Powering Tamil Nadu's Progress...

From
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To
The Director,
Impact Assessment IA.II (T) Division,
Ministry of Environment, Forests & Climate Change,
Indira Paryavaran Bhawan, Vayu Wing,
Jor Bagh Road, Aliganj,
New Delhi-110 003

Kind Attention: Sh. B.B.Burman, Director

Lr.No. SE/C/P&E/EE/EMC-1/F.Uppur TPP/D.52/16, dt.2.2.2016

Sir,

Sub: TANGEDCO - Uppur Thermal Power Project (2 x 800 MW) – Environmental Clearance Sought For – Additional details submitted

Ref: 1) TANGEDCO's application Lr.No.CE/C/P&E/SE/C/P&E/EE/EMC-1/F.Uppur TPP/D.70/15, dt.7.3.15
2) MOEF/GOI's F.No.- J-13012/01/2012-IA II (T)
3) Minutes of the 38th Meeting of the Re-Constituted Expert Appraisal Committee (EAC) on Environmental Impact Assessment (EIA) of Thermal Power & Coal Mining Projects held on 25th & 26th June 2015 – Item No.2.1

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The Expert Appraisal Committee (EAC) on Environmental Impact Assessment (EIA) of Thermal Power & Coal Mining Projects, MOEF/GOI, in the meeting held on 25.6.2015, considered TANGEDCO's Uppur Thermal Power Project (2 x 800 MW) proposal. In the minutes, the Committee has sought for the following information/ documents:

1. Pictures and location of the creeks in a legible map.

2. Action plan for harnessing solar power.

3. Revised layout clearly depicting the various Units and facilities.

4. Clarification that the community land is not being acquired as per the definition of the State Govt.

5. Commitment for development of thick green belt of minimum 50 m width between the ash pond and village tanks.

6. Notification issued by the State Govt. regarding acquisition of land as per the provisions of relevant act/rules.

7. Explore the possibility of making an embankment without raising the level of the project site.

8. Letter from competent Port and Railway authorities for handling & transportation of the coal.

9. The transportation of coal shall be by Rail only. The PP shall take up the matter of transportation of coal by the shortest route which would save journey of around 100 km.

10. Diversion of existing Nalahs shall be done in such a way that it shall not dry up the creeks and it shall be ensured that water flows perennially in the creeks so as to preserve the mangroves. Anna University, who has conducted the hydro-geological study, shall present the same in the next meeting.

11. The water quality data was not properly presented. Hence, the same needs to be done for the fresh water and sea water.

12. Details of proposed e-auction for fly ash, the LoIs from prospective takers along with quantities etc. to be submitted.

13. Explore various avenues for utilization of bottom ash.

14. Revised and detailed budgetary action plan for Public Hearing issues

15. Employment potential for locals.

16. Detailed reply to the issues raised by ERC, New Delhi

17. Borrowing of earth should be avoided and efforts be made to balance cutting and filling in the project area/site.

18. In order to maintain tranquility and sanctity of the creek area by ensuring bare minimum disturbances, proposed sea-ward pipe line shall have to be realigned.

19. Concerns were expressed on the high PH of water which needs to be dealt extensively in EIA.

The above details are submitted in enclosure.

Further, it is informed that the Expert Appraisal Committee for Projects related to Infrastructure Development, Coastal Regulation Zone, MOEF, GOI has considered the Uppur Thermal Power Project in its 156th Meeting of EAC, held on 28.1.2016 and has agreed to recommend the Project for CRZ Clearance. The minutes of the meeting are awaited.

It is requested that the proposal of TANGEDCO for establishing the proposed Uppur Thermal Power Project (2 x 800 MW) may be considered for issue of Environmental Clearance.

Yours faithfully,

02/02/16

3/3 Chief Engineer/Projects

Encl: As above

Uppur Thermal Power Project (2 x 800 MW)
Meeting of the Thermal Expert Appraisal Committee of MOEF/GOI held on 25.6.2015

Point wise reply for queries raised by the EAC

Point 1: Pictures and location of the creeks in a legible map

Photographs of the project area and creeks nearby are enclosed as Annexure -1. Further, a detailed map indicating all the tanks, creeks, mangroves, etc., located near the project area has been prepared and enclosed as Annexure - 2.

Point 2: Action plan for harnessing solar power

It is proposed to tap solar power by installing PV Solar Plant (with seasonal tilt mechanism) on roof tops of Main Power House building, ESP Control Room, Administrative Building and Service Building at a cost of Rs.11.25 Crores to generate 1250 KW power.

In addition to this, solar water heating systems will be provided on the roof tops of guest house and canteen at an estimated cost of Rs.50 lakhs.

Total budget proposed for tapping solar power is Rs.11.75 Crores.

Point 3: Revised layout clearly depicting the various Units and facilities

Revised layout clearly depicting the various units and facilities has been prepared through Institute of Remote Sensing, Anna University, showing the revised cooling water intake and outfall route is enclosed as Annexure-2. A blow up of the Power Plant layout clearly depicting various units and facilities is enclosed as Annexure - 3

Point 4: Clarification that the community land is not being acquired as per the definition of the State Govt.

Out of the lands proposed to be acquired by TANGEDCO for the Power Project, the following are categorised as Community lands:

Uppur Village:

Sl.No.	Survey No.	Category	Extent (in Ha)
1.	51/5	Cart Track	0.11.0
2.	53/7	Cart Track	0.10.0
3.	150	Road	0.58.0
	Total		**0.79.0**

Valamavoor Village:

Sl.No.	Survey No.	Category	Extent (in Ha)
1.	13/1	Road	0.49.5
2.	14/1	Road	0.28.0
3.	15/1	Road	0.19.0
	Total		**0.86.5**

Thiruppalaikudi Village:

Sl.No.	Survey No.	Category	Extent (in Ha)
1.	57/2	Threshing ground	0.26.5
2.	60/2	Threshing ground	0.09.0
	Total		**0.35.5**

Total Community lands proposed to be acquired is 2.01 Ha. The Uppur, Valamavoor and Thiruppalaikudi Panchayat Boards, in their meetings dt.8.12.2015, dt.8.12.2015 and dt.1.10.2015 respectively, have given their "No Objection" for acquisition of the above community lands for the purpose of setting up the Uppur Thermal Power Project.

Point 5: Commitment for development of thick green belt of minimum 50 m width between the ash pond and village tanks.

A green belt of 50 m width has been provided between the ash pond and village tanks. The total land requirement for the Project is 1013 acres. Out of the same, 376 Acres, ie., about 37% of the total land is provided for green belt development.

Point 6: Notification issued by the State Govt. regarding acquisition of land as per the provisions of relevant act/rules.

Show Cause Notice Under Subsection 2 of Section 3 of The Tamil Nadu Acquisition of Land for Industrial Purposes Act 1997 has been issued on 10.10.2015, in local newspapers, informing about the acquisition of patta lands for the proposed project. The District Collector, Ramanathapuram, vide Lr.dt.3.1.2016 has issued enter upon permission for Poramboke Lands. Further, the Village Panchayat Boards of Uppur, Valamavoor and Thiruppalaikudi villages have given their "No Objection" for transfer of Community Lands to TANGEDCO for setting up the Power Plant.

Point 7: Explore the possibility of making an embankment without raising the level of the project site

The level of the project has been fixed based on detailed survey and hydro geological studies and flood levels of the nearby creeks. It is safe practice to raise

the level of the site above the high flood levels of the creeks, to avoid flooding of the Power Plant

The existing ground level and other water levels near to the plant are given below.

(i)	RL of East Coast Road	:	MSL + 5.300 m
(ii)	RL of Project Site (Average)	:	MSL + 4.800 m
(iii)	High Flood Level in River	:	1.542 m
(iv)	RL of River Bed	:	MSL + 3.380 m
(v)	RL of High Flood Level in River	:	MSL + 4.922 m
(vi)	Free Board	:	0.300 m
(vii)	Safe Grade Elevation of Project Site Board	:	RL of River Bed + HFL + Free = MSL +5.230

Therefore, MSL +5.230 m has to be adopted as a safe grade elevation throughout the project site.

Point 8: Letter from competent Port and Railway authorities for handling & transportation of the coal

Acceptance letter from Southern Railways for transportation of coal has been obtained (Annexure-4). Further, acceptance letter from Tuticorin Port Trust for handling of coal for the Project has also been obtained (Annexure-5).

Point 9: The transportation of coal shall be by Rail only. The PP shall take up the matter of transportation of coal by the shortest route which would save journey of around 100 km.

TANGEDCO envisages transportation of coal only through rail route. The coal will be transported from Tuticorin Port Trust to Ramanathapuram through the existing railway route and then from Ramanathapuram to the Project site through a 25.8 km Railway siding. However, we have already approached Railways for development of the BG railway route from Kanyakumari to Karaikudi, earlier proposed by Railways. That proposal has since been dropped by Railways. However, TANGEDCO will again approach Railways seeking revival of the above proposal

Point 10: Diversion of existing Nalahs shall be done in such a way that it shall not dry up the creeks and it shall be ensured that water flows perennially in the creeks so as to preserve the mangroves. Anna University, who has conducted the hydro-geological study, shall present the same in the next meeting

As directed by the Committee, the surplus channels have been diverted in such a way so that it flows back to its natural course downstream after crossing the Power Plant area to maintain the ecosystem balance on the downstream side. The report on the realignment of the surplus channel, is enclosed in Annexure – 6.

Point 11: The water quality data was not properly presented. Hence, the same needs to be done for the fresh water and sea water

The ground water samples were drawn from the hand pumps and open wells being used by the villagers for their domestic needs. Surface water sampling was carried out from River and Sea present in the study area. Totally, 14 Ground Water Samples, 3 Surface Water Samples and 1 Sea Water Sample were taken

Water Sampling Locations

S No.	Location Code	Location Name	Distance (kms) w.r.t. Plant	Direction w.r.t. Plant	Sample Source
1	GWQ1	Valamavoor	--		Ground water
2	GWQ2	Karangudi	2.0	W	Ground water
3	GWQ3	Uganthangugi	3.5	NE	Ground water
4	GWQ4	Solandur	4.9	W	Ground water
5	GWQ5	Uppur	1.2	N	Ground water
6	GWQ6	Erramaipatti	5.0	SW	Ground water
7	GWQ7	Thirupalakudi	1.7	S	Ground water
8	GWQ8	Paranur	2.7	NW	Ground water
9	GWQ9	Kothamangalam	3.2	SW	Ground water
10	GWQ10	Kavanur	2.2	NW	Ground water
11	GWQ11	Mangalam	5.7	NW	Ground water
12	GWQ12	Papanendal	1.5	SSW	Ground water
13	GWQ13	Pathaneneal	2.1	S	Ground water
14	GWQ14	Mayilurani	3.8	NNW	Ground water
15	SWQ1	Back Water Near Uppur Plant Site	1.2	E	Surface water
16	SWQ2	Mangalam tank	9.2	W	Surface water
17	SWQ3	Kotthiyar river	7.7	NE	Surface water
18	SWQ4	**Sea Water Sample**	1.6	E	Sea water

The water samples collected from the above locations were analyzed and compared with IS: 2296 Surface Water standards as well as IS:10500 drinking water standards and the results are given below:

Ground Water Quality from 14 Samples

S.No.	Parameters	Results Obtained		
		Valamavoor (GW1)	**Karangudi (GW2)**	**Uganthangudi (GW3)**
I.	**Essential Characteristics**			
1.	Colour (Hazen Units)	< 5	10	10
2.	Odour	UnObjectionable	UnObjectionable	UnObjectionable
3.	Taste	Un-Agreeable	Agreeable	Agreeable
4.	Turbidity, NTU	< 1	20	20
5.	pH	8.15	7.21	8.00
6.	Total Hardness as $CaCO_3$, mg/l	520	85	610
7.	Iron as Fe, mg/l	0.06	0.25	0.28
8.	Chlorides as Cl, mg/l	1259	210	806
9.	Residual free, Chlorine, mg/l	Nil	Nil	Nil
II.	**Desirable Characteristics**			
1.	Dissolved Solids, mg/l	2660	850	1800
2.	Calcium as Ca, mg/l	104.2	18.0	66.1
3.	Magnesium as Mg, mg/l	63.2	9.7	108.2
4.	Copper as Cu, mg/l	<0.01	<0.01	<0.01
5.	Manganese as Mn, mg/l	<0.01	0.02	0.02
6.	Sulphate as SO_4, mg/l	100	59	57
7.	Nitrate as NO_3, mg/l	7	17	1
8.	Fluoride as F, mg/l	1.10	1.30	0.70
9.	Phenolic Compounds as C_6H_5OH, mg/l	<0.001	<0.001	<0.001
10.	Mercury as Hg, mg/l	<0.001	<0.001	<0.001
11.	Cadmium as Cd, mg/l	<0.01	<0.01	<0.01
12.	Selenium as Se, mg/l	<0.01	<0.01	<0.01
13.	Arsenic as As, mg/l	<0.01	<0.01	<0.01
14.	Cyanide as CN, mg/l	<0.01	<0.01	<0.01
15.	Lead as Pb , mg/l	<0.01	<0.01	<0.01
16.	Zinc as Zn, mg/l	0.02	< 0.01	0.02
17.	Anionic detergents as MBAS, mg/l	<0.02	<0.02	<0.02
18.	Chromium as $Cr6^+$, mg/l	<0.01	<0.01	<0.01
19.	Mineral Oil, mg/l	Absent	Absent	Absent
20.	Alkalinity $CaCO_3$, mg/l	325	280	295

21.	Aluminium as Al, mg/l	0.01	0.02	0.03
22.	Boron as B, mg/l	0.21	< 0.1	0.12

S.No.	Parameters	Results Obtained		
		Solandur (GW4)	**Uppur (GW5)**	**Errumaipatti (GW6)**
I.	**Essential Characteristics**			
1.	Colour (Hazen Units)	5	10	10
2.	Odour	UnObjectionable	UnObjectionable	UnObjectionable
3.	Taste	Agreeable	Agreeable	Un - Agreeable
4.	Turbidity, NTU	5	27	36
5.	pH	8.23	7.40	8.07
6.	Total Hardness as $CaCO_3$, mg/l	195	155	325
7.	Iron as Fe, mg/l	0.09	0.18	0.16
8.	Chlorides as Cl, mg/l	106	179	912
9.	Residual free, Chlorine, mg/l	Nil	Nil	Nil
II.	**Desirable Characteristics**			
1.	Dissolved Solids, mg/l	480	670	2540
2.	Calcium as Ca, mg/l	42	26.0	52
3.	Magnesium as Mg, mg/l	22	22	47
4.	Copper as Cu, mg/l	<0.01	<0.01	<0.01
5.	Manganese as Mn, mg/l	<0.01	<0.01	<0.01
6.	Sulphate as SO_4, mg/l	6	11	163
7.	Nitrate as NO_3, mg/l	1	5	13
8.	Fluoride as F, mg/l	0.90	0.80	0.90
9.	Phenolic Compounds as C_6H_5OH, mg/l	<0.001	<0.001	<0.001
10.	Mercury as Hg, mg/l	<0.001	<0.001	<0.001
11.	Cadmium as Cd, mg/l	<0.01	<0.01	<0.01
12.	Selenium as Se, mg/l	<0.01	<0.01	<0.01
13.	Arsenic as As, mg/l	<0.01	<0.01	<0.01
14.	Cyanide as CN, mg/l	<0.01	<0.01	<0.01
15.	Lead as Pb , mg/l	<0.01	<0.01	<0.01
16.	Zinc as Zn, mg/l	0.02	0.02	0.02
17.	Anionic detergents as MBAS, mg/l	<0.02	<0.02	<0.02
18.	Chromium as $Cr6^+$, mg/l	<0.01	<0.01	<0.01
19.	Mineral Oil, mg/l	Absent	Absent	Absent
20.	Alkalinity $CaCO_3$, mg/l	215	245	485
21.	Aluminium as Al, mg/l	0.01	0.04	0.05
22.	Boron as B, mg/l	< 0.1	< 0.1	0.20

S.No.	Parameters	Results Obtained		
		Thirupalakudi (GW7)	**Paranur (GW8)**	**Kothamangalam (GW9)**
I.	**Essential Characteristics**			
1.	Colour (Hazen Units)	< 5	5	40
2.	Odour	Un - Objectionable	Un - Objectionable	Un – Objectionable
3.	Taste	Agreeable	Agreeable	Agreeable
4.	Turbidity, NTU	< 1	5	10
5.	pH	7.18	8.00	8.31
6.	Total Hardness as $CaCO_3$, mg/l	25	125	55
7.	Iron as Fe, mg/l	0.08	0.09	0.40
8.	Chlorides as Cl, mg/l	24	45	61
9.	Residual free, Chlorine, mg/l	Nil	Nil	Nil
II.	**Desirable Characteristics**			
1.	Dissolved Solids, mg/l	85	390	560
2.	Calcium as Ca, mg/l	10	36	12
3.	Magnesium as Mg, mg/l	< 1	8.5	6.1
4.	Copper as Cu, mg/l	<0.01	<0.01	<0.01
5.	Manganese as Mn, mg/l	<0.01	<0.01	<0.01
6.	Sulphate as SO_4, mg/l	4	26	34
7.	Nitrate as NO_3, mg/l	6	6	< 1
8.	Fluoride as F, mg/l	0.40	1.10	1.20
9.	Phenolic Compounds as C_6H_5OH, mg/l	<0.001	<0.001	<0.001
10.	Mercury as Hg, mg/l	<0.001	<0.001	<0.001
11.	Cadmium as Cd, mg/l	<0.01	<0.01	<0.01
12.	Selenium as Se, mg/l	<0.01	<0.01	<0.01
13.	Arsenic as As, mg/l	<0.01	<0.01	<0.01
14.	Cyanide as CN, mg/l	<0.01	<0.01	<0.01
15.	Lead as Pb , mg/l	<0.01	<0.01	<0.01
16.	Zinc as Zn, mg/l	0.02	0.02	0.02
17.	Anionic detergents as MBAS, mg/l	<0.02	<0.02	<0.02
18.	Chromium as $Cr6^+$, mg/l	<0.01	<0.01	<0.01
19.	Mineral Oil, mg/l	Absent	Absent	Absent
20.	Alkalinity $CaCO_3$, mg/l	20	190	295

21.	Aluminium as Al, mg/l	0.01	< 0.01	0.02
22.	Boron as B, mg/l	< 0.1	< 0.1	< 0.1

S.No.	Parameters	Results Obtained		
		Kavanur (GW10)	**Mangalam (GW11)**	**Pathanendal (GW12)**
I.	**Essential Characteristics**			
1.	Colour (Hazen Units)	10	5	< 5
2.	Odour	UnObjectionable	UnObjectionable	UnObjectionable
3.	Taste	Un - Agreeable	Agreeable	Agreeable
4.	Turbidity, NTU	9	5	< 1
5.	pH	8.08	8.14	7.64
6.	Total Hardness as $CaCO_3$, mg/l	755	165	45
7.	Iron as Fe, mg/l	0.12	0.09	0.06
8.	Chlorides as Cl, mg/l	1664	75	21
9.	Residual free, Chlorine, mg/l	Nil	Nil	Nil
II.	**Desirable Characteristics**			
1.	Dissolved Solids, mg/l	3880	420	75
2.	Calcium as Ca, mg/l	164	44	12
3.	Magnesium as Mg, mg/l	84	13	4
4.	Copper as Cu, mg/l	<0.01	<0.01	<0.01
5.	Manganese as Mn, mg/l	<0.01	<0.01	<0.01
6.	Sulphate as SO_4, mg/l	391	5	5
7.	Nitrate as NO_3, mg/l	3	2	2
8.	Fluoride as F, mg/l	1.10	0.70	0.40
9.	Phenolic Compounds as C_6H_5OH, mg/l	<0.001	<0.001	<0.001
10.	Mercury as Hg, mg/l	<0.001	<0.001	<0.001
11.	Cadmium as Cd, mg/l	<0.01	<0.01	<0.01
12.	Selenium as Se, mg/l	<0.01	<0.01	<0.01
13.	Arsenic as As, mg/l	<0.01	<0.01	<0.01
14.	Cyanide as CN, mg/l	<0.01	<0.01	<0.01
15.	Lead as Pb , mg/l	<0.01	<0.01	<0.01
16.	Zinc as Zn, mg/l	0.02	0.02	0.02
17.	Anionic detergents as MBAS, mg/l	<0.02	<0.02	<0.02
18.	Chromium as $Cr6^+$, mg/l	<0.01	<0.01	<0.01
19.	Mineral Oil, mg/l	Absent	Absent	Absent
20.	Alkalinity $CaCO_3$, mg/l	370	205	20
21.	Aluminium as Al, mg/l	0.02	< 0.01	< 0.01
22.	Boron as B, mg/l	0.35	< 0.1	< 0.1

S.No.	Parameters	Results Obtained	
		Pathaneneal (GW13)	**Mayilurani (GW14)**
I.	**Essential Characteristics**		
1.	Colour (Hazen Units)	30	5
2.	Odour	Un - Objectionable	Un - Objectionable
3.	Taste	Agreeable	Agreeable
4.	Turbidity, NTU	110	5
5.	pH	7.45	8.15
6.	Total Hardness as $CaCO_3$, mg/l	25	220
7.	Iron as Fe, mg/l	0.26	0.09
8.	Chlorides as Cl, mg/l	35	193
9.	Residual free, Chlorine, mg/l	Nil	Nil
II.	**Desirable Characteristics**		
1.	Dissolved Solids, mg/l	165	505
2.	Calcium as Ca, mg/l	6	72
3.	Magnesium as Mg, mg/l	2.4	2.4
4.	Copper as Cu, mg/l	<0.01	< 0.01
5.	Manganese as Mn, mg/l	<0.01	< 0.01
6.	Sulphate as SO_4, mg/l	21	17
7.	Nitrate as NO_3, mg/l	< 1	1
8.	Fluoride as F, mg/l	0.40	1.00
9.	Phenolic Compounds as C_6H_5OH, mg/l	<0.001	< 0.001
10.	Mercury as Hg, mg/l	<0.001	< 0.001
11.	Cadmium as Cd, mg/l	<0.01	< 0.01
12.	Selenium as Se, mg/l	<0.01	< 0.01
13.	Arsenic as As, mg/l	<0.01	< 0.01
14.	Cyanide as CN, mg/l	<0.01	< 0.01
15.	Lead as Pb , mg/l	<0.01	< 0.01
16.	Zinc as Zn, mg/l	0.02	< 0.01
17.	Anionic detergents as MBAS, mg/l	<0.02	< 0.02
18.	Chromium as $Cr6^+$, mg/l	<0.01	< 0.01
19.	Mineral Oil, mg/l	Absent	Absent
20.	Alkalinity $CaCO_3$, mg/l	50	95
21.	Aluminium as Al, mg/l	0.09	0.02
22.	Boron as B, mg/l	< 0.1	< 0.1

Surface Water Quality in 3 Samples:

S.No.	Parameters	Back Water near uppur plant site (SW1)	Mangala, Tank Water (SW2)	Kotthiyar River (SW3)
I.	**Essential Characteristics**			
1.	Colour (Hazen Units)	5	40	5
2.	Odour	UnObjectionable	Objectionable	UnObjectionable
3.	Taste	Un - Agreeable	---	Un – Agreeable
4.	Turbidity, NTU	10	120	20
5.	pH	7.49	7.41	7.61
6.	Total Hardness as $CaCO_3$, mg/l	11500	245	8500
7.	Iron as Fe, mg/l	0.20	0.60	0.08
8.	Chlorides as Cl, mg/l	32061	64	23103
9.	Residual free, Chlorine, mg/l	Nil	Nil	Nil
II.	**Desirable Characteristics**			
1.	Dissolved Solids, mg/l	60100	470	43500
2.	Calcium as Ca, mg/l	1603	16.0	1403
3.	Magnesium as Mg, mg/l	1824	50	1216
4.	Copper as Cu, mg/l	<0.01	<0.01	<0.01
5.	Manganese as Mn, mg/l	0.02	0.04	0.03
6.	Sulphate as SO_4, mg/l	5317	153	3374
7.	Nitrate as NO_3, mg/l	28	13	3
8.	Fluoride as F, mg/l	2.00	1.00	1.80
9.	Phenolic Compounds as C_6H_5OH, mg/l	<0.001	<0.001	<0.001
10.	Mercury as Hg, mg/l	<0.001	<0.001	<0.001
11.	Cadmium as Cd, mg/l	<0.01	<0.01	<0.01
12.	Selenium as Se, mg/l	<0.01	<0.01	<0.01

13.	Arsenic as As, mg/l	<0.01	<0.01	<0.01
14.	Cyanide as CN, mg/l	<0.01	<0.01	<0.01
15.	Lead as Pb , mg/l	<0.01	<0.01	<0.01
16.	Zinc as Zn, mg/l	0.06	0.01	0.05
17.	Anionic detergents as MBAS, mg/l	<0.02	<0.02	<0.02
18.	Chromium as $Cr6^{+}$, mg/l	<0.01	<0.01	<0.01
19.	Mineral Oil, mg/l	Absent	Absent	Absent
20.	Alkalinity $CaCO_3$, mg/l	165	95	135
21.	Aluminium as Al, mg/l	0.05	0.09	0.05
22.	Boron as B, mg/l	6.4	< 0.1	4.2

Inland Surface Water Standards IS 2296:1992

Water Quality Standards in India (Source IS 2296:1992)

Characteristics	Designated best use				
	A	B	C	D	E
pH value	6.5-8.5	6.5-8.5	6.0-9.0	6.5-8.5	6.0-8.5
Colour, Hazen units, max.	10	300	300	-	-
Odour	Un-objectionable			-	-
Taste	Tasteless	-	-	-	-
Total dissolved solids, mg/l, max.	500	-	1,500	-	2,100
Total hardness (as $CaCO_3$), mg/l, max.	200	-	-	-	-
Calcium hardness (as $CaCO_3$), mg/l, max.	200	-	-	-	-
Magnesium hardness (as $CaCO_3$), mg/l, max.	200	-	-	-	-
Copper (as Cu), mg/l, max.	1.5	-	1.5	-	-
Iron (as Fe), mg/l, max.	0.3	-	0.5	-	-
Manganese (as Mn), mg/l, max.	0.5	-	-	-	-
Cholorides (as Cu), mg/l, max.	250	-	600	-	600
Sulphates (as SO_4), mg/l, max.	400	-	400	-	1,000
Nitrates (as NO_3), mg/l, max.	20	-	50	-	-
Fluorides (as F), mg/l, max.	1.5	1.5	1.5	-	-
Phenolic compounds (as C_2H_5OH), mg/l, max.	0.002	0.005	0.005	-	-
Mercury (as Hg), mg/l, max.	0.001	-	-	-	-
Cadmium (as Cd), mg/l, max.	0.01	-	0.01	-	-
Salenium (as Se), mg/l, max.	0.01	-	0.05	-	-

Arsenic (as As), mg/l, max.	0.05	0.2	0.2	-	-
Cyanide (as Pb), mg/l, max.	0.05	0.05	0.05	-	-
Lead (as Pb), mg/l, max.	0.1	-	0.1	-	-
Zinc (as Zn), mg/l, max.	15	-	15	-	-
Chromium (as Cr^{6+}), mg/l, max.	0.05	-	0.05	-	-
Anionic detergents (as MBAS), mg/l, max.	0.2	1	1	-	-
Barium (as Ba), mg/l, max.	1	-	-	-	-
Free Ammonia (as N), mg/l, max	-	-	-	1.2	-
Electrical conductivity, micromhos/cm, max	-	-	-	-	2,250
Sodium absorption ratio, max	-	-	-	-	26
Boron, mg/l, max	-	-	-	-	2

Drinking Water Specifications (IS 10,500:1991)

Characteristics	Desirable limit	Permissible limit
Essential Characteristics		
Colour, Hazen Units, Max	5	25
Odour	Unobjectionable	-
Taste	Agreeable	-
Turbidity, NTU, Max	5	10
PH value	6.5 to 8.5	-
Total Hardness (as $CaCo_3$), mg/l, Max	300	600
Iron (as Fe), mg/l, Max	0.3	1.0
Chlorides (as Cl), mg/l, Max	250	1,000
Residual free chlorine, mg/l, Max	0.2	-
Desirable Characteristics		
Dissolved solids, mg/l, Max	500	2,000
Calcium as (Ca), mg/l, Max	75	200

Magnesium (as Mg), mg/l, Max	30	75
Copper (as Cu), mg/l, Max	0.05	1.5
Manganese (as Mn), mg/l, Max	0.1	0.3
Sulphate (as So_4), mg/l, Max	200	400
Nitrate (as No_3), mg/l, Max	45	100
Flouride (as F0, mg/l, Max	1.0	1.5
Phenolic compounds (as C_6H_5OH), mg/l, Max	0.001	0.002
Mercury (as Hg), mg/l, Max	0.001	-
Cadmium (as Cd), mg/l, Max	0.01	-
Selenium (as Se), mg/l, Max	0.01	-
Arsenic (as As), mg/l, Max	0.05	-
Cyanide (as CN), mg/l, Max	0.05	
Lead (as Pb), mg/l, Max	0.05	-
Anionic detergents (as MBAS), mg/l, Max	0.02	1.0
Chromium (as Cr^{6+}), mg/l, Max	0.05	-
PAH, mg/l, Max	-	-
Mineral oil, mg/l, Max	0.01	0.03
Pesticides, mg/l, MAX	Absent	0.001
Alkalinity, mg/l, Max	200	600
Aluminum (as Al), mg/l, Max	0.03	0.2
Boron, mg/l, Max	1	5

Sea Water Quality from 1 Sample:

S.No.	Parameters	Result Obtained
		Sea Water (SW4)
I.	**Essential Characteristics**	
1.	Colour (Hazen Units)	20
2.	Odour	Un – Objectionable
3.	Taste	Un - Agreeable
4.	Turbidity, NTU	25
5.	pH	7.24
6.	Total Hardness as $CaCO_3$, mg/l	6060
7.	Iron as Fe, mg/l	0.18
8.	Chlorides as Cl, mg/l	13013
9.	Residual free, Chlorine, mg/l	Nil
II.	**Desirable Characteristics**	
1.	Dissolved Solids, mg/l	24900
2.	Calcium as Ca, mg/l	297
3.	Magnesium as Mg, mg/l	323.4
4.	Copper as Cu, mg/l	<0.01
5.	Manganese as Mn, mg/l	<0.01
6.	Sulphate as SO_4, mg/l	2149
7.	Nitrate as NO_3, mg/l	5
8.	Fluoride as F, mg/l	1.30
9.	Phenolic Compounds as C_6H_5OH, mg/l	<0.001
10.	Mercury as Hg, mg/l	<0.001
11.	Cadmium as Cd, mg/l	<0.01
12.	Selenium as Se, mg/l	<0.01
13.	Arsenic as As, mg/l	<0.01
14.	Cyanide as CN, mg/l	<0.01
15.	Lead as Pb , mg/l	<0.01
16.	Zinc as Zn, mg/l	0.02
17.	Anionic detergents as MBAS, mg/l	<0.02
18.	Chromium as $Cr6^+$, mg/l	<0.01
19.	Mineral Oil, mg/l	Absent
20.	Alkalinity $CaCO_3$, mg/l	225
21.	Aluminium as Al, mg/l	0.04
22.	Boron as B, mg/l	3.8

Overall all the ground water samples collected from the study area were found to be fit for human consumption, however the hardness, dissolved solids of most of the ground water samples seem to be above desirable limit but well within the permissible limits. Most of the heavy metals in all samples are below detectable limits.

Point 12: Details of proposed e-auction for fly ash, the LoIs from prospective takers along with quantities etc. to be submitted

At present TANGEDCO is disposing the fly ash by allotment to the Cement Companies and the Companies have established silos to collect the fly ash from the power plant. Also the bottom ash is being supplied to the Brick manufacturers / SSI Units for making fly ash bricks. Open tender system is being adopted to allot the fly ash to the Companies.

For the proposed Uppur Thermal Power Project, TANGEDCO has entered into an MOU with M/s.Dalmia cements (Bharat) Ltd., Dalmiapuram, Tamilnadu for off take of fly ash. The MOU is enclosed in Annexure-7.

Point 13: Explore various avenues for utilization of bottom ash

Earlier it was proposed to dispose the bottom ash in the proposed ash dyke in slurry form. Now it has been decided to collect the bottom ash through dry bottom ash handling system and used for brick manufacturing and road laying purposes. Excess bottom ash will be disposed off in the proposed ash dyke in slurry form.

Point 14: Revised and detailed budgetary action plan for Public Hearing issues

The following is the abstract of the budget provided for the specific points raised during the Public Hearing. The detailed plan, against each of the public hearing Points is enclosed in Annexure-8. The abstract of the same is furnished below:

Sl.No.	Description	Budget (Rs. In Crores)
1.	Laying of Railway line and siding for coal transportation (inclusive of land acquisition cost and R&R Cost if any)	317.84
2.	RCC deck and allied structures for drawing and discharging seawater	146.65
3.	Desalination Plant	305.00
4.	Ash Handling System	250.00
5.	Green Belt Development	3.76
6.	CSR Activities: Inclusive of Drinking Water supply to nearby villages-Rs.10.34 Crores; Desilting of Water Tanks in study area - Rs.6.00 Crores; Fishermen Welfare Fund-Rs.2.00 Crores, etc. Recurring cost: Rs.3.00 Crores	38.00
7.	Land Acquisition for Power Plant	22.50
	Total	1083.75

Point 15: Employment potential for locals

Details of the employment potential from the proposed project are given below. Preference will be given to local people for the works carried out through contracts.

Sl.No.	Phase	Permanent	Contract / Temporary	Total
1.	Construction	50	125	175
2.	Operation and Maintenance	350	200	550

CSR budget provides for giving training to local youth in various skills for increasing their employment opportunities.

Point 16: Detailed reply to the issues raised by ERC, New Delhi

Based on the documents uploaded by TANGEDCO in the Thermal Committee, MOEF & CC/GOI's website in connection with obtaining Environmental Clearance for the Uppur TPP, M/s. EIA Resource and Response Centre (ERC) have raised certain points. The Petition of ERC is enclosed as Annexure –9.

1. Marine EIA not available in Public Domain:

The EIA Report uploaded on the MOEF & CC website does neither contain the Marine Environmental Impact Assessment nor any of the Annexure except annexure1. Has Marine Environmental Impact Assessment done?

While the section on fauna lists bird, reptile and mammalian species, there is no inventory of the fish species found in the area. This area is known for high level of fish species richness.

The impacts of the project and its affiliated activities on the fisheries have also not been studied.

Reply:

When TANGEDCO approached the Thermal Expert Appraisal Committee for E.C, only the Terrestrial EIA Study report was uploaded, since the space provided for Project Proponents in the website for uploading documents is only 20 MB. Subsequently, when TANGEDCO approached CRZ Committee for recommendation, the Marine EIA Study Report along with Thermal and Salinity Dispersion Mathematical Modelling Report have been uploaded in the MOEF & CC's website and now available in Public Domain.

The Marine EIA Report, the inventory of fish species found in the area has been listed and the impact of the project on the fisheries activity in the area has been studied.

2. Public Hearing: Opposition by the Public

The EAC must take into account the opinions expressed by the participants in the Public Hearing. Based on the document uploaded on the MOEF & CC website, it is apparent that majority of the participants was against the project and demanded that the project location be moved to an area where agriculture and fishing were not prominent.

Reply:

Various sites were considered and this site was chosen from the final 3 alternate sites, since this site was considered to have lesser environmental impact. The site was chosen only after presenting to the Expert Appraisal Committee. The project has been located in the backward district of Ramanathapuram. Setting up the project in this district will directly and indirectly benefit in the economic development of the District. Further, the Plant Layout has been planned in such a way that land acquisition is kept to a minimum.

3. Irrigated, very good agricultural land: A significant part of the land proposed to be used for the Project (43% of the total area) is agricultural land, most of which is irrigated. These are fertile lands, integral to the rice bowl of Tamilnadu.

Reply:

The total area for the project is 1013 acres. Out of this, 510 acres are dry patta lands (non-irrigated), 264 acres are wet patta lands (single crop agricultural lands) and the balance 239 acres are waste lands. From the above, it may be seen that the wet patta lands form about 26%. Further, these lands are single crop lands, irrigated by nearby Tanks. Great care has been taken to fix the Plant Layout so as to limit the acquisition of land to minimum.

4. Control of fouling:

Since the sea water intake systems are proposed within a water depth of 10m, the intake system is liable for fouling activities. Usually, to control fouling, biocides are used. The current EIA does not expand upon this. If biocides are used, their chemical nature and concentration must be thoroughly scrutinized since persistent exposure of aquatic organisms to such chemicals even at low concentrations can be toxic and can further pose a threat to the entire trophic system due to the process of bio accumulation of heavy metals.

Reply:

It is proposed to have continuous chlorination at offshore caisson with pump house, to keep the trash racks and travelling water screen from any bio fouling. A continuous dosing of approximately 1 – 2 ppm is proposed. Further, shock dosing of chlorination is proposed for condenser at 1 – 5 ppm depending on quality of sea water. The dosing time is one cycle time for every 8 hour shift.

The current Environmental Protection Agency (EPA) limitation guideline is 0.5 mg/L maximum and 0.1 mg/L average free available chlorine. Generally a maximum limit of 0.5 ppm TRC in the outfall for a normal 30 min chlorination dosage will not cause any toxic effects. Further, there is no chance of bio accumulation of metals due to chlorine dosing. This has been indicated in the Marine EIA Study Report.

5. Impact on mangroves:

The mangrove forest that will be deforested / affected due to the construction of water intake / exit system has not been mentioned. In fact, impacts of increased sediment load on reefs and mangroves systems have also been ignored.

Reply:

Earlier, TANGEDCO proposed the cooling water intake / outfall structure corridor through minimal mangroves, which would have impacted a maximum of 100m x 50m (0.5 Ha). This has been indicated in the Marine EIA Report. However, when the Thermal Expert Committee considered the Project in their meeting held on 25.6.2015, the Committee directed to re-route the corridor so that even very minimal mangroves are not affected. Hence as directed by the Expert Committee, TANGEDCO has now re-routed the corridor, which has no mangroves. Hence there will not be any impact on mangroves. Further, there are no reefs in the area. The turbidity study has also been included in the Marine EIA Study report.

6. Impact of Tsunamis, Cyclones, Storm surges not studied:

Section 1.8 of the EIA on Disaster Management deals with the issue of seismicity, but completely ignores the far more pressing concern of tsunamis, cyclones and storm surges as mandated by the TOR.

Reply:
The same has been discussed in the Terrestrial EIA Report.

In 1948-49, during a vertical tectonic movement, the erstwhile Dhanuskodi Town (about 75 km from the project site) sank by almost 5 m. During December 2004, when Tsunami struck in Indian Ocean, the sea around Dhanuskodi receded about 500m from coastline. However there was no impact near the project area.

In 1964, a cyclone was formed with depression with its centre at 5°N 93°E in South Andaman Sea. The present project site is at 9° 35' N 78° 54' E. A 100 year cyclone atlas from IMD also shows that no cyclones have crossed the project area.

It has also been indicated in the Marine EIA Report that it is unusual for cyclonic storms to cross the Palk bay. However there was one severe cyclonic storm in the last 100 years, which produced about 6m surge in the north of Palk Bay. This data has been taken into account for calculating the height of RCC deck for cooling water intake/outfall pipes.

7. Gulf of Mannar Marine National Park at 20 km from proposal:

Gulf of Mannar Marine National Park is just 20 km from proposed site. The TPPs have far reaching impacts. In this case, besides air and water pollution, there would be impacts on marine ecosystem also. Has the impact on the National Park studied?

Reply:

The Gulf of Mannar is at a distance of about 35 km from the project site as crow flies. However, the distance of the cooling water outfall to the point at sea where the waters of Palk Bay and Gulf of Mannar join is at a distance of about 45 km. Hence there will not be any impact on Gulf of Mannar National Park due to the Project.

Point 17: Borrowing of earth should be avoided and efforts be made to balance cutting and filling in the project area/site

As suggested by EAC/MOEF, it will be adhered to, to the extent feasible, by deepening the area earmarked for Ash dyke and use the cutting earth for filling wherever required.

Point 18: In order to maintain tranquility and sanctity of the creek area by ensuring bare minimum disturbances, proposed sea-ward pipe line shall have to be realigned.

As directed by EAC/MOEF, the sea water pipe line has been realigned such that there is no disturbance to the Mangroves. The route has been superimposed on the CRZ map, through Institute of Remote Sensing, Anna University. As per the revised alignment, the Outfall is located at 8.1 KM from Shore at a depth of 5.5m (earlier located at a distance of 7 KM) and the Intake well is located at a distance of 5.3 KM at 4.0m depth (earlier located at a distance of 5 KM).

Point 19: Concerns were expressed on the high PH of water which needs to be dealt extensively in EIA

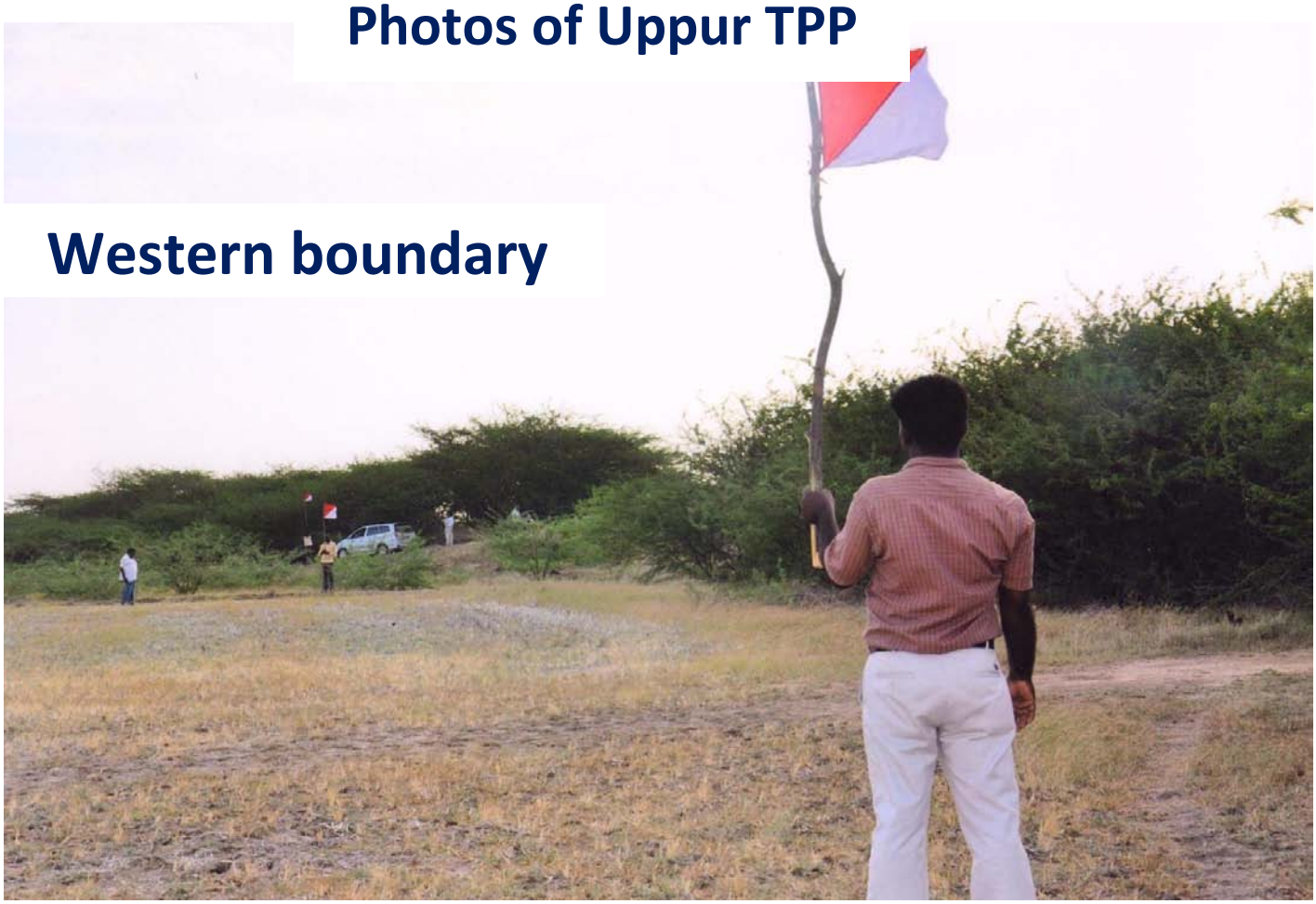
The ground water samples were drawn from the hand pumps and open wells being used by the villagers for their domestic needs. Surface water sampling was carried out from River and Sea present in the study area. Totally, 14 Ground Water Samples, 3 Surface Water Samples and 1 Sea Water Sample were taken

The pH of the Ground Water Samples range from 7.18 to 8.31
The pH of the Surface Water Samples range from 7.41 to 7.61
The pH of the Sea Water was 7.24

The Drinking Water Standards (IS 10500:1991) specify a pH of 6.5 to 8.5 as desirable. As such it is seen that the pH of the Ground Water and Surface Water are well within the Standards.

Annexure I
Photos of Uppur TPP

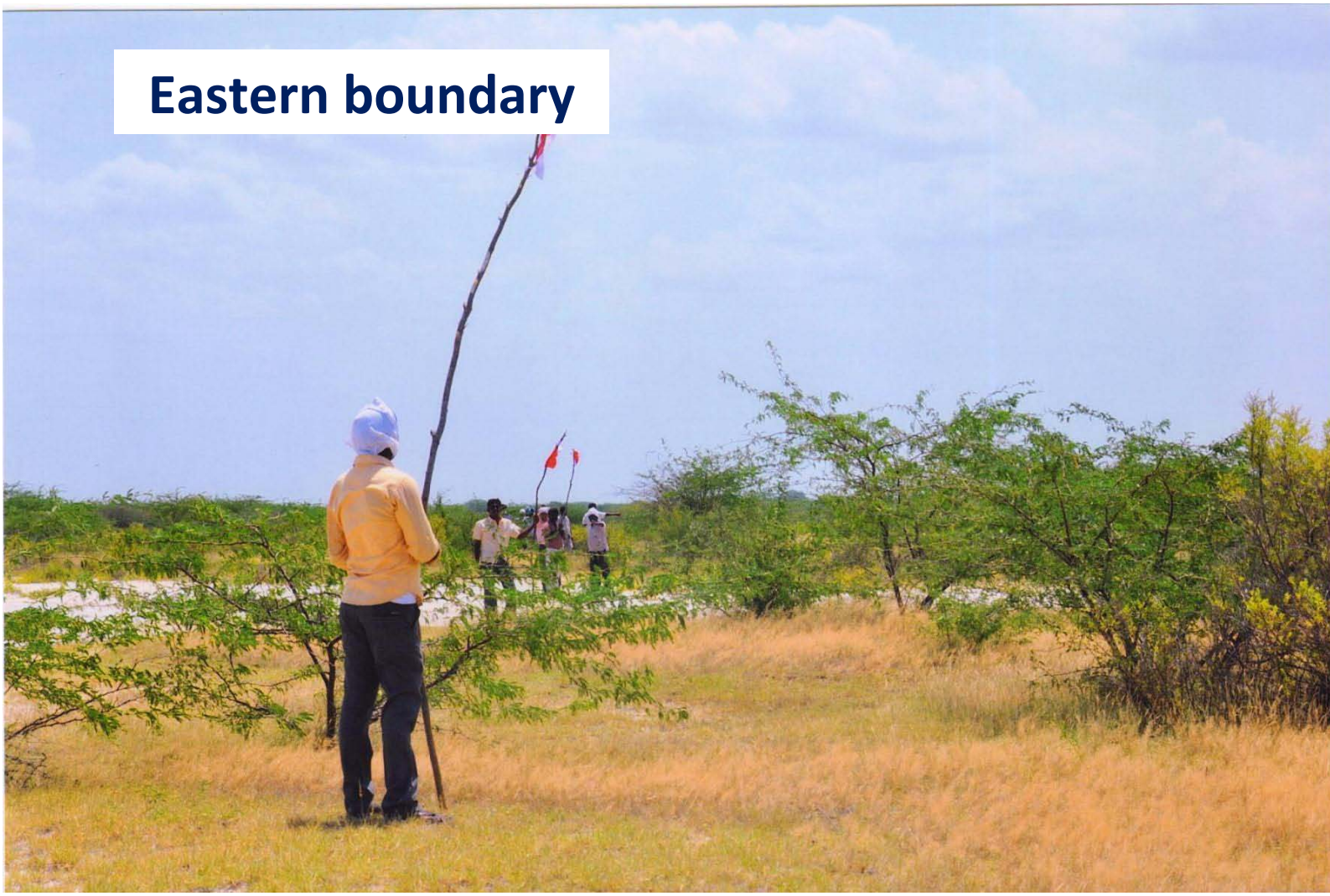
Western boundary



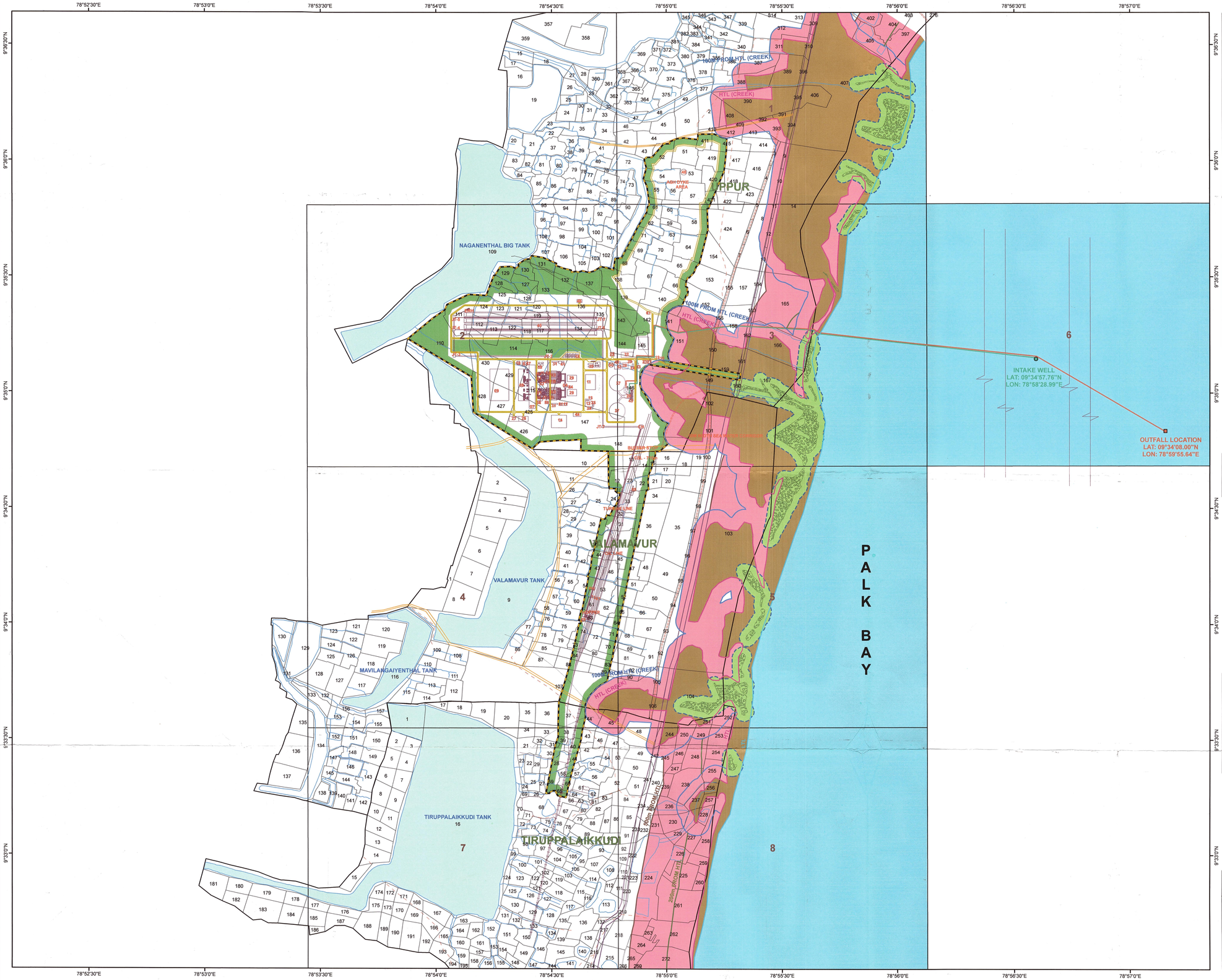
Northern boundary

Intake route

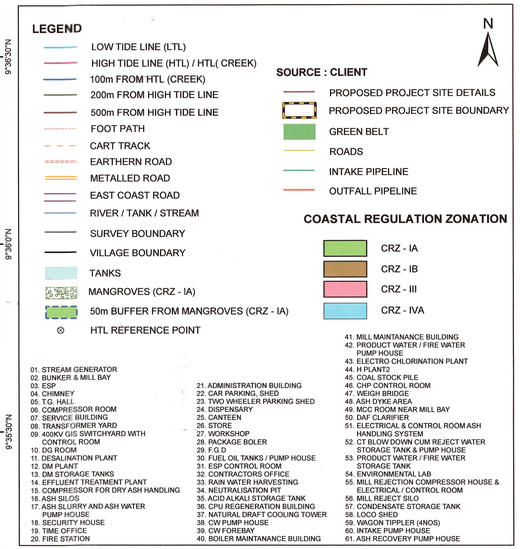
Eastern boundary



CRZ Mapping for the Proposed Uppur Thermal Power Project (2 x 800 MW), Tiruvadanai Taluk, Ramanathapuram District



INDEX MAP



PREPARED BY

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ANNA UNIVERSITY
CHENNAI - 600 025

FOR

CHIEF ENGINEER / CIVIL / PROJECTS & ENVIRONMENT
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NPKRR MALIGAI
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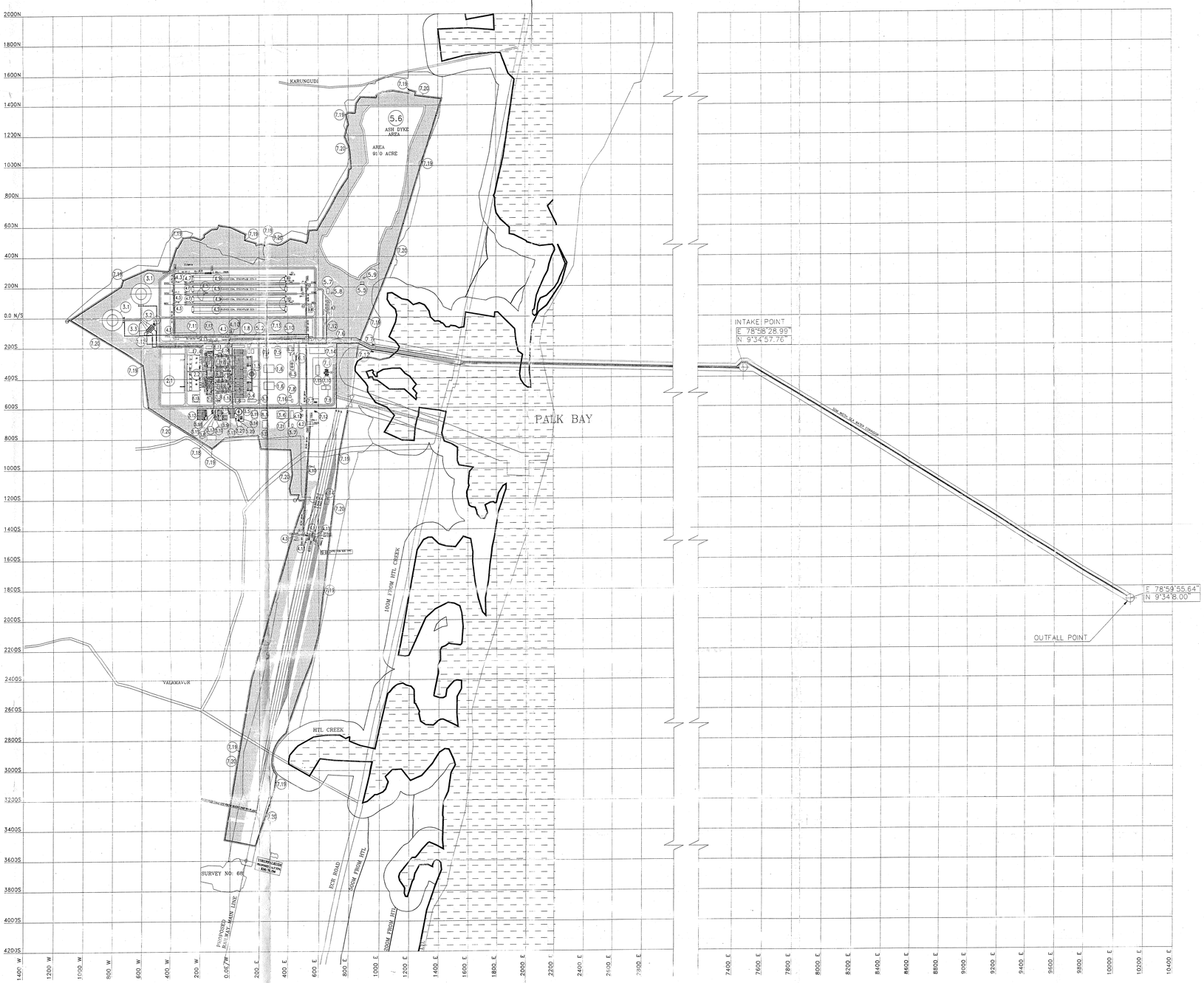
PREPARED BY	
VERIFIED BY	
APPROVED BY	Prof. S.S. Ramakrishnan, B.E(Hons), M.Tech., Ph.D., Director Institute of Remote Sensing, Anna University, Chennai-600 025.

WINDROSE

NORTH



LEGEND

ITEM NO.	DESCRIPTION
1.0	POWER BLOCK AREA
1.1	STEAM GENERATOR
1.2	T.G. HALL
1.3	BUNKER & MILL BAY
1.4	ELECTROSTATIC PRECIPITATOR (ESP)
1.5	S.CHIMNEY
1.6	SPACE FOR F.G.D.
1.7	DE ROOM
1.8	ESP CONTROL ROOM/MCC ROOM
1.9	CONDENSATE STORAGE TANK/CONDENSATE TRANSFER PUMP HOUSE
1.10	M.L REJECT SILO
1.11	M.L REJECTIONCOMPRESSOR HOUSE & ELECTRICAL/ CONTROL ROOM
1.12	PIPE RACK
1.13	PACKAGE BOILER
2.0	ELECTRICAL FACILITIES
2.1	400kV GIS SWITCHYARD WITH CONTROL ROOM
2.2	TRANSFORMER YARD
2.3	
3.0	WATER SYSTEM
3.1	NATURAL DRAFT COOLING TOWER
3.2	CW FOREBAY
3.3	CW PUMP HOUSE
3.4	INTAKE PUMP HOUSE
3.5	SEA WATER CLARIFIER
3.6	EFFLUENT TREATMENT PLANT
3.7	RAIN WATER HARVESTING
3.8	RO STAGE II PERMEATE TANK
3.9	SWRO (RO STAGE-II)/DM BUILDING
3.10	ACID/ALKALI STORAGE
3.11	ELECTRO CHLORINATION PLANT
3.12	RO STAGE I PERMEATE SUMP TANK/FIRE WATER TANK AND PUMP HOUSE
3.13	CLARIFIED WATER STORAGE TANK AND PUMP HOUSE
3.14	CHEMICAL HOUSE
3.15	DM STORAGE TANK (2 NOS)
3.16	WDP & CPU MCC & CONTROL ROOM (PART OF DM BLDG.)
3.17	NEUTRALIZING PIT
3.18	CONDENSATE REGENERATIVE BLDG. (CPU)
3.19	GRAVITY POND
3.20	REJECT SUMP
3.21	AERATOR
3.22	CMB
4.0	COAL HANDLING PLANT
4.1	WAGON TIPPLER COMPLEX
4.2	CRUSHER HOUSE
4.3	JUNCTION TOWER
4.4	STACKER CUM RECLAIMER M/C (Bucket Wheel Type)
4.5	RECLAIMER M/C (Bucket Wheel Type)
4.6	BELT CONVEYOR
4.7	YARD BELT CONVEYOR (UNIDIRECTIONAL)
4.8	TRIPPER BELT CONVEYOR (On Coal Bunker)
4.9	CRUSHED COAL STOCKPILE
4.10	PENT HOUSE
4.11	OPERATOR CABIN CUM MCC ROOM BLDG. (FOR TIPPLER)
4.12	MAIN CONTROL ROOM CUM MCC ROOM BLDG. OF CHP
4.13	MCC ROOM BLDG. OF CHP
4.14	LOCO SHED
5.0	ASH HANDLING PLANT
5.1	ASH SILOS
5.2	ASH COMPRESSOR HOUSE
5.3	ASH SLURRY AND ASH WATER PUMP HOUSE
5.4	ELECTRICAL & CONTROL ROOM FOR ASH HANDLING SYSTEM
5.5	ASH RECOVERY PUMP HOUSE
5.6	ASH DYKE AREA
5.7	FA SLURRY PUMPHOUSE
5.8	SHO UTILITY BUILDING
5.9	ASH RECOVERY CLARIFIER
5.10	WEIGH BRIDGE ASH SILO AREA
6.0	FUEL OIL SYSTEM
6.1	LDO TRUCK UNLOADING AREA
6.2	LDO UNLOADING & PRESSURIZING PUMP HOUSE
6.3	LDO TANK FARM AREA
6.4	
7.0	NON-PLANT BUILDING
7.1	ADMINISTRATION BUILDING
7.2	SERVICE BUILDING
7.3	STORE
7.4	CANTEEN
7.5	WORKSHOP
7.6	WEIGH BRIDGE
7.7	SECURITY HOUSE
7.8	FIRE STATION
7.9	CAR PARKING SHED
7.10	TWO WHEELER PARKING SHED
7.11	LAYDOWN AREA
7.12	TIME OFFICE CUM SECURITY OFFICE
7.13	CONSTRUCTION & FABRICATION YARD
7.14	CONTRACTORS OFFICE
7.15	CANTEEN/DORMITORY
7.16	DISPENSARY
7.17	COMPRESSOR ROOM
7.18	MONITOR
7.19	WATCH TOWERS
7.20	COMPOUND WALL
7.21	OWNERS SITE OFFICE
7.22	
8.0	SEWAGE TREATMENT PLANT
8.1	PLANT AREA STP
8.2	

MAIN PLANT AREA	50 ACRES
ASHPOND AREA	91 ACRES
ROADS, RAILWAY SIDING, COAL STACK YARD, PIPE CORRIDORS, COOLING TOWER, SWITCH YARD, ADMINISTRATIVE BUILDING, INTAKE PUMP HOUSE, SEA WATER INTAKE & OUTFALL PIPING CORRIDOR ETC...	436 ACRES
GREEN BELT AREA	300 ACRES
TOTAL	877 ACRES

LEGENDS:

- PLANT BOUNDARY LINE
- ROAD
- GREEN BELT
- RAILWAY TRACK

JT – JUNCTION TOWER
CH – CRUSHER HOUSE
ERH – EMERGENCY RECLAIM HOPPER
TH – TRANSFER HOUSE
PH – PENT HOUSE

REFERENCE DRAWINGS.

1. UPPUR THERMAL POWER PROJECT (2X800MW) AT THIRUVADANAI TALUK RAMNAD DISTRICT – PLOT PLAN – TANGEDCO FEASIBILITY REPORT.
2. DEMARCATION OF HIGH TIDE LINE /LOW TIDE LINE FOR THE PROPOSED UPPUR THERMAL POWER PROJECT (2X800MW) AT THIRUVADANAI TALUK RAMNAD DISTRICT – PLOT PLAN – ANNA UNIVERSITY

NOTES

1. DO NOT SCALE, ASK WHEN IN DOUBT.
2. ALL DIMENSIONS ARE IN MILIMETRES UNLESS NOTED OTHERWISE.
3. ALL CO-ORDINATES & LEVELS ARE IN METRES.
4. PLANT(0.00N/S, 0.00E/W) REFERS TO (N-9°35'7.42", E-78°54'23.47") AS PER GLOBAL GRID & COORDINATES.

NOTICE

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ZONE	MARK	PARTICULARS	DATE	HOD	STRUCT	MECH.	ELEC.
	4						
	3						
	2						
	1						
	0	FOR BID PURPOSE ONLY	19.08.15				

REVISIONS

FOR BID PURPOSE ONLY

PROJECT	2x800MW SUPERCRITICAL COAL BASED UPPUR THERMAL POWER PROJECT				
OWNER	TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION LIMITED				
OWNER CONSULTANT:-	DESEIN CONSULTING ENGINEERS NEW DELHI – INDIA	CAD/DRAWN	KJAL	01.08.2015	
		DESIGNED	LN.KHANNA	01.08.2015	
		CHECKED	EY.ANAND	01.08.2015	
		APPROVED	EY.ANAND	19.08.2015	
TITLE	PLOT PLAN	SCALE			
		JOB. No.	D-0420		
APPRD. FOR CONSTRUCTION:		DWG. No.	111-29-BTG-0200 Sheet No. of	REV.	0

WINDROSE

NORTH

LEGEND

ITEM NO.	DESCRIPTION
1.0	POWER BLOCK AREA
1.1	STEAM GENERATOR
1.2	T.G. HALL
1.3	BUNKER & MILL BAY
1.4	ELECTROSTATIC PRECIPITATOR (ESP)
1.5	CHIMNEY
1.6	SPACE FOR F.G.D.
1.7	DG ROOM
1.8	ESP CONTROL ROOM/MCC ROOM
1.9	CONDENSATE STORAGE TANK/CONDENSATE TRANSFER PUMP HOUSE
1.10	MILL REJECT SILO
1.11	MILL REJECTIONCOMPRESSOR HOUSE & ELECTRICAL/ CONTROL ROOM
1.12	PIPE RACK
1.13	PACKAGE BOILER
2.0	ELECTRICAL FACILITIES
2.1	400kV GIS SWITCHYARD WITH CONTROL ROOM
2.2	TRANSFORMER YARD
2.3	
3.0	WATER SYSTEM
3.1	NATURAL DRAFT COOLING TOWER
3.2	CW FOREBAY
3.3	CW PUMP HOUSE
3.4	INTAKE PUMP HOUSE
3.5	SEA WATER CLARIFIER
3.6	EFFLUENT TREATMENT PLANT
3.7	RAIN WATER HARVESTING
3.8	RO STAGE II PERMEATE TANK
3.9	SWRO (RO STAGE-I)/DM BUILDING
3.10	ACID/ALKALI STORAGE
3.11	ELECTRO CHLORINATION PLANT
3.12	RO STAGE I PERMEATE SUMP TANK/FIFE WATER TANK AND PUMP HOUSE
3.13	CLARIFIED WATER STORAGE TANK AND PUMP HOUSE
3.14	CHEMICAL HOUSE
3.15	DM STORAGE TANK (2 NOS)
3.16	WTP & CPU MCC & CONTROL ROOM (PART OF DM BLDG.)
3.17	NEUTRALIZING PIT
3.18	CONDENSATE REGENERATIVE E.DG. (CF.)
3.19	GUARD POND
3.20	REJECT SUMP
3.21	AERATOR
3.22	CMB
4.0	COAL HANDLING PLANT
4.1	WAGON TIPPLER COMPLEX
4.2	CRUSHER HOUSE
4.3	JUNCTION TOWER
4.4	STACKER CUM RECLAIMER M/C [Bucke: Wheel Type]
4.5	RECLAIMER M/C [Bucket Wheel Type]
4.6	BELT CONVEYOR
4.7	YARD BELT CONVEYOR (UNIDIRECTIONAL)
4.8	TRIPPER BELT CONVEYOR [On Coal Bunker]
4.9	CRUSHED COAL STOCKPILE
4.10	PENT HOUSE
4.11	OPERATOR CABIN CUM MCC FOOM BLDG. (FOR TIPPLER)
4.12	MAIN CONTROL ROOM CUM MCC ROOM BLDG. OF CHP
4.13	MCC ROOM BLDG. OF CHP
4.14	LOCO SHED
5.0	ASH HANDLING PLANT
5.1	ASH SILOS
5.2	ASH COMPRESSOR HOUSE
5.3	ASH SLURRY AND ASH WATEF PUMP HOUSE
5.4	ELECTRICAL & CONTROL ROOM FOR ASH HANDLING SYSTEM
5.5	ASH RECOVERY PUMP HOUSE
5.6	ASH DYKE AREA
5.7	FA SLURRY PUMPHOUSE
5.8	SILO UTILITY BUILDING
5.9	ASH RECOVERY CLARIFIER
5.10	WEIGH BRIDGE ASH SILO AREA
6.0	FUEL OIL SYSTEM
6.1	LDO TRUCK UNLOADING AREA
6.2	LDO UNLOADING & PRESSURIZNG PUMP HOUSE
6.3	LDO TANK FARM AREA
6.4	
7.0	NON-PLANT BUILDING
7.1	ADMINISTRATION BUILDING
7.2	SERVICE BUILDING
7.3	STORE
7.4	CANTEEN
7.5	WORKSHOP
7.6	WEIGH BRIDGE
7.7	SECURITY HOUSE
7.8	FIRE STATION
7.9	CAR PARKING, SHED
7.10	TWO WHEELER PARKING SHED
7.11	LAYDOWN AREA
7.12	TIME OFFICE CUM SECURITY OFFICE
7.13	CONSTRUCTION & FABRICATION YARD
7.14	CONTRACTORS OFFICE
7.15	CANTEEN/DORMITORY
7.16	DISPENSARY
7.17	COMPRESSOR ROOM
7.18	H2PLANT
7.19	WATCH TOWERS
7.20	COMPOUND WALL
7.21	OWNERS SITE OFFICE
7.22	
8.0	SEWAGE TREATMENT PLANT
8.1	PLANT AREA STP
8.2	

MAIN PLANT AREA	50 ACRES
ASHPOND AREA	91 ACRES
ROADS, RAILWAY SIDING, COAL STACK YARD, PIPE CORRIDORS, COOLING TOWER, SWITCH YARD, ADMINISTRATIVE BUILDING, INTAKE PUMP HOUSE, SEA WATER INTAKE & OUTFALL PIPING CORRIDOR ETC..	417 ACRES
GREEN BELT AREA	300 ACRES
TOTAL	858 ACRES

LEGENDS:

- PLANT BOUNDARY LINE
- ROAD
- GREEN BELT
- RAILWAY TRACK

JT – JUNCTION TOWER
CH – CRUSHER HOUSE
ERH – EMERGENCY RECLAIM HOPPER
TH – TRANSFER HOUSE
PH – PENT HOUSE

REFERENCE DRAWINGS.

1. UPPUR THERMAL POWER PROJECT (2x800mW) AT THIRUVADANAI TALUK RAMNAD DISTRICT – PLOT PLAN –TANGEDCO FEASIBILITY REPORT.
2. DEMARCATION OF HIGH TIDE LINE /LOW TIDE LINE FOR THE PROPOSED UPPUR THERMAL POWER PROJECT (2x800mW) AT THIRUVADANAI TALUK RAMNAD DISTRICT – PLOT PLAN – ANNA UNIVERSITY

NOTES

1. DO NOT SCALE, ASK WHEN IN DOUBT.
2. ALL DIMENSIONS ARE IN MILIMETRES UNLESS NOTED OTHERWISE.
3. ALL CO-ORDINATES & LEVELS ARE IN METRES.

NOTICE

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ZONE	MARK	PARTICULARS	DATE	HOD	STRUCT. MECH.	ELEC.
	4					
	3					
	2					
	1					
	0	FOR BID PURPOSE ONLY	19.08.15			

REVISIONS — APPRD. BY — CLEARED BY — APPRD. FOR CONSTRUCTION:

FOR BID PURPOSE ONLY

PROJECT	**2x800MW SUPERCRITICAL COAL BASED UPPUR THERMAL POWER PROJECT**
OWNER	**TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION LIMITED**
OWNER CONSULTANT:-	DESEIN CONSULTING ENGINEERS NEW DELHI – INDIA

CAD/DRAWN	R.LAL	01.08.2015
DESIGNED	S.K.KHANNA	01.08.2015
CHECKED	K.V.ANAND	01.08.2015
APPROVED	K.V.ANAND	19.08.2015

TITLE: **PLOT PLAN (PLANT AREA)**

SCALE

JOB. No. D-0420

DWG. No. 111-29-BTG-0202 — REV. 0

Sheet No. of

(4)

भारत सरकार/**GOVERNMENT OF INDIA**
रेल मंत्रालय/**Ministry of Railways**
दक्षिण रेलवे/**Southern Railway**

प्रधानकार्यालय/Headquarters Office,
परिवहन शाखा/Transportation Branch,
Chennai 600003.

No. T.143/RTC/VOL III

Date: 24.07.2015.

Er. P. Manohar, BE,
Director/Projects (a/c),
M/s TANGEDCO Ltd,
10th Floor,
NPKRR Maaligai,
144 Annasalai,
Chennai 600 002.

EE/C
12/8
SE/C/P&E.

Sub: Uppur Thermal Power project (2x800 MW) Coal transportation from Tuticorin Port to site – Preliminary consent for transport of coal.

Ref: Your letter No. CE/P/SE/C/P&E/EE1/AEE/F.UPPUR TTP/D 256/15 dt 20.07.15.

****

With reference to the letter cited, the consent of this Railway is communicated hereby for the carriage of coal to be offered by M/s TANGEDCO Ltd for transportation by rail from Tuticorin Port to their proposed private siding site at Uppur via Vanchi Maniyachchi – Virudunagar - Manamadurai – Ramanathapuram, subject to compliance of the extant provisions of Indian Railways in this regard and conforming to the logistic policy of Railways regarding transportation of imported coal.

M. Sivanandam
Chief Transportation Planning Manager

V.O.CHIDAMBARANAR PORT TRUST

Grams : PORTRUST
Phone : 2352290 (50 Lines)
e-mail : info@vocport.gov.in
website : www.vocport.gov.in

Traffic Department
Administrative Office
Fax : 0461-2352658
e-mail : tm@vocport.gov.in

CERTIFIED UNDER ISO 9001:2008 & ISO 14001:2004 AND ISPS CODE

No.TRA-OPNOP-CRG-OVERL-V1-15(40542)/D 2037 Date : 30.07.2015

To 004240
Shri. Er. P. Manohar, B.E.
Director/Projects (a/c), TANGEDCO,
10th floor, NPKRR Maaligai,
Chennai – 600002.
e-mail : directorprj@tnebnet.org

Sir,

Sub : Transportation of coal from V.O.C. Port Trust to Uppur Thermal Power Project (2x800 MW) site – Request to utilise NCB II after completion of dredging process – Reg.

Ref : Your Letter No. CE/P/SE/C/P&E/EE1/AEE/F.UPPUR TPP/D 255/15 dated 20.07.2015

==========

Reference is made to your Letter cited on the above mentioned subject, wherein the consent of the Port for handling of coal through V.O.C. Port Trust for the proposed Uppur Thermal Power Project (2x800 MW). In this connection, we confirm that Port will earmark one Berth to handle the coal requirements for the proposed Uppur Thermal Power Project.

Yours faithfully,

CHAIRMAN
Fax : 0461-2352160
e-mail : chairman@vocport.gov.in

Annexure 6: **New Surplus Channel design**

1. DESIGN OF NEW SURPLUS CANAL

The surplus water generated from the upstream catchment is currently discharged through the natural drainages available at Tiruppalaikudi, Valamavur, Nagananthanal Big tank, and Uppur tanks. These natural drains carrying the surplus discharge into the sea at three locations (Figure 1). The existing surplus drains originating from Tiruppalaikudi, Valamavur, and Nagananthanal Big tank crosses the Project site at four different locations. Particularly, the Nagananthal Big tank which is having two surplus drains, crosses at the middle portion of the project site. Continuing the same alignment of these channels may cause the disturbance to the function of thermal power plant. At the same time, these surplus discharges are necessary to maintain the ecosystem balance on the downstream side. Hence, design of new canal is needed for the safe disposal of surplus without disturbing the functional activity of the power plant.

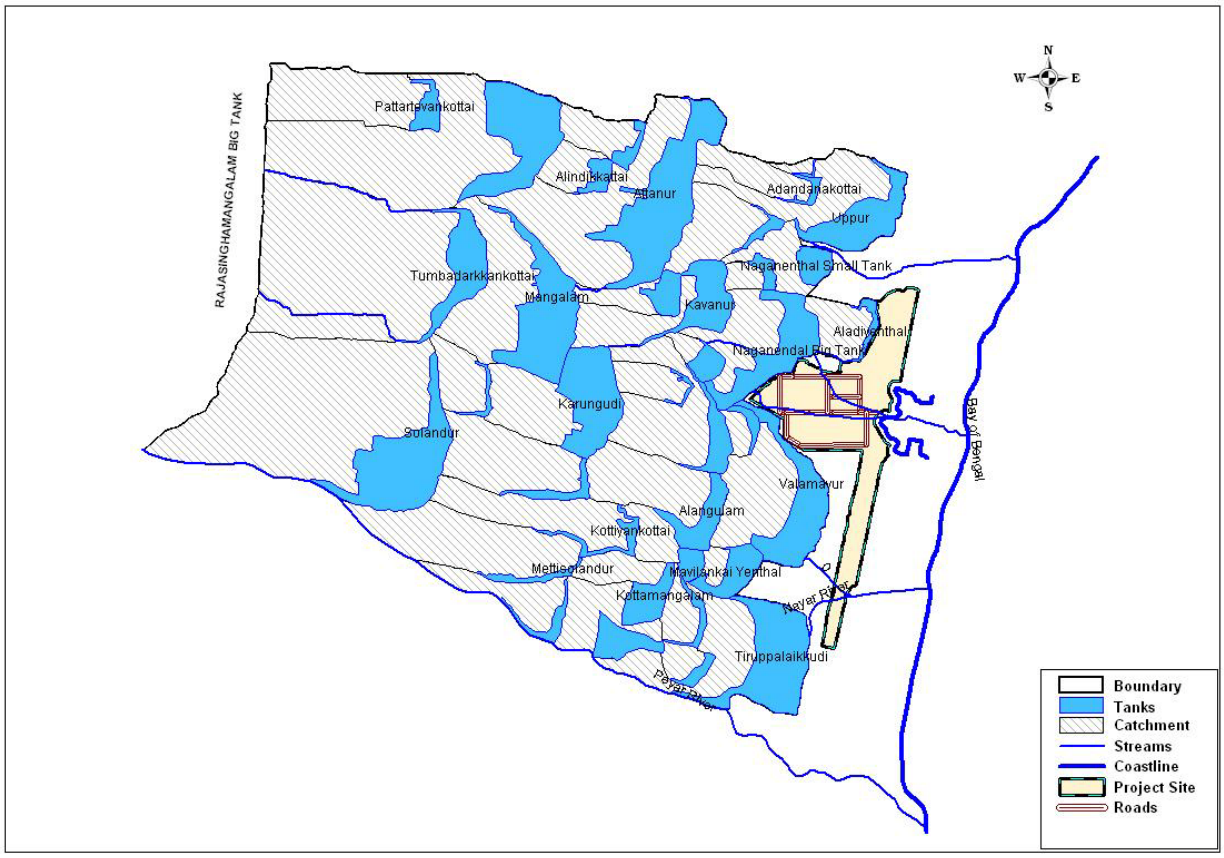

Figure 1. Project site with streams and tanks

1.1 Development of Synthetic Unit Hydrograph

The design of new canal requires maximum possible surplus discharge that can be possibly generated from the upstream catchment. For this purpose, the upstream catchment is divided into three sub catchments, namely, S-I, S-II and S-III based on the elevation characteristics of the area. The topographic elevation characteristics of the area are already developed and using which the area is divided into three sub catchments and there geographical area is calculated with the help of GIS. The sub catchment details are presented in Figure 2 and Table 1.

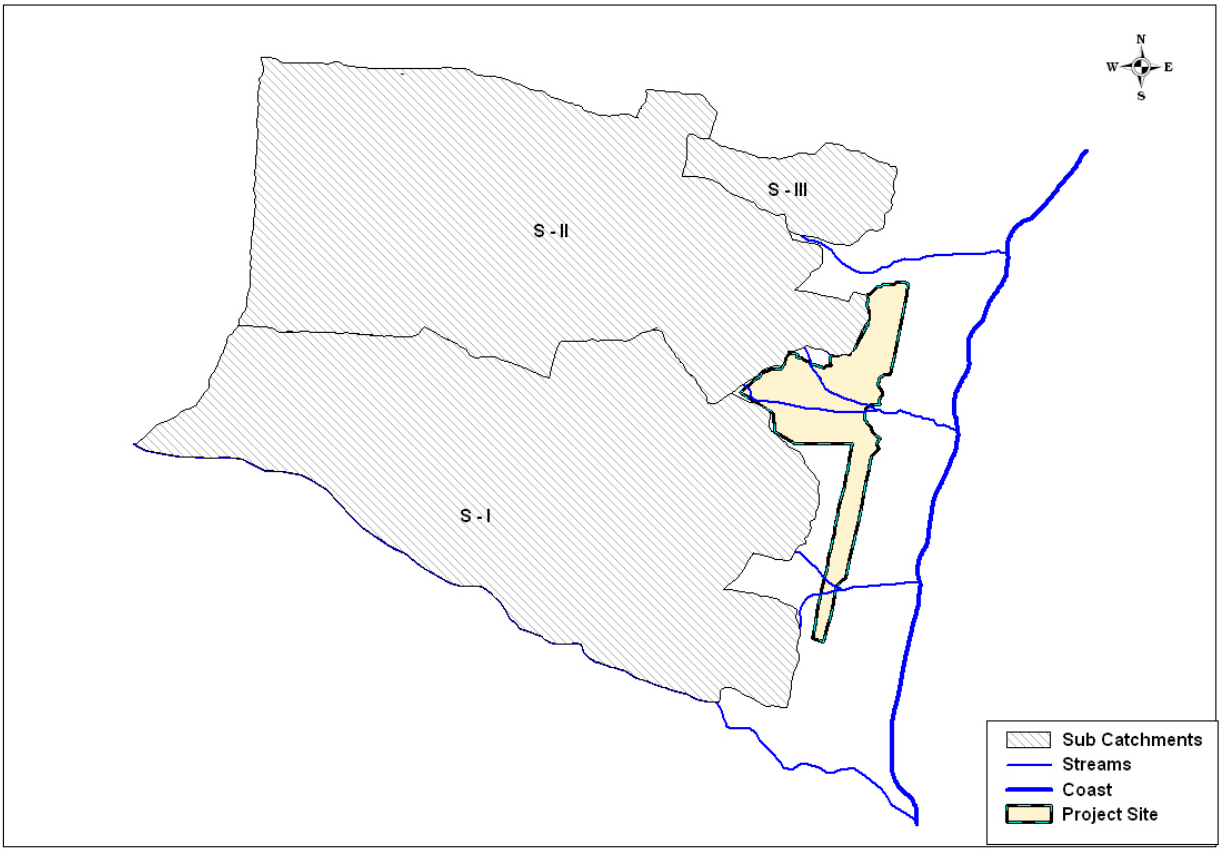

Figure 2. Sub catchment map of study area

The Synthetic Unit Hydrograph (SUH) method suggested by Central Water Commission is applied for each sub catchment and the components of SUH are calculated. The values are plotted and curve fitting technique and smoothening of curve are applied to ordinates of the

Unit Hydrograph of corresponding catchment is calculated. The rainfall excess which is already calculated is multiplied with Unit Hydrograph and Storm Hydrograph each sub catchment is developed. The parameters and components of SUH are presented in Table 1. The ordinates of SUH of all the three sub catchments are given in Table 2 and corresponding hydrographs are presented in Figure Nos.3 to 5. The value peak discharge of SUH of each sub catchments are 8.42 m^3/s, 8.6 m^3/s and 1.96 m^3/s occurs at 9 hrs, 8.3 hrs and 2.4 hrs respectively.

Table 1. Sub Catchment Details and parameters of Synthetic Unit Hydrograph

S. No.	Sub Catchment	Area (km^2)	L (km)	Lc (km)	Se	t p (hr)	T B (hr)	q p ($m^3/s/km^2$)	Q p (m^3/s)
1	**S - I**	31.69	9.592	5.219	0.001094662	9.02	37.38	0.2658	8.42
2	**S – II**	30.49	9.000	4.650	0.001133333	8.28	35.15	0.2819	8.60
3	**S - III**	2.95	2.639	1.108	0.001667298	2.40	14.35	0.6635	1.96

Table 2. Ordinates of Synthetic Unit Hydrograph of each sub catchment

Time (hr)	Ordinates of SUH (m^3/s)		
	S – I	S – II	S - III
0	0.00	0.00	0.00
1	0.70	0.80	0.85
2	1.40	1.65	1.80
3	2.10	2.45	1.90
4	2.80	3.20	1.12
5	3.60	4.10	0.92
6	4.50	5.40	0.81
7	6.20	7.30	0.71
8	7.60	8.60	0.61
9	8.40	8.30	0.51
10	8.00	7.40	0.41
11	7.20	6.60	0.32
12	6.30	5.30	0.20
13	5.10	4.60	0.12
14	4.50	4.25	0.00
15	4.20	4.00	-
16	4.00	3.80	-
17	3.75	3.55	-
18	3.55	3.35	-
19	3.35	3.10	-
20	3.05	2.90	-
21	2.95	2.75	-
22	2.80	2.58	-
23	2.60	2.30	-
24	2.40	2.20	-
25	2.20	2.00	-
26	2.05	1.80	-
27	1.85	1.60	-
28	1.70	1.40	-
29	1.50	1.20	-
30	1.35	1.00	-
31	1.19	0.80	-
32	1.00	0.60	-
33	0.80	0.40	-
34	0.60	0.20	-
35	0.40	0.00	-
36	0.20	-	-
37	0.00	-	-

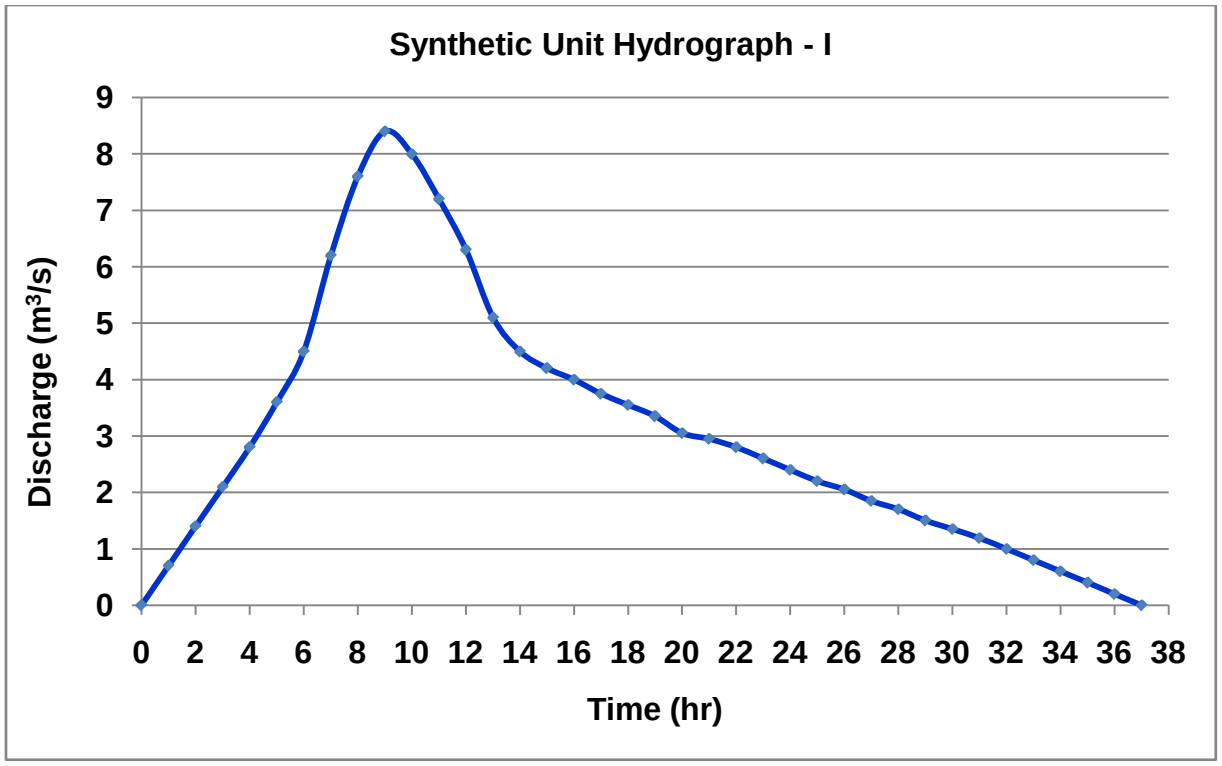

Figure 3. Synthetic Unit Hydrograph of sub catchment 1 (S - I)

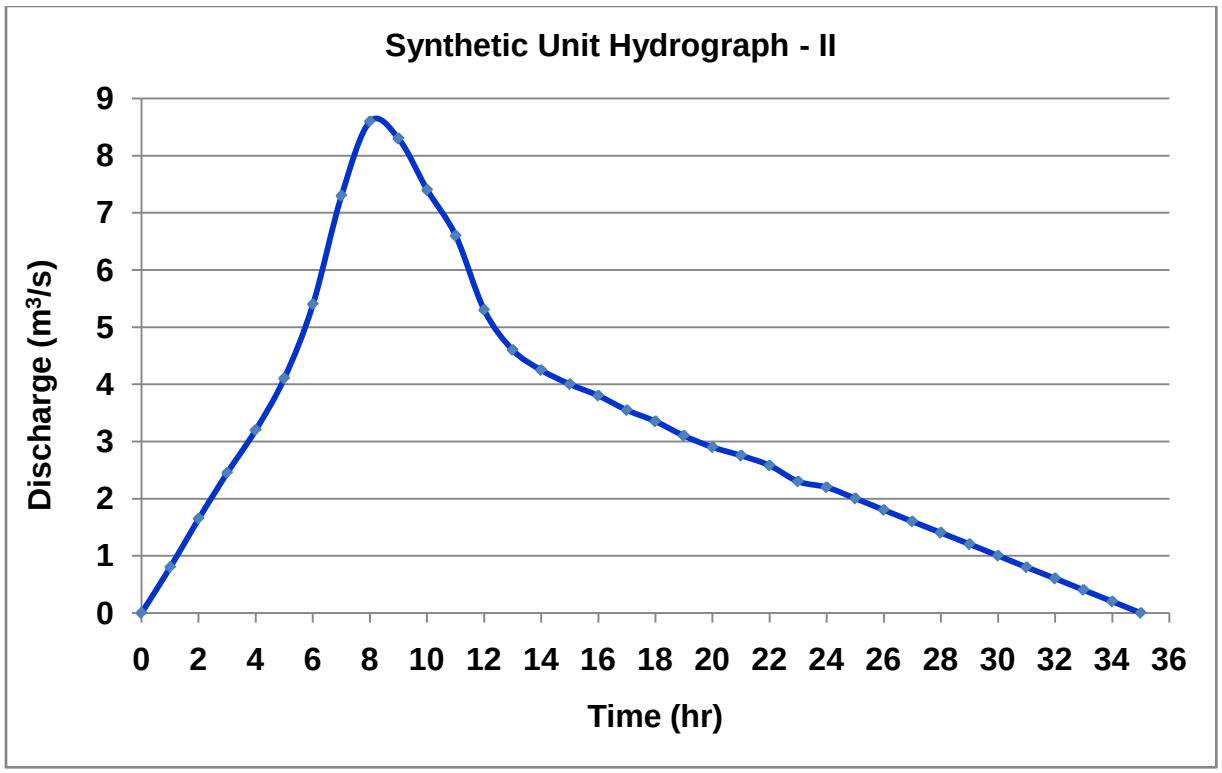

Figure 4. Synthetic Unit Hydrograph of sub catchment 2 (S - II)

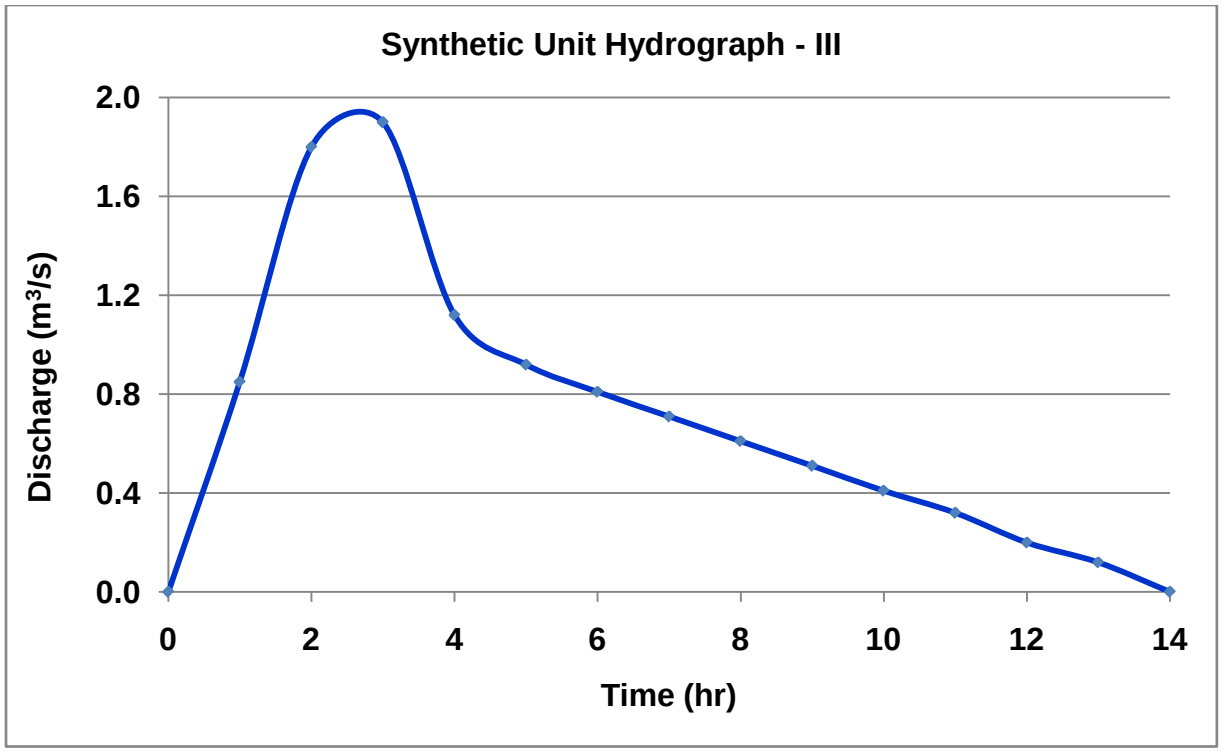

Figure 5. Synthetic Unit Hydrograph of sub catchment 3 (S - III)

1.2 Development of Storm Hydrograph

The ordinates of Synthetic Unit Hydrograph are multiplied with the rainfall excess and corresponding storm hydrograph of each sub catchments are obtained. The ordinates are plotted to develop the storm hydrograph of each sub catchment. The ordinates of storm hydrograph are given in Table 3 and corresponding storm hydrographs presented in Figure Nos.6 to 8. This storm hydrograph is further used to know the possible peak runoff that can generate from the upstream catchment. For sub catchment 1 (S-I) the peak runoff value of 29.75 m^3/s occurs at 9 hrs, for sub catchment 2 (S-II) the peak discharge of 30.17 m^3/s occurs at 8 hrs and for sub catchment 3 (S-III) the peak runoff 6.73 m^3/s occurs at 3 hrs respectively. The peak discharge generating from each sub catchment must be safely disposed to the downstream side through the surplus canal. Since the existing channels crosses the project along the main portion of the power plant, the realignment of surplus canal is necessary. Out of the three surplus generating locations, the sub catchments S-I and S-III are located away from the main thermal power plant, whereas the sub catchment S-II is at the middle portion of the power plant.

Table 3. Storm Hydrograph of each sub catchment

Time (hr)	Ordinates of Storm Hydrograph (m^3/s)		
	S – I	S – II	S - III
0	0.00	0.00	0.00
1	2.16	2.47	2.62
2	4.63	5.45	5.94
3	7.15	8.35	6.73
4	9.67	11.08	4.43
5	12.50	14.25	3.47
6	15.68	18.71	2.99
7	21.39	25.22	2.61
8	26.53	30.17	2.25
9	29.74	29.95	1.89
10	28.95	27.12	1.53
11	26.36	24.23	1.20
12	23.20	19.80	0.79
13	19.04	17.00	0.48
14	16.59	15.53	0.07
15	15.31	14.55	0.01
16	14.52	13.80	0.00
17	13.64	12.92	-
18	12.90	12.18	-
19	12.18	11.30	-
20	11.15	10.56	-
21	10.69	9.99	-
22	10.16	9.39	-
23	9.47	8.44	-
24	8.76	7.99	-
25	8.04	7.31	-
26	7.47	6.60	-
27	6.77	5.88	-
28	6.21	5.16	-
29	5.51	4.44	-
30	4.95	3.72	-
31	4.38	3.00	-
32	3.71	2.28	-
33	3.00	1.56	-
34	2.28	0.84	-
35	1.56	0.12	-
36	0.84	0.01	-
37	0.12	0.00	-
38	0.01	-	-
39	0.00	-	-

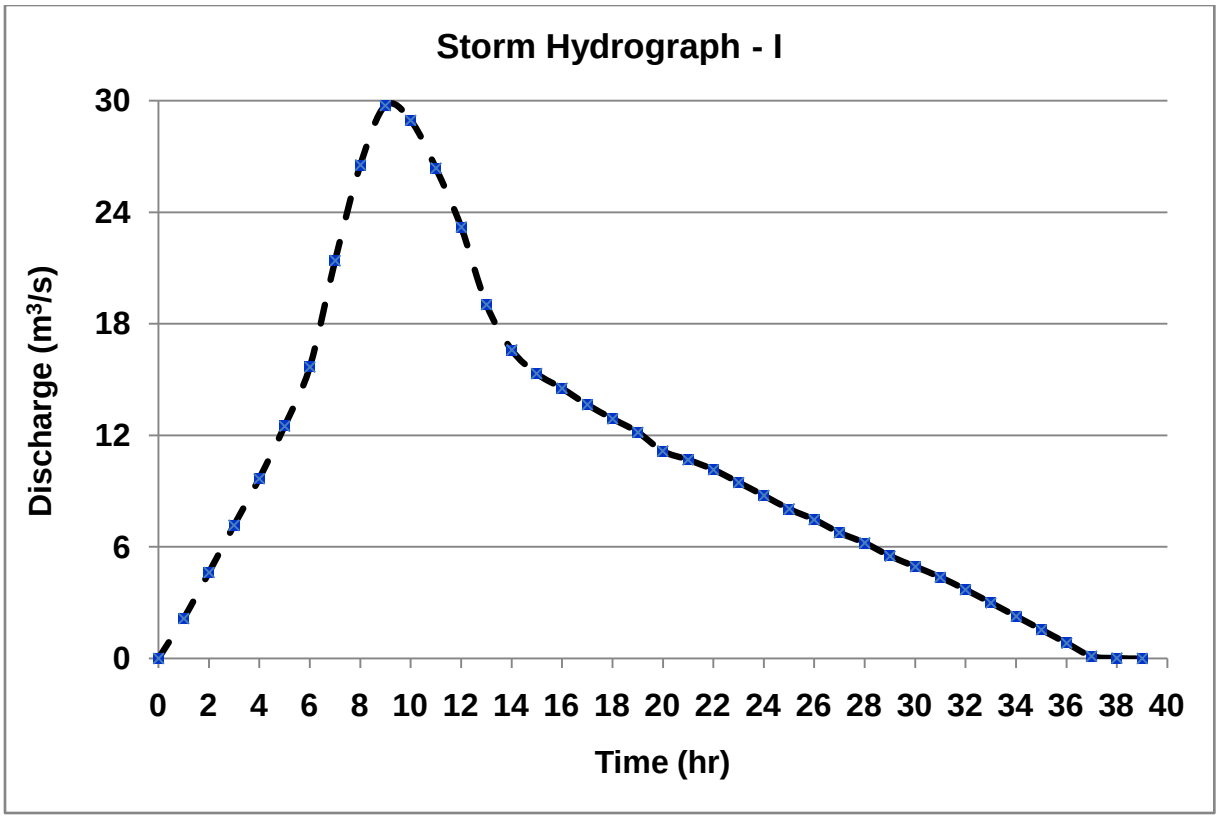

Figure 6. Storm Hydrograph of sub catchment 1 (S - I)

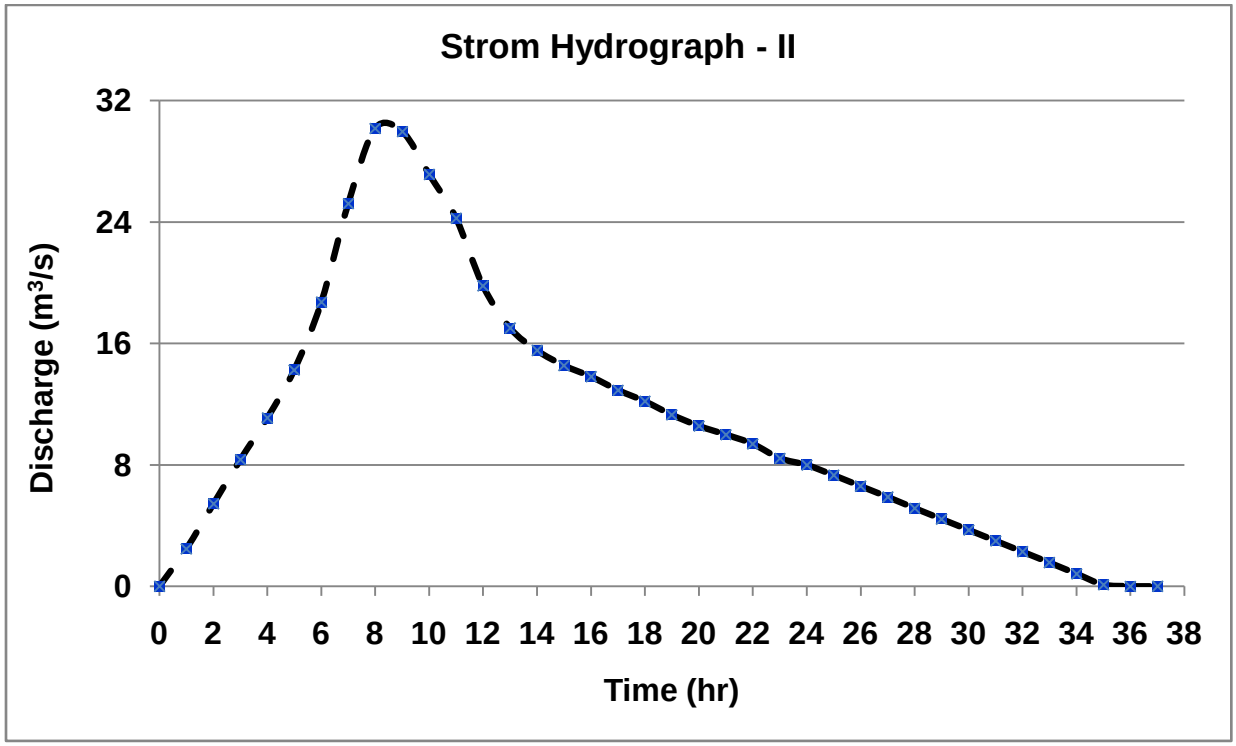

Figure 7. Storm Hydrograph of sub catchment 2 (S - II)

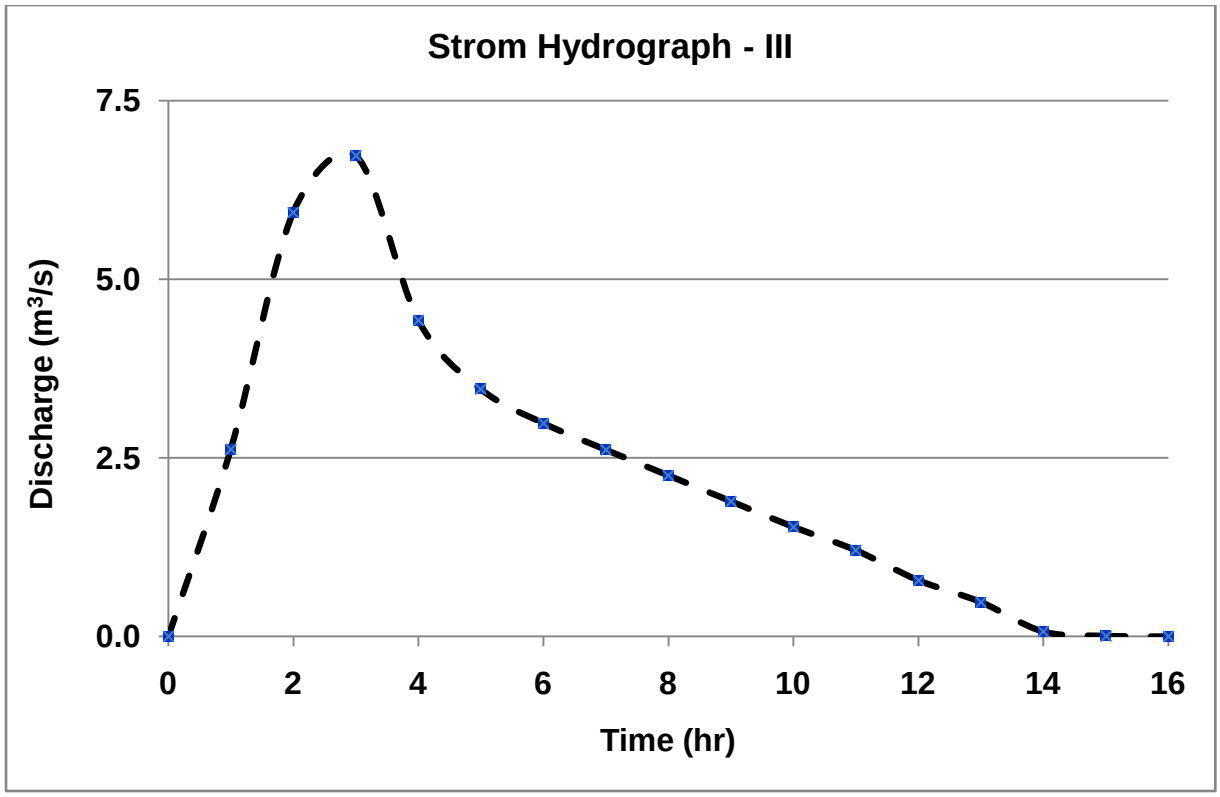

Figure 8. Storm Hydrograph of sub catchment 3 (S - III)

1.3 Design of new surplus canal

In order to discharge the surplus discharge, without affecting the functioning of power plant, new surplus canals are designed. The new surplus canals are originating at the corresponding tanks and confluences at the natural drainage available at the downstream. For designing purpose, existing slope between the two points (starting and confluence points) is used as the bed slope to be provided for each canal. The new surplus canals are marked in the map and presented in Figure 9. The length of each canal is calculated with the help of GIS.

For the first sub catchment S-I, the existing surplus channel originating from the Thirupalaikudi and Valamavur tanks are used where these channels passing through the project site on the southern side of project site. Since no main activity will be carried in that area the existing drainage path can be utilized by providing proper protection works for the canal. The surplus canal originating from Thirupalaikudi tank having length 0.64 km confluences to the new canal originating from Valamavur tank having length 0.911 km used to discharge the peak

surplus of 29.75 m^3/s. The canal originating from Thirupalaikudi tank has to be constructed for a width of 6 m and depth 0.8 m. Whereas the canal starting from Valamavur tank should have a width of 8 m and depth of 1.0 m.

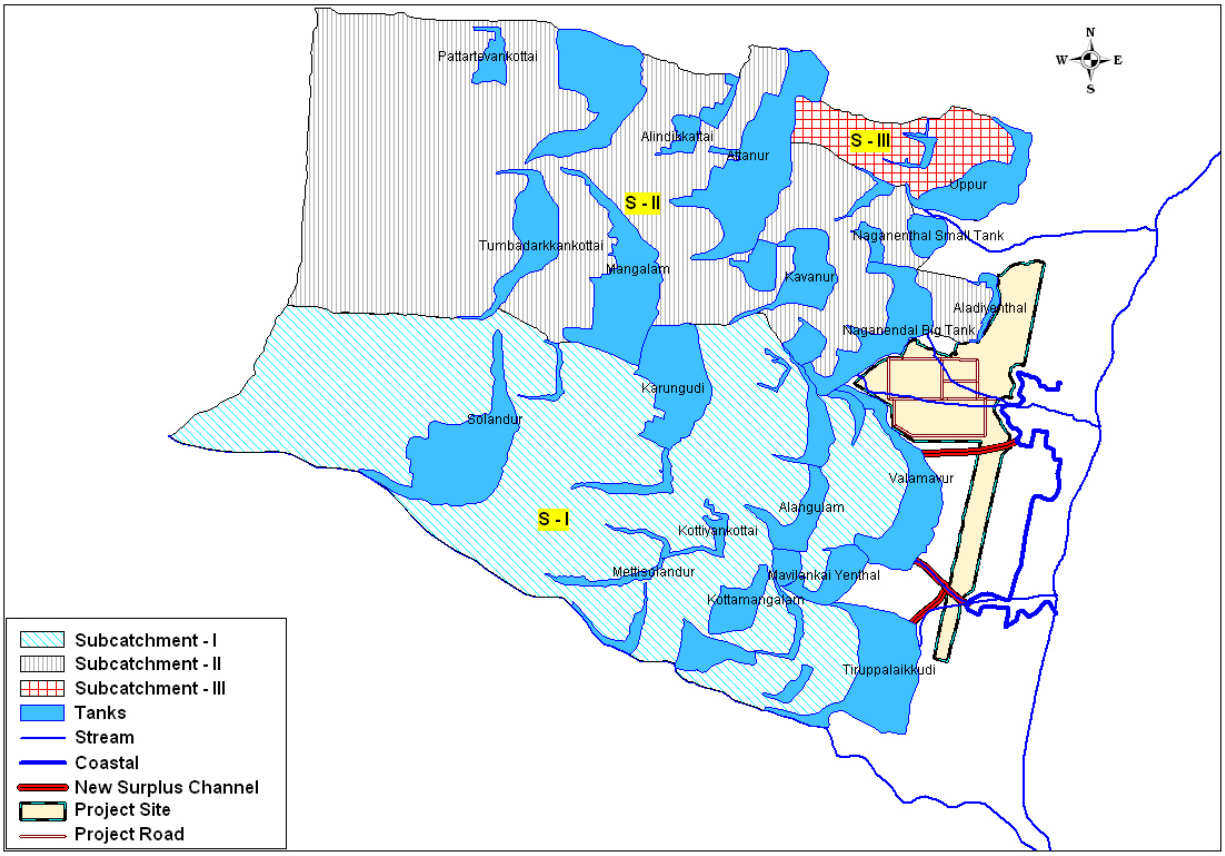

Figure 9. Study area with new surplus canals

For the second sub catchment (S-II), the existing canals are passing through the middle portion of the power plant, and hence, the shifting of them is very much essential. In order to maintain the environmental stability the surplus is discharged into the existing natural drainage at the downstream of project site. For this purpose, the new alignment of surplus canal is made on the northern part of Valamavur tank and discharges into coastal area. For this new canal the existing bed slope is maintained (1 in 416). The length of new surplus canal is 1.244 km which will carry a peak runoff of 30.17 m^3/s. The width and depth of new rectangular canal are 12 m and 1.2 m respectively. This canal will carry the surplus water safely without affecting any operation of the power plant. In addition to that, the surplus water will reach the coastal habitat located on the eastern side of the power plant.

தமிழ்நாடு तमिलनाडु TAMILNADU

BF 588352

Dalmia cements

M. மணிவண்ணன்
முத்திரைத்தாள் விற்பனையாளர்
சென்னை மாவட்டம்
உரிமம் எண்: 7/2008

தமிழ்நாடு
எண்
நாள். 14/10/15

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding (hereinafter referred to as "**MOU**") entered into on this 14th Day of October 2015 by and between:

A. The TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED a company incorporated under Companies Act, 1956, having its office at NPKRR Maaligai, 144, Anna Salai, Electricity Avenue,

Dalmia Cement (Bharat) Ltd. Dalmiapuram - 621 651

Chief Engineer / Projects
TANGEDCO
144,Anna Salai, Chennai- 600 002.

Chennai – 600 002, (hereinafter called as "TANGEDCO" which expression shall unless the context requires otherwise, include its successors and permitted assigns) of the **First Part**

and

B. M/s. Dalmia Cement (Bharat) Limited, a company incorporated under the Companies ACT, 1956, having its registered office at Dalmiapuram, Trichy District (hereinafter referred to as "DCBL" which expression shall unless the context requires otherwise, include its successors and permitted assigns) of the **Second Part**

WHEREAS:

a) TANGEDCO has proposed to establish Uppur Thermal Power Project of 2x800 MW coal based super critical thermal power project (hereinafter referred to as "**Project**") in Uppur, Valamavoor and Thiruppalaikudi, of Thiruvadani taluk of Ramanathapuram District, Tamil Nadu to improve the power supply situation in Tamil Nadu;

b) The Project will utilize 5.02 Million Tonnes Per Annum (MTPA) of Imported Coal with 10% ash content, for power generation. The total fly ash generated from the Project will be 0.402 MTPA, ie., about 1100 Tonnes per day.

c) TANGEDCO agrees to supply the entire fly ash generated from the Project to M/s. Dalmia Cement (Bharat) Limited (on non-exclusive arrangement basis) at their request, at a cost to be mutually agreed and fixed at the time of off take of fly ash.

d) For the aforesaid purpose, the parties hereby agree to sign these presents on mutually agreed terms and conditions mentioned hereunder:

NOW THEREFORE THIS MEMORANDUM OF UNDERSTANDING (MOU) WITNESSTH AS FOLLOWS:

1. <u>INTENT:</u>

a) TANGEDCO shall supply 0.402 MTPA of fly ash generated from the operation of Uppur Thermal Power Project (2x800 MW).

Dalmia Cement (Bharat) Ltd. 621 651 Dalmiapuram

Chief Engineer / Projects
TANGEDCO
144,Anna Salai, Chennai- 600 002.

b) The plant is expected to be commissioned by April 2019. The supply of fly ash shall commence from April 2019 tentatively.

c) TANGEDCO shall erect dry fly ash collection silos at the Power Station from which the fly ash would be loaded in closed trucks by TANGEDCO

d) M/s Dalmia Cement (Bharat) Limited shall arrange to transport the dry fly ash through closed trucks, to ensure environmental safety standards following the Ministry of Environment and Forest, Govt. of India regulations/rules issued from time to time.

e) M/s Dalmia Cement (Bharat) Limited shall arrange to off take the fly ash (Non-exclusive basis) of 0.402 MTPA of fly ash generated from the Project, to ensure trouble free operation of the Project.

f) TANGEDCO shall ensure supply of good quality fly ash and as suitable to the manufacturing of Cement by DCBL

2. <u>REPRESENTATION AND WARRANTIES:</u>

Neither party shall have the right of power to bind the other party to any agreement without the prior written consent of the other party. Unless specifically agreed in writing, no party is authorized to make commitments, representations, warranties to agreements on behalf of the other party and each party agrees that it will not hold itself out as having such authority. If any party acts in violation of the foregoing, the said party agrees to indemnify, defend and hold the other parties harmless from and against any and all claims, demands, losses, damages, liabilities, law suits and other proceedings, judgments and awards, the reasonable cost and expenses, (including but not limited to reasonable attorneys fee) arising directly or indirectly in whole or in part, out of the breach of this article by such party whether committed by the indemnifying party, its employees, agents, successors or assigns.

Dalmia Cement (Bharat) Ltd. Dalmia Dalmiapuram - 621 651

Chief Engineer / Projects
TANGEDCO
144,Anna Salai, Chennai- 600 002.

3. **LIMITATION OF LIABILITY:**

Neither party shall be liable to each other for any financial liability or any consequential loss incurred by the party individually in respect of the MOU.

4. **ASSIGNMENT:**

The assignment by any party of all its rights and obligations under this MOU to a third party shall be subject to the written consent of the other party provided that such assignee shall also specifically agrees in writing to be bound by the terms of this MOU.

5. **SETTLEMENT OF DISPUTES:**

In the event of any difference / dispute arising between the parties hereof under these presents, such disputes/difference shall in the first instance be resolved amicably by mutual consultations within 45 days of the reference of dispute by either party.

6. **GOVERNING LAWS & JURISDICTION :**

This MOU shall be governed by the laws of India and the rules framed thereunder. The Courts of Chennai shall have exclusive jurisdiction in all matters relating to or arising out of this MOU.

7. **NOTICE:**

Any notice to be given under this MOU shall be in writing and shall be deemed to have been duly and properly served upon the Parties hereto if delivered against acknowledgement or by registered mail with acknowledgement or by registered mail with acknowledgement due, addressed to the Parties herein at the following addresses or such changed addresses as will be duly notified by the Parties from time to time.

Address

Attention

TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED
represented by

Cement (Bharat) Ltd. Dalmia Dalmiapuram - 621 651

Chief Engineer / Projects
TANGEDCO
144,Anna Salai, Chennai- 600 002.

CHIEF ENGINEER - TANGEDCO
NPKRR Maaligai,
144, Anna Salai,
Electricity Avenue,
Chennai – 600 002.
Tamil Nadu State.
Tel.No.044-28521300
FAX No: 044-28549528.

Attention

CHIEF ENGINEER - TANGEDCO
M/s Dalmia Cement (Bharat) Limited, represented by B. Karthikumar, Senior General Manager, (Commercial)

8.0 CONFIDENTIALITY:

a. The parties, to the extent of their respective rights to do so, shall exchange such technical information and data as is reasonably required of each party to perform its responsibilities under this MOU. Each party agrees to keep in confidence and to use the same degree of care as it uses with respect to its own proprietary data to prevent the disclosure to third parties of all technical information, data and confidential business information (hereinafter referred to as "Data").

b. Exchange, use and maintenance of confidential data shall be mutually discussed and agreed to by the parties.

c. The preceding provisions of confidentially and restriction on use of data shall not apply to by the Parties.

- Information in the public domain of information, which subsequently enter into public domain without committing breach of this clause.
- Information in possession of the party at the time of disclosure and was not acquired, directly or indirectly, from the other party.

Dalmia Cement (Bharat) Ltd. Dalmiapuram - 621 651

Chief Engineer / Projects
TANGEDCO
144,Anna Salai, Chennai- 600 002

- Information which a party is required to disclose under law, rules or regulations to any judicial or other authorities.

- Consultants / advisors, provided they, in turn, sign undertaking of confidentially.

9. TERMINATION OF MOU:

The MOU shall stand terminated without any liability on either party,

i) If the parties hereto by mutual consent agree that the MOU could not be continued for any reason whatsoever, or

ii) On expiry of the notice period if either party gives a written notice of not less than three months expressing inability to continue with the MOU.

iii) If the parties failed to execute an agreement for supply and sale of Fly Ash at a mutually agreed rates and terms

10. EFFECTIVE DATE:

This MOU shall come into force as soon as it is signed for all purposes and intents.

IN WITNESS WHEREOF, the parties hereto have signed this Memorandum of Understanding at Chennai on the date first mentioned above in the presence of witnesses as mentioned hereunder.

For and behalf of TANGEDCO

(R. KAMARAJ)
Chief Engineer / Projects
TANGEDCO
CHIEF ENGINEER - TANGEDCO
144,Anna Salai, Chennai- 600 002.

For and on behalf of
Dalmia Cement (Bharat) Ltd

(B. KARTHI KUMAR)
Authorized Signatory

WITNESSES:

1. (UMASHANKAR)
Deputy manager/commercial

2. (KUMAR)
Senior officer/commercial

ANNEXURE - 8
Revised and detailed budgetary action plan for Public Hearing issues

Sl.No.	Public Hearing Minutes	Compliance/Action Taken Report	Budgetary Action Plan
1.	Thiru Kalidasan, Uppur In his speech, Thiru Kalidasan requested the details about how to bring the coal to the project site, what are the possibilities to bring the water for project and where the ash will be disposed. He informed that the people are only farmers and there is no water to drink in this area and also informed that only "Juli Flora" (Seemai Karuvelam) are in existence in this area and what kind of trees the proponents are about to develop as the green belt. He finally concluded that what is the need of the project which couldn't solve any of these problems	Coal will be transported from Tuticorin Port Trust to the Project site through the existing railway line from Tuticorin - Vanchi Maniyachi – Manamadurai – Ramanathapuram and then a private siding of 28 km from Ramanathapuram to Thiruppalaikudi and then take off to the power plant. The Feasibility Study for Transportation of coal has been conducted through M/s.RITES, a Govt. of India Organisation and has been included in the EIA Report as Annexure. The same was also informed during the Public Hearing Meeting. The water for the project will be drawn entirely from the Sea. Based on the Study conducted through M/s.IIT, Madras, the cooling water will be drawn from the sea through an Intake Well located at a distance of 5.2 km from shore at 4.0m water depth. The Outfall will be at a distance of 7.0 km from shore at 5.0m water depth. The Intake and Outfall pipes will be laid over Jetty. Desalination Plant is proposed for plant water and drinking water purposes. It is also proposed to supply drinking water to the nearby villages as a part of CSR activity. The entire fly ash will be disposed off to Cement	The cost of laying railway route is as follows: Laying railway line from Ramnad to Thiruppalaikudi: Rs.227.50 Crores Land acquisition cost: Rs.11.34 Crores Laying railway line from Thiruppalaikudi to Plant entry and proposed yard facilities, including land cost: Rs.79.00 crores Total: Rs.317.84 crores Total cost of drawing and discharging seawater: Rs.146.65 Crores Desalination Plant: Rs.305.00 Crores

		Companies / Brick Manufacturers. Many Cement Companies, viz., M/s. Tamil Nadu Cements, M/s.Dalmia Cements Ltd., M/s.Malabar Cements Ltd., M/s.Ultra Tech Cements Ltd., and M/s. Chettinad Cement Company Ltd., have furnished their expression of interest for off take of flyash. The bottom ash is proposed to be disposed in Ash Dyke. 275 acres of lands have been proposed for green belt development. Trees will be planted in consultation with the local Forest Department. The soil will be prepared to suit the needs of the plant growth. The treated effluent / sewage will be utilised for watering the green belt.	Ash Handling System: Rs.250.00 Crores Green Belt Development: Rs.2.75 Crores
2.	Thiru Thirumalai, Valamavoor Thiru Thirumalai, Valamavoor told that there are 3000 families living in the project proposed area with only the agriculture as their livelihood and the annual production of "Baptla Ponni" grade rice is 38000 tonnes and the value will be approximately 5 crore rupees. He also asked that what will be the action for the future of the farmers whose lands will be acquired. He finally requested the following things – 1. The compensation to be given for the land acquisition should be increased upto 5% of the project cost.	1. The Project cost is about Rs.12,000 crores. 5% of the above is Rs.600 crores. The tentative market rate for the private land proposed to be acquired for the project is about Rs.7.50 crores. As per LA Act 2013, the land acquisition cost may be taken as about 4 times the market rate, say Rs.30 crores. Thiru Thirumalai is asking for 20 times more compensation. This is not	Land acquisition cost: Rs.22.50 Crores

	2. The rate fixed for the compensation by the Government is not adequate. 3. The farmers should be given with land in some other place so that they can keep their livelihood. 4. Employment need to be given to the families whose lands are to be taken for the project 5. There should not be any additional land acquisition in future in the name of project expansion. 6. The basic infrastructure like education, medical, etc., should be developed in their villages. 7. The name of the Valamavoor and Thiruppalaikudi villages also should be added with the name of the project.	acceptable. 2. The compensation for the lands will be as per the prevailing Land Acquisition Act and as per the directions of Government of Tamil Nadu. 3. The suggestion of Thiru Thirumalai for giving alternate lands to be farmers will be examined in consultation with GOTN. 4. There are no Rehabilitation and Resettlements involved in the lands proposed to be acquired for the project. As per the LA Act, employment per family of inhabited lands to be acquired only will be given. However any decision in this issue will be taken in consultation with Government of Tamil Nadu. 5. There is no proposal to expand the project capacity and it is also not possible. 6. Funds have been allocated under CSR to improve the infrastructure facilities like education, medical, etc., 7. The suggestion of Thiru Thirumalai will be considered in consultation with GOTN.	Funds allotted for CSR Activity: Capital cost: Rs.38.00 Crores Recurring cost: Rs.3.00 Crores
3.	Thiru Thivakaran, Naganenthal Thiru Thivakaran also told that the people in this area are only farmers and they know only agriculture and animal husbandry. He also informed that the 30 villages around the project site are the “rice bowl” of the Ramanathapuram District and even the educated youths also carrying out the agriculture. The compensation	The compensation for the lands will be as per the prevailing Land Acquisition Act and as per the directions of Government of Tamil Nadu. The site for the project has been finalised only after considering many alternatives, so as to have minimal impact on the environment and to have minimal R&R	

	to be given for the lands taken is very much less than the annual rice production. He requested that the project may be shifted to some other place without disturbing even a single agriculture land.	issues. Due care has been taken to minimise the acquisition of agricultural lands. The agricultural lands now proposed for acquisition are single crop lands.	
4.	Thiru Muniyandi, President of the Irrigation Association, Thiruppalaikudi He told that the farmers in these area are very small level who having only 2 to 3 acres each. He told that the details of the project should be informed to the village people at the starting stage of the project itself, be conducting at least one meeting in each village before initializing the project. He also told that it is informed by the Collectorate, Ramnad under the RTI Act that the details of the railway lines to bring the coal to the project site is not available. He also told that the land acquisition done here is not based on the 2013 Act which is announced in the Parliament and done only based on 1977 act which is not correct and he concluded that the land acquisition can't be done under this Act.	The villagers are aware about the project from the initial stage of identification of lands itself. Surveys have been conducted to finalise the boundary of the project area. Terrestrial and Marine Bore hole studies have been conducted in the poramboke lands. Further as a part of Socio Economic Study, the Consultants, M/s.Madras School of Social Work have conducted direct household interviews, Key informants interviews with District level officials, President of the SHG/ President of the Village level association, Block Development Office/ President GP/ Ward member GP/ ICDS-Teacher/ School Headmaster/Head mistress, etc., Cluster level focus group discussions with Women/Self Help Group/ Village level committee/Youth groups/salt pan groups, etc., to get quality data on the community needs. The above interviews have been held in the villages which fall in both core zone and buffer zone of the Project area. The information under RTI Act on the details of the railway lines to bring coal for the project, were called in the year 2012/2013, when the proposal was not finalised and the same was also not available with the Collectorate, Ramnad. The documents were submitted to the Collectorate only for Public Hearing. The feasibility report has also been included in the EIA Report as Annexure.	

		The land acquisition will be done only as per the Act in vogue.	
5.	Thiru Thanraj, Morpannai, Thiruppalaikudi Group He told that people of Morpannai and Thiruppalaikudi are not aware of the project. Approximately 10000 persons are fishing with the help of small country boats. He also told that the emission from the power plant may affect fish development and hence fishing also. In turn this will affect the livelihood of the fishermen.	All efforts were taken to inform about the Project to the Public. Notice was issued in the local newspapers both in English and Tamil regarding conducting Public Hearing. Banners were placed in all strategic places. As a part of Socio Economic Study, the Consultants, M/s.Madras School of Social Work have conducted direct household interviews, Key informants interviews and Cluster level focus group discussions regarding the Project. The above interviews have been held in the villages which fall in both core zone and buffer zone of the Project area, which includes Thiruppalaikudi and Morpannai villages. Hence the statement that the people are not aware about the Project is not correct. Pollution Control Measures will be implemented to limit the pollution within statutory limits, so as to mitigate the impacts and emission from the Power Plant will have little effect on fishing.	
6.	Tmt Sesu Rathinam, Cuddalore She told that the full EIA Report was not available in the MOEF website and hence carrying out public hearing is not a correct one. She also told that the EIA report is not based on the TOR given by MOEF and it is not having any details about Carbon Monoxide emission. She also informed that the depth of the sea near the project site is very shallow and due to	TANGEDCO submitted the hard copy and soft copy of the Terrestrial EIA, Marine EIA Report and Executive Summary of the Project to MOEF/Southern Zone vide lr.dt.30.5.2014 as per the procedure for conducting Public Hearing stipulated in the EIA Notification 2006. The EIA Report has been prepared fully in line with	

	the project the “Bio-diversity” will get affected. Finally, she requested to generate power with the help of renewable energy sources by avoiding burning of coal.	the TOR stipulated by MOEF/GOI. The baseline study of the Ambient Air Quality recorded the Carbon Monoxide and it is found to be well within the limits of 4 mg/m^3 Because the sea near the project site is shallow, TANGEDCO has proposed to draw water for the project far away from the shore. Based on the Study conducted through M/s.IIT, Madras, the cooling water will be drawn from the sea through an Intake Well located at a distance of 5.2 km from shore at 4.0m water depth. The Outfall will be at a distance of 7.0 km from shore at 5.0m water depth. The Intake and Outfall pipes will be laid over Jetty. Based on the modelling studies, it is seen that The temperatures in the sea will rise by about 0.5-0.75deg. C and Salinity will rise by about 4 ppt within 2.0 km distance from outfall. Beyond this, ambient conditions will be preserved. M/s.WAPCOS, the consultants for Marine EIA Study have concluded that rise in temperature is not likely to cause any alteration in the biotic community of the coastal waters of the project area. The Intake Well has been designed with fish escape velocity as 0.15m/sec. Due care has been taken to protect the marine environment. Hence Bio-diversity of the area will not be affected due to the setting up of the Project. Regarding generating Power from renewable energy, as on year 2013, Tamil Nadu has 7145.225 MW	

		installed capacity of Wind power generation, 17 MW of Solar power generation and 177.4 MW of Biomass power generation and we are also taking efforts to continue to add renewable energy every year.	
7.	Thiru Ilango, Nam Tamizhar Party, Ramanathapuram He told that the farmers should be motivated to do agriculture in the current situation since most agricultural lands are now changed into real estate land. He further told that this project will affect the livelihood of fishermen and he requested to check and improve the basic infrastructure to the villagers. Finally, he told to change the project site to some other places where there are no issues to environment, farmers, fishermen and general public.	The project will not affect the livelihood of the fishermen. As stated in Sl.No.6 above, due care has been taken to protect the environment. The site has been chosen so that there are minimal environmental impacts.	
8.	Thiru Arulanantham, Pampan He told that the Ramanathapuram District has very lengthiest coastal area and the plankton, food for fish is available in plenty in the sea, will be affected by the waste water let out by the power plant. He finally requested to give priority to alternate power projects for power generation.	As stated in Sl.No.6 above, due care has been taken to protect the environment.	
9.	Thiru Karunamoorthi, Secretary, Tamil Nadu Fishermen Association, Ramanathapuram He told that the people of the project villages are not aware of the public hearing meeting and this meeting looks like conducting for record. He also informed that the livelihood of this area people is only agriculture and fishing. Due to the discharge of treated effluent, which will contain heat and more salinity will affect fish growth. This will affect the livelihood of the	As stated in Sl.No.5 & 6.	

	fishermen of this area.		
10.	Thiru Jeeva, Coastal Action Network, Nagapattinam He told that administrative sanction for land acquisition has been given before this public hearing which is not correct and this administrative sanction should be cancelled. The project should not affect the people, agriculture and fisheries. He also informed that as per Land Acquisition and Rehabilitation Act, 2013, if the people gave written objection against land acquisition, then the land can't be taken for the project. He finally concluded that as the project affect people, it should not come.	In order to approach MOEF/GOI for obtaining E.C for a project, the pre-requisites are Availability of Land, Coal Linkage and Water Linkage. Hence based on TANGEDCO's application, Govt. of Tamil Nadu issued Administrative Sanction for Acquisition / Alienation of lands for the Project vide G.O.Ms.91, dt.21.1.2014. However, no activity has been carried out in the lands except preliminary survey and geo-technical investigation (bore hole studies). However, only after obtaining requisite statutory clearance, actual work at the field will be started. Land Acquisition will be carried out only as per the prevailing LA Act.	
11.	Tmt.Ganthimathi, Advocate She told that the Socio Economic Study conducted by secondary resources only which is not adequate. The project area consists of 37 tanks and the overflow during flood times will reach sea. But the EIA Report does not contain any details about the effect of emissions from the power plant on the flora and fauna in these tanks. She also told that around 150m of Ramnad district coastal shore already got eroded and this EIA Report is not having cumulative effect about the coastal erosion.	TANGEDCO has conducted Socio Economic Study by fixing Consultants, viz., M/s.Madras School of Social Work, Chennai, one of the premier institutes for the work. M/s.Madras School of Social Work have conducted direct household interviews, Key informants interviews with District level officials, President of the SHG/ President of the Village level association, Block Development Office/ President GP/ Ward member GP/ ICDS-Teacher/ School Headmaster/Head mistress, etc., Cluster level focus group discussions with Women/Self Help Group/ Village level committee/Youth groups/salt pan groups, etc., to get quality data on the community needs. Only based on the Community Needs Assessment, TANGEDCO has fixed the budget for CSR Activity.	

		The core zone, ie., the Project Boundary of the Uppur Thermal Power Project does not contain any tank. The Buffer zone of the project area has 37 tanks. Hence MOEF/GOI while issuing TOR for the Project has specifically stated as follows: • Scheme for regeneration and preservation of village ponds in the study area shall be formulated. TANGEDCO has conducted Geo-hydrological Study of the Project area through Anna University and the report has given proposal for desilting and increasing the depth of tanks for increasing the storage capacity. This increase in capacity will improve the irrigation activity as well as economic status of the people surrounding the tanks. The de-silted volume of soil can be used for filling the project site. Based on the design hydrograph, the peak flood discharge can be easily stored within the tanks on the upstream of the project site itself. Impact of flood discharge to the project site is very less. Further, flood discharge can be safely discharged into the Nayar River and drained to Bay of Bengal. The tanks are dry for most of the year. Only during rainy season, the tanks get filled. The entire water is used up for irrigation before the next rainy season. The tanks are not perennial water sources. All Air/Water/Soil/Noise pollution mitigation measures will be implemented. Hence there will not be any impact on the flora and fauna in the Tanks.	

		Based on the Report prepared by Institute for Ocean Management, Anna University, for MOEF/GOI, it is seen that a portion of the coast near Morpannai village has high erosion. Hence as a part of CSR Activity, TANGEDCO has proposed to construct a Sea Wall of 500m in the village. However establishment of the project will not have any impact on the coastal erosion, since the cooling water intake and outfall pipelines are proposed to be laid over Jetty. The support columns will be placed 16m c/c. The Jetty will not block the littoral drift of the coastal waters.	
12.	Thiru Mugilan, Tamil Nadu Environmental Association, Erode He told that most of the people are not aware of public hearing and the project report is not made available to most of the people. He told the following things in his speech – 1. Employment to the local people will not be possible in the Thermal Power Plant as it required more technical skills. 2. The EIA Report is not covering the site selection criteria given by Central Pollution Control Board like the Thermal Power Plant should not be located within 15 km from any residential area, 5 km away from any NH or 10 km from any tourist or eco-sensitive area. 3. There is major chance for discharge of chemicals into sea which are used in the water treatment 4. Micro organisms, fish growth will be affected	As discussed in Sl.No.5. All efforts were taken to inform about the Project to the Public. Notice was issued in the local newspapers both in English and Tamil regarding conducting Public Hearing. Banners were placed in all strategic places. The Project report / Executive Summaries (both English & Tamil) were uploaded in the TNPCB Website and also the hard copies were made available in the following offices: • Collectorate, Ramnad • District Industries Centre, Ramnad • Tahsildar, Thiruvadanai Taluk • Panchayat Union Office, Thiruvadanai • District Environmental Engineer/TNPCB, Sivagangai • TNPCB HQ, Chennai • Secretary, E&F Dept., GOTN, Chennai • MOEF/GOI 1. Implementation of the project has beneficial	

	5. The existence of Mangrove forest is not listed in the report 6. The possibility of acid rain will increase due to the SO_2 emission 7. The agriculture will get affected due to the water scarcity. Hence he requested to take these points into consideration before taking any decision.	impact in terms of providing direct and indirect employment opportunities. 2. The site was selected only based on the Site Selection Criteria stipulated by CPCB. The site is away from Cities (Nearest Town Ramanathapuram is at a distance of 28 km), 500m away from East Coast Road, 4 Km away from NH-210 and there are no eco-sensitive zones within 10 km of the project site. 3. Only cooling water along with the brines from Desalination plant will be discharged into the sea. 4. The Intake and Outfall are designed based on the Modelling Study report by M/s.IIT, Madras, to ensure that the marine flora / fauna are not affected. 5. The existence of Mangroves has been mentioned in the report and it has been indicated in the CRZ Map as 1A Zone. However, the routing of intake and outfall has been fixed to cross the zone with minimum mangroves. 6. The Maximum GLCs with 100% imported coal indicate that SOx will be 50.72 $\mu g/m^3$ which is well within the permitted limits of 80 $\mu g/m^3$. 7. The entire water requirement for the Project is proposed to be met from Sea. Hence there is no possibility of agriculture getting affected due to water scarcity. Further, TANGEDCO has proposed to desilt and deepen the Irrigation tanks in the surrounding area which will benefit agriculture.	
13.	Thiru Udhayanan, Ramanathapuram		

	He told that the executive summary report does not contain many things. He also told that if the sea water was taken at a distance of 6 km from the shore then the livelihood of the fishermen will get affected. The ash emission from the power plant will affect the whole Ramanathapuram District. Also the report has covered only agricultural villages around the project site and the fishermen villages are not taken into account. He finally requested to find alternate ways for the power production and not to affect the livelihood of the people.	As discussed in Sl.No.5 & 6 As a part of Socio Economic Study, the Consultants, M/s.Madras School of Social Work have conducted direct household interviews, Key informants interviews and Cluster level focus group discussions regarding the Project. The above interviews have been held in the villages which fall in both core zone and buffer zone of the Project area, which includes Agricultural villages and Fishermen villages.	
14.	Thiru Siron Kumar, State Secretary, Tamil Nadu Fishermen Association He told that the electricity already been generated in the state of Tamil Nadu has been transmitted to other states and Government should take action for this. The officials should understand the feelings of the village people and the district administration should bring some other good projects to improve the life status of the people.	Noted.	
15.	Thiru Ramesh Karuppaiah, Representative of "Pooulagin Nanpargal" Thiru Ramesh Karuppaiah told following things in his speech – 1. This project is planned only based on the imported coal 2. CRZ clearance certificate is not available for the project 3. Details of solar power usage inside the plant are not available. 4. The details of water flow pattern in	1. The project is planned for 100% imported coal with a provision for blended coal of 70% imported and 30% Indian coal. 2. CRZ Clearance certificate is not required for conducting Public Hearing. TANGEDCO already submitted application for CRZ	

	case of over flow of tanks are not available. 5. The disposal details of ash are not available 6. The alternate plan for satisfying water demand in case of failure of desalination plant is not available. 7. The waste water generation points are not given in detail 8. The list of industries in the nearby locations is not available. 9. The details on heavy metal management and radiation are not available. 10. The details of railway line proposal are not given 11. The Natural Disaster Management Report is not available. 12. The report on Mangrove forest protection is not available. 13. The details with respect to the effect on the fisheries are not available He finally requested to use the new technologies with renewable energy	Clearance along with application for conducting Public Hearing. The District Level CRZ Committee convened on 20.8.2014 and recommended the project. Public hearing is a pre-requisite for obtaining CRZ Clearance. 3. Solar panels will be provided in roof tops and other feasible locations. 4. The Geo-Hydrological Report of Anna University discusses the drainage pattern of the study area. Discussed in Sl.No.11 5. Discussed in Sl.No.1. The entire fly ash will be disposed off to Cement Companies / Brick Manufacturers. Many Cement Companies, viz., M/s. Tamil Nadu Cements, M/s.Dalmia Cements Ltd., M/s.Malabar Cements Ltd., M/s.Ultra Tech Cements Ltd., and M/s. Chettinad Cement Company Ltd., have furnished their expression of interest for off take of flyash. The bottom ash is proposed to be disposed in Ash Dyke. 6. In case of failure of Desalination Plant, the Power Plant will be stopped till the Desal Plant is repaired. 7. The waste water generation points have been indicated in the EIA Report. 8. There are no major industries in the Core Zone / Buffer Zone of the Project area. The major activities are agriculture and fishing. There are few aqua culture units and salt pans near the project area.	

		9. The radio activity and heavy metals in coal / ash will be tested once the coal source is finalised. The bottom ash is proposed to be disposed in ash dyke which will be lined with Geo-membranes. Hence there will be no impact on the ground water. 10. Discussed in Sl.No.1 11. The Natural Disaster Management is given in Cl.6.15 of the EIA Report. The proposed project site is 1.0 km away from the shoreline and far beyond 100 km from the disasters occurred in the past. The power plant will be established at an elevation of 5.0 m above mean sea level and thick green belt will be developed along the periphery of the project site. Hence, the proposed power plant may not have significant impacts due to natural disasters like tsunami, cyclones. The cyclone atlas is provided in Figure – 6.2 of the EIA Report. 12. Discussed in Sl.No.12. The existence of Mangroves has been mentioned in the report and it has been indicated in the CRZ Map as 1A Zone. However, the routing of intake and outfall has been fixed to cross the zone with minimum mangroves. The Mangrove monitoring Programme has been furnished in Cl.5.3 of Marine EIA Study report prepared by M/s.WAPCOS. 13. The details are available in Chapter 6 of Marine EIA Study report prepared by M/s.WAPCOS.	

16.	Thiru Rajiv Kumar, Uppur He told that the people of the villages should be informed about the project at the starting stage of the project itself.	As Discussed in Sl.No.5	
17.	Thiru Mugilan again came and requested that the EIA reports shall be prepared in Tamil for projects in the Tamil Nadu	Noted. As per the EIA Notification 2006, the Executive Summary is to be prepared both in English and vernacular language.	
18.	Thiru Muniyandi again came and told that the report on the construction of railway line for the transportation of the coal should be incorporated into this report.	As discussed in Sl.No.1	

Further, TANGEDCO has proposed to carry out the following CSR Activities based on detailed Need Based Assessment Study:

Sl. No.	Particulars	Amount (Rs. In Lakhs)
1.	Drinking water supply	1034.00
2.	Augmentation of School Facilities	300.00
3.	Augmentation of Anganwadi Facilities	80.00
4.	Augmentation of PHC Facilities	125.00
5.	Toilet facilities	200.00
6.	Community halls	150.00
7.	Auction halls, net mending sheds, fish drying platforms,	120.00
8.	Sea wall in Morepannai village	100.00
9.	Youth training programmes	100.00

10.	Library, playground, gym	200.00
11.	Roads, street lights	500.00
12.	Desilting of Tanks in the study area	600.00
13.	Women Empowerment Group	60.00
14.	Fishermen Welfare fund	200.00
	Total	**3769.00**

Further about 10% of the capital cost of CSR has been proposed to be allocated towards annual recurring expenditure for CSR activities, ie., Rs.3.00 Crores for carrying out regular Medical Camps, running cost of De-sal plant, funds for water lorries for supply of drinking water, maintaining of green belt, maintenance of roads, etc.

ERC's Review
EAC Thermal Meeting on 25-26 June 2015
Uppur TPP at Distt Ramanathapuram, Tamil Nadu

Proposal

2x800 MW Uppur Supercritical Thermal Power Plant at Villages Uppur, Valamavoor & Thiruppalaikudi, Tehsil Tiruvadanai, District Ramanathapuram, Tamil Nadu by M/s Tamil Nadu Generation & Distribution Corporation Ltd. (TANGEDCO) for EC

Issues in Brief

Marine EIA not available in public domain
Irrigated, very good agricultural land
Impacts on mangroves for intake and outfall pipelines not studied
Potential impacts of tsunamis, cyclones and storm surges not studied
Project 20 km from the Gulf of Mannar Marine National Park
Most of the people opposed the proposal at PH

Issues in Detail

Marine EIA not available in public domain

The EIA report uploaded on the MOEF&CC website does neither contain the Marine Environmental Impact Assessment nor any of the Annexure except annexure 1. Has Marine Environmental Impact Assessment done?

While the section on fauna lists bird, reptile and mammalian species, there is no inventory of the fish species found in the area. This area is known for high level of fish species richness.

The impacts of the project and its affiliated activities on the fisheries have also not been studied.

Public Hearing – People Oppose the Project

The EAC must take into account the opinions expressed by the participants in the Public Hearing. Based on the document uploaded on the MOEF&CC website, it is apparent that majority of the participants were against the project and demanded that the project location be moved to an area where agriculture and fishing were not prominent.

Irrigated, very good agricultural land

A significant part of land proposed to be used for the project (43% of the total area) is agricultural land, most of which is irrigated. These are fertile lands, and are integral to the rice bowl of Tamil Nadu.

Control of fouling?

Since the seawater intake systems are proposed within a water depth of 10 m, the intake system is liable for fouling activities. Usually, to control the fouling, biocides are used. The current EIA does not expand upon this. If biocides are to be used, their chemical nature and concentration must be thoroughly scrutinised since persistent exposure of aquatic organisms to such chemicals even at low concentrations can be toxic, and can further pose a threat to the entire trophic system due to the process of bioaccumulation of heavy metals.

Impacts on mangroves not studied

The mangrove forest that will be deforested/ affected due to the construction of the water intake/exit system has not been mentioned. In fact, impacts of increased sediment load on reefs and mangrove systems have also been ignored.

Impact of tsunamis, cyclones and storm surges not studied

Section 3.8 of the EIA on Disaster Management deals with the issue of seismicity, but completely ignores the far more pressing concern of tsunamis, cyclones and storm surges as mandated by the TOR.

Gulf of Mannar Marine National Park at 20 km from Proposal

Gulf of Mannar Marine National Park is just at 20 km from proposed site. The TPPs have far reaching impacts. In this case, besides air and water pollution, there would be impacts on marine ecosystem also. Has the impact on the National Park studied?

Suggestions

EAC must advice a comprehensive Marine Environmental Impact Assessment (if not already done). Gaps in EIA report with respect to impacts on mangroves, impacts of tsunamis, cyclones and storm surges etc should be studied and added. Wildlife Institute of India should be asked to study impacts on Gulf of Mannar Marine National Park, which is just at 20 km from proposed site. People's concern raised at PH must be duly addressed.

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