Executive summary

Tamil Nadu Generation and Distribution Corporation (TANGEDCO) (A subsidiary of TNEB Ltd) is a state Government utility undertaking power Generation, Distribution and operation and maintenance of power plants. The power generation business of TANGEDCO under Tamil Nadu Electricity Board is unbundled into a separate company named as Tamil Nadu Power Generation Corporation Limited (TNPGCL) vide G.O (MS.) No. 6 Dated 24.01.2024 issued by Government of Tamil Nadu. Till such time TNPGCL is fully established TANGEDCO shall continue the business of Power Generation. To meet the increasing demand for power supply in the sectors of agriculture, domestic, industrial and commercial purposes in Tamil Nadu, TNPGCL (TANGEDCO) has proposed to install a 2 x 800 MW coal based Thermal Power Plant with supercritical technology at Udangudi village, Thiruchendur taluk, Thoothukudi district of Tamil Nadu, and obtained an Environmental Clearance for the same. Subsequently, TNPGCL (TANGEDCO) obtained amendment to the above-mentioned Environmental Clearance for reduction of unit sizes from 2 x 800 MW to 2 x 660 MW. Presently, the physical work progress for the Project is completed to the tune of 85% for which EC was granted. Since the validity of EC was extended for all the projects on account of Covid-19 pandemic, the validity of EC for Udangudi Supercritical Thermal Power Plant is valid upto 13.10.2024 As the validity of EC is completed, it is planned to obtain fresh EC for the project.

The ongoing power plant will be operated with coal as the main fuel to generate 1320 MW power (2×660 MW) and would be developed with super critical technology to obtain benefits under Clean Development Mechanism (CDM Project). It is proposed to use blended coal based on efficiency (50% imported Coal from Indonesia, South Africa, Australia, China, etc and 50%Indian coal from Talcher coal fields of Mahanadi coal fields limited from Odisha) as fuel. The annual consumption of coal for the ongoing power plant is estimated as 5.893 million tonnes for two units considering Plant Load Factor of 85%. The requirement of Indian coal from Talcher coal field will be about 3.647 million tonnes per annum and imported coal requirement will be 2.246 million tonnes per annum.

Land use area break up

S. No.	Purpose	Area in Ha
1	Main Plant, Transformer yard, Switch yard and FGD	26.305
2	Coal Yard	26.305
3	Cooling Water System	17.402
4	Fuel oil system	1.699
5	Water system including Chlorination system	7.782
6	Ash Dyke	48.562
7	Administration building and other non-plant buildings	4.719
8	Miscellaneous such as Corridor for CW piping, Ash piping, Intake & outfall, Silo & its utility building, Workshop, Stores, Roads etc.	80.168
9	Green Belt	167.058 (about 44% of total area)
Total		**380**

The project proposes to have its own captive coal jetty at Udangudi with transportation of coal through pipe conveyor system to the power plant to handle coal up to 15.33 million tonnes per annum. IITM, Chennai has studied the feasibility of the coal jetty. Based on the feasibility study NIO, Goa has finalized the location by model studies.

The Govt of Tamil Nadu has accorded approval for the development of coal jetty as Udangudi Minor Port by declaring the Port Limits for captive use of TANGEDCO. M/s. The coal jetty is located at about 7.5km from shore and possess a separate EC and CRZ clearance from MoEF&CC vide Lr. No. - EC22A004TN156490, 10-66/2020-IA.III dt. 03.08.2022.

The total water requirement for boiler and cooling water for the ongoing plant would be around 13,063 m^3/hr and the source is seawater. The NIO, Goa, has finalized the location of the cooling water intake and outfall in sea by conducting the modeling studies. The total intake length is located at 2.68 km (onshore – 1 km & offshore – 1.68 km) and the total outfall length is located at 2.39 km (onshore – 1.51 km & offshore – 0.88 km).

TANGEDCO has planned to install Supercritical pulverized fuel combustion technology for this ongoing 2x660 MW power plant, targeting higher efficiency (and hence minimum coal consumption) as well as conforming to best possible friendliness to environment at reduced emission.

Additionally, following pollution control equipment are attached to the once-through steam generator, for compliance to latest MoEF &CC guidelines.

- Selective Catalytic Reactor (SCR)
- Flue Gas Desulphurization (FGD
- Electrostatic Precipitator (ESP)
- Fly Ash Handling system and Storage Pond & Silos
- Sewage Treatment Plant
- Effluent treatment Plant

TANGEDCO is proposing 2x660 MW, in the district of Tuticorin, Tamil Nadu. The major components of (2x660 MW) Power Project are as follows:

- Steam Generator and its Auxiliaries;
- Steam Turbine and its Auxiliaries;
- Electrical Generators, Transformers and Switchyard
- Control and Instrumentation systems
- Air Pollution Control Systems like Dust Suppression and Extraction Systems, Electrostatic Precipitators, Flue Gas Desulphurization System and NOx Control (SCR) System;
- Water Intake and Treatment Systems;
- Condenser and Auxiliary Cooling System;
- Fuel Oil System;
- Coal Handling and Storage System;
- Ash Handling, Utilization and Disposal System;
- Site Drainage, Sewage Treatment Systems with facilities for Recycle and Reuse;
- Green belt, afforestation and landscaping systems.

Raw material requirement

Sl. No.	Raw Material	Quantity	Source	Calorific Value	Mode of Transport	Distance in kms.
1.	Imported Coal	2.246 (MTPA)	Indonesia	4350 kcal/kg (Blended coal)	captive jetty at Udangudi	9.356
2.	Indigenous coal	3.647 (MTPA)	Odisha			
Other Raw materials						
4.	Wet Lime stone	288 (T/day)	Indigenous	-	by road	-
5.	Fuel oil	41500m^3	Indigenous	-	By road	-

The Steam generator units will be of once through type with supercritical steam parameters. The steam generator will be of single pass (Tower type) or two pass type using spiral wall (inclined) or vertical plain / rifled type water wall tubing. The steam generator will be direct pulverised coal fired, top supported, single reheat, radiant, dry bottom, with balance draft furnace and suitable for outdoor installation. The evaporator of steam generator will be suitable for variable pressure operation from subcritical to supercritical pressure range.

During start-up and low load, the steam generator is operated in recirculation mode. In recirculation mode the boiling water is separated from the vapor in the steam water separators and the separated water dumped to condenser flash tank or recirculated via recirculation pump back to economizer and is mixed with feed water.

Coal bunkers are in-process storage silos used for storing crushed coal from the coal handling system. The coal feeders transport raw coal from the bunker to the inlet chute, leading to mill at required rate. The feeders will be of gravimetric type.

Mills pulveriser coal to the desired fineness to be fed to the furnace for combustion. The system consists of medium speed vertical spindle bowl mills. The no. of mills will be so selected to have N+ 2 standby mills available for 100% BMCR with design coal and N+1 standby mill available for 100% BMCR with worst coal.

The firing system will be designed for tangential corner firing/opposed wall firing.

Burners will be used for burning pulverised coal. Each unit has a set of burners located at different elevations of the furnace specially designed for low NOx emissions.

Seal air fans used for supplying seal air to the mills to prevent ingress of coal dust into gear box lubrication oil will be provided.

The primary function of the Air Pre-heaters is to cool down the flue gas to increase the efficiency of the unit by preheating the combustion air.

One (1) no. steam coil air pre-heater (SCAPH) will be provided at the outlet of each F.D. fan, and will be installed close to the regenerative air heater. The SCAPH will be designed to maintain the average metal temperature of regenerative air pre-heater cold elements 10°C above the acid dew point temperature by increasing the temperature of air to 100°C during start-up and very low load operation. The regenerative air pre-heater (RAPH) will

be of vertical type. The air heater will be leak proof and relatively maintenance free. These air pre-heaters will be designed passively to avoid the low temperature corrosion of the cold end section of the air heater parts.

When coal is fired in the boiler, ash will be liberated and about 80% of ash is carried along with the flue gas. If this ash is allowed to atmosphere, it will create an air pollution thereby resulting in health hazards. Hence it is necessary to precipitate the dust from the flue gas and in this process electrostatic precipitator will be envisaged to reduce particulates and remove fly ash from the flue gas. The ESP will have adequate number of ash hoppers provided with electric heaters. Each ESP will have separate collecting and emitting rapping system and each field have separate entry. Microprocessor based ESP controller will be provided. The ESP will be designed to control particulate matters in flue gas within the limits as prescribed in Ministry of Environment, Forest & Climate Change (MoEF&CC) norms.

SOx and NOx emission from the plant will be within the limits as prescribed in MoEF&CC norms. This is achieved using DeSOx and DeNOx equipment respectively.

Chimney is tall RCC structure with multiple flues. One (1) no of chimney of 275 m height is proposed for effective dispersion of the pollutants. One Chimney will be common for two (2) units housing two independent flues. The external platforms will be of RCC construction.

The Steam turbine units will be of condensing type with single reheat and supercritical steam inlet parameters.

The steam turbine will be of single reheat, condensing type with separate HP, IP and multiple LP cylinders. The steam turbine has eight (8) uncontrolled extractions for feed water and condensate preheating.

Flue Gas Desulphurisation (FGD) unit will be installed to reduce the concentration of SOx emission.

The FGD is classified into three types based on the following:

- Sea water-based flue gas desulphurisation system
- Dry Flue gas desulphurization system
- Wet Limestone based flue gas desulphurisation system

Among the three types, wet limestone based FGD system is selected.

At present, advanced Low NOx combustion technology is used in all steam generator combustion system with Low NOx burner and over fire air system. This will reduce the NOx emission to a large extent. However, cost effective post combustion NOx control technology such as SCR / SNCR will be required to limit the NOx level to 100 mg/Nm^3 as stipulated by 2015 amendment.

The coal requirement for 2x660 MW unit shall be about 5.893 MTPA based on gross calorific value of 4350 Kcal/ kg. Blended coal (Indian - coal and imported coal) will be used in the ongoing power project.

The I&C system will consist of a microprocessor based on Programmable Logic Control (PLC) system, hardwired Annunciation system, control desk cum- panel, local control panels, local instruments, instrumentation control cables and erection hardware.

For design basis of ash handling system, worst coal (blending option 50:50) will be considered. Ash content of the blended coal will be 19.5%. But for designing the ash handling system, 20% margin will be considered. This assumption is only for designing the ash handling system.

About 3,13,512 KLD of sea water shall be required, with closed cycle cooling system with natural-draft cooling tower (NDCT). Water for construction purpose will be sourced from local water resource & Desalinated water will be used during operation stage. No extraction of ground water is envisaged. Water requirement for the operation phase will be met through captive desalination plant of 16 MLD capacity.

Water requirement

Sr. No.	Description flow rate	m^3/hr
1.	Desalination Plant Feed Water	3632
2.	Cooling Water makeup	9431
3.	Total sea water requirement	13063

The RO reject (reject concentrate or Brine) from the desalination plant will be about 36840KLD. This reject will be diluted by discharging the same into the large quantity of blow down water let into the sea. Thereby the impact of RO reject over the marine ecology is negligible. The storm water drains will be segregated and channelized to water harvesting area.

STP Details: STP sludge generated will be used as manure for green belt development and maintenance. Quantity of sewage generated during operational phase will be 22.5KLD which will be treated through Two sequential batch reactors (SBR) based Sewage Treatment Plant of capacity 40 KLD.One STP at jetty (underground deck) and the other near shore within the port landward boundary is proposed. Treated wastewater from the Jetty STP will be reused for flushing while the landward STP treated water will be reused for gardening.

ETP Details: Effluent generation from Transformer yard, TG hall, floor wash, fuel oil and coal handling area of about 720 KLD will be transferred/ collected/ treated in the Effluent Treatment plant of capacity 720 KLD are planned for the project.

The expected power to be evacuated from the plant will be in the order of about 1228 MW after accounting 7% auxiliary power consumption for entire plant auxiliaries and desalination plant. Considering a plant load factor of 85% the available energy for evacuation per annum will be about 9140.7 million units from 2x660 MW power plant. The generators are connected to the 400 kV switchyard through step-up transformers. Gas insulated switchgear (GIS) is considered for the Switchyard; in view of the fact that project site is located in coastal area. GIS Switchyard will have 4 number line feeders. One double circuit (2 lines) 400 kV line will be routed to 400 kV Ottapidaram Substation, one double circuit (2 lines) 400 kV line will be routed to 400 kV Samugarengapuram

Substation and another double circuit (2 lines) 400 kV line will be routed to Viruthunagar Substation.

The rain (storm) water removed from the building roofs, non-process area and grade level surfaces will be directed through the open ditches and culverts to the storm drainage piping. The rain water is collected in the storm water drain running all around the project. Rain water harvesting pits 30 nos. and 100 m3 pond is proposed.

During the construction phase the project requires direct employment of about 114 persons (permanent) and contractual workers of about 500 persons during construction period for supervision and execution. After construction of the project, the Plant will require about 545 persons for operation and maintenance of the plant.

The project site has about 40.469 Ha of land adjacent to the power plant identified for residential development which is currently in the design phase and will be implement later.

The greenbelt is planned around the plant as well as coal stock yards and fly ash ponds. About 167.058 Ha of land is earmarked for greenbelt, which is 44%. The species and plantation norms will be as per directives of CPCB guidelines in consultation with local forest department. M/s. Tamil Nadu Power Generation Corporation Limited (TNPGCL) conducted the '**EK PED MAA KE NAAM**' tree plantation program at two schools, such as Sri R.K.C. Hr. Sec. School on 19.09.2024 and T.D.T.A. Hr. Sec. School on 26.09.2024. The plantation program engaged 200 school students, and 50 saplings were planted at each school.

The project cost is estimated to be Rs.13,076.705 crores.

The baseline environmental study has been carried out during pre-monsoon season i.e. March 2024 to May 2024 by ABC Techno Labs India Pvt Ltd., NABL Accredited Lab, in accordance with the guidelines of EIA issued by the Ministry of Environment Forests and Climate Change, Govt. of India and CPCB, New Delhi. Secondary data was collected from public domain as well as different Government sources. The scope of the study has been done as per approved ToR by 11th EAC MoEF&CC vide file no J-13012/19/2008-IA. II(T) dated 29.07.2024. Granted Terms of References for EIA/EMP Study of ongoing 2 x 660 MW Udangudi Supercritical Thermal Power plant of M/s. TANGEDCO, Tuticorin District, Tamil Nadu.

From the summary of the wind pattern for study period (March 2024- May 2024) season the predominant direction is ENE and followed by E with less calm of 5.71 percent. The average wind speed is 2.82 m/s. The nearby India Meteorological Department station that is generating meteorological data is 40 km from the site i.e. IMD, Tuticorin. Hence, secondary information on meteorological conditions has been collected from IMD station.

The monthly mean maximum temperature varied from 28.3°C to 30.1°C while annual mean monthly highest and lowest temperature in the region is about 39.1^0C and 18^0C respectively. The district is very hot and dry during the summer season from March to May. During winter season which was about 81% to 84% (at 08:30 Hours) and 76% to 77% (at 17:30 Hours). The annual average Relative humidity is 76% (at 08:30 Hours) and 69% (at 17:30 Hours).

The rainfall occurred maximum in the month of November (192.8 mm). The total rainfall received in the year is about 630.2 mm. Total rainy days observed was about 32.1 days. It is evident from the available IMD data that the area is not prone to any special weather phenomena like dust storm, hail, cloud burst etc.,

This height is determined by the observation of the atmospheric temperature profile. The inversion level during winter season ranges above 200 m at 8 A.M. and 1000m at 5 P.M.

Tuticorin district comprises of well-developed litho package of meta-sedimentary sequence inter banded with charnockite Group of rocks. The rock types exposed are of quartzite, calc-granulite, garnet-biotite-sillimanite gneiss, garnet quartzo -feldspathic gneiss and garnet-biotite-cordierite gneiss belonging to Khond alite group of rock. The economic minerals found in the district are gypsum, limestone, beach sand, kankar and shell limestone. Minor occurrences of quartzite were also observed in Thoothukudi District. Major deposits of garnet and ilmenite sand were present in the coastal part of Tiruchendur Taluk whereas proposed project site comprises of recent deposits (younger age of formation, which is called Quaternary comprises of alluvium and coastal sand).

The district is underlain by both porous and fissured formations. The important aquifer systems in the district are constituted by i) unconsolidated & semi consolidated formations and ii) weathered and fractured crystalline rocks.

The porous formations in the district include sandstones and clays of Recent to subrecent and Tertiary age (Quaternary). The Recent formations comprising mainly sands, clays and gravels are confined to major drainage courses in the district. The maximum thickness of alluvium is 45m bgl, whereas the average thickness is about 25m. Ground water occurs under water table and semi-confined conditions in these formations and is being developed by means of dug wells and filter points. The productive zones are encountered in the depth range of 29.5 to 62 m bgl. Alluvium, which forms a good aquifer system along the Vaippar and Gundar river bed which is one of the major sources of water supply to the villages.

Landsat 8-9 & TIRS of 1:150000 scale is used for land use and landcover study. From the study it is observed that Barren land is covering 22% (90.48 Sq.km) of the total area followed by mixed plantation 21% (87.58 Sq.km).

Presentation of results

Air: The maximum and minimum concentrations for PM_{10} were recorded as 58 µg/m^3 and 33 µg/m^3 respectively. The maximum and minimum concentrations for $PM_{2.5}$ were recorded as 27 µg/m^3 and 16 µg/m^3 respectively. The maximum SO_2 concentrations were recorded as 8.9 µg/m^3 and minimum is found to be BDL(<5). The maximum and minimum NO_x concentrations were recorded as 17.7 µg/m^3 and 10.4 µg/m^3. it is observed that very marginal decrease in the revalidated baseline data.

Noise: The day time noise level at industrial zone was observed to be 51.7 dB(A) which is within the prescribed limit of 75 dB(A). The day time noise level at commercial zone was observed to be 53.7 dB(A) which is within the prescribed limit of 65 dB(A). The day time noise level at all residential zone was observed to be 47.5 to 53.7 dB(A) which is within the prescribed limit of 55 dB(A). The night time noise level at industrial zone was

observed to be 42.2 dB(A) which is within the prescribed limit of 70 dB(A). The night time noise levels at residential locations were found to be 40.8 to 44.5 dB(A) within the prescribed limit of 45 dB(A). From the revalidated data, it is observed that the noise level is decreasing when compared with existing baseline data.

Water: The pH value of the collected ground water in the study area varies from 7.41 to 8.02 and meets the acceptable limit for drinking water standards. The essential parameters of ground water are well within the permissible limits. The heavy metal parameters are also well within the IS10500 norms. The surface water analytical results are compared with best of use norms given by MoEF&CC and the observed values are well within the limit.

From the revalidated data of surface and groundwater samples, it is evident that there is no change in the chemical parameters and hence, it can be concluded the operation of plant does not have any impact on surface and ground water.

Soil: Eight numbers of soil samples have been collected from the study area and all the physical and chemical parameters are observed to be normal.

Ecology: The detailed study about 121 floral species observed. The most dominant tree species in the entire study area was dominated Cocos nucifera, Azadirachta indica, Musa paradisiaca, Acacia nilotica, Psidium guajava etc. Most dominant shrubs in the study area were, Prosopis juliflora, Lantana camara, Datura metel, Calotropis procera, Tecoma stans etc. Among the herb species observed are Boerhavia diffusa, Cynodon dactylon, Achyranthes aspera, Amaranthus spinosus, Ageratum conyzoides, Mimosa pudica, etc.

Livestock like cattle, buffalo, goat, poultry, and duck are reared for dairy products, meat, egg and for agriculture purpose. Majority of cattle and buffalo are of local variety. Backyard poultry farms are mostly common in this area; however, some commercial poultry farms are also recorded in the study area.

To assess the planktonic profile of Phytoplankton and Zooplankton, 3 water samples from estuary region, intertidal zone and coastal water were collected at sub surface level. The marine ecological study was conducted in different water bodies of the study area and the flora and fauna was recorded.

Traffic: The existing PCU per day volume of SH 176 (Thoothukudi - Tiruchendur - Kanyakumari Road) is about 21638.4 against the capacity of 36000 PCU per day.

Land: As the project site (total area 380 Ha) is under possession of TANGEDCO and preparatory activities like construction of access roads, temporary offices and godowns, piling, storage of construction materials etc. will be confined within the project area. Topography of the proposed site appears to be flat with level + 2.00 m AMSL and it may not require any major excavation. The filling material will be fly ash from Tuticorin Thermal Power station of TANGEDCO (TNEB). The filling material will be transported by closed trucks through all-weather metalled road. However, the above activities are already completed and suitable mitigation measures taken and hence does not warrant for further analysis.

Water: The study area is demarcated with dentritic drainage pattern as the area is completely covered by recent alluviam. The surface run-off water from the project site is

naturally diverted into surface water network system which is constructed one side of the road and all along the boundary wall and finally diverted to rainwater harvesting pits. The increase runoff will be directed to 100 m^3 rainwater storage pond. The excess runoff (i.e., pre-construction stage quantity) will be drained into rainwater harvesting pits 30 Ns. which is having 180 m^3 carrying capacity. The harvested water will be used for plant purposes.

Air: The construction and other associated activities will lead to emission of different pollutants, viz. particulate matter and gaseous pollutants (SO2 and NOx) from machineries and vehicles. The important air pollutants generated from thermal power plant are Particulate Matter (PM), Sulphur dioxide (SO_X) and Oxides of Nitrogen (NO_X) due to burning of coal.

The maximum GLCs for each grid point were predicted with respect to pollutants PM10, PM2.5, SO2 and NOx. In order to obtain the impact due to proposed project, Background concentration recorded in the study area are considered and the contribution due to proposed project is added to it. The predicted cumulative GLC values are as follows and the isopleths are enclosed in the report.

Resultant concentrations due to incremental GLC's at project site

Pollutant	Maximum AAQ Concentrations Recorded During the Study Period in Project site (µg/ m^3)	Incremental Concentration (µg/m^3) – Worst Case	Resultant Concentration (µg/m^3)	AAQ Standards (mg/Nm^3)
PM	31.849	1.17	33.01	100
NOx	51.374	1.89	53.264	80
SOx	28.78	1.06	29.84	80

Mitigation measures

It is proposed to install adequately sized electrostatic precipitator having an efficiency that limits the outlet emission to the applicable value of 30 mg/Nm3. The electrostatic precipitators will have adequate numbers of parallel gas streams, isolated from each other on the electrical as well as gas side and will be provided with gas tight dampers at inlets and outlets of each stream, to allow maintenance to be carried out safely on the faulty stream, while the unit is working. Electrostatic precipitator will be provided with transformer rectifier sets, microprocessor based programmable type rapper control system and ESP management system to ensure safe and optimum operation of ESP. The dust collection hoppers at all strategic locations will have a minimum storage capacity of eight (8) hours. The hoppers will have heating arrangements to prevent ash sticking to the sloping sides and down pipes. Level indicators to indicate ash levels in the hoppers and trip the ESP in case of high ash levels in the ash hoppers are also envisaged to ensure safety of ESP.

Wet Limestone based Flue Gas Desulphurization system

The wet limestone based FGD system adopts limestone slurry for the removal of the SOx present in the flue gas and the flue gas after treatment will be saturated. Gas to gas heat exchangers will be required to raise the temperature of the flue gas entering the chimney. The system will have efficiency of 95% or more. The arrangement of flue gas system will allow complete isolation of the absorber from gas side, with the unit in operation. For this purpose, Motorized/Pneumatic Guillotine type gates will be provided at hot gas inlet to gas-gas heater, cold gas outlet from gas-gas heater and the flue gas bypass duct.

NOX Control System

At present, advanced Low NOx combustion technology is used in all steam generator combustion system with Low NOx burner and over fire air system. This will reduce the NOx emission to a large extent. However, cost effective post combustion NOx control technology such as SCR / SNCR will be required to limit the NOx level to 100 mg/Nm3 as stipulated by 2015 amendment.

The proposed project related activities will lead to generation of noise that may have minor impact on the surrounding communities in terms of minor increase in noise levels. The machinery envisaged for the plant operation is a source of noise. Generally, this noise is generated due to continuous operation of machineries like coal mills, turbine, boilers, generators, pumps and cooling towers etc.

The propagation modeling Dhawani Pro considered for operation and the predicted noise level at source during operation is 85 dB(A). The results of the noise modelling reveal that the maximum noise level will be 23.4 dB(A) at 1.5km distance due to the proposed plant.

The effluent generated from the plant is treated in Sequential Batch Reactor (SBR) based ETP capacity of 720 KLD. The treated water will meet the requirement of TNPCB norms viz. BOD <30 mg/l, TSS <20 mg/l and pH 5.5-8.5. The SBR plant consists of clarifier, oil and grease removal, closed aeration followed by pressure sand filter and activated carbon filter.

The estimated Municipal solid waste is about 109 kg/day. Out of this, 40% that is about 43.6 kg/day is Bio-degradable waste. The non Bio-degradable waste 60% is estimated to be 65.4 kg/day. As the plastic waste recirculation is maximized and usage of plastic is reduced the expected plastic waste is about 20% of 65.4 kg/day that is 13.08 kg/day will be collected, segregated and disposed through Udangudi town panchayat as per Solid Waste Management Rules, 2016.

Hazardous Wastes are properly handled in containers and stored in hazardous waste storage areas as per rules and also bunding is provided to avoid overflow of spillage waters which can contaminate the surroundings. Recyclable waste is handed over to authorized recyclers and other hazardous waste will be disposed through approved TSDF facility.

TNPGCL (TANGEDCO) is located near to Udangudi village about 4.85 km in the West direction on SH-176 (Thoothukudi – Tiruchendur – Kanyakumari Road) - 0.12 km East which is leading to Udangudi. Since, the plant is located on the isolated path major traffic is not expected. The LOS study shows that the existing traffic scenario is “Excellent” and

the free flow of vehicles is observed during the study period February 2024. Out of the total traffic vehicles, 2 wheelers are very high followed by Trucks& Bus, 4-wheeler light and medium vehicles. Due to the proposed 2 x 660 MW supercritical thermal power plant, the traffic density will have negligible increase and traffic scenario is “High” and stable flow.

The ongoing plant is already in construction and about 85% of the work is completed and it is planned to obtain a fresh EC as the validity is expired in the month October, 2024. Hence, alternative site and technology consideration is not applicable for this project at this stage.

The key issues associated with the life cycle of a project are the monitoring of environmental parameters. Three types of environmental monitoring are ensured the compliance through separate EMC.

The preliminary risk assessment has been completed for the ongoing plant and associated facilities:

- Individual risk from the thermal power plant is negligible, as it is below the tolerance criterion of individual risk not to exceed 1.0E-5 per year in populated areas,
- Individual risk contour for 1.0E-5 per year is also within the boundary limit of the Udangudi thermal power plant,
- The Individual Risk Potential for Loss of Life (Potential Loss of Life- PLL) due to Udangudi thermal power plant is 2.3527E-005 per avg. year.

Socio-economic: The district population growth rate is 3% Which is used for projecting the population within the study area of 10 km radius. The projected population for 2024 study area is 140279 (13%).

The ongoing 2 X 660 MW Power plant will result in improvement of infrastructure as well as up-liftment of social infrastructure in the area. The people residing in the nearby areas will be benefited directly and indirectly through employment opportunities likely to arise due to the project. It will also help in sustainable development of this area including development of physical Infrastructural facilities such as road transport facilities, educational facilities and water supply and sanitation. It is anticipated that the ongoing power plant will provide benefits to the locals in two phases i.e. during construction phase as well as during the operational stage of the plant.

The capital cost of the project is estimated to be Rs. 13076.705 Crore. As the project is a greenfield project about 0.25% of the cost is to be spent towards CER activity as per OM F.No. 22-65/2017-IA. III dated. 1st May,2018. Accordingly, the ongoing project authority planned to spend Rs.32.694 Crore. This amount will be spent for the development of local people within the impact area of 10 km radius from the project site. During 2018 to 2020, Rs. 10.843 Crore was spent on equipment purchase/ repair/ alteration in government hospitals, construction of fish landing center and temporary protection of sea erosion, etc.

The CSR initiatives of TANGEDCO have been prioritized on local needs, which focus on Health, Education, Sustainable Livelihood, Social Mobilization, Infrastructure Development, Water Harvesting, Agriculture and Environment Conservation.

The EMC is headed by a Plant Head. In his day to day work, the plant head is assisted by chemists, laboratory assistants and other staff. Services of forest officials are also taken for effective implementation of plantation schemes. For development and maintenance of jobs like drainage, clearing settling pits etc. assistance from the plant's civil engineering department is taken. The officers of the department meet frequently to assess the progress and analyses the data collected during the preceding fortnight/month. Total manpower of EMC is about 41 numbers.

Anticipated adverse environmental impacts from the ongoing of TNPGCL (TANGEDCO) will be localized, short term and low/moderate in nature, and visible only during construction phase. Adverse environmental impacts identified in EIA study due to the ongoing project will be mitigated by implementation of mitigation measures/environmental management plan (EMP) described in EIA report and compliance of applicable environmental regulations. The ongoing project will have long term and regional beneficial/positive direct and indirect impacts on employment, socio economic conditions and development of the area and region. Hence, it is requested to grant Environmental Clearance for the project.