



File No.J-13012/04/2018-IA.I(T)
Government of India
Ministry of Environment, Forest and Climate Change

3rd Floor, Vayu Block,
Indira Paryavaran Bhawan, Jor Bagh Road,
Aliganj, New Delhi-110003

Dated: 12.10.2020
13

To

The Chief Engineer (Planning & Projects)
M/s. Gujarat State Electricity Corporation Ltd.
Vidyut Bhawan, Race Course,
Vadodara, Gujarat-390007.

Sub: 1x800 MW Coal Based Supercritical Thermal Power Plant and Decommissioning of 2x120 MW Units at Ukai Thermal Power Plant at Vill. Vagda, Tehsil -Fort Songadh, District-Tapi, Gujarat by M/s Gujarat State Electricity Corporation Limited (GSECL)- reg. grant of Environmental Clearance.

Sir,

The undersigned is directed to refer your online application No. **IA/GJ/THE/144074/2018** dated 19.2.2020 for grant of Environmental Clearance to establish 1x800 MW Thermal Power Project within the premises of existing units 2x200 MW, 1x210 MW and 1x500 MW Ukai Thermal Power Plant located at Village Vagds, Tehsil Fort Songadh, District Tapi in the state of Gujarat.

2. It has been noted that the Term of Reference (TOR) for the proposed project was granted vide Ministry's letter dated 04.09.2018. The total installed generating capacity at Ukai TPS is 1350 MW, comprising of 2x120 MW (Units 1 & 2- Decommissioned), 2x200 MW (Units 3 & 4), 1x210 MW (Unit 5), and 1x500 MW (Unit 6).

3. It has been noted that the land requirement for the project 89 Acres (69 Acres in Ash Pond 'A' to be reclaimed and 20 Acres vacant land within existing TPP premises). There is no forest land involved in the project. There are No National park, Sanctuary, Elephant/tiger Reserve (existing as well as proposed), migratory routes, exist within 10 km of the project site.

4. It has been noted that the coal required for the proposed project is 3.34 Million Tons/annum. The company has been allocated Gare Palma Sector-I coal block, in Mand Raigarh Coal field, Raigarh district of Chhattisgarh vide MoC letter F.No.103/27/2015/NA dated 17.2.1017. The expected coal quality is: Ash Content-31.97%, Sulphur- 0.54%, Gross CV-4706 kcal/kg, Moisture-5.38 %, Mercury- 0.125 (ppm), Fixed carbon-35.66%, Volatile matter-26.9 %. The company has its own railway siding and rail network in the plant to receive coal from nearest railway Songadh railway station (6 km). Accordingly, the proposed coal will also be transported by rail.

5. The maximum water requirement for the proposed 1x800 MW unit is about 1900 m³/h (45,600 m³/day), which is less than 3.0 m³/MWh. Ukai Thermal Power

station is situated next to the Ukai left bank Main Canal, the water requirements for the existing plant of 1x210 MW, 2x200 MW and 2x120MW and 1x500 MW is being met from the supply from Main Canal. The proposed project will be operated on zero effluent discharge concept, and no wastewater will be discharged.

6. Water consumption in FGD for 800 MW unit shall be 171 m³/hr, in case of wet lime dosing and this shall be met with through treated effluent from ETP. Quantity of gypsum generation from the FGD unit will in the range of 40-45 T/hr. The Gypsum shall be dried, and disposed through sale to users like cement industry, land correction, etc. Intermediate storage shall be done at Gypsum storage shed in the plant.

7. Based on the thermal dispersion modeling studies, it has been observed that the discharged cooling water from the thermal plant gets normal ambient temperature within downstream flow of 1.55 km from the proposed outfall location. Since, there is no change observed in the water qualities after 1.55 km in the downstream, the canal water can be used for irrigation purpose.

8. It has been informed that the possibility of using cooling water discharge of existing units for the proposed project has been examined and the consumption of Water for proposed 800 MW unit will be only make up water of 1900 m³/h. Recently in 2017, 100% civil lining work of irrigation canal is carried out by GSECL, incurring huge expenses, and GSECL is stake holder of Ukai hydro power plant and power block of DAM, regularly spending considerable expenses on maintaining the same through irrigation department of Government of Gujarat.

9. It is proposed to install a closed re-circulating cooling water system using Natural draft cooling towers, with 9°C temperature rise across the condenser. It is envisaged to design the system for five (5) cycles of concentration (CoC). Clarified water shall be used in closed recirculating cooling water system. With 28°C Design Wet Bulb Temperature, the optimum Cooling Water temperature which can be achieved is 33°C.

10. The ambient air quality has been monitored during pre-monsoon season of 2018. The observed PM₁₀ concentration was ranging from 50 µg/m³ at GEB Colony to 88 µg/m³ at Ghoda Village, Navi Ukai Village, Motikhervan Village. The maximum observed PM_{2.5} concentration was 48 µg/m³ at Navi Ukai Village. The maximum SO₂ concentration was 18 µg/m³ at Charcharbunda Village. Further NO₂ concentration maximum observed was 28 µg/m³ at Partharda village.

11. The pollution load from existing units (Unit- 3& 4: 2x200 MW; Unit- 5: 210 MW, Unit-6: 500 MW) and proposed unit (1x800 MW) has been estimated for two scenarios with and without FGD and De-NO_x control measures.

Parameter	Existing Power Plants with present pollution controls (with ESP, without FGD & without NO _x control)	Proposed Power Project with all pollution control measures (ESP, FGD & De-NO _x control)	Total emission load
Plant/ capacity	Unit- 3& 4: 2x200 MW; Unit- 5: 210 MW, Unit- 6: 500 MW (Total:1110	Proposed Unit-7: 800 MW	Total: 1910 MW

	MW)		
PM	9.66 Tons/day (112 g/sec)	2.35 Tons/day (27.2 g/sec)	12.01 Tons/day (139.2 g/sec)
SO ₂	146.8 Tons/day (1699 g/sec)	7.93 Tons/day (91.8 g/sec)	154.73 Tons/day (1790.8 g/sec)
NO _x	57.37 Tons/day (664 g/sec)	7.93 Tons/day (91.8 g/sec)	154.73 Tons/day (1790.8 g/sec)

12. The incremental concentrations have been predicted by using plume dispersion model and the details are as below:

Pollutant	Maximum AAQ Concentrations Recorded During the Study ($\mu\text{g}/\text{m}^3$)	Maximum Incremental GLC ($\mu\text{g}/\text{m}^3$)	Cumulative GLC ($\mu\text{g}/\text{m}^3$)	Standard (24 hrs) ($\mu\text{g}/\text{m}^3$)
SO ₂	18	56.99	74.99	80
NO _x	26	24.30	50.30	80
PM	88	4.93	92.93	100

13. It has been informed that ESP up gradation for units 3, 4 & 5 of Ukai TPS were completed. The Timelines for installing FGD for units # 3, 4, & 5 is December 2021 and for Unit 6 of Ukai TPS is March 2022. Draft Tender for FGD installation in old units 3,4 & 5 of Ukai TPS received and is under Scrutiny. EPC tender for FGD in unit-6 of Ukai TPS will be re-invited soon. However, the same can be delayed on account of Covid-19 pandemic. The CPCB has given the timeline of June 2022 for installing the cooling Towers in place of Once Through Cooling system in unit 3, 4, 5 of Ukai TPS. However, GSECL has requested MoEF&CC and CPCB to grant exemption from providing Cooling towers considering the age of units and space constraints.

14. The flyash generation from proposed project is 9.08 Lakh Tons/annum and bottom ash generation is 2.27 Lakh Tons/annum amounting to total ash generation of 11.35 Lakh Tons/annum. Existing ash ponds (B,C &D) will be used for storage of ash. All efforts will be made to promote utilization of fly ash to the fullest extent. In the event not enough utilization is found, fly ash will be disposed to the ash pond by HCSD system. Bottom ash will also be discharged by HCSD system to the ash pond. The ash pond will have a water cover always to prevent ash being carried by wind. The existing ash ponds are sufficient to store ash generated from the proposed 800 MW unit as per MOEF&CC Guidelines. Waste water from the FGD approx. 25 m³/hr will be discharged directly into the ash pond.

15. The ash generation vis-à-vis utilization for the existing power plant is given as below:

Year	Ash generation in Tons	Ash utilisation in Tons	% of ash utilisation
2015-16	12,57,297	10,10,955	79.45
2016-17	11,95,325	10,58,145	88.52
2017-18	14,04,886	10,65,143	75.82
2018-19	13,11,946	10,81,131	82.41
2019-20	13,55,128	11,56,495	85.34

16. The Company had already approached Roshni Stone Quarry and Dhara Stone Quarry, situated in the 20 Km radius from the proposed thermal power plant for utilizing of the fly ash in their open cast stone quarry reclamation and back-filling operations. Work Order was placed on 26.09.2019.

17. Public Hearing for the proposed project was conducted on 19.06.2019 (at 11:00 am) at Urja Nagar Colony, Post: Ukai, Ta. Fort Songadh, District: Tapi, Gujarat. The issues raised during public hearing inter-alia include employment, welfare activities, the disposal/utilisation system for ash from proposed unit, reclamation of ash ponds, air born flyash causing air pollution, tree plantation, compensation issues of earlier acquired land, transfer of plots to tribals in the new colony, provision of health care facilities, etc.

18. Project Proponent replied to the public during hearing that the land acquired for earlier plant facilities was compensated. Further, welfare activities and tree plantation shall be extensively carried out in surrounding villages. After providing ash slurry recirculation pump house, height of ash dyke will be raised upto 5m. Existing ash shall be utilized in stone quarry nearby Songadh area after the consent of respective owners. Annual order of approx. 2,35,000 MT of pond ash has already been issued, this pond ash will be used in stone quarry filling.

19. Further, it has been informed that the M/s GSECL has been doing social welfare activities towards affected villages surrounding the project and accordingly, the amount of Rs.12.78 crores has been earmarked to meet the public hearing commitments.

20. The Ministry's Regional Office, Bhopal submitted certified EC compliance report vide dated 7.1.2018. Regarding non-compliances highlighted by the Regional Office, stack emissions exceeding the standard, effluent release into natural drain, no garland drain around the coal stock yard, no settling pond near ash pond, housekeeping, the following measures were taken to control pollution:

- a. High efficiency Electrostatic Precipitator has been provided for unit no. 6 with Collection efficiency of 99.897%. ESP up-gradation work of unit No. 3 to 5 has been completed & PM norms were achieved in all units.

- b. As per directive of CPCB, timelines for implementation of FGD to meet SO₂ norms in old units 3, 4 & 5 is December 2021 & Unit 6 is March 2022. Draft Tender for FGD installation in old units received and is under Scrutiny. EPC tender for FGD in unit 6 of Ukai TPS will be re-invited soon. However, the same can be delayed on account of COVID-19 pandemic.
- c. The Over Fire Air (OFA) and Lower Over Fire Air (LOFA) System has been provided in unit 6 for reduction of NO_x emission.
- d. Work order was issued for Consultancy work for ash water recirculation and establishing ZLD scheme to M/s Radical Engineering, Vadodara vide dated 24.01.2019. Survey work completed and DPR is received on 10.01.2020. After implementation of this scheme, the zero effluent discharge will be achieved. The same has been delayed on account of COVID-19 pandemic.
- e. Construction work of coal settling tank has been completed. Technical bid was opened on 18.06.2020 for providing both sides drain of coal stacker & reclaimer in coal plant.
- f. For improvement of housekeeping in the plant, scrap & usable material is segregated by concerned section. Scrap collected & credited to store section by concerned section as per scrap lifting work. Scrap management is in place. Further, Work order was issued for painting to steel structure and work started from 12.12.2019.

21. The total area of the project including existing units, proposed unit & ash dykes is 285.49 ha. The 33% greenbelt of 285.49 ha would be 94.21 ha. Total existing plantation area is 37.56 ha. Total proposed plantation area in proposed project area is 11.88 ha. Remaining 44.77 ha area for plantation has been proposed in Villages Dumda, Ukai, Nanikhervan. Consent was obtained from respective Gram Panchayats.

22. The estimated project cost is Rs.5,113 Crores. Capital cost of EMP measures provided in the project is Rs. 799.20 Crores which includes Rs. 322 crores for FGD & De-NO_x systems and the recurring cost of operation and maintenance of these measures is Rs. 47.40 Crores/annum. The estimated employment generation during construction phase is 800 persons and operation phase is 300 persons.

23. The proposal was appraised by the EAC (Thermal) in its meetings held on 10.4.2020 and 28.7.2020. In acceptance of the recommendations of the Re-constituted EAC (Thermal Power) in its meeting held on 28.7.2020 and in view of the information, clarifications and documents submitted by Project Proponent, **the Ministry hereby accords the Environmental Clearance** to the above mentioned project under Schedule 1(d) of the EIA Notification dated September 14, 2006 with following specific conditions for compliance:-

- i. From the annual average values of baseline data, PM₁₀ values are exceeding the annual standard at several locations. An action plan to bring it below the annual standards is to be submitted by the project proponent and the Gujarat State Pollution Control Board should monitor the action plan and the ambient air quality to bring it below the standards.



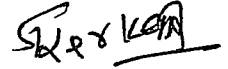
- ii. As the FGD cannot be installed within the timeline given by CPCB, necessary permission shall be obtained once again as to which date the FGD could be installed to meet the new norms.
- iii. The stack emissions of PM: 30 mg/Nm³, SO₂: 100 mg/Nm³, NOx: 100 µg/Nm³, Hg: 0.03 mg/Nm³ shall be complied with. The emission reporting shall be submitted in the compliance report.
- iv. The emission norms for the existing power plants as applicable inline with Ministry's Notification dated 07.12.2015 shall be complied with. The status of implementation and the current emission norms to be reported. Plant is not allowed to operate without meeting emission norms, unless an extension of timelines for implementation is granted by CPCB/MoEF&CC.
- v. As the proposed 800 MW unit will be built on existing ash pond, the stability of the structure shall also be ensured.
- vi. The implementation status of action plan furnished to the observations of the sub-committee such as a) Ash water recirculation system for existing ash ponds and treatment & reuse, b) Municipal Solid waste and hazardous waste and segregation & disposal, c) installation of Vermi composting plant, d) Removal of dry flyash along the roads and embankment & stabilization with vegetation, e) Continuous flow meters at intake & discharge points for cooling water, f) air quality monitoring in the village near Ash pond, g) continuous online ambient air quality monitoring stations both at Plant & Township, and h) Water quality monitoring in the upstream and downstream of Ukai canal, shall be submitted in the compliance report.
- vii. Daily average and annual consumption of quantities of Coal consumption and water consumption shall be provided.
- viii. ZLD of the plant shall be complied as per the notification dated 07.12.2020 of MoEFCC.
- ix. The daily average and monthly quantities of flyash (including bottom ash) generation, utilisation and disposal of unutilised ash including percentages against the target as given in the flyash Notification shall be submitted.
- x. No additional ash pond is permitted. Existing ash ponds shall be used to store the unutilised ash pond.
- xi. The status of ash ponds such as volume availability, amount of flyash filled, stability of the dyke, greenbelt around the ash dyke, remaining life of ash pond, reclamation plan after its life shall be submitted.
- xii. High Concentrated Slurry Disposal System, ash water recirculation system shall be installed for disposal of unutilised ash.

- xiii. As proposed, the Cost of EMP Rs.799.2 crores as capital cost, Rs.47.40 Crores as recurring cost shall be spent to implement environment pollution control measures.
- xiv. As proposed, Rs. 12.78 Crores (0.25% of the project cost) has been earmarked for fulfilling the public hearing commitments and for uplifting the socio-economic conditions of the surrounding and affected villages as part of Corporate Environment Responsibility. The progress of implementation is to be submitted.
- xv. The 33% of the project area (285.49 ha) would be 94.21 ha. As proposed, 49.44 ha greenbelt is to be developed within the plant area. Due to paucity of land, the remaining 44.77 ha greenbelt is to be developed in Villages Dumda, Ukai, Nanikhervan so that the objective of 33% greenbelt development is achieved.
- xvi. The Standard EC conditions for Thermal Project to be complied with on uploaded in the website of the Ministry (http://moef.gov.in/wp-content/uploads/2018/03/E12Q0QNG_Standardisation-of-Conditions-of-EC-for-TPP-19112018.pdf).
24. Once the project construction is complete, the final layout of the Plant including the existing one to be submitted stating the scope/extent of work envisaged in the EIA along with estimated cost vis-à-vis the actual cost incurred.
25. The Ministry reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.
26. The environmental clearance accorded **shall be valid for a period of 7 years** from the date of issue of this letter to start operations by the power plant.
27. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
28. In case of any deviation or alteration in the project proposed including coal transportation system from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the condition(s) imposed and to add additional environmental protection measures required, if any.
29. The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.

30. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

This issues with the approval of the Competent Authority.

Yours faithfully,



(Dr. S. Kerketta)
Director (IA.I)

Copy to:-

1. The Secretary, Ministry of Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. The Chairman, Central Electricity Authority, Sewa Bhawan, R.K. Puram, New Delhi-110066.
3. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi- 110032.
4. The Additional Director General of Forests (C), Ministry of Environment, Forests and Climate Change, Regional Office (EZ), A/3, Chandrasekharpur, Bhubaneswar - 751023.
5. The Additional Chief Secretary, Forests & Environment Department, Government of Gujarat, Block-14, 8th Floor, Sachivalaya, Gandhinagar - 382 010, Gujarat.
6. The Member Secretary, Gujarat Pollution Control Board, Paryavaran Bhavan, Sector-10A, Gandhinagar-382010.
7. The District Collector Office, Collector office, Government of Gujarat, District Tapi-Vyara, Gujarat - 394651.
8. Guard file/Monitoring file.
9. Website of MoEF&CC.



Director (IA.I)