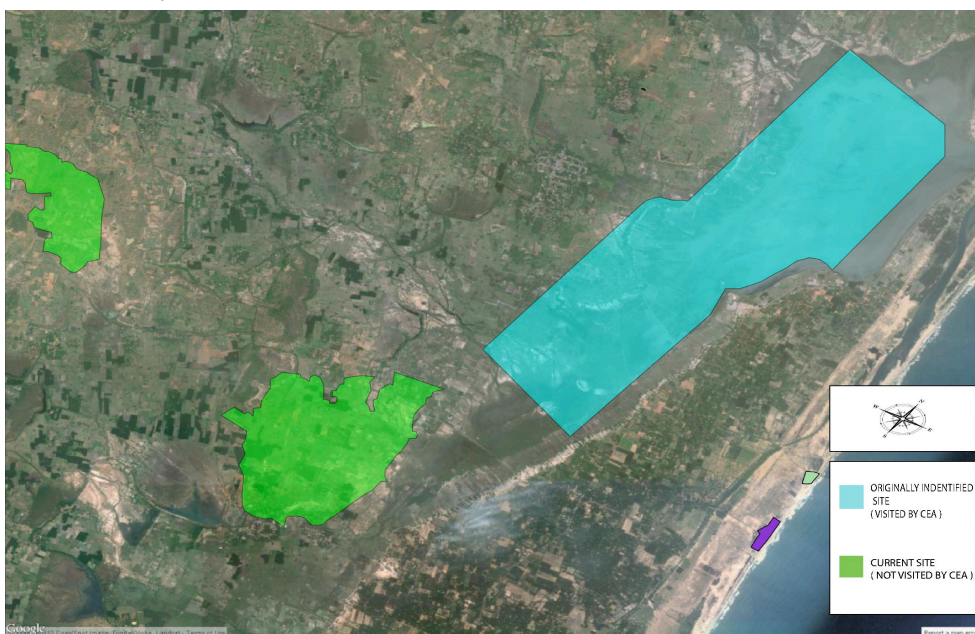
**Claim 5: The current site is the site visited by the site selection committee of the Central Electricity Authority.**

**Reality**

- *The site where the plant is currently set to come up was never visited or considered by the CEA's site selection committee. The power plant and ash pond of the current site are 1 km and 6 km away from the originally visited site.*
- *The original site was centred around Cheyyur village of Cheyyur taluk. The current site is centred around Vedal village of Cheyyur taluk, with the ash pond at Vilangadu village.*

CTNPL claims that the site spread over the villages of Vedal, Gangadevankuppam, Cheyyur, Chittarkadu and Vilangadu where the power plant and ash pond are to be located were surveyed by a team comprising members from the Central Electricity Authority (CEA) and Power Finance Corporation (PFC) in October 2006. CTNPL also claims that the chosen land is barren, sparsely populated and with minimum area under agriculture.

Documents at hand, unearthed through the Right to Information Act, 2005, do not support this claim. A note of the Tamil Nadu Electricity Board (TNEB) relating to the visit by the CEA's site selection committee contains a map of the site in Cheyyur village, Cheyyur taluk, visited and considered by the CEA team at the behest of TNEB.<sup>12</sup>



**Fig 2: Comparative Map of 2 Sites**

10 "Annual Census of Waterfowl at Odiyur Lake (a.k.a Cheyyur Lagoon)/Mudaliarkuppam Estuary: 2004 to 2013." Compilation of data submitted to the Asian Waterfowl Census ([www.wetlands.org](http://www.wetlands.org)) by Dilip Patel, Pondicherry.

11 BirdLife International (2013). Important Bird Areas Factsheet: Kaliveli Tank and Yeduyanthittu estuary." Downloaded from <http://www.birdlife.org> on 21.07.2013.

12 Environmental Management Cell, Office of the Chief Engineer/Projects, Chennai-2. "Points for Discussion with CEA Team on 17.10.06 at 11.00 A.M. at Secretariat." 2006.



This site is not the same as the site where the plant is currently proposed. The committee never visited Vedal, Gangadevankuppam, Chittarkadu and Vilangadu villages. **Fig. 2** marks both sites on the same map. However, the company and its consultant WAPCOS have lied about this and made it seem as though the site considered by CEA, and the site where the current proposal is set to come up are one and the same.

**Claim 6: Cheyyur plant is proposed to be developed on “undeveloped, barren land.” Acquisition of minimum agricultural land was a key criterion for selection of this site.**

#### **Reality**

- *About 82 percent of the land being acquired for the power plant and related infrastructure is agricultural.*

As part of its statutory form titled “Basic information for Environment Clearance,” CTNPL repeats the claim about “minimum acquisition of agricultural land” and claims that “The power plant is proposed to be commissioned on an undeveloped barren land.”<sup>13</sup>

Curiously, the Expert Appraisal Committee (Thermal projects) that considered this claim and recommended the site and the project for clearance has observed that: “Land requirement will be 416.45 ha, out of which 342.62 ha is agriculture land, 9.83 ha is forest land and 64 ha is Poromboke and barren govt. Land.”<sup>14</sup>

Contrary to WAPCOS and CTNPL's claim about “minimum agricultural land,” the EAC's own observation places the proportion of agricultural land at about 82 percent. Inexplicably, the EAC fails to find fault with the siting despite this obvious discrepancy.

Only 15 percent of the total land under the project area is classified as “Poromboke and barren govt. Land.” It is noteworthy that even poromboke lands are cultivated and used for grazing, collecting of medicinal plants and fuel wood.

**Claim 7. Panaiyur of Panaiyur village was chosen as the site for the port based on an inspection by a multi-departmental team.**

#### **Reality**

- *Department of Environment, Government of Tamil Nadu, and the State Coastal Zone Management Authority rejected all sites and suggested that an alternative site be considered as the entire Mammallapuram-Marakkanam stretch was ecologically sensitive and identified as a tourism corridor.*
- *Two successive site selection visits by multi-departmental teams including officials from CTNPL rejected Panaiyur of Panaiyur village and instead recommended Thalathalaiyur of Panaiyur village.*

The original site identified for a captive port for this project was at Paramankeni village, Cheyyur Taluk, Kanchipuram District. However, during its meeting of July 20-22, 2009, the Expert Appraisal Committee (Infrastructure) rejected this site citing the ecosensitive nature of that area and the extensive sand dune formations there.

<sup>13</sup> Coastal Tamil Nadu Power Ltd. Letter to Director, Ministry of Environment & Forests, containing “Proposal for Environmental Clearance for the Proposed Ultra Mega Power Project at Cheyyur, Kancheepuram, Tamil Nadu.” November 16, 2012.

<sup>14</sup> Minutes of the 74th Meeting of Reconstituted Expert Appraisal Committee on Environmental Impact Assessment of Thermal and Coal Mining Projects. May 20-21, 2013.

Agenda notes of a meeting convened by the Chief Secretary, Government of Tamil Nadu, record that on August 20, 2009, the Director, Department of Environment, Government of Tamil Nadu, along with officials of PFC and Tamil Nadu Electricity Board inspected three sites – Peruntharavu in Paramankeni village, and Tharuthazhaikuppam and Panaiyur in Panaiyur village. Based on this preliminary inspection, Peruntharavu (Paramankeni village) and Panaiyur (Panaiyur village) were rejected “due to the presence of sand dunes.” Site 2 – Tharuthazhaikuppam of Panaiyur village – was identified “as suitable under environmental considerations.”<sup>15</sup>

Subsequently, on 24.8.2009, another multidepartmental team visited Tharuthazhaikuppam, and returned the same evening to a meeting headed by the Chairman, TNEB. At this meeting, the chairman, TNEB, advised CTNPL to write to Tamil Nadu Maritime Board seeking transfer of the “In-principle” approval already granted for setting up the captive jetty at Paramankeni site to the Tharuthazhaikuppam site in Panaiyur village.<sup>16</sup>

Tharuthazhaiyur, the recommended site, is about 3 km North of Panaiyur, the site that was rejected by the Committee, and where the project is currently set to come up.

At the 53rd meeting of the Tamil Nadu State Coastal Zone Management Authority held on 28.8.2009, the Authority resolved to request the applicant to relocate the project as “the proposed areas have been earmarked for eco-tourism activities and also because the project areas are having cluster of sand dunes.”<sup>17</sup>

Curiously, although all site inspections ended up rejecting Panaiyur of Panaiyur village, this site is the one for which permission is sought and obtained. The Expert Appraisal Committee (CRZ) never really sought to see the inspection reports to verify if the proponent's claims are true.

***Claim 8. There are no sand dunes in the project area for the port, and the land where the port is set to come up is entirely flat.***

### **Reality**

- *Several governmental and non-governmental reports confirm the widespread presence of sand dunes.*
- *The Department of Environment, the State Coastal Zone Management Authority, and a multidepartmental site selection team, including members from the proponent's side, had rejected Panaiyur because of the presence of dunes.*

The site selection committee for an alternative location for the Cheyyur port had rejected Panaiyur and recommended Tharuthazhaikuppam. The SCZMA too rejected all sites in Cheyyur taluk on grounds of ecosensitivity and presence of sand dunes.

An oft-cited 2006 study by S. Sanjeevi established that dunes are prevalent in the open and high-energy Coromandel coastline.<sup>18</sup> The study suggests that along the Coromandel coast, the Buckingham Canal -- about 700 metres from the coastline at Panaiyur – serves as the demarcating line with sand dunes on the eastern side and the hinterland to the west.

<sup>15</sup> Tamil Nadu Electricity Board. Agenda Notes for the meeting convened by Chief Secretary, Government of Tamil Nadu. 8.10.2009.

<sup>16</sup> “Record Notes of Discussion held by Chairman/TNEB on 24.8.2009 at 4 p.m. with GoTN/GoI officials following the Joint Inspection of the Alternate Site for Jetty for the Cheyyur UMPP by the Officials.” Signed by C.P. Singh, Tamil Nadu Electricity Board. Agenda Notes for the meeting convened by Chief Secretary, Government of Tamil Nadu. 8.10.2009.

<sup>17</sup> Letter from C.V. Sankar, IAS, Principal Secretary (Environment & Forests) to Government of Tamil Nadu, to Chairman, National Coastal Zone Management Authority, Govt of India. 6.9.2011.

<sup>18</sup> Sanjeevi, S. (1996). “Morphology of dunes of Coromandel Coast of Tamil Nadu: A satellite-based approach for coastal landuse planning.” *Landscape and Urban Planning*. 34(3): 189-195

Pondicherry-based FERAL conducted a preliminary survey of 38 coastal villages all along Tamil Nadu coast where sand dunes are reported. Two of the 38 locations are Panaiyur Chinnakuppam and Panaiyur Periakuppam.<sup>19</sup>

Fisherfolk from Panaiyur Periakuppam and Chinnakuppam, guided by Naveen Namboothri, a marine biologist from Dakshin Foundation, conducted a sample survey to develop a profile of the beach where the project is set to come up. The study, which used well-accepted scientific methodology, found that the project site lies squarely atop a well-established dune that is part of a larger dune complex that extends to the North and South of the project site.<sup>20</sup>

Both, the site selection committee and the SCZMA, had rejected Panaiyur. But the company seems to have rejected the directions of both, and insisted that it could and would build the port on “non-sand dune” areas of Panaiyur. After their initial objections, all regulators seem to play along with the proponent's wish.

**Claim 9. The 650 metre shorefront proposed to be used for the port is empty and unused by local fisherfolk.**

#### **Reality**

- *The above mentioned shorefront is used for a variety of fishing related activities by fisherfolk from Periakuppam and Chinnakuppam*
- *People, including women, from inland fishers' community, and SC/ST communities use the shorefront for hand-lining, cast net fishing, and gathering crabs, shell fish and clams.*

The said shorefront falls between the fishing villages of Panaiyur Chinnakuppam and Periakuppam, and is used by residents of both villages for a variety of purposes. These include parking and launching boats, mending nets and landing fish. The long stretch of wide beach is also used to haul the seasonal shorreseine net.

People from Scheduled Caste, Scheduled Tribe communities and the community of inland fishers (*Sembadavar*) also engage in shore-based fishing using hook-and-line or hand-cast nets at the project site. Women from surrounding villages (not from the fishing community) also collect clams and sea lice from the intertidal zone to supplement their diets.

The proponent's claim exposes the failure of the consultant to study the project area, and conduct any meaningful social impact assessment. In fact, the Socioeconomic Assessment for the port area does not even have the demographic profiles of Periakuppam and Chinnakuppam, leave alone any report on the varied ways in which the beach and dunes are used by people from these or other villages.<sup>21</sup>

**Claim 10. Nesting of Olive Ridley sea turtles is only sporadic, and no nests were observed in the nesting season of 2010-2011 in the Panaiyur beaches, according to a study conducted by NIOT.**

#### **Reality**

- *A study conducted by Tree Foundation, Chennai, found 1217 eggs in 15 nests in a 3 km stretch of beach starting from Periakuppam in the 2010-2011 nesting season*

According to a systematic study conducted in the 2010-2011 nesting season by Chennai-based

19 Bhalla, R.S., Ram. S., and V. Srinivas, eds. 2008 “Studies on vulnerability and habitat restoration along the Coromandel Coast.” 1st ed. Pondicherry, India: FERAL, UNDP-UNTRS (See Annexure E. Page 227)

20 Naveen Namboothri et al. (2013). “Community Mapping of the Sand Dune Ecosystems of the Panaiyur Coast, Kanchipuram District, Tamil Nadu.” Dakshin Foundation & Community Environmental Monitoring. July 2013.

21 CTNPL (Undated). Socio-economic study for Cheyyur Ultra Mega Thermal Power Project: Port Area.”

Tree Foundation, 15 nests were spotted in the 3 km beach stretching from Panaiyur Periakuppam to Tharuthazhaikuppam. In all, 1217 eggs were recorded. In 2012-2013, 22 nests containing 2610 turtle eggs were collected. The study was conducted with the approval of the Forest Department, Government of Tamil Nadu, and a copy of the data was submitted to them.

**Claim 11. The shoreline at Panaiyur is “stable.”**

**Reality**

- *A Ministry of Environment study identifies the Panaiyur coast as erosion prone.*

EIA consultant NIOT states that “The Institute of Ocean Management (IOM), Anna University has carried out shoreline evolution studies by interpreting satellite data over about 40 years (from 1972 to present) and concluded that the coast of Panaiyur is stable.”<sup>22</sup>

The National Centre for Sustainable Coastal Management (Ministry of Environment & Forests) carried out a shoreline change assessment for the Indian coast with data over a period of 38 years – 1972 to 2010. The Tamil Nadu chapter of the “National Assessment of Shoreline Change” provides maps of different sections of the state's coastline identifying them varyingly as low erosion, medium erosion, high erosion, stable, low accretion, medium accretion or high accretion.<sup>23</sup> Panaiyur's coastline is described in this chapter as “moderately eroding.

**Claim 12. Mercury emissions to air are negligible.**

**Reality**

- *The power plant could end up releasing up to 46 kg of mercury into the air if run on Australian coal. To put things in perspective, 1 gram of mercury is sufficient to contaminate a 25 acre lake.*

A coal-burning thermal power plant is a significant emitter of mercury. This plant is to run on coal imported from one of the following countries -- China, Australia, South Africa, Indonesia. The mercury content in coal varies based on its origin. According to the Term of Reference No. 20 assigned for the power plant EIA by the Expert Appraisal Committee (Thermal projects), the company is required to provide the composition of the fuel including levels of heavy metals such as lead, chromium, arsenic and mercury. No such data has been provided. As such, the EIA is in violation of this TOR.

From the minutes of the Expert Appraisal Committee (Thermal projects), it appears that the EAC had raised some question about mercury emissions, to which the company had responded stating that “Hg [mercury] release in the environment [through air] would be of the order of less than 1.1 mg/day.”

It appears that the EAC has accepted this story, because in the same document, the Committee recommends Environment Clearance with not one mention about mercury in its conditions. This is curious because the EAC is a gathering of experts meant to debunk non-science submitted by project proponents, and CTNPL's claims about mercury emissions are not borne out by the data it submits or by what is known of coal combustion.

22 NIOT. Final Report on Comprehensive Environmental Impact Assessment of Proposed Captive Marine Terminal off Panaiyur Chinnakuppam for Cheyyur UMPP.

23 National Assessment of Shoreline Change. (Panaiyur, Tamil Nadu). p. 39.

[http://www.ncscm.org/pdf\\_documents/Tamil%20Nadu%20Shoreline%20Change.pdf](http://www.ncscm.org/pdf_documents/Tamil%20Nadu%20Shoreline%20Change.pdf) Downloaded 23 July, 2013.



CTNPL proposes to burn between 39,420 tonnes to 46,000 tonnes of coal per day, according to the observations contained in the May 20-21, 2013 minutes of the EAC (Thermal). Australian coal has a mercury content of between 0.01 mg/kg<sup>24</sup> and 1 mg/kg<sup>25</sup>. Assuming conservatively that the imported coal contains only 0.01 mg/kg mercury, the power plant would release 394 grams to 460 grams of mercury each day. At the upper limit of 1 mg/kg of mercury in the coal, the level of mercury released to the environment through various media would total between 39 kg and 46 kg daily.

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- 24 Wojciech, M.(1994), "Emission factor of Mercury from coal-fired power stations." *Environmental Monitoring and Assessment*, 33, 161-170.
- 25 Mukherjee, Arun B. et al. (2008). "Mercury flow via coal and coal utilization by-products: A global perspective." *Resources, Conservation and Recycling*, Volume 52, Issue 4, February 2008, Pages 571-591

## ANNEXURE 1

### List of Expert Appraisal Committee Members for evaluating Environmental Impact Assessments (Ministry of Environment & Forests)

#### MEMBERS OF EXPERT APPRAISAL COMMITTEE – THERMAL AND COAL PROJECTS

- Names listed in **bold** were present when decision was taken to grant clearance

1. **Shri V.P.Raja** - Chairman, Mumbai.
2. **Dr. C.R. Babu** – Vice-Chairman, Professor Emeritus, Centre for Environmental Management of Degraded Ecosystems, School of Environmental Studies, University of Delhi, Delhi-110 007.
3. Prof. K.K.S. Bhatia, Director, Jaipur.
4. **Shri Jawahar Lal Mehta**, Former Director (Planning & Projects), Neyveli Lignite Corporation, Jharkhand
5. Dr. S.D. Attri, Environmental Monitoring and Research Centre, Indian Meteorological Department, New Delhi
6. **Prof. G.S.Roonwal**, Prof. (Retired), Department of Geology, University of Delhi New Delhi-110017.
7. Dr.CBS Dutt, Scientist G & Group Director, Atmospheric Science & Oceanography Group, National Remote Sensing Centre, Hyderabad-500625, A.P.
8. Dr. V.B.Mathur, Head Faculty of Wildlife Sciences, Dehradun - 248001
9. Member Secretary, Central Pollution Control Board, Delhi- 110 032
10. **Shri M.S.Puri**, Chief Engineer, Central Electricity Authority (CEA), New Delhi
11. **Shri T.K.Dhar**, Noida - 201 301
12. **Dr. Saroj**, Director, Ministry of Environment and Forests, New Delhi.

#### MEMBERS OF EXPERT APPRAISAL COMMITTEE – CRZ

- Names listed in **bold** were present when decision was taken to grant clearance

1. Shri Naresh Dayal, IAS, Chairman, New Delhi- 110049.
2. **Dr. M.L.Sharma**, IFS, Gandhi Nagar-382008
3. **Shri V.G. Koshy**, Aluva- 683 101, Kerala.
4. **Dr Apurba Gupta**, 2C 504, Mumbai 400042.
5. **Dr. H.S.Ramesh**, Mysore-570023, Karnataka
6. **Dr. S.P.Bansal**, New Delhi- 110049
7. **Dr.Y.Basavaraju**, Professor and Head Fisheries Research and Information Center (Inland), Karnataka Veterinary, Animal and Fisheries Sciences University, Bengaluru 560 094.
8. **Dr. Niraj Sharma**, Central Road Research Institute (CRRI), New Delhi-20.
9. **Shri G Bala Subramanyam**, Hyderabad - 500018, Andhra Pradesh
10. The Member Secretary, Central Pollution Control Board, Delhi -110 032,
11. Shri Avinash Kant, Senior Hydrogeologist & National Coordinator - Aquifer Mapping, Ministry of Water Resources, New Delhi – 110001.
12. **Shri Lalit Kapur**, Director, Ministry of Environment and Forests, New Delhi-110 003.

## ANNEXURE 2

### Citations for False Claims

	Claim	Name of Document
1.	There are no sensitive ecosystems, including estuaries, in the vicinity of the project.	<p><b>1. Detailed</b> Project Report:Marine Terminal for Cheyyur Ultra Mega Power Project. March 2011. p 4, sec 2.1. NIOT</p> <p><b>2. Rapid</b> EIA study for the Proposed Cheyyur Ultra Mega Power Project. P 1-8. WAPCOS.</p> <p><b>3. Comprehensive</b> EIA for the Marine Terminal – p 6. NIOT/CTNPL</p> <p><b>4. Form 1</b> for seeking clearance for project attracting CRZ notification – as part of application submitted by CTNPL to Collector cum Chariman District CZMA. June 1, 2011. CTNPL</p> <p><b>5. Submissions</b> by CTNPL to MoEF for seeking Environmental Clearance. From CTNPL to Dr Saroj, Director (HSMD), MoEF. November 16, 2012. CTNPL (Yogesh Juneja)</p> <p><b>6. Form 1</b> for seeking clearance for project attracting CRZ notification – as part of application submitted by CTNPL to Collector cum Chariman District CZMA. June 1, 2011. CTNPL</p> <p><b>7. Response</b> to Thiru. Kathivel, President, Amanthankarnai Village Panchayat as part of submissions made to MoEF before the 62nd meeting of the EAC (Thermal). Annexure IV. CTNPL Letter to MoEF dated Jan 17, 2013. CTNPL</p> <p><b>8. Submissions</b> to MoEF - Compliance of Cheyyur UMPP with response to MoEF – Cheyyur UMPP with respect to National Green Tribunal judgements since 2009. Part of submissions made to MoEF before the 62<sup>nd</sup> meeting of the EAC (Thermal). Annexure I. CTNPL Letter to MoEF dated Jan 17, 2013. CTNPL</p> <p><b>9.Final</b> Report on Comprehensive Environmental Impact Assessment of proposed Captive marine terminal off Panaiyur Chinnakkuppam for Cheyyur UMPP. P 40. NIOT</p>
2.	There are no areas containing scarce resources (such as rare minerals, surface or ground water etc) in the vicinity.	<p><b>1. Form 1</b> for seeking clearance for project attracting CRZ notification – as part of application submitted by CTNPL to Collector cum Chariman District CZMA. June 1, 2011. CTNPL</p> <p><b>2. Submissions</b> by CTNPL to MoEF for seeking Environmental Clearance. From CTNPL to Dr Saroj, Director (HSMD), MoEF. November 16, 2012. CTNPL (Yogesh Juneja)</p>
3.	There are no mangroves, seagrass beds within 50 km of the project area.	<p><b>1. Final</b> Report on Comprehensive Environmental Impact Assessment of Proposed Captive Marine Terminal off Panaiyur Chinnakkuppam for Cheyyur UMPP. P 34. NIOT/CTNPL</p>
4.	The number of “migratory birds” in Cheyyur Lagoon is “negligible.”	<p><b>1. Minutes</b> of the 74<sup>th</sup> re-constituted Expert Appraisal Committee on Expert Appraisal Committee of Thermal Power and Coal Mine Projects. May 20-21, 2013. Expert Appraisal Committee.</p> <p><b>2. Form 1</b> for seeking clearance for project attracting CRZ notification – as part of application submitted by CTNPL to Collector cum Chariman District CZMA. June 1, 2011. CTNPL</p>
5.	The current site is the site visited by the site selection committee of the Central Electricity Authority.	<p><b>1. Rapid</b> EIA study for the Proposed Cheyyur Ultra Mega Power Project. P 1-6. WAPCOS</p> <p><b>2. Feasibility</b> Report for Cheyyur Ultra Mega Power Project (4000 MW). October 2009. P 2-2. WAPCOS</p> <p><b>3. Submissions</b> by CTNPL to MoEF for seeking Environmental Clearance. From CTNPL to Dr Saroj, Director (HSMD), MoEF.</p>

		November 16, 2012. CTNPL (Yogesh Juneja)
6.	Cheyyur plant is proposed to be developed on “undeveloped, barren land.” Acquisition of minimum agricultural land was a key criterion for selection of this site.	<p><b>1. Rapid</b> EIA study for the Proposed Cheyyur Ultra Mega Power Project. P 1 – 10. WAPCOS</p> <p><b>2. Submissions</b> by CTNPL to MoEF for seeking Environmental Clearance. From CTNPL to Dr Saroj, Director (HSMD), MoEF. November 16, 2012. Annexure 2. CTNPL</p>
7.	Panaiyur was chosen as the site for the port based on an inspection by a multi-departmental team.	<p><b>1. Form 1</b> for seeking clearance for project attracting CRZ notification – as part of application submitted by CTNPL to Collector cum Chairman District CZMA. June 1, 2011. CTNPL</p> <p><b>2. The</b> Minutes of the 115<sup>th</sup> Meeting of the Expert Appraisal Committee for Building Construction, Coastal Regulation Zone, Infrastructure Development and Miscellaneous Projects held on 16<sup>th</sup> – 17<sup>th</sup> August, 2012. Expert Appraisal Committee.</p> <p><b>3. Socio-Economic</b> Study for Cheyyur Ultra Mega Thermal Power Project, District Kancheepuram, Tamil Nadu. P 1.2. WAPCOS</p> <p><b>4. Minutes</b> of the 63<sup>rd</sup> meeting of the Tamil Nadu Maritime Board. 08<sup>th</sup> September, 2009. TNMB</p>
8.	The 650 metre shorefront proposed to be used for the port is empty and unused by local fisherfolk.	<p><b>1. Final</b> Report on Comprehensive Environmental Impact Assessment of Proposed Captive Marine Terminal off Panaiyur Chinnakuppam for Cheyyur UMPP. P 6. NIOT/CTNPL</p> <p><b>2. The</b> Minutes of the 115<sup>th</sup> Meeting of the Expert Appraisal Committee for Building Construction, Coastal Regulation Zone, Infrastructure Development and Miscellaneous Projects held on 16<sup>th</sup> – 17<sup>th</sup> August, 2012. Expert Appraisal Committee quoting CTNPL.</p> <p><b>3. Marine</b> Terminal for Cheyyur Ultra Mega Power Project - Detailed Project Report. P 23. NIOT</p>
9.	There are no sand dunes in the project area for the port, and the land where the port is set to come up is entirely flat.'	<p><b>1. Final</b> Report on Comprehensive Environmental Impact Assessment of Proposed Captive Marine Terminal off Panaiyur Chinnakuppam for Cheyyur UMPP. P 7. NIOT/CTNPL</p> <p><b>2. CTNPLs</b> Response to Queries Raised by DEE, Kancheepuram. June 14, 2011. CTNPL</p> <p><b>3. CTNPLs</b> Response to Queries Raised by DEE, Kancheepuram. June 14, 2011. CTNPL</p> <p><b>4. Marine</b> Terminal for Cheyyur Ultra Mega Power Project - Detailed Project Report. P 24. NIOT</p>
10.	Nesting of Olive Ridley sea turtles is only sporadic, and no nests were observed in the nesting season of 2010-2011 in the Panaiyur beaches, according to a study conducted by NIOT	<p><b>1. Form 1</b> for seeking clearance for project attracting CRZ notification – as part of application submitted by CTNPL to Collector cum Chariman District CZMC. June 1, 2011. CTNPL.</p> <p><b>2. Final</b> Report on Comprehensive Environmental Impact Assessment of Proposed Captive Marine Terminal off Panaiyur Chinnakuppam for Cheyyur UMPP. P 93. NIOT/ CTNPL</p> <p><b>3. Minutes</b> of the 62<sup>nd</sup> meeting of Re-constituted Expert Appraisal Committee on Environmental Impact Assessment of Thermal Power and Coal Mine Projects. December 4, 2012. Expert Appraisal Committee (Thermal)</p>
11.	The shoreline at Panaiyur is “fairly stable.”	<p><b>1. Final</b> Report on Comprehensive Environmental Impact Assessment of Proposed Captive Marine Terminal off Panaiyur Chinnakuppam for Cheyyur UMPP. P18. NIOT/CTNPL</p> <p><b>2. Marine</b> Terminal for Cheyyur Ultra Mega Power Project - Detailed Project Report. P34. NIOT</p>
12.	Mercury emissions to air are 1.1 mg per day only.	<b>Minutes</b> of the 74 <sup>th</sup> meeting of the Re-constituted Expert Appraisal Committee on Environmental Impact Assessment of Thermal Power Projects. May 20 – 21 <sup>st</sup> , 2013. CTNPL



## ANNEXURE 3

### Non-system tanks in Cheyyur Taluk. Source: PWD, GoTN, 2013

s.no	Tank.	Block.	Taluk	Ayacut in ha	Capacity in mcm.
1.	Kilmaruvathur tank	Chitamur	Cheyyur	50.61	0.22
2.	Kazhuvelithangal tank	Chitanur	Cheyyur	49.11	0.14
3.	Kulathur tank	Chitamur	Cheyyur	35.55	0.56
4.	Kumili tank	Chitamur	Cheyyur	61.13	0.14
5.	Kurumbarai tank	Chitamur	Cheyyur	40.89	0.26
6.	Mazhuvankaranai tank	Chitamur	Cheyyur	53.12	0.25
7.	Mugundagiri tank	Chitamur	Cheyyur	91.76	0.51
8.	Nerkunam tank	Chitamur	Cheyyur	97.98	0.53
9.	Nugumbal tank	Chitamur	Cheyyur	71.69	0.33
10.	Parukkal tank	Chitamur	Cheyyur	45.03	0.54
11.	Pazhavur tank	Chitamur	Cheyyur	50.06	0.34
12.	Perambakkam tank	Chitamur	Cheyyur	58.86	0.42
13.	Periakalakadi tank	Chitamur	Cheyyur	109.58	0.24
14.	Periyakapakkam tank	Chitamur	Cheyyur	93.05	0.39
15.	Perukkaralai tank	Chitamur	Cheyyur	94.46	0.31
16.	Poongunam tank	Chitamur	Cheyyur	171.69	0.52
17.	Pudupattu tank	Chitamur	Cheyyur	85.02	0.25
18.	Puliyani tank	Chitamur	Cheyyur	50.61	0.13
19.	Puthirankottai tank	Chitamur	Cheyyur	94.77	0.35
20.	Puthur tank	Chitamur	Cheyyur	90.69	0.57
21.	Sirumailur tank	Chitamur	Cheyyur	87.16	0.82
22.	Sirunagar tank	Chitamur	Cheyyur	103.49	0.41
23.	Thenpakkam tank	Chitamur	Cheyyur	71.25	0.45
24.	Vannianallur tank	Chitamur	Cheyyur	85.90	0.37
25.	Vellakondagaram tank	Chitamur	Cheyyur	64.78	0.16
26.	Venmelagaram tank	Chitamur	Cheyyur	44.05	0.33
27.	Vilampattu tank	Chitamur	Cheyyur	125.09	0.49
28.	Agaram tank	Lathur	Cheyyur	42.11	0.84
29.	Amainthankaranai peria eri	Chitamur	Cheyyur	57.25	0.16
30.	Ammanur peria eri	Lathur	Cheyyur	56.74	0.17
31.	Arkadu peria eri	Chitamur	Cheyyur	87.89	0.23
32.	Cheyyur chekkeri	Lathur	Cheyyur	160.83	0.39
33.	Cheyyur Chitheri	Lathur	Cheyyur	48.99	0.18
34.	Cheyyur neman eri	Lathur	Cheyyur	162.71	0.36
35.	Cheyyur nemili thangal	Lathur	Cheyyur	49.41	0.15
36.	Cheyyur odapperi tank	Lathur	Cheyyur	165.12	0.13
37.	Cheyyur peria eri	Lathur	Cheyyur	162.71	0.63
38.	Cheyyur puthur	Lathur	Cheyyur	56.30	0.18
39.	Chinnavelikadu peria eri	Lathur	Cheyyur	63.20	0.25
40.	Chithamoor tank	Chithamur	Cheyyur	95.92	0.20
41.	Chitharkadu peria eri	Chithamur	Cheyyur	57.35	0.26
42.	Chunambedu tank	Chithamur	Cheyyur	72.87	0.21
43.	Iranyachithi eri	Lathur	Cheyyur	48.22	5.19
44.	Kadugupattu chiteri tank	Lathur	Cheyyur	40.44	0.23
45.	Kadugupattu peria eri	Lathur	Cheyyur	70.94	0.34
46.	Kadukkalur peria eri	Chithamur	Cheyyur	221.00	1.46
47.	Kalkulam tank	Lathur	Cheyyur	230.36	0.50
48.	Kalpattu tank	Chithamur	Cheyyur	51.01	0.10
49.	Kalpattu tank	Lathur	Cheyyur	23.54	0.12
50.	Karumbakkam tank	Chithamur	Cheyyur	128.76	0.32
51.	Kolathur peria eri	Lathur	Cheyyur	45.51	0.11
52.	Kumarakuppam tank	Lathur	Cheyyur	42.70	0.30
53.	Lathur tank	Lathur	Cheyyur	42.51	0.19

54.	Melapattu Siruvangunam tank	Lathur	Cheyyur	127.68	0.45
55.	Neelamangalam tank	Lathur	Cheyyur	60.73	0.16
56.	Nemandam tank	Lathur	Cheyyur	43.74	0.29
57.	Nesappakam peria eri	Lathur	Cheyyur	47.21	0.64
58.	Othivilagam tank	chithamur	Cheyyur	75.25	0.38
59.	Pachayambakkam tank	Lathur	Cheyyur	47.37	0.23
60.	Palur peria eri	Lathur	Cheyyur	53.44	0.13
61.	Panaiyadivakkam tank	Chithamur	Cheyyur	44.72	0.25
62.	Pavunjur tank	Lathur	Cheyyur	47.36	0.75
63.	Periyavelikadu tank	Lathur	Cheyyur	75.68	0.33
64.	Pondur peria eri	Chithamur	Cheyyur	87.69	0.70
65.	Porur peria eri	Chithamur	Cheyyur	42.84	0.19
66.	Pudupattu tank	Lathur	Cheyyur	55.75	0.37
67.	Punnamai tank	Lathur	Cheyyur	50.60	0.32
68.	Seevadi peria eri	Lathur	Cheyyur	52.80	0.33
69.	Sengattur peria tank	Lathur	Cheyyur	264.37	0.95
70.	Sirukalathur tank	Chithamur	Cheyyur	44.53	0.49
71.	Thanner pandal tank	Chithamur	Cheyyur	40.49	0.20
72.	Thondamanallur tank	Lathur	Cheyyur	65.18	0.19
73.	Tiruvadur tank	Lathur	Cheyyur	53.42	0.18
74.	Vayalur eri	Chithamur	Cheyyur	60.54	0.24
75.	Vedal peria eri	Chithamur	Cheyyur	321.10	2.09
76.	Vedal thangal	Chithamur	Cheyyur		0.25
77.	Veerabogam tank	Lathur	Cheyyur	40.86	0.05
78.	Velur peria eri	Chithamur	Cheyyur	82.23	0.25
79.	Velur pudu eri	Chithamur	Cheyyur	106.11	0.27
80.	Vilangadu tank	Chithamur	Cheyyur	102.41	0.50
80.	Villivakkam tank	Chithamur	Cheyyur	55.47	0.13
81.	Vizhuthamangalam peria tank	Lathur	Cheyyur	53.44	0.50
82.	Zamin perumbakkam tank	Maduranthagam	Maduranthagam	55.10	0.11
				6619.88	35.15