



सत्यमेव जयते

File No: J-13011/22/2007-IA.II(T)
Government of India
Ministry of Environment, Forest and Climate Change
IA Division



Date 26/02/2024



To,

Shri R R Pandey
DAMODAR VALLEY CORPORATION
DVC Headquarters, DVC Towers, VIP Road, Kolkata - 700054, Kolkata, KOLKATA, WEST
BENGAL, 700054
rakesh.pandey@dvc.gov.in

Subject: Expansion of Raghunathpur Thermal Power Station by installing 1320 (2x660) MW capacity Thermal Power plant (Phase-II) at village Raghunathpur, District Purulia (West Bengal) by M/s Damodar Valley Corporation – Environmental Clearance (EC-regarding).

Sir/Madam,

This is in reference to your application submitted to MoEF&CC vide proposal number IA/WB/THE/451957/2023 dated 10/05/2023 for grant of prior Environmental Clearance (EC) to the proposed project under the provision of the EIA Notification 2006 and as amended thereof.

2. The particulars of the proposal are as below :

(i) EC Identification No.	EC23A0601WB5144917N
(ii) File No.	J-13011/22/2007-IA.II(T)
(iii) Clearance Type	Fresh EC
(iv) Category	A
(v) Project/Activity Included Schedule No.	1(d) Thermal Power Plants
(vi) Sector	Thermal Projects
(vii) Name of Project	Proposed DVC, Raghunathpur Thermal Power Project-PH-II (2x660 MW)
(viii) Name of Company/Organization	DAMODAR VALLEY CORPORATION
(ix) Location of Project (District, State)	PURULIA, WEST BENGAL
(x) Issuing Authority	MoEF&CC
(xi) Applicability of General Conditions as per EIA Notification, 2006	No

3. The proposal is for grant of environmental clearance to the project for expansion of Raghunathpur Thermal Power Station by installing 1320 (2x660) MW capacity Thermal Power plant (Phase-II) at village Raghunathpur, District Purulia

(West Bengal) by M/s Damodar Valley Corporation.

4. The existing Raghunathpur Thermal Power Station (RTPS) of DVC is located at village Raghunathpur, having total installed capacity of 1200 MW (2x600 MW) under Ph-1 to which MoEF&CC has granted Environmental Clearance vide letter dated 18.10.2007. The commercial operation of the Phase 1 project i.e. 1200 MW (2x600 MW) has been started in March, 2016. Earlier, Raghunathpur Thermal Power Station was accorded Environment Clearance on 23.05.2012, under expansion, by MOEF&CC for 2x660 MW under Phase II. Public Hearing for this project was successfully conducted. However, due to one or more reasons, activities of Ph-II could not be taken up further and the project was dropped by DVC in 2014-15 and contracts for different packages were terminated. The validity of environmental clearance has expired on 22.05.2017.

5. The project/activity is proposed by the PP is a brownfield project and covered under category A of item 1(d) 'Thermal Power Plants' of the Schedule to the Environmental Impact Assessment Notification, 2006 as the power generation capacity is beyond threshold limit of 500 MW therefore, it requires appraisal at Central level by the sectoral EAC in the Ministry.

6. The MoEF&CC vide its letter dated 10.05.2023 has issued a denovo ToR for conducting EIA study for expansion of Raghunathpur Thermal Power Station by installing 1320 (2x660) MW capacity Thermal Power plant (Phase-II) at village Raghunathpur, District Purulia (West Bengal) in favour of M/s Damodar Valley Corporation.

7. The Project Proponent and the accredited Consultant M/s. Envirotech East Pvt. Limited made a detailed presentation on the salient features of the project and informed that:

(i) 6.60 Million Metric Tonne per annum of coal will be required as fuel. Coal Linkage is from Central Coalfield Limited (CCL) . M/s Central Coalfields Limited (CCL) on 03.01.2011 issued a Letter of Assurance (LOA) for 4.69 MTPA of E-Grade Coal for Ph-II. DVC vide its letter ref. no- ED(Fuel)/ MOP/RTPS, Ph-II/2021-22/559 dated: 21.03.2022 to Ministry of Power has requested extension of validity of LOA for a further period of 4 years with effect from 31.03.2022 towards fuel security of RTPS Ph-II. Further, SLC-LT, in its meeting held on 08.08.2022, has recommended the grant of coal linkage under Para B (i) of SHAKTI Policy to Raghunathpur TPS Ph-II from Coal India Limited.

(ii) Details of fuel and Ash disposal

Fuel to be used	Coal
Quantity of Fuel required per annum	6.60 Million Metric Tonne per annum
Coal Linkage / Coal Block (If Block allotted, status of EC & FC of the Block)	Coal Linkage from Central Coalfield Limited (CCL) available. M/s Central Coalfields Limited (CCL) on 03.01.2011 issued a Letter of Assurance (LOA) for 4.69 MTPA of E-Grade Coal for Ph-II. DVC vide its letter ref. no- ED(Fuel)/ MOP/RTPS, Ph-II/2021-22/559 dated: 21.03.2022 to Ministry of Power has requested extension of validity of LOA for a further period of 4 years with effect from 31.03.2022 towards fuel security of RTPS Ph-II. Further, SLC-LT, in its meeting held on 08.08.2022, has recommended the grant of coal linkage under Para B (i) of SHAKTI Policy to Raghunathpur TPS Ph-II from Coal India Limited.
Fly Ash Disposal System proposed	The fly ash shall be extracted in dry form from the electrostatic precipitator hoppers. This dry ash is taken to buffer hoppers for its onward transportation in dry form to storage silos for utilization. In case of non-utilization, fly ash can be converted to slurry in wetting units/through feeder ejectors for its ultimate disposal in wet form to ash disposal area.
Ash Pond / Dyke (Area, location, &	The geographical co-ordinates of the ash pond is Latitude 23°36'11.23"N to 23°37'12.74"N and Longitude 86°37'3.97"E to 86°38'4.73"E.

co-ordinates Average height of the area above MSL (m)	Average height of the area 176m (577.42 ft.) above MSL
Quantity of 1. Fly ash to be generated 2. Bottom ash to be generated	Fly ash - 23.76 Lakh Metric Tonne per Annum Bottom ash - 5.94 Lakh Metric Tonne per Annum
Fly ash utilisation details	Fly ash will be utilized in nearby Cement Plants & Brick manufacturing units
Stack height (m) & Type of flue	In the proposed (RTPS, Ph-II) project, either, One twin flue stack of 220 M height Or Two single flue stacks of 150 M height is envisaged.

Land requirement for RTPS phase – II will be 150 acres, which is available within the existing project area of 840.53 Hectares (2077 acres), which is already acquired. Land of 507.480 acres (205.37 Ha.) for the existing Ash disposal system in RTPS (ph-1) comprising of Ash pond, ash pipeline corridor, green belt etc. will be utilised for RTPS (Ph-2) also. The ash dyke is about 3 Km from Plant premises

Land use break-up

Sl. No.	Description	Area (in acre)	
		Existing	Proposed
1	Main Power House (Boiler + TG + ESP + Fans + Mills)	90	90
2	Coal Handling Plant	100	-
3	Switch yard	45	45
4	Lime storage & FGD etc.	15	15
5	Ash disposal area	300	-
6	Township (CISF Complex)	72	-
7	In plant water reservoir, cooling towers etc.	250	-
8	Water Corridor	33	-
9	Corridor between ash pond and plant	22	-
10	Rail cum road corridor	340	-
11	Township (including approach road) for employee	70	-
12	Road widening (SH-5, Jharukhamar Ghutitara plant gate)	19	-
13	Plant area approach road & Free space	20	-

14	Green belt	551	-
	TOTAL	1927	150

(iii) Total water requirement for the project is 95,049 Kilo Litres per Day (KLD) and same will be met from Panchet Dam of DVC through pipeline and is situated at 12km from project site. It is informed that Damodar Valley Corporation is the Authority for drawl of water from Panchet Dam. Therefore, water linkage is not required.

(iv) No Environmentally Sensitive area, National Park, Wildlife Sanctuary and forest areas are present within the study area

(v) Baseline data was collected during 1st December, 2022 – 28th February, 2023 for air quality parameters (10 locations), water (ground water: 09 locations; river water: 02 locations & pond water: 08 locations, soil (04 locations) and Noise quality (10 locations). No Schedule-I species were observed in the study area. A total of 14 species of mammals, 21 species of birds, 11 lyspecies of reptiles and 4 species of amphibians were observed during the study.

(vi) Public hearing was held on 17th August, 2023 at 12.00 hrs at Outside campus of Administrative Building Raghunathpur Thermal Power Station, vill - Dumdumi, PO - Nildih, PS - Raghunathpur, District -Purulia, PIN - 723133, West Bengal chaired by Mr. Rajesh Rathod, Additional District Magistrate (LA), Purulia. Details of advertisement given on 16th July, 2023 in Bengali newspaper “Ajkal”, English newspaper “Millennium Post” and Hindi newspaper “Sanmarg”.

(vii) The IRO, Kolkata visited the site on 9.10.2023 and submitted the compliance status of the existing EC dated 18.10.2007. Action taken report has been submitted by the DVC, RTPS vide letter dated 26.12.2023 to the IRO, Kolkata against the non- compliances observed by the IRO in its Certified Compliance Report (CCR) dated 20.10.2023.

8. Above proposal was considered by the EAC in its 3rd & 6th meeting held on 30.11.2023 and 18.01.2024, respectively, In the 3rd EAC meeting EAC sought additional information on fly ash utilization, development plan for three layer green belt development, non-compliances of EC conditions, Action plan with timelines for addressing the issues/activities raised during public hearing, action plan for emissions control from existing as well as expansion unit etc. Project Proponent submitted the reply on PARIVESH portal and accordingly proposal was considered in the 6th meeting held on 18.01.2024.

9. EAC during the 6th meeting, on the ADS reply submitted, on the fly ash utilization was of the view that Fly Ash disposal / utilization needs to be done as per CPCB guidelines and Notifications issued by the MoEF&CC from time to time. The commissioning of FGD systems to control SOx levels in flue gases for the existing Phase I (2x600 MW) for unit#1 (1x600 MW) is in the verge of completion (expected to be completed by January/February 2024) and the likely date of completion of FGD for Unit#2 (1x600 MW) is May 2024. Total cost of installation of FGD project is Rs/- 560 Crores. Similarly, the FGD systems to control SOx levels in flue gases for the proposed Phase II (2x660 MW) shall be installed with the implementation of the Phase II Project. Regarding control of NOx levels for existing Phase I (2x600 MW) The installation of De-NOx burner is already completed in unit#1 (1x600 MW) and its fine tuning and commissioning is under progress which will be completed by February 2024. The commissioning of De-NOx burners in Unit #2 (1x600 MW) shall be completed by April'2024. Total cost of installation of De-NOx burner is Rs/- 20.81 Crores. There will be similar provision to control NOx levels in flue gases for the proposed Phase II (2x660 MW). The EAC after detailed deliberations on the information submitted and as presented during the meeting recommended for grant of Environmental Clearance to the project Expansion of Raghunathpur Thermal Power Station by installing 1320 (2x660) MW capacity Thermal Power plant (Phase-II) at village Raghunathpur, District Purulia (West Bengal) by M/s Damodar Valley Corporation subject to compliance of specific environmental safeguard conditions, in addition to the standard EC conditions (Annexure-I) stipulated for the thermal power plants.

10. The MoEF&CC has examined the proposal in accordance with the provisions contained in the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and based on the recommendations of the Expert Appraisal Committee hereby accords Environment Clearance to the instant proposal of M/s Damodar Valley Corporation to the project Expansion of Raghunathpur Thermal Power Station by installing 1320 (2x660) MW capacity Thermal Power plant (Phase-II) at village Raghunathpur, District Purulia (West Bengal) by M/s Damodar Valley Corporation

subject to compliance of specific environmental safeguard conditions, in addition to the standard EC conditions (Annexure-I) stipulated for the thermal power plants.

11. Ministry reserves the right to stipulate additional conditions, if found necessary.

12. The Environmental Clearance to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.

13. The Project Proponent is under obligation to implement commitments made in the Environment Management Plan as submitted to the Ministry with budgetary provision given in the Annexure 2

14. As per the provision of para 9 of EIA Notification 2006 and as amended, the prior environmental clearance granted to the proposed expansion project is for 10 years from the date of issue of this letter, to start of production operations by the project or activity.

15. The total project cost for the proposed expansion project has been estimated to be Rs. 11554.29 Crores. The capital cost of environmental mitigation measures is estimated to be Rs. 940 Crores and the Recurring cost is Rs.91.06 Crores

16. General Instructions:

(a) The project proponent shall prominently advertise it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days indicating that the project has been accorded environment clearance and the details of MoEF&CC/SEIAA website where it is displayed.

(b) The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.

(c) The project proponent shall have a well laid down environmental policy duly approved by the Board of Directors (in case of Company) or competent authority, duly prescribing standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions.

(d) Action plan for implementing EMP and environmental conditions along with responsibility matrix of the project proponent (during construction phase) and authorized entity mandated with compliance of conditions (during perational phase) shall be prepared. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Six monthly progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six-Monthly Compliance Report.

(e) Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.

(f) The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information/monitoring reports.

(g) Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

17. This issues with the approval of the Competent Authority

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 Deputy Director General of Forests (C), Regional Office IB-198, Sector-III, Salt Lake City, Kolkata – 700106
5. The Chairman, West Bengal Pollution Control Board, PARIBESH Bhawan, 10A, Block-LA, Sector III, Bidhannagar, Kolkata-700106
6. The District Magistrate and Collector, **Purulia** District, Govt. of West Bengal
7. Guard file/Monitoring file.
8. Website of MoEF&CC

Annexure 1

Specific EC Conditions for (Thermal Power Plants)

1. Specific Conditions:

S. No	EC Conditions
1.1	Peripheral Green belt (Three row plantation) with Miyawaki plantation technique of 15 m thickness along the plant boundary shall be developed with more than 90% survival rate of the plant species focusing on Ash Dyke area.
1.2	Extensive green cover within 2 km range of the plant boundary shall be developed. An action plan in this regard to be prepared in consultation with CPCB/expert institution and submitted before Regional Office of the Ministry within 3 months.
1.3	Extensive green plantation shall be done in the school to bring down the emission level in the range of 10km radius of the project boundary with more than 90% survival rate. Green belt implementation status shall be submitted in six monthly compliance report.
1.4	24x7 online monitoring system for ambient air quality shall be established with its connectivity with SPCB and CPCB server. Stack monitoring shall be done through 24X7 online monitoring system. PP shall ensure that Ambient air quality data shall be uploaded on CPCB server uninterruptedly through continuous monitoring station.
1.5	Adequate dust extraction system such as cyclones/bag filters and water spray system in dusty areas such as waste delivery points, transfer areas and other vulnerable dusty areas shall be provided along with an environment friendly sludge disposal system. Water Sprinkling on roads shall be done in every 6 hours in winter season and 3 hours in summer season of roads within 1 km range approaching the plant. A logbook shall be maintained for the activity and be in six-monthly compliance report.
1.6	LED display of air quality (Continuous Online monitoring) shall be installed on the roadside (within 1 km range) and nearby hotspots viz. residential colony, Schools Hospitals; maintenance of devices shall be done on regular basis.
1.7	Everyday cleaning of road/Paved roads/schools/ hospitals within 5 km range of plant site shall be ensured throughout the year through vaccum based vehicle.
1.8	Environment Audit of plant shall be done annually and report shall be submitted to Regional office

S. No	EC Conditions
	of the Ministry.
1.9	Project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality / local bodies/ similar organization located within 50km radius of the proposed power project to minimize the water drawl from surface water bodies.
1.10	A detailed action plan regarding leachate handling shall be prepared and implemented in consultation with SPCB and the same shall be submitted to the Regional Office of the Ministry. Leachate shall be treated and reused. No treated leachate shall be discharged in any circumstances. Characteristics of Leachate and the treated leachate shall be monitored once in quarter and records shall be maintained.
1.11	Oil and grease recovered from the treatment plant should be disposed only through authorized recyclers.
1.12	Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation including actual generation of solar power shall be submitted along with half yearly monitoring report.
1.13	PP shall provide LEDs Solar lights, solar panel, availability of drinking water, internet connectivity and equip with smart classes, and other basic necessity to School present in 10 km radius of the plant boundaries.
1.14	Monitoring of surface water quality and Ground Water quality shall also be regularly conducted and records maintained. The monitored data shall be submitted to the Ministry regularly. Further, monitoring points shall be located between the plant and drainage in the direction of flow of ground water and records maintained. Monitoring for heavy metals in ground water shall also be undertaken and results/findings submitted along with half yearly monitoring report. Ground water analysis should also include heavy metal and micro bacterial study.
1.15	A well designed rain-water harvesting system shall be put in place within six months, which shall comprise of rain water collection from the built up and open area in the plant premises and detailed record kept of the quantity of water harvested every year and its use.
1.16	No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/ operation of the power plant. A list of all small and large water bodies shall be prepared after physical survey within 10 km radius of the project. A detailed conservation plan for all these water bodies shall be prepared and submitted before the Regional Office of the Ministry within 3 months. Implementation status of conservation plan be submitted in 6 monthly compliance report.
1.17	Watershed development plan shall be prepared and implemented focusing on micro watershed development within 10 km radius of the project. Action taken report in this regard be submitted before regional office of the Ministry in 6 monthly compliance report.
1.18	A detailed ecological monitoring and survey covering forestry, fisheries, wildlife and its habitat shall be done once in two years to assess the impacts of project on the local environment and ecology. Monitoring report shall be uploaded on the Parivesh Portal and a copy of the same be submitted to the regional office of MoEF&CC.

S. No	EC Conditions
1.19	For the DG sets, emission limits and the stack height shall be in conformity with the extant regulations and the CPCB guidelines. Acoustic enclosure shall be provided to DG set for controlling the noise pollution.
1.20	PP shall submit the updated EMP plan activity budget wise by including i) Fog cannon installation: to mitigate dust emissions, ii) Increased greenbelt development budget: aligned with the expanded plan iii) 02 Continuous Ambient Air Quality Monitoring Stations (CAAQMS): for real-time air quality monitoring. And iv) disaster management system.
1.21	PP submitted that a minimal plastic waste (less than 1 ton per year) is anticipated from equipment packaging. This will be stored separately in isolated area and disposed of strictly adhering to the Plastic Waste Management Rules 2016. The Committee is of the view that in pursuant to Ministry's OM dated 18/07/2022 PP shall also create awareness among the people working in the project area as well as in its surrounding area on the ban on Single Use Plastic (SUP) in order to ensure compliance of Ministry's Notification published by the Ministry on 12/08/2021. A report along with photograph on the measures taken shall also be included in the six monthly compliance report being submitted by PP.
1.22	PP shall ensure that legacy ash shall be completely utilized within 1 year after the start of construction of roads by NHAI.
1.23	For both the existing unit of TPP, FGD will be installed by May, 2024.
1.24	Fly ash disposal/ utilization shall be done as per CPCB guidelines and Notifications issued by the MoEF&CC from time to time.
1.25	A vision document comprising prospective plan for implementation of various CER activities, plantation programme outside the project cover area, rejuvenation and conservation of water bodies within 5km radius of the project cover area, creation of sacred groves etc. shall be prepared and submitted to the Regional Office of the Ministry within 6 months. Implementation status of the same shall be reported to the Regional office in 6 monthly compliance report.
1.26	Epidemiological Study among population within 5 km radius of project cover area shall be carried out on regular interval (Once in two year) through independent agency. Necessary measures shall be taken as per findings of study in consultation with district administration. Action taken report shall be submitted to the Regional Office of the Ministry.
1.27	The Project Proponent shall submit the time- bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of Environmental Clearance for undertaking the CER activities, committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEF&CC Office Memorandum No.22-65/2017-IA.III dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.
1.28	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
1.29	A multi-specialty Hospital with 100 beds shall be established and managed by the PP to cater the need of population living within 10 km. The project affected families shall be given free of cost treatment.

S. No	EC Conditions
1.30	A 10+2 Grade school with capacity of at least 500 students with well-equipped modern science practical lab, computer lab and other necessary infrastructure shall be established to provide education facilities in the area. The students from project affected families shall be given free of cost education.
1.31	The establishment of a robust public grievance redressal mechanism to address concerns and complaints from local communities regarding the power plant's operations, environmental impacts, or social issues shall be developed. A Senior Officer shall review the functioning of the mechanism twice in a month.
1.32	An Environmental Cell headed by the Environment Manger with postgraduate qualification in environmental science/environmental engineering, shall be created. It shall be ensured that the Head of the Cell shall directly report to the Head of the Plant who would be accountable for implementation of environmental regulations and social impact improvement/mitigation measures.
1.33	Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.
1.34	All necessary clearance from the concerned Authority, as may be applicable should be obtained prior to commencement of project or activity.

Standard EC Conditions for (Thermal Power Plants)

1. Statutory Compliance

S. No	EC Conditions
1.1	Emission Standards for Thermal Power Plants as per Ministry's Notification S.O. 3305(E) dated 7.12.2015, G.S.R.593(E) dated 28.6.2018 and as amended from time to time shall be complied.
1.2	Part C of Schedule II of Municipal Solid Wastes Rules, 2016 dated 08.04.2016 as amended from time to time shall be complied for power plants based on Municipal Solid Waste.
1.3	MoEF&CC Notification G.S.R 02(E) dated 2.1.2014 as amended time to time regarding use of raw or blended or beneficiated/washed coal with ash content not exceeding 34% shall be complied with, as applicable.
1.4	MoEF&CC Notifications on Fly Ash Utilization S.O. 763(E) dated 14.09.1999, S.O. 979(E) dated 27.08.2003, S.O. 2804(E) dated 3.11.2009, S.O. 254(E) dated 25.01.2016 as amended from time to time shall be complied.
1.5	Thermal Power Plants other than the power plants located on coast and using sea water for cooling purposes, shall achieve specific water consumption of 2.5 m ³ /MWh and Zero effluent discharge.
1.6	The recommendation from Standing Committee of NBWL under the Wildlife (Protection) Act, 1972 should be obtained, if applicable.
1.7	No Objection Certificate from Ministry of Civil Aviation be obtained for installation of requisite

S. No	EC Conditions
	chimney height and its siting criteria for height clearance.
1.8	Groundwater shall not be drawn during construction of the project. In case, groundwater is drawn during construction, necessary permission be obtained from CGWA.

2. Ash Content/mode Of Transportation Of Coal

S. No	EC Conditions
2.1	EC is given on the basis of assumption of ____% of ash content and ____km distance of transportation in rail/road/conveyor/any other mode. Any increase of %ash content by more than 1 percent, and/or any change in transportation mode or increase in the transport distance (except for rail) require application for modifications of EC conditions after conducting the 'incremental impact assessment' and proposal for mitigation measures.

3. Air Quality Monitoring And Management

S. No	EC Conditions
3.1	Flue Gas Desulphurisation System shall be installed based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO ₂ emissions standard of 100 mg/Nm ³ .
3.2	Selective Catalytic Reduction (SCR) system or the Selective Non-Catalytic Reduction (SNCR) system or Low NO _x Burners with Over Fire Air (OFA) system shall be installed to achieve NO _x emission standard of 100 mg/Nm ³ .
3.3	High efficiency Electrostatic Precipitators (ESPs) shall be installed in each unit to ensure that particulate matter (PM) emission to meet the stipulated standards of 30 mg/Nm ³ .
3.4	Stacks of prescribed height ____m shall be provided with continuous online monitoring instruments for SO _x , NO _x and Particulate Matter as per extant rules.
3.5	Exit velocity of flue gases shall not be less than 20-25 m/s. Mercury emissions from stack shall also be monitored periodically.
3.6	Continuous Ambient Air Quality monitoring system shall be set up to monitor common/criteria pollutants from the flue gases such as PM ₁₀ , PM _{2.5} , SO ₂ , NO _x within the plant area at least at one location. The monitoring of other locations (at least three locations outside the plant area covering upwind and downwind directions at an angle of 120° each) shall be carried out manually.
3.7	Adequate dust extraction/suppression system shall be installed in coal handling, ash handling areas and material transfer points to control fugitive emissions.
3.8	Appropriate Air Pollution Control measures (DEs/DSs) be provided at all the dust generating sources including sufficient water sprinkling arrangements at various locations viz., roads, excavation sites, crusher plants, transfer points, loading and unloading areas, etc.

4. Noise Pollution And Its Control Measures

S. No	EC Conditions
4.1	The Ambient Noise levels shall meet the standards prescribed as per the Noise Pollution (Regulation and Control) Rules, 2000.
4.2	Persons exposed to high noise generating equipment shall use Personal Protective Equipment (PPE) like earplugs/ear muffs, etc.
4.3	Periodical medical examination on hearing loss shall be carried out for all the workers and maintain audiometric record and for treatment of any hearing loss including rotating to non-noisy/less noisy areas.

5. Human Health Environment

S. No	EC Conditions
5.1	Bi-annual Health check-up of all the workers is to be conducted. The study shall take into account of chronic exposure to noise which may lead to adverse effects like increase in heart rate and blood pressure, hypertension and peripheral vasoconstriction and thus increased peripheral vascular resistance. Similarly, the study shall also assess the health impacts due to air polluting agents.
5.2	Baseline health status within study area shall be assessed and report be prepared. Mitigation measures should be taken to address the endemic diseases.
5.3	Impact of operation of power plant on agricultural crops, large water bodies (as applicable) once in two years by engaging an institute of repute. The study shall also include impact due to heavy metals associated with emission from power plant.
5.4	Sewage Treatment Plant shall be provided for domestic wastewater.

6. Water Quality Monitoring And Management

S. No	EC Conditions
6.1	Induced/Natural draft closed cycle wet cooling system including cooling towers shall be set up with minimum Cycles of Concentration (COC) of 5.0 or above for power plants using fresh water to achieve specific water consumption of 2.5 m ³ /MWhr. (Or) Induced/Natural draft open cycle cooling system shall be set up with minimum Cycles of Concentration (COC) of 1.5 or above for power plants using sea water.
6.2	In case of the water withdrawal from river, a minimum flow 15% of the average flow of 120 consecutive leanest days should be maintained for environmental flow whichever is higher, to be released during the lean season after water withdrawal for proposed power plant.
6.3	Records pertaining to measurements of daily water withdrawal and river flows (obtained from Irrigation Department/Water Resources Department) immediately upstream and downstream of withdrawal site shall be maintained.
6.4	Rainwater harvesting in and around the plant area be taken up to reduce drawl of fresh water. If possible, recharge of groundwater to be undertaken to improve the ground water table in the area.

S. No	EC Conditions
6.5	Regular (at least once in six months) monitoring of groundwater quality in and around the ash pond area including presence of heavy metals (Hg, Cr, As, Pb, etc.) shall be carried out as per CPCB guidelines. Surface water quality monitoring shall be undertaken for major surface water bodies as per the EMP. The data so obtained should be compared with the baseline data so as to ensure that the groundwater and surface water quality is not adversely impacted due to the project & its activities.
6.6	The treated effluents emanating from the different processes such as DM plant, boiler blow down, ash pond/dyke, sewage, etc. conforming to the prescribed standards shall be re-circulated and reused. Sludge/ rejects will be disposed in accordance with the Hazardous Waste Management Rules.
6.7	Hot water dispensed from the condenser should be adequately cooled to ensure the temperature of the released surface water is not more than 5 degrees Celsius above the temperature of the intake water.
6.8	Based on the commitment made by the Project Proponent, Sewage Treatment Plants within the radius of 50 km from proposed project, the treated sewage ofKLD from STP (name) shall be used as an alternative to the fresh water source to minimize the fresh water drawl from surface water bodies.
6.9	Wastewater generation ofKLD from various sources (viz. cooling tower blowdown, boiler blow down, wastewater from ash handling, etc) shall be treated to meet the standards of pH: 6.5-8.5; Total Suspended Solids: 100 mg/l; Oil & Grease: 20 mg/l; Copper: 1 mg/l; Iron:1 mg/l; Free Chlorine: 0.5; Zinc: 1.0 mg/l; Total Chromium: 0.2 mg/l; Phosphate: 5.0 mg/l;
6.10	Sewage generation ofKLD will be treated by setting up Sewage Treatment plant to maintain the treated sewage characteristics of pH: 6.5-9.0; Bio-Chemical Oxygen Demand (BOD): 30 mg/l; Total Suspended Solids: 100 mg/l; Fecal Coliforms (Most Probable Number):<1000 per 100 ml.

7. Risk Mitigation And Disaster Management

S. No	EC Conditions
7.1	Adequate safety measures and environmental safeguards shall be provided in the plant area to control spontaneous fires in coal yard, especially during dry and humid season.
7.2	Storage facilities for auxiliary liquid fuel such as LDO and HFO/LSHS shall be made as per the extant rules in the plant area in accordance with the directives of Petroleum & Explosives Safety Organisation (PESO). Sulphur Content in the liquid fuel should not exceed 0.5%.
7.3	Ergonomic working conditions with First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.
7.4	Safety management plan based on Risk Assessment shall be prepared to limit the risk exposure to the workers within the plant boundary.
7.5	Regular mock drills for on-site emergency management plan and Integrated Emergency Response System shall be developed for all kind of possible disaster situations.

8. Green Belt And Biodiversity Conservation

S. No	EC Conditions
8.1	Green belt shall be developed in an area of 33% of the total project with indigenous native tree species in accordance with CPCB guidelines. The green belt shall inter-alia cover an entire periphery of the plant.
8.2	In-situ/ex-situ Conservation Plan for the conservation of flora and fauna should be prepared and implemented.
8.3	Suitable screens shall be placed across the intake channel to prevent entrainment of life forms including eggs, larvae, juvenile fish, etc., during extraction of seawater.

9. Waste Management

S. No	EC Conditions
9.1	Solid waste management should be planned in accordance with extant Solid Waste Management Rules, 2016.
9.2	Toxicity Characteristic Leachate Procedure (TCLP) test shall be conducted for any substance, potential of leaching heavy metals into the surrounding areas as well as into the groundwater.
9.3	Ash pond shall be lined with impervious liner as per the soil conditions. Adequate dam/dyke safety measures shall also be implemented to protect the ash dyke from getting breached.
9.4	Fly ash shall be collected in dry form and ash generated shall be used in phased manner as per provisions of the Notification on Fly Ash Utilization issued by the Ministry and amendment thereto. By the end of 4th year, 100% fly ash utilization should be ensured. Unutilized ash shall be disposed off in the ash pond in the form of High Concentration Slurry. Mercury and other heavy metals (As, Hg, cr, Pb, etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. Flyash utilization details shall be submitted to concerned Regional Office along with the six-monthly compliance reports and utilization data shall be published on company's website.
9.5	Unutilized ash shall be disposed off in the ash pond in the form of High Concentration Slurry/Medium Concentration Slurry/Lean Concentration Slurry method. Ash water recycling system shall be set up to recover supernatant water.
9.6	In case of waste-to-energy plant, major problems related with environment are fire smog in MSW dump site, foul smell and impacts to the surrounding populations. Therefore, the following measures are required to be taken up: i) Water hydrant at all the dumpsites of MSW area to be provided so that the fire and smog could be controlled. ii) Sprayer like microbial consortia may be provided for arresting the foul smell emanating from MSW area.

10. Monitoring Of Compliance

S. No	EC Conditions
10.1	Environmental Audit of the project be taken up by the third party for preparation of Environmental Statement as per Form-V & Conditions stipulated in the EC and report be submitted to the Ministry.
10.2	Resettlement & Rehabilitation Plan as per the extant rules of Govt. of India and respective State Govt. shall be followed, if applicable.
10.3	Energy Conservation Plan to be implemented as envisaged in the EIA / EMP report. Renewable Energy Purchase Obligation as set by MoP/State Government shall be met either by establishing renewable energy power plant (such as solar, wind, etc.) or by purchasing Renewable Energy Certificates.
10.4	Monitoring of Carbon Emissions from the existing power plant as well as for the proposed power project shall be carried out annually from a reputed institute and report be submitted to the Ministry's Regional Office.
10.5	Energy and Water Audit shall be conducted at least once in two years and recommendations arising out of the Report should be followed. A report in this regard shall be submitted to Ministry's Regional Office.
10.6	Environment Cell (EC) shall be constituted by taking members from different divisions, headed by a qualified person on the subject, who shall be reporting directly to the Head of the Project.
10.7	The project proponent shall (Post-EC Monitoring): a. send a copy of environmental clearance letter to the heads of Local Bodies, Panchayat, Municipal bodies and relevant offices of the Government; b. upload the clearance letter on the web site of the company as a part of information to the general public. c. inform the public through advertisement within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment, Forest and Climate Change (MoEF&CC) at http://parviesh.nic.in . d. upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same periodically; e. monitor the criteria pollutants level namely; PM (PM10& PM2.5incase of ambient AAQ), SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company; f. submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB; g. submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company; h. inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project and the date of commencement of the land development work.

11. Corporate Environmental Responsibility (Cer) Activities

S. No	EC Conditions
11.1	CER activities will be carried out as per OM No. 22-65/2017-IA.III dated 30.9.2020 or as proposed by the PP in reference to Public Hearing or as earmarked in the EIA/EMP report along with the detailed scheduled of implementation with appropriate budgeting.

12. Marine Facilities

S. No	EC Conditions
12.1	As the seawater intake systems are required for the plant fall in CRZ area, recommendations from State Coastal Zone Management Authority (SCZMA) as per CRZ Notification shall be implemented.
12.2	Marine intake and outfall pipelines shall be located as per the recommendations State Coastal Zone Management Authority (SCZMA).

13. Sea Water Intake

S. No	EC Conditions
13.1	Seawater intake system shall be so designed and constructed to ensure sufficient sweater in terms of quantity and quality.
13.2	The withdrawal of seawater shall be preferably through a pipeline with a riser equipped with a velocity cap arrangement and bar screen to arrest the impingement of large marine organisms.
13.3	In all tide conditions (particularly at spring low tides) the riser head must be flooded with the required submergence of seawater above its top.

14. Effluent Release

S. No	EC Conditions
14.1	At the effluent release point, maximum temperature of the discharge water shall not be more than 5oC and salinity shall not exceed 50 ppt with respect to that of the ambient seawater.
14.2	Use of antifouling agents like chlorine / hypochlorite, shall be carefully controlled. The chlorine concentration shall not exceed 0.2 ppm at the effluent release point.
14.3	The effluent when released at the selected location shall attain sufficient dilution so that near ambient water quality (particularly temperature and salinity) is attained within 500 m from the release location, at low tide.
14.4	The location of the diffuser shall be marked with a solar lighted buoy to avoid accidents.
14.5	The site selected based on mathematical modeling shall ensure absence of recirculation of the effluent plume in the seawater intake area under all tidal conditions.

S. No	EC Conditions
14.6	The effluent shall be released through a properly designed multiport diffuser above the seabed to facilitate its efficient initial mixing with the receiving seawater.
14.7	Efficacy of the diffuser shall be ascertained at least once in 2 years through scientific studies and corrective actions such as cleaning of the diffuser from marine growth, removal of silt deposits, etc. shall be taken up, if warranted.
14.8	Continuous online monitoring system for Temperature and Salinity shall be installed to monitor the quality of effluent.

15. Common To Intake And Effluent

S. No	EC Conditions
15.1	The pipeline shall be buried below the seabed at a depth to ensure its stability under rough sea conditions particularly during cyclone / tsunami. The depth of burial will depend on the seafloor strata but normally the top of the pipeline shall be at least 1 m below the bed level. In the surf and intertidal zones, the pipeline shall be buried below the maximum scour level.
15.2	In case of open channel, the channel shall be constructed as per the recommendations of State Coastal Zone Management Authority (SCZMA).
15.3	If the substratum is rocky the pipeline may be anchored to the rock provided the geology of the area satisfactorily supports the structure which shall be ascertained through geo-technical investigations.
15.4	Exposed pipeline section and riser shall be protected by armour stone from waves, boats anchoring, fishing activities etc.
15.5	The location of the riser & diffuser shall be marked with a solar lighted buoy to avoid accidents from boats.
15.6	Marine / Sea water quality shall be monitored at effluent release location at the center. Parameters to be monitored shall be as follows: a. Physico-chemical: Temperature, Salinity, pH and Dissolved Oxygen. b. Biological: Primary Productivity, Phytoplankton (Chlorophyll a, Phaeophytin, Population, Species), Zooplankton (Biomass, Population, Species) and Benthos (Biomass, Population, Species).
15.7	In case of Coastal Power Plants, the Mangrove plantation shall be taken up in an area ofha, along the coast/ on the banks of Estuary.

Additional EC Conditions

N/A

ENVIRONMENTAL MANEGMENT PLAN

Environmental Cost Component

Earlier the EMP cost was proposed to be as Rs. 937.87 Crores, and Rs. 89.03 Crores as recurring cost. But, as per the recommendations of the honorable committee in the MoM, the revised EMP cost is now Rs. 940 Crores and the Recurring cost is Rs.91.06 Crores after including the following heads viz.

- i) Fog cannon installation: to mitigate dust emissions,
- ii) Increased greenbelt development budget: aligned with the expanded plan
- iii) 02 Continuous Ambient Air Quality Monitoring Stations (CAAQMS): for real-time air quality monitoring. and
- iv) disaster management system.

As per the Minutes of Agenda For 4th Meeting of The Re-Constituted Expert Appraisal Committee (EAC) (Thermal Power Projects) meeting Thermal Projects held from 18/01/2024 to 18/01/2024, the project proponent is required to submit the revised budgetary provision of the EMP cost against the following heads:

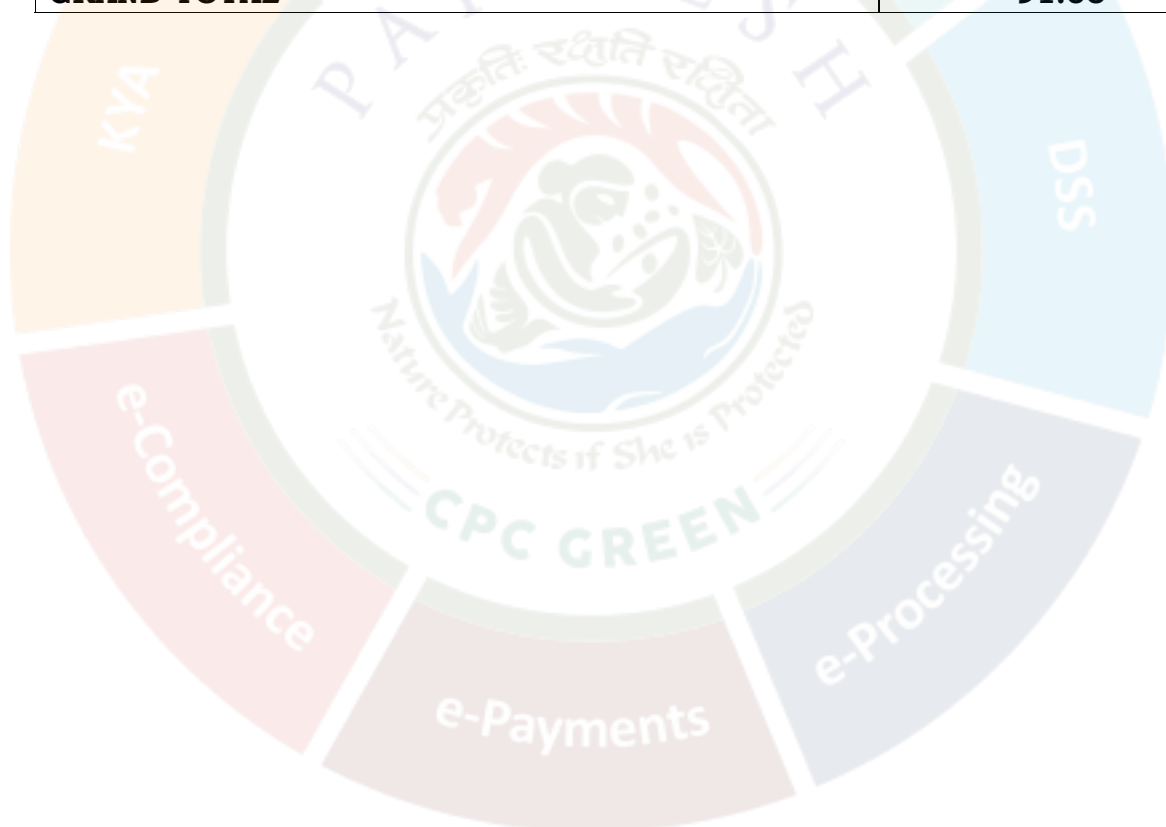
The total project cost for the proposed expansion project has been estimated to be Rs. 11554.29 Crores. The capital cost of environmental mitigation measures is estimated to be Rs. 940 Crores, which includes:

Item	Cost (in Crores)
Estimated Cost of Air Pollution Control Systems (FGD , ESP & Fog cannon)	880.00
Estimated Cost of Water conservation & Pollution Control	37.87
Green belt development	2.93
Occupational Health Management	1.0
Risk Mitigation & Safety Plan	0.6
Public Hearing Related Capital Expenditure*	17.60
GRAND TOTAL	940.0

* the Public Hearing cost also increases from 16.17 Crores to 17.60 Crores, to increase the fund in Road repairing, Street lighting & Educational support

Calculated annual cost of environmental mitigation measures for the proposed project has been estimated to be Rs. 91.06 Crores. The annual estimated environmental mitigation costs include:

Item	Cost (in Crores)
Air Pollution Control Systems	36.00
Water conservation & Pollution Control	0.50
Ash Management System (including pond ash evacuation)	47.0
Occupational Health Management	1.0
Risk Mitigation & Safety Plan	1.0
Environmental Management Department	3.53
Public Hearing Related Expenditure	2.03
GRAND TOTAL	91.06



Public Hearing related expenditure plan						
	ISSUE	YEAR OF IMPLEMENTATION ALONGWITH BUDGET (in Rs. LAKHS) CAPITAL EXPENDITURE			CAPITAL TOTAL BUDGET (in Rs. LAKHS)	RECURRING EXPENDITURE (in Rs. LAKHS)
		1st Year	2nd Year	3rd Year		
JOB RELATED						
1	Job opportunities for women					25
2	Job oriented training for local youth					25
POLLUTION RELATED						
1	Fly ash & dust					8
2	Air and water pollution	Budget already considered in the EMP				
PERIPHERAL DEVELOPMENT RELATED						
1	Road repairing	70	70	70	310	10
2	Street Lighting	150	150	150	500	
3	Bridge Repairing	3	2	-	5	
4	Drinking Water	20	20	20	60	5
5	Electricity	10	10	10	30	
6	Educational support	75	75	75	278	5
7	Health support					15
8	Peripheral development under CSR.	162	200	200	562	100
OTHER MISCELLLENEOUS ISSUES RELATED						
1	Sports & cultural support					10
2	Speed control of Fly-ash carrying trucks	5	5	5	15	
					1760	203