सत्यमेव जयते

Government of India
Ministry of Environment, Forest and Climate Change
IA Division
(Thermal Projects)
***

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 **Date:** 27/01/2024

MoM ID: EC/MOM/EAC/643331/1/2024

Agenda ID: EC/AGENDA/EAC/643331/1/2024

Meeting Venue: MOEF&CC

Meeting Mode: Hybrid

Date & Time:

18/01/2024	02:00 PM	05:00 PM

1. Opening remarks

The 4thMeeting of the re-constituted EAC (Thermal Power) organized by the Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhiwas held on 18thJanuary, 2024 in Hybrid Mode at Narmada Hall, Jal Wing, Indira Paryavaran Bhawan (MoEF&CC) under the Chairmanship of Dr. Sharad Singh Negi. The list of Members participated in the meeting is at Annexure I. Note - Due to Editor issue, Final Approved Minutes of the EAC is enclosed herewith in PDF as a ANNEXURE]. Please refer this document and Treat as approved Minutes of the EAC [Thermal Sector].

2. Confirmation of the minutes of previous meeting

The Minutes of the 3rd EAC (Thermal Power) meeting held on 30th November, 2023 were confirmed in the meeting.

3. Details of proposals considered by the committee

Day 1 -18/01/2024

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

Proposed DVC, Raghunathpur Thermal Power Project-PH-II (2x660 MW) by **DAMODAR VALLEY CORPORATION** located at **PURULIA,WEST BENGAL**			
Proposal For		Fresh EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**

IA/WB/THE/451957/2023	J-13011/22/2007-IA.II(T)	11/11/2023	Thermal Power Plants (1(d))

3.1.2. Project Salient Features

Agenda Item No.4.3

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 – Reconsideration for Environmental Clearance (EC) - reg.

[Proposal No. IA/WB/THE/451957/2023; F. No. J-13011/22/2007-IA. II (T)]

.3.1 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.

4.3.2 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:

1. The salient features of the project are as under: -

Project details:

Name of the Proposal	Proposed Expansion of Raghunathpur Thermal Power Station by installing capacity 1320 (2x660) MW (Phase - II)
Proposal No.	IA/WB/THE/451957/2023
Location	Village: Dumdumi, P.O. - Nildih, P.S.: Raghunathpur, District: Purulia, West Bengal
Company's Name	M/s Damodar Valley Corporation
Accredited Consultant and certificateno.	Envirotech East Pvt. Limited NABET/EIA/2225/RA 0279 VALIDITY – 12th September, 2025
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	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.
Capacity	1320 (2x660) MW

Attracts the General Conditions (Yes/No)	No
Additional information (if any)	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 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.

Electricity generation capacity:

Capacity & Unit Configurations:	82.5 MW (Source : Captive)
Generation of Electricity Annually	2 X 600 MW : 1200 MW 2 X 660 MW : 1320 MW (Proposed) Total : 2520 MW

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, & co-ordinates Average height of the area abo	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. Average height of the area 176m (577.42 ft.) above MSL

ve MSL (m)	
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 perAnnum
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.

Water Requirement:

Source of Water:	Panchet Dam of DVC
Quantity of water requirement:	95,049 Kilo Litres per Day (KLD)
Distance of source of water from Plant:	12 Km.
Whether barrage/ weir/ intake well/ jack well/ others proposed:	Barrage
Mode of conveyance of water:	Pipe line
Status of water linkage:	Damodar Valley Corporation ids the Authority for drawl of water from Panchet Dam. Therefore, water linkage is not required.
(If source is Sea water) Desalination Plant Capacity	Not applicable
Mode / Management of Brine:	Not applicable
Cooling system	Water Cooling

Land Area Breakup:

LandRequirement: 1. TPP Site 2. Ash Pond	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 utilise

3. Township 4. Railway Siding & Others 5. Raw Water Reservoir 6. Green Belt 7. others Total (if expansion state additional land requirement)	d for RTPS (Ph-2) also. The ash dyke is about 3 Km from Plant premises.
Status of Land Acquisition:	Already acquired

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/letter/Remarks**
Reserve Forest/Protected Forest Land	No	No Environmentally Sensitive areas are present within the study area
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/historical temples etc	No	
Names & distance of National parks, Wildlife sanctuaries, Biosphere reserves, Heritage sites Rivers, Tanks, Reserve Forests etc. Located within 10 Km from the plant boundary:	No	

Court case details:

Court Case	Original Application No. 104/2021/EZ before Hon'ble NGT, Eastern Zone Bench, Finance Centre, Kolkata
Complaint	On receiving a reference from the West Bengal Human Rights Commission with reference to media report dated 9.7.2021 in Bengali Daily Newspaper "Gana Shakti". Media report was that effluents were being discharged by Raghunathpur Thermal Power Plant on agricultural lands in Villages Ghutitora, Lachhiara, Valdubi, Asta, Pathuriadanga and Khairabad in District Purulia, West Bengal resulting in damage to agricultural fields which were covered by the fly ash.
Present Status	The application is disposed of vide order dated 10.04.2023

Baseline Environmental Scenario: The area falling within the radius of 10 km around the proposed expansion of existing Steel Plant at Village: Raghunathpur, Dist.-Purulia in the state of West Bengal has been considered as study area.

Period	1st December, 2022 – 28th February, 2023
AAQ parameters at 10 locations (min. & Max.)	• PM10 = 50 to 88 µg/m3 • PM2.5 = 19 to 43 µg/m3 • SO2 = 4 to 18µg/m3 • NOx = 11 to 40 µg/m3. • CO =0.111 to 1.158 mg/m3
Incremental GLC Level	• PM = Max. GLC -0.24 µg/m3 • SO2 = Max GLC- 0.80 µg/m3 • NOx = Max GLC- 0.80 µg/m3
River water samples (Two samples)	pH 7.2- 7.5. Dissolved Oxygen: 6.7- 7.7 mg/lit; Total Dissolved Solids: 196-206 mg/lit; Total Hardness (as CaCO3): 102 - 117 mg/lit & total Alkalinity (asCaCO3): 109 - 119 mg/lit; Calcium (as Ca): 29 – 30 mg/lit; Magnesium (as Mg) :7 - 10 mg/lit ; Oil and grease: BDL (<1.4 mg/lit) Sulphate (as SO4): 14 - 20) mg/lit , Nitrate (asNO3) : 2.7 3.3) mg/lit; Chloride (as Cl) :40 - 43 mg/lit; Iron (as Fe): 0.15-0.19 mg/lit; BOD (2 - 2) mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Pond water samples quality at 8 locations	pH: 7.02 – 7.82; Dissolved Oxygen: 6.08 – 7.19 mg/lit; Total Dissolved Solids: 290 – 394 mg/lit; total Hardness (as CaCO3): 131 - 172 mg/lit; total Alkalinity(asCaCO3): 109 - 119 mg/lit; Calcium (as Ca): 30 – 52 mg/lit; Magnesium (as Mg): 8 – 17 mg/lit; Oil and grease was below detection limit (<1.4 mg/lit); Sulphate(asSO4): 13 – 36 mg/lit, Nitrate (as NO3): 3.8 – 6.6 mg/lit; Chloride (as Cl): 64– 112 mg/lit; Iron (as Fe): 0.16–0.25 mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Ground Water samples at 9 locations	pH: 6.6 – 7.5; Total Dissolved Solids: 336 – 552 mg/lit, Total Hardness (as CaCO3): 158 – 222 mg/lit; Alkalinity (as CaCO3): 135 – 251) mg/lit; Calcium (as Ca): 43 – 70) mg/lit; Magnesium(as Mg): 8–16 mg/lit; Sulphate (as SO4): 10 – 38 mg/lit, ; Nitrate (as NO3): 3.0 – 5.7 mg/lit ; Chloride (as Cl) : 778 – 145 mg/lit; Iron (as Fe): 0.23 – 0.43 mg/lit; Zinc (as Zn): 0.08–0.11 mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Noise levels Leq (Day & Night) at 10 locations	The Leq values for day time was observed to be 54.1 - 67.8 dB (A) in residential area, while during night time 42.9 - 52.9 dB (A).
Soil Quality at 4 Locations	Bulk density: 1.16 - 1.36 gm/cm3; pH range 6.5 - 6.); Electrical conductivity (EC); 524 – 616 µmhos/cm; calcium content: 369 - 442 mg/kg; sodium: 135 - 172 mg/kg; potassium: 122 - 137 mg/kg; Nitrogen: 59 - 78) mg/kg; Phosphorous: 27.9 - 31.4 mg/kg; Cation Exchange Capacity (CEC): 22.3 – 25.5) meq/100gm; Magnesium: 150-208)mg/kg; Sulphur: 25.1 - 28.2 mg/kg; Organic Matter: 1.1 – 1.7%./
Flora & Faun	No Schedule-I species were observed in the study area. A total of 14 species of mammals, 21 species of birds, 11 species of reptiles and 4species of amphibian

a	s were observed during the study

Green Belt Development (RTPS):

Total Land For Green Belt	Green Belt Area		Number of Trees		Total
	Existing	Proposed	Existing	Proposed	
222.983 Hectares (551 acres) of land (33% of 840.5 hectares / 2077 acres)	222.983 hectares (551 acres)	-	3,13,300Trees on 222.983 hectares. [@1405 trees per hectare]	1,88,420 (@ 845 number of trees per hectare for 222.983 hectares)	5,01,720 (3,13,300 + 1,88,420) number of trees on 222.983 Ha i.e. (@ 2250 number trees per hectare

Rs. 3 lakhs has been estimated for every 2250 no. of trees, therefore, budgetary estimate of Rs. 252 lakhs have been kept for the expansion proposal of RTPS.

The land use breakup of the project site has been presented in Table below.
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, JharukhamarGhutitara plant gate)	19	-
13	Plant area approach road & Free space	20	-
14	Green belt	551	-
	TOTAL	1927	150

1. The MoEF&CC vide its letter dated 10.05.2023 has issued a 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.
2. 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 16thJuly, 2023 in Bengali newspaper "Ajkal", English newspaper "Millennium Post" and Hindi news paper "Sanmarg".
3. The IRO, Kolkata visited the site on 9.10.2023 and submitted the compliance status of the existing EC dated 18.10.2007.
4. The PP after conducting PH, prepared EIA/EMP Report and applied for grant of EC vide proposal No. **IA/WB/THE/451957/2023. The** proposal was thereafter considered by the EAC in its 3rd meeting held on 30.11.2023 wherein the Committee deferred the proposal for want of additional information. PP vide letter dated 09.01.2024 submitted the reply on Parivesh Portal and the proposal in now considered in 4th EAC meeting held on 18/01/2024. The Point wise reply submitted by PP w.r.t information sought by EAC is as follows:

Query 1: Requisite amendment shall be obtained w.r.to change in land area.
Reply: The land requirement of 1820 Acres was considered as per the EC issued for Phase-l in 2007 project i.e. 2600MW capacity.
Additionally, 257 acres land was acquired for the project, however the total requirement of 2077 Acres is also reflected in the EC granted in the year 2012 [Ref F. No. J-13012/258/2007-IA (T) dated 23rd may 2012] by MOEF&CC for our Phase-II to facilitate the green belt development & improvement of railway siding & associated infrastructure.
However, Phase-II project could not be implemented and the validity of the EC granted in the year 2012 also got expired. Now, we have proposed the same Phase-II project within total 2077 acres for both Phase-I & Phase- II projects as mentioned in the EC, granted in the year 2012.
Query 2: Action plan for development of 3 layer peripheral greenbelt with 90% survival rate for the empty spaces shall be submitted.
Reply: Action plan for development of 3 layer peripheral greenbelt has been submitted along with ADS reply. It has been mentioned about the Choice of Species and Quality plating material, Planting techniques and methods and Post Planting Maintenance Operations.
Also, MoU between Damodar Valley Corporation RTPSs and West Bengal Forest Development Corporation Ltd for Green-belt / Afforestation / Landscaping & Beautification / Soil Moisture Conservator/ Watershed management and other Forestry and Wild Life related works and Damodar Valley Corporation's land within RTPS as well as in the land ofGovernment degraded Forest Land, Wasteland & farmer's land within the aerial distance of approximately 10 Km RTPS Project vide letter dated 01.04.2023**.**
M/s Damodar Valley Corporation has already developed green belt covering an area of 222.983 Hectares (551 Acres) for its thermal power plant located at Raghunathpur (RTPS).

Around 3,13,300 number trees [@1405 number trees per hectare] have been planted.

Green Belt Area Developed	222.983Hectares(551Acres)
Number of trees planted	3,13,000
Tree Density [Number of trees planted per Hectare]	1,405

Query 3: Compliance of non-compliances noted by the IRO during site inspection shall be ensured and a compliance report duly certified by the IRO be submitted along with the present proposal.
Reply: 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.
Accordingly, review of Action Taken Report related to the project has been submitted by the IRO, Kolkata vide letter 08.01.2024.
Query 4: Fly ash utilization plan shall be submitted for proposed and existing unit for ensuring 100% Ash utilization shall be submitted as per extent rules and regulations of the Ministry.

Ash generation utilization of RTPS from FY: 23-2

FY	Legacy ash at the starting of the FY in LMT	Capacity of Phase# I in MW	Capacity addition due to Phase# II in MW	Total capacity in MW	Approx. Ash generation in LMT	Pond as NHAI
2023-24	70.0	1200	0	1200	21.0	2.0
2024-25	79.0	1200	0	1200	21.0	40.0
2025-26	42.0	1200	0	1200	21.0	40.0
2026-27	3.0	1200	0	1200	21.0	
2027-28	0.0	1200	0	1200	21.0	
2028-29	0.0	1200	660 MW in the month of July'28 and another 660MW in the month of Jan'29.	1200 MW till June'28, from July'28 to Jan'28 is 1860 MW and Jan'29 onwards is 2520 MW.	30.0	
2029-30	0.0	1200	1320	2520	43.0	
2030-31	0.0	1200	1320	2520	43.0	
2031-32	0.0	1200	1320	2520	43.0	
2032-33	0.0	1200	1320	2520	43.0	

(-) sign indicate ash utilization is more than ash generation.

Calculation based as per bellow:
1. Sp. Coal coalconsumption= 0.60 for all the units. 2. % Ash in Coal=42% to 45%. 3. PLF for FY: 23-24 to 28-29 is 70-80% for RTPS Ph#
5. PLF for FY: 30-31 to 32-33 is 70 - 80 % for RTPS Ph# 1 & 2 units. 6. Expected COD of the PH#2 unit#1 in the month of July'28. & 7. E

Reply: Details of Fly ash utilization plan has been prepared for proposed and existing unit for ensuring 100% Ash utilization.

Query 5: Detailed Action plan with timelines for addressing the issues/activities raised during public hearing shall be submitted along with budget proposed for future issues/activities.
Reply: Detailed Action plan with timelines for addressing the issues/activities raised during public hearing submitted along with budget proposed for future issues/activities has been submitted.
Query 6: Action plan for installation of emission control devices for existing unit as well asexpansion unit to limit emissions level within as per extent rules and regulations of the Ministry.
Reply: Installation of emission control devices for existing unit
Control at Particulate matter

- High efficient ESPs in Boilers
- High efficient Bag filters at all strategic locations
- Dry fog System

Control of SO2
The commissioning of FGD systems to control SOx levels in flue gases are on the verge of completion. The likely date of completion of FGD far unit#1 is March 2024 and Unit#2 is
May 2024. Total cost of installation of FGD project is Rs/- 560 Crores

Control of NOX
Regarding control of NOx levels, DVC has issued the work orders for installation of De-NOx burners in both the units of RTPS Phase-l.
The installation of De-NOx burner is already completed in unit#1 and its fine tuning and commissioning is under progress which will be completed by February 2024.
The commissioning of De-NOx burners in Unit shall be completed by April 2024.
Total cost of installation of De-NOx burner is Rs. 20.81 Crores
Work order De NOx has been submitted as ANNEXURE -8

Control at Dust Emission on roads
DVC has already deployed External Agencies to carryout water sprinkling on different roads inside the Plant. Work order for mobile water sprinklers has been submitted as ANNEXURE -9.

Installation of emission control devices for proposed units (RTPS-II)

Commercial operation of RTPS-I is already started therefore, expansion of RTPS by installing additional two units of 660 MW (RTPS-II) within the same shall be environmentally compatible as the site conforms to the environmental guidelines of MoEF&CC for sitting of thermal power projects.

Moreover, many of the activities related to development of site and establishment of Infrastructure has already been taken up under RTPS-I, the Impact due to construction of RTPS-II will be less as compared to construction at green field site.

Sources	**Mitigation Measures**
Unloading of Raw Material	Sprinkler/Dry Fog Dust Suppression System
Raw Material Handling System for Power Plant	Bag Filter/Dry Fog Dust Suppression System
Boiler Flue Gases	Electrostatic Precipitator (ESP)
Ash Handling Area	Fixed and Mobile water Sprinkler

Electrostatic Precipitator

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, so as 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.

In order to meet the environment norms and maintain the sustained efficiency of ESP it shall be adequately designed with sufficient margins for all operating conditions. The Electrostatic Precipitator Management System (EPMS) in

conjunction with opacity monitor shall continuously monitor and

In order to meet the environment norms and maintain the sustained efficiency of ESP, it shall be adequately designed with sufficient margins for all operating conditions The Electrostatic Precipitator Management System (EPMS) in conjunction with opacity monitor shall continuously monitor and maintain the optimum energy level to achieve higher efficiency of ESP

Flue Gas Desulphurization System (FGD)

Wet limestone-based flue gas desulphurization (FGD) system shall be installed at the tall end of the steam generator downstream of the ESP, in which SO2 gas shall be captured in limestone slurry to produce gypsum.

The FGD System shall be provided with bypass system. Necessary auxiliary equipment and systems like cyclones, vacuum filters, belt conveyors, pumps, storage vessels for different liquids, piping and fittings, zero liquid discharge (ZLD) etc shall complete the FGD plant.

NOX Control System (SCR - Selective Catalytic Reduction)

NOx emission from the steam generator shall be controlled by employing low NOx burners (LNB), combustion staging and reducing NOx in the tail flue gas. Suitable technology, taking into consideration the boiler furnace conditions and high ash Indian coals, for reduction of NOx to N_2 using either SNCR (selective non catalytic reduction) or SCR (selective catalytic reduction) technology as applicable shall be employed.

Tall Stack:

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 for wide dispersion of the emitted pollutants

Query 7: Air monitoring and stack emissions shall be carried out by third party. Latest data of continuous online air quality monitoring shall be submitted.
Reply: Stack emissions monitoring was carried out by M/s RV BRIGGS & CO PRIVATE LTD (AN ISO SOOL 2015 8 IS0 4500L 2018CERTIFIED COMPANY) on 02.12.2023.
Details are as under:

NameoftheMonitoringAgency	M/s.R.V.BRIGGS&CO.PRIVATELTD. (ANISOSOOL:2O15&ISO45OOL:2018CERTIFIEDCOMPANY) OfficeAddress: TAHERMANSION,ISTFLOOR. 9,BENTINCKSTREET,KOLKATA-7OOOOI	
SampleDescription	StackGas/FlueGas	
Date&TimeofSampling	02.12.2023(04:00P.M.to04:30P.M.)	
SamplingPlan&Method	RVB/FM/45&IS:11255(Part-l,2&3)	
Emissiondueto	Combustion of Coal	
Analysiscompletedon	04.12.2023	
Stack Connected to	Boiler Unit – 1	Boiler Unit - 2
Stack Height (mtr)	275	275
Stack dia (m)	7.1	7.1

Palticulate Matters (mg/nm3)	31	35
SO2(mg/nm3)	789	819
NOx(mg/nm3)	533	519

4.3.1 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.

4.3.2 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:

1. The salient features of the project are as under: -

Project details:

Name of the Proposal	Proposed Expansion of Raghunathpur Thermal Power Station by installing capaci ty 1320 (2x660) MW (Phase - II)
Proposal No.	IA/WB/THE/451957/2023
Location	Village: Dumdumi, P.O. - Nildih, P.S.: Raghunathpur, District: Purulia, West Ben gal
Company's Name	M/s Damodar Valley Corporation
Accredited Consultant and c ertificateno.	Envirotech East Pvt. Limited NABET/EIA/2225/RA 0279 VALIDITY – 12th September, 2025
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the proj ect	The project/activity is proposed by the PP is a brownfield project and covered under category A of it em 1(d) 'Thermal Power Plants' of the Schedule to the Environmental Impact Assessment Notificati on, 2006 as the power generation capacity is beyond threshold limit of 500 MW therefore, it require s appraisal at Central level by the sectoral EAC in the Ministry.
Capacity	1320 (2x660) MW
Attracts t he Genera l Conditio ns (Yes/N o)	No

Additional information (if any)	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 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.

Electricity generation capacity:

Capacity & Unit Configurations:	82.5 MW (Source : Captive)
Generation of Electricity Annually	2 X 600 MW : 1200 MW 2 X 660 MW : 1320 MW (Proposed) Total : 2520 MW

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, & co-ordinates Average height of the area above MSL (m)	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. Average height of the area 176m (577.42 ft.) above MSL
Quantity of 1. Fly ash t	Fly ash - 23.76 Lakh Metric Tonne per Annum Bottom ash - 5.94 Lakh Metric Tonne perAnnum

o be generated 2. Bottom ash to be generated	
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.

Water Requirement:

Source of Water:	Panchet Dam of DVC
Quantity of water requirement:	95,049 Kilo Litres per Day (KLD)
Distance of source of water from Plant:	12 Km.
Whether barrage/ weir/ intake well/ jack well/ others proposed:	Barrage
Mode of conveyance of water:	Pipe line
Status of water linkage:	Damodar Valley Corporation ids the Authority for drawl of water from Panchet Dam. Therefore, water linkage is not required.
(If source is Sea water) Desalination Plant Capacity	Not applicable
Mode / Management of Brine:	Not applicable
Cooling system	Water Cooling

Land Area Breakup:

LandRequirement: 1. TPP Site 2. Ash Pond 3. Township 4. Railway Siding & Others 5. Raw Water Reservoi	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.

r 6. Green Belt 7. others Total (if expansion state additional land requirement)	
Status of Land Acquisition:	Already acquired

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/letter/Remarks**
Reserve Forest/Protected Forest Land	No	No Environmentally Sensitive areas are present within the study area
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/historical temples etc	No	
Names & distance of National parks, Wildlife sanctuaries, Biosphere reserves, Heritage sites Rivers, Tanks, Reserve Forests etc. Located within 10 Km from the plant boundary:	No	

Court case details:

Court Case	Original Application No. 104/2021/EZ before Hon'ble NGT, Eastern Zone Bench, Finance Centre, Kolkata
Complaint	On receiving a reference from the West Bengal Human Rights Commission with reference to media report dated 9.7.2021 in Bengali Daily Newspaper "Gana Shakti". Media report was that effluents were being discharged by Raghunathpur Thermal Power Plant on agricultural lands in Villages Ghutitora, Lachhiara, Valdubi, Asta, Pathuriadanga and Khairabad in District Purulia, West Bengal resulting in damage to agricultural fields which were covered by the fly ash.
Present Status	The application is disposed of vide order dated 10.04.2023

Baseline Environmental Scenario: The area falling within the radius of 10 km around the proposed expansion of existing Steel Plant at Village: Raghunathpur, Dist.-Purulia in the state of West Bengal has been considered as study area.

Period	**1st December, 2022 – 28th February, 2023**

AAQ parameters at 10 locations (min. & Max.)	• PM10 = 50 to 88 µg/m3 • PM2.5 = 19 to 43 µg/m3 • SO2 = 4 to 18µg/m3 • NOx = 11 to 40 µg/m3. • CO =0.111 to 1.158 mg/m3
Incremental GLC Level	• PM = Max. GLC -0.24 µg/m3 • SO2 = Max GLC- 0.80 µg/m3 • NOx = Max GLC- 0.80 µg/m3
River water samples (Two samples)	pH 7.2- 7.5. Dissolved Oxygen: 6.7- 7.7 mg/lit; Total Dissolved Solids: 196-206 mg/lit; Total Hardness (as CaCO3): 102 - 117 mg/lit & total Alkalinity (asCaCO3): 109 - 119 mg/lit; Calcium (as Ca): 29 – 30 mg/lit; Magnesium (as Mg) :7 - 10 mg/lit ; Oil and grease: BDL (<1.4 mg/lit) Sulphate (as SO4): 14 - 20) mg/lit , Nitrate (asNO3) : 2.7 3.3) mg/lit; Chloride (as Cl) :40 - 43 mg/lit; Iron (as Fe): 0.15-0.19 mg/lit; BOD (2 - 2) mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Pond water samples quality at 8 locations	pH: 7.02 – 7.82; Dissolved Oxygen: 6.08 – 7.19 mg/lit; Total Dissolved Solids: 290 – 394 mg/lit; total Hardness (as CaCO3): 131 - 172 mg/lit; total Alkalinity(asCaCO3): 109 - 119 mg/lit; Calcium (as Ca): 30 – 52 mg/lit; Magnesium (as Mg): 8 – 17 mg/lit; Oil and grease was below detection limit (<1.4 mg/lit); Sulphate(asSO4): 13 – 36 mg/lit, Nitrate (as NO3): 3.8 – 6.6 mg/lit; Chloride (as Cl): 64– 112 mg/lit; Iron (as Fe): 0.16–0.25 mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Ground Water samples at 9 locations	pH: 6.6 – 7.5; Total Dissolved Solids: 336 – 552 mg/lit, Total Hardness (as CaCO3): 158 – 222 mg/lit; Alkalinity (as CaCO3): 135 – 251) mg/lit; Calcium (as Ca): 43 – 70) mg/lit; Magnesium(as Mg): 8–16 mg/lit; Sulphate (as SO4): 10 – 38 mg/lit, ; Nitrate (as NO3): 3.0 – 5.7 mg/lit ; Chloride (as Cl) : 778 – 145 mg/lit; Iron (as Fe): 0.23 – 0.43 mg/lit; Zinc (as Zn): 0.08–0.11 mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Noise levels Leq (Day & Night) at 10 locations	The Leq values for day time was observed to be 54.1 - 67.8 dB (A) in residential area, while during night time 42.9 - 52.9 dB (A).
Soil Quality at 4 Locations	Bulk density: 1.16 - 1.36 gm/cm3; pH range 6.5 - 6.); Electrical conductivity (EC); 524 – 616 µmhos/cm; calcium content: 369 - 442 mg/kg; sodium: 135 - 172 mg/kg; potassium: 122 - 137 mg/kg; Nitrogen: 59 - 78) mg/kg; Phosphorous: 27.9 - 31.4 mg/kg; Cation Exchange Capacity (CEC): 22.3 – 25.5) meq/100gm; Magnesium: 150-208)mg/kg; Sulphur: 25.1 - 28.2 mg/kg; Organic Matter: 1.1 – 1.7%./
Flora & Fauna	No Schedule-I species were observed in the study area. A total of 14 species of mammals, 21 species of birds, 11 species of reptiles and 4species of amphibians were observed during the study

Green Belt Development (RTPS):

Total Land For Green Belt	Green Belt Area		Number of Trees		Total
	Existing	Proposed	Existing	Proposed	
222.983 Hectares (551 acres) of land (33% of 840.5 hectares / 2077 acres)	222.983 hectares (551 acres)	-	3,13,300Trees on 222.983 hectares. [@1405 trees per hectare]	1,88,420 (@ 845 number of trees per hectare for 222.983 hectares)	5,01,720 (3,13,300 + 1,88,420) number of trees on 222.983 Ha i.e. (@ 2250 number trees per hectare

Rs. 3 lakhs has been estimated for every 2250 no. of trees, therefore, budgetary estimate of Rs. 252 lakhs have been kept for the expansion proposal of RTPS.

The land use breakup of the project site has been presented in Table below.
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, JharukhamarGhutitara plant gate)	19	-

13	Plant area approach road & Free space	20	-
14	Green belt	551	-
	TOTAL	1927	150

1. The MoEF&CC vide its letter dated 10.05.2023 has issued a 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.
2. 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 16thJuly, 2023 in Bengali newspaper "Ajkal", English newspaper "Millennium Post" and Hindi news paper "Sanmarg".
3. The IRO, Kolkata visited the site on 9.10.2023 and submitted the compliance status of the existing EC dated 18.10.2007.
4. The PP after conducting PH, prepared EIA/EMP Report and applied for grant of EC vide proposal No. **IA/WB/THE/451957/2023. The** proposal was thereafter considered by the EAC in its 3rd meeting held on 30.11.2023 wherein the Committee deferred the proposal for want of additional information. PP vide letter dated 09.01.2024 submitted the reply on Parivesh Portal and the proposal in now considered in 4th EAC meeting held on 18/01/2024. The Point wise reply submitted by PP w.r.t information sought by EAC is as follows:

Query 1: Requisite amendment shall be obtained w.r.to change in land area.
Reply: The land requirement of 1820 Acres was considered as per the EC issued for Phase-l in 2007 project i.e. 2600MW capacity.
Additionally, 257 acres land was acquired for the project, however the total requirement of 2077 Acres is also reflected in the EC granted in the year 2012 [Ref F. No. J-13012/258/2007-IA (T) dated 23rd may 2012] by MOEF&CC for our Phase-II to facilitate the green belt development & improvement of railway siding & associated infrastructure.
However, Phase-II project could not be implemented and the validity of the EC granted in the year 2012 also got expired. Now, we have proposed the same Phase-II project within total 2077 acres for both Phase-I & Phase- II projects as mentioned in the EC, granted in the year 2012.
Query 2: Action plan for development of 3 layer peripheral greenbelt with 90% survival rate for the empty spaces shall be submitted.
Reply: Action plan for development of 3 layer peripheral greenbelt has been submitted along with ADS reply. It has been mentioned about the Choice of Species and Quality plating material, Planting techniques and methods and Post Planting Maintenance Operations.
Also, MoU between Damodar Valley Corporation RTPSs and West Bengal Forest Development Corporation Ltd for Green-belt / Afforestation / Landscaping & Beautification / Soil Moisture Conservator/ Watershed management and other Forestry and Wild Life related works and Damodar Valley Corporation's land within RTPS as well as in the land ofGovernment degraded Forest Land, Wasteland & farmer's land within the aerial distance of approximately 10 Km RTPS Project vide letter dated 01.04.2023**.**
M/s Damodar Valley Corporation has already developed green belt covering an area of 222.983 Hectares (551 Acres) for its thermal power plant located at Raghunathpur (RTPS).

Around 3,13,300 number trees [@1405 number trees per hectare] have been planted.

Green Belt Area Developed	222.983Hectares(551Acres)
Number of trees planted	3,13,000
Tree Density [Number of trees planted per Hectare]	1,405

Query 3: Compliance of non-compliances noted by the IRO during site inspection shall be ensured and a compliance report duly certified by the IRO be submitted along with the present proposal.
Reply: 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. Accordingly, review of Action Taken Report related to the project has been submitted by the IRO, Kolkata vide letter 08.01.2024.

Query 4: Fly ash utilization plan shall be submitted for proposed and existing unit for ensuring 100% Ash utilization shall be submitted as per extent rules and regulations of the Ministry.

Ash generation utilization of RTPS from FY: 23-2

FY	Legacy ash at the starting of the FY in LMT	Capacity of Phase# I in MW	Capacity addition due to Phase# II in MW	Total capacity in MW	Approx. Ash generation in LMT	Pond as NHAI
2023-24	70.0	1200	0	1200	21.0	2.0
2024-25	79.0	1200	0	1200	21.0	40.0
2025-26	42.0	1200	0	1200	21.0	40.0
2026-27	3.0	1200	0	1200	21.0	
2027-28	0.0	1200	0	1200	21.0	
2028-29	0.0	1200	660 MW in the month of July'28 and another 660MW in the month of Jan'29.	1200 MW till June'28, from July'28 to Jan'28 is 1860 MW and Jan'29 onwards is 2520 MW.	30.0	
2029-30	0.0	1200	1320	2520	43.0	
2030-31	0.0	1200	1320	2520	43.0	
2031-32	0.0	1200	1320	2520	43.0	
2032-33	0.0	1200	1320	2520	43.0	

(-) sign indicate ash utilization is more than ash generation.

Calculation based as per bellow:
1. Sp. Coal coalconsumption= 0.60 for all the units. 2. % Ash in Coal=42% to 45%. 3. PLF for FY: 23-24 to 28-29 is 70-80% for RTPS Ph#
5. PLF for FY: 30-31 to 32-33 is 70 - 80 % for RTPS Ph# 1 & 2 units. 6. Expected COD of the PH#2 unit#1 in the month of July'28. & 7. E

Reply: Details of Fly ash utilization plan has been prepared for proposed and existing unit for ensuring 100% Ash utilization.

Query 5: Detailed Action plan with timelines for addressing the issues/activities raised during public hearing shall be submitted along with budget proposed for future issues/activities.

Reply: Detailed Action plan with timelines for addressing the issues/activities raised during public hearing submitted along with budget proposed for future issues/activities has been submitted.

Query 6: Action plan for installation of emission control devices for existing unit as well asexpansion unit to limit emissions level within as per extent rules and regulations of the Ministry.

Reply: Installation of emission control devices for existing unit
Control at Particulate matter

- High efficient ESPs in Boilers
- High efficient Bag filters at all strategic locations
- Dry fog System

Control of SO2
The commissioning of FGD systems to control SOx levels in flue gases are on the verge of completion. The likely date of completion of FGD far unit#1 is March 2024 and Unit#2 is
May 2024. Total cost of installation of FGD project is Rs/- 560 Crores

Control of NOX
Regarding control of NOx levels, DVC has issued the work orders for installation of De-NOx burners in both the units of RTPS Phase-l.
The installation of De-NOx burner is already completed in unit#1 and its fine tuning and commissioning is under progress which will be completed by February 2024.
The commissioning of De-NOx burners in Unit shall be completed by April 2024.
Total cost of installation of De-NOx burner is Rs. 20.81 Crores
Work order De NOx has been submitted as ANNEXURE -8

Control at Dust Emission on roads
DVC has already deployed External Agencies to carryout water sprinkling on different roads inside the Plant. Work order for mobile water sprinklers has been submitted as ANNEXURE -9.

Installation of emission control devices for proposed units (RTPS-II)

Commercial operation of RTPS-I is already started therefore, expansion of RTPS by installing additional two units of 660 MW (RTPS-II) within the same shall be environmentally compatible as the site conforms to the environmental guidelines of MoEF&CC for sitting of thermal power projects.

Moreover, many of the activities related to development of site and establishment of Infrastructure has already been taken up under RTPS-I, the Impact due to construction of RTPS-II will be less as compared to construction at green field site.

Sources	**Mitigation Measures**
Unloading of Raw Material	Sprinkler/Dry Fog Dust Suppression System
Raw Material Handling System for Power Plant	Bag Filter/Dry Fog Dust Suppression System
Boiler Flue Gases	Electrostatic Precipitator (ESP)
Ash Handling Area	Fixed and Mobile water Sprinkler

Electrostatic Precipitator

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, so as 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.

In order to meet the environment norms and maintain the sustained efficiency of ESP it shall be adequately designed with sufficient margins for all operating conditions. The Electrostatic Precipitator Management System (EPMS) in conjunction with opacity monitor shall continuously monitor and

In order to meet the environment norms and maintain the sustained efficiency of ESP, it shall be adequately designed with sufficient margins for all operating conditions The Electrostatic Precipitator Management System (EPMS) in

conjunction with opacity monitor shall continuously monitor and maintain the optimum energy level to achieve higher efficiency of ESP

Flue Gas Desulphurization System (FGD)

Wet limestone-based flue gas desulphurization (FGD) system shall be installed at the tall end of the steam generator downstream of the ESP, in which SO2 gas shall be captured in limestone slurry to produce gypsum.

The FGD System shall be provided with bypass system. Necessary auxiliary equipment and systems like cyclones, vacuum filters, belt conveyors, pumps, storage vessels for different liquids, piping and fittings, zero liquid discharge (ZLD) etc shall complete the FGD plant.

NOX Control System (SCR - Selective Catalytic Reduction)

NOx emission from the steam generator shall be controlled by employing low NOx burners (LNB), combustion staging and reducing NOx in the tail flue gas. Suitable technology, taking into consideration the boiler furnace conditions and high ash Indian coals, for reduction of NOx to N_2 using either SNCR (selective non catalytic reduction) or SCR (selective catalytic reduction) technology as applicable shall be employed.

Tall Stack:

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 for wide dispersion of the emitted pollutants

Query 7: Air monitoring and stack emissions shall be carried out by third party. Latest data of continuous online air quality monitoring shall be submitted.
Reply: Stack emissions monitoring was carried out by M/s RV BRIGGS & CO PRIVATE LTD (AN ISO SOOL 2015 8 IS0 4500L 2018CERTIFIED COMPANY) on 02.12.2023.
Details are as under:

NameoftheMonitoringAgency	M/s.R.V.BRIGGS&CO.PRIVATELTD. (ANISOSOOL:2O15&ISO45OOL:2018CERTIFIEDCOMPANY) OfficeAddress: TAHERMANSION,ISTFLOOR. 9,BENTINCKSTREET,KOLKATA-7OOOOI	
SampleDescription	StackGas/FlueGas	
Date&TimeofSampling	02.12.2023(04:00P.M.to04:30P.M.)	
SamplingPlan&Method	RVB/FM/45&IS:11255(Part-l,2&3)	
Emissiondueto	Combustion of Coal	
Analysiscompletedon	04.12.2023	
Stack Connected to	Boiler Unit – 1	Boiler Unit - 2
Stack Height (mtr)	275	275
Stack dia (m)	7.1	7.1
Palticulate Matters (mg/nm3)	31	35

SO2(mg/nm3)	789	819
NOx(mg/nm3)	533	519

3.1.3. Deliberations by the committee in previous meetings

Date of EAC 1 :30/11/2023

Deliberations of EAC 1 :

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.

The project/activity is covered under category A of item 1(d) 'Thermal Power Plants' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level.

Earlier, the Ministry had granted Environment Clearance vide letter dated 23.05.2012 to 2x660 MW under Phase II Raghunathpur Thermal Power Station. The project was dropped by DVC in 2014-15. The validity of environmental clearance had expired on 22.05.2017.

The MoEF&CC vide its letter dated 10.05.2023 has issued a ToR for conducting EIA study 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) in favour of M/s Damodar Valley Corporation.

The land area mentioned in the proposal is not matching with the earlier EC. It seems that the project proponent has changed the area mentioned in earlier EC without informing the Ministry. The EAC suggested to submit proposal for amendment in EC for change in land area from 1820 acre to 2076 acre.

EAC further noted that green belt has not been developed in a proper manner. The EAC also noted that ash utilization is very less and accordingly not complying with Ministry's Fly ash utilization norms i.e. 100% ash utilization. It was also noted that no stack emissions control equipments have not been installed due to which SOx and NOx emissions are beyond permissible limit.

The certified compliance report submitted by the IRO, Kolkata mentioned several major non-compliance of conditions mentioned in the EC letter dated 18.10.2007. The EAC observed that PP & consultant were not well prepared for presentation as they were unable to present the facts & future plan for ash utilization.

The EAC after detailed deliberation on the information submitted and as presented during the meeting decided to **defer** the proposal for want of following additional information:

1. Requisite amendment shall be obtained w.r.to change in land area.
2. Action plan for development of 3 layer peripheral greenbelt with 90% survival rate for the empty spaces shall be submitted.
3. Compliance of non-compliances noted by the IRO during site inspection shall be ensured and a compliance report duly certified by the IRO be submitted along with the present proposal.
4. Fly ash utilization plan shall be submitted for proposed and existing unit for ensuring 100% Ash utilization shall be submitted as per extent rules and regulations of the Ministry.
5. Detailed Action plan with timelines for addressing the issues/activities raised during public hearing shall be submitted along with budget proposed for future issues/activities.
6. Action plan for installation of emission control devices for existing unit as well as expansion unit to limit emissions level within as per extent rules and regulations of the Ministry.
7. Air monitoring and stack emissions shall be carried out by third party. Latest data of continuous online air quality monitoring shall be submitted.

*The proposal is therefore **deferred** on the above lines.*

3.1.4. Deliberations by the EAC in current meetings

4..3.3 The EAC during deliberations noted the following:

The proposal is for grant of Environment 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.

The project/activity is covered under category A of item 1(d) 'Thermal Power Plants' of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, as amended as the power generation capacity of proposed expansion is beyond threshold capacity of 500MW i.e. 1320 MW and requires appraisal at Central level by the sectoral EAC in the Ministry.

The ToR for the project was granted by MoEF&CC vide its letter dated 10.05.2023 for conducting EIA study to the project for expansion of Raghunathpur Thermal Power Station. Public hearing was held on 17th August, 2023 at 12.00 hrs at Outside campus of Administrative Building Raghunathpur Thermal Power Station. Major issues raised during public hearing were related to Job opportunities, pollution related, peripheral development, and other miscellaneous issues such as sports events, speed of trucks etc.

The EAC noted that the IRO, Kolkata visited the site on 9.10.2023 and submitted the compliance status of the existing EC dated 18.10.2007 wherein several non-compliance of EC conditions was observed. Accordingly, Action taken report (ATR) has been submitted by the Project proponent vide letter dated 26.12.2023 to the IRO, Kolkata against the non-compliances therefore, review of Action Taken Report related to the project has been submitted by the IRO, Kolkata vide letter 08.01.2024. It was observed that in latest IRO report conclusion given was as under:

PAs have complied or are in the process of complying the conditions stipulated by the Ministry. In most of the stipulated condition PAS, have assured to comply with the condition. This may be appraised in the Ministry and accordingly the action taken report may be considered for further necessary action

The project proponent has submitted the year wise proposed expenditure for next three years to address the issues raised during Public Hearing is Rs. 16.17 Crores.

The EIA/EMP report is in compliance of the ToR issued for the project, reflecting the present environmental concerns and the projected scenario for all the environmental components. Issues raised during the public hearing have been duly addressed by the project proponent.

The EAC observed that as submitted by the PP 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. 880 Crores. Rs. 88 Crores have been estimated as recurring per year for EMP and as per discussion held during the meeting submitted the revised capital cost of environmental mitigation measures as Rs. 937.87 Crores, and Rs. 89.03 Crores as annual cost for the same.

During the discussion the Committee asked the PP to submit an undertaking for the commitments made during the meeting. The PP vide letter dated 24.01.2024 submitted an undertaking wherein it has mentioned the following:

1. M/s Damodar Valley Corporation has already developed green belt covering an area of 222.983 Hectares (551 Acres) for its thermal power plant located at Raghunathpur (RIPS). Around 3,13,300 number trees [©1405 number trees per hectare] have been planted. Therefore, to make-up the existing short fall (2500 - 1405 = 1,095), DVC will carry out additional plantation of 2,44,170 on 222.983 Hectares [© 1,095 number of trees per hectare]. Total 5,57,470 (3,13,300 + 2,44,170) number of trees will be planted on 222.983 Ha of land i.e. (©2500 number trees per hectare). This additional plantation will be completed within 3 years during the implementation of the project. The total expenditure estimated will be around Rs. 293 Lakhs (considering Expenditure on Formation/ Establishment ©Rs. 3 lakhs per 2500 trees).

1. 100 % Fly Ash Utilization will be done within the year 2027-28 and thereafter.

Observation of EAC: The Committee is 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.

1. 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.

1. 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)

4.3.4 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 following specific environmental safeguard conditions, in addition to the standard EC conditions (Annexure-II of MoM) stipulated for the thermal power plants:

3.1.5. Recommendation of EAC

Recommended

3.1.6. Details of Environment Conditions

3.1.6.1. Specific

Specific Conditions:	
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.
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.
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.
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.
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.

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.
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.
8.	Environment Audit of plant shall be done annually and report shall be submitted to Regional office of the Ministry.
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.
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.
11.	Oil and grease recovered from the treatment plant should be disposed only through authorized recyclers.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
22.	PP shall ensure that legacy ash shall be completely utilized within 1 year after the start of construction of roads by NHAI.
23.	For both the existing unit of TPP, FGD will be installed by May, 2024.
24.	Fly ash disposal/ utilization shall be done as per CPCB guidelines and Notifications issued by the MoEF&CC from time to time.
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.
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.
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.
28.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
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.
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.
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.
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.
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.

34.	All necessary clearance from the concerned Authority, as may be applicable should be obtained prior to commencement of project or activity.

3.1.6.2. Standard

1(d)	**Thermal Power Plants**
Air quality monitoring and Management	
1.	Flue Gas Desulphurisation System shall be installed based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO2 emissions standard of 100 mg/Nm3.
1.	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.
1.	Adequate dust extraction/suppression system shall be installed in coal handling, ash handling areas and material transfer points to control fugitive emissions.
1.	Continuous Ambient Air Quality monitoring system shall be set up to monitor common/criteria pollutants from the flue gases such as PM10, PM2.5, SO2, NOXwithin 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.
1.	Exit velocity of flue gases shall not be less than 20-25 m/s. Mercury emissions from stack shall also be monitored periodically.
1.	Stacks of prescribed height ____m shall be provided with continuous online monitoring instruments for SOX, NOx and Particulate Matter as per extant rules.
1.	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/Nm3.
1.	Selective Catalytic Reduction (SCR) system or the Selective Non-Catalytic Reduction (SNCR) system or Low NOX Burners with Over Fire Air (OFA) system shall be installed to achieve NOX emission standard of 100 mg/Nm3.
Ash content/mode of transporatation of coal	
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.
Common to intake and effluent	
1.	In case of Coastal Power Plants, the Mangrove plantation shall be taken up in an area of ……ha, along the coast/ on the banks of …… Estuary.
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.
1.	In case of open channel, the channel shall be constructed as per the recommendations of State Coastal Zone Management Authority (SCZMA).

1.	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.
1.	Exposed pipeline section and riser shall be protected by armour stone from waves, boats anchoring, fishing activities etc.
1.	The location of the riser & diffuser shall be marked with a solar lighted buoy to avoid accidents from boats.
1.	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).
Corporate Environmental Responsibility (CER) activities	
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.
Effluent Release	
1.	The effluent shall be released through a properly designed multiport diffuser above the seabed to facilitate its efficient initial mixing with the receiving seawater.
1.	Continuous online monitoring system for Temperature and Salinity shall be installed to monitor the quality of effluent.
1.	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.
1.	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.
1.	The location of the diffuser shall be marked with a solar lighted buoy to avoid accidents.
1.	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.
1.	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.
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.
Green belt and Biodiversity conservation	
1.	In-situ/ex-situ Conservation Plan for the conservation of flora and fauna should be prepared and implemented.
1.	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.
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.
Human Health Environment	

1.	Baseline health status within study area shall be assessed and report be prepared. Mitigation measures should be taken to address the endemic diseases.
1.	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.
1.	Sewage Treatment Plant shall be provided for domestic wastewater.
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.
Marine facilities	
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.
1.	Marine intake and outfall pipelines shall be located as per the recommendations State Coastal Zone Management Authority (SCZMA).
Monitoring of compliance	
1.	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.
1.	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.
1.	Monitoring of Carbon Emissions from the existing power plant aswell 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.
1.	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.
1.	Resettlement & Rehabilitation Plan as per the extant rules of Govt. of India and respective State Govt. shall be followed, if applicable.
1.	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.
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.
Noise pollution and its control measures	
1.	Persons exposed to high noise generating equipment shall use Personal Protective Equipment (PPE) like earplugs/ear muffs, etc.
1.	The Ambient Noise levels shall meet the standards prescribed as per the Noise Pollution (Regulation and Control) Rules, 2000.
1.	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.
Risk Mitigation and Disaster Management	
1.	Safety management plan based on Risk Assessment shall be prepared to limit the risk exposure to the workers within the plant boundary.
1.	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%.
1.	Regular mock drills for on-site emergency management plan and Integrated Emergency Response System shall be developed for all kind of possible disaster situations.
1.	Ergonomic working conditions with First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.
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.
Sea Water Intake	
1.	In all tide conditions (particularly at spring low tides) the riser head must be flooded with the required submergence of seawater above its top.
1.	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.
1.	Seawater intake system shall be so designed and constructed to ensure sufficient sweater in terms of quantity and quality.
Statutory compliance	
1.	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.	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.	Groundwater shall not be drawn during construction of the project. In case, groundwater is drawn during construction, necessary permission be obtained from CGWA.

1.	No Objection Certificate from Ministry of Civil Aviation be obtained for installation of requisite chimney height and its siting criteria for height clearance.
1.	The recommendation from Standing Committee of NBWL under the Wildlife (Protection) Act, 1972 should be obtained, if applicable.
1.	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 m3/MWh and Zero effluent discharge.
1.	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.	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.
Waste management	
1.	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.
1.	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.
1.	Solid waste management should be planned in accordance with extant Solid Waste Management Rules, 2016.
1.	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.
1.	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.
1.	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.
Water quality monitoring and Management	
1.	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.
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 m3/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.
1.	Sewage generation of …….KLD 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.

1.	Wastewater generation of …….KLD 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;
1.	Based on the commitment made by the Project Proponent, Sewage Treatment Plants within the radius of 50 km from proposed project, the treated sewage of ……..KLD from STP ….. (name) shall be used as an alternative to the fresh water source to minimize the fresh water drawl from surface water bodies.
1.	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.
1.	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.
1.	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.
1.	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.
1.	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.

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Expansion of Ramagundam STPP by addition of 2x800 MW (Stage-IV, Telangana STPP, Phase-I) at village & Mandal Ramagundam by **NTPC LIMITED** located at **PEDDAPALLI,TELANGANA**			
Proposal For		Amendment in EC	
Proposal No	**File No**	**Submission Date**	**Activity (Schedule Item)**
IA/TG/THE/452481/2023	J-13012/112/2010-IA.II (T)	23/11/2023	Thermal Power Plants (1(d))

3.2.2. Project Salient Features

Agenda Item No.4.2

Expansion of Ramagundam STPP by addition of 2x800 MW (Stage-IV, Telangana STPP, Phase-I) at village & Mandal Ramagundam, District Peddapalli (Telangana) by M/s NTPC Limited – Amendment in Environmental Clearance – reg.

[Proposal No. IA/TG/THE/452481/2023; F. No. J-13012/112/2010-IA.II (T)]

4.2.1 The proposal is for grant of amendment in EC to the project Expansion of Ramagundam STPP by addition of 2x800 MW (Stage-IV, Telangana STPP, Phase-I) at village & Mandal Ramagundam, District Peddapalli (Telangana) by

M/s NTPC Limited.

4.2.2 The Project Proponent made a detailed presentation on the salient features of the project and informed that:

1. M/s NTPC is implementing Telangana STPP, Phase-I (2x800 MW) in Pedapalli District of Telangana. Unit-I has achieved full load and Commercial Operation (COD) declared w.e.f 28.09.23.Unit-II is also scheduled to be commissioned on within three months. In addition, NTPC is also planning to establish Phase-II of the project with a capacity of 3x800 MW, thereby making a total capacity of 4000 MW.

1. The Environmental Clearance for Phase-I (2x800MW) was accorded by MOEF&CC vide letter J-13012/112/2010-IA.II (T) dated 20.01.2016 with an ash dyke area of 400 acres which wasamendedvide letter dated 08.08.2022 with a reduction in ash dyke area from 400 acres to 200 acres.

1. The Ministry of Coal vide letter no: 43012/13/2017-CPAM dated 22.04.2021, based on recommendations of the Expert Committee Constituted by NITI, Ayog has identified Mine Voids of Medapalli OCP for fly ash/ bottom ash filling to NTPC.

1. M/s NTPC intends to utilise the allocated mine voids of Medapalli OCP for disposal of ash from Telangana STPP, Phase-I and Phase-II. Further details of the Mine Void are as follows:

1. **Total Area of Mine Void** - 258.31 Ha, Total Capacity - 2164.3 lakh cu. m. The area proposed for ash filling is about 14 Ha with a Capacity of 14 lakh cu.m of ash, However, this is based on preliminary investigation and may change during detailed design.
2. Anticipated Life of the void (part) for ash filling three years for 2x800 MW with 80% ash Utilization (Annual Ash Generation 22 Lakh Cu. M. per year).
3. **Mode of Ash Filling**: HCSD technology through a pipeline of 7.5 km from project to Mine Void
4. **Status of MOU** – MOU is yet to be signed between NTPC & SCCL.However, SCCL vide letter dated 01.01.2020 has provisionally offered the Mine Void after closure of the mine & subject to compliance of statutory provision.
5. **Status of Mine Closure** – Mining operations closed on 01.07.2022.
6. **Statutory Compliances:**
7. The permission from Telangana SPCB shall be obtained in accordance with OM dated F.No.22-13/2019-IA.III dated 28.08.2019 of MOEF & CC and the provision of the OM dated 28.08.2019 shall be complied.
8. The permission from DGMS shall be obtained.
9. Condition (x) of the Amendment of EC for Medapalli OCP Mine Void, accorded to SCCL by MOEF&CC vide letter dated 17.08.2023 and stipulates as follows:

(x) The project proponent should rejuvenate the mine pit so that same may be used for the purpose of Ground water recharge as well as the water may be used for the nearby villagers. Water treatment plant facility should also be setup near to the mine pit subsequently after the treatment the mine pit water should be supplied to villagers through permanent water tank facility having capacity not less than 1000 Kilo litres.
SCCL shall obtain the amendment in above mentionedcondition from MOEF&CC (Coal Wing) separately.

1. **Amendment sought:**

1. The OM dated 28.08.2019 stipulates that the ash filling in the Mine Void may be undertaken with the permission from SPCB, the present application is being submitted to MOEF&CC for amendment of the following conditions of Ramagundam STPP, Stage-IV (Telangana STPP, Phase-I) 2x800 MW:

Specific condition no (xxvi)
“Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash. No ash shall be disposed off in low lying area”.

1. **Amendment Proposed**
2.

"Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash. Ash shall be disposed off in low lying area and Mine Void as per CPCB Guidelines".

1. **Justification**

As the Telangana STPP has limited area of ash dyke, it is requested that the amendment to the above-mentioned condition may be considered as.

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

4.2.3 The EAC during deliberations noted the following:

The proposal is for grant of amendment in EC to the project Expansion of Ramagundam STPP by addition of 2x800 MW (Stage-IV, Telangana STPP, Phase-I) at village & Mandal Ramagundam, District Peddapalli (Telangana) by M/s NTPC Limited.

The project/activity is covered under category A of item 1(d) 'Thermal Power Plants' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry.

The EAC noted that the Ministry vide its OM dated 29.08.2019has replaced the existing conditions (Specific & General) which prohibited the use of fly ash in abandoned mines/low lying areas/soil conditioner in agriculture by allowing them to dispose of flyash in abandoned mines with several conditions stipulated therein. One of the conditions is as follows:

"…..ii. There should at least be clearance of 500 m of safe distance be maintained from River and water body in case of ash disposal in abandoned mines to prevent embankment failures and flyash flowing into the nearby water body…..."

Further, it was observed by the EAC that the proposed location of dumping fly ash in allocated mine voids of Medapalli OCP for disposal of ash from Telangana STPP, Phase-I and Phase-II is surrounded by the water body. The EAC was of the view that the PP could not show a map which clearly indicate the distance of ash dumping site from Godavari River therefore PP shall submit a certified map from river development board / state water department which clearly mentioning about the all the distance from all water bodies.

The EAC was of the view that if the Medapalli OCP Mining operations has been closed, then SCCL need to amend mining closure plan and take necessary amendment initially from the Ministry for disposing of fly ash in the proposed area.

The EAC after detailed deliberation on the information submitted and as presented during the meeting if of the view that the distance of water bodies/river is not clear from the plan and photograph submitted by the PP. The Committee therefore, decided to conduct site visit by EAC sub-committee before making any recommendations on proposal and **deferred** the proposal.

The proposal was ***deferred*** on the above lines.

3.2.5. Recommendation of EAC

Deferred for Site Inspection

4. Any Other Item(s)

N/A

5. List of Attendees

Sr. No.	Name	Designation	Email ID	Remarks
1	Dr Sharad Singh Negi	Chairman, EAC	sha**********@gmail.com	
2	Dr Santoshkumar Hampannavar	Member (EAC)	san**********@yahoo.com	
3	Shri K B Biswas	Member (EAC)	bis*********@gmail.com	
4	Dr Nazimuddin	Member (EAC)	naz*******@nic.in	
5	Shri Mahi Pal Singh	Member (EAC)	mps********@nic.in	
6	Sh Inder Pal Singh Matharu IFS	Member (EAC)	mat********@gmail.com	Absent
7	Sh Lalit Kapur	Member (EAC)	lka********@yahoo.com	
8	Dr Umesh Jagannathrao Kahalekar	Member (EAC)	uka*******@gmail.com	
9	Sh Savalge Chandrasekhar	Member (EAC)	sav******@gmail.com	
10	Prof Shyam Shanker Singh	Member (EAC)	sin********@gmail.com	Absent
11	Dr Vinod Agrawal	Member (EAC)	vin*****@yahoo.com	
12	Shri Harmeet Sahaney	Member (EAC)	har**********@imd.gov.in	Absent
13	Prof R M Bhattacharjee	Member (EAC)	rmb**********@iitism.ac.in	
14	Amit Vashishtha	Scientist E	ami**********@nic.in	

MINUTES OF THE 04TH MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF THERMAL POWER PROJECTS HELD ON 18TH JANUARY, 2024

The 4thMeeting of the re-constituted EAC (Thermal Power) organized by the Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhiwas held on 18thJanuary, 2024 in Hybrid Mode at Narmada Hall, Jal Wing, Indira Paryavaran Bhawan (MoEF&CC) under the Chairmanship of Dr. Sharad Singh Negi. The list of Members participated in the meeting is at **Annexure I**.

Agenda Item No.4.1: Confirmation of the Minutes of the 4th EAC meeting

The Minutes of the 3rd EAC (Thermal Power) meeting held on 30th November, 2023 were confirmed in the meeting.

Agenda Item No.4.2

Expansion of Ramagundam STPP by addition of 2x800 MW (Stage-IV, Telangana STPP, Phase-I) at village & Mandal Ramagundam, District Peddapalli (Telangana) by M/s NTPC Limited – Amendment in Environmental Clearance – reg.

[Proposal No. IA/TG/THE/452481/2023; F. No. J-13012/112/2010-IA.II (T)]

4.2.1 The proposal is for grant of amendment in EC to the project Expansion of Ramagundam STPP by addition of 2x800 MW (Stage-IV, Telangana STPP, Phase-I) at village & Mandal Ramagundam, District Peddapalli (Telangana) by M/s NTPC Limited.

4.2.2 The Project Proponent made a detailed presentation on the salient features of the project and informed that:

i. M/s NTPC is implementing Telangana STPP, Phase-I (2x800 MW) in Pedapalli District of Telangana. Unit-I has achieved full load and Commercial Operation (COD) declared w.e.f 28.09.23.Unit-II is also scheduled to be commissioned on within three months. In addition, NTPC is also planning to establish Phase-II of the project with a capacity of 3x800 MW, thereby making a total capacity of 4000 MW.

ii. The Environmental Clearance for Phase-I (2x800MW) was accorded by MOEF&CC vide letter J-13012/112/2010-IA.II (T) dated 20.01.2016 with an ash dyke area of 400 acres which wasamendedvide letter dated 08.08.2022 with a reduction in ash dyke area from 400 acres to 200 acres.

iii. The Ministry of Coal vide letter no: 43012/13/2017-CPAM dated 22.04.2021, based on recommendations of the Expert Committee Constituted by NITI, Ayog has identified Mine Voids of Medapalli OCP for fly ash/ bottom ash filling to NTPC.

iv. M/s NTPC intends to utilise the allocated mine voids of Medapalli OCP for disposal of ash from Telangana STPP, Phase-I and Phase-II. Further details of the Mine Void are as follows:

a) **Total Area of Mine Void** - 258.31 Ha, Total Capacity - 2164.3 lakh cu. m. The area proposed for ash filling is about 14 Ha with a Capacity of 14 lakh cu.m of ash, However, this is based on preliminary investigation and may change during detailed design.

b) Anticipated Life of the void (part) for ash filling three years for 2x800 MW with 80% ash Utilization (Annual Ash Generation 22 Lakh Cu. M. per year).

c) **Mode of Ash Filling**: HCSD technology through a pipeline of 7.5 km from project to Mine Void

d) **Status of MOU** – MOU is yet to be signed between NTPC & SCCL.However, SCCL vide letter dated 01.01.2020 has provisionally offered the Mine Void after closure of the mine & subject to compliance of statutory provision.

e) **Status of Mine Closure** – Mining operations closed on 01.07.2022.

f) **Statutory Compliances:**

(i) The permission from Telangana SPCB shall be obtained in accordance with OM dated F.No.22-13/2019-IA.III dated 28.08.2019 of MOEF & CC and the provision of the OM dated 28.08.2019 shall be complied.

(ii) The permission from DGMS shall be obtained.

(iii) Condition (x) of the Amendment of EC for Medapalli OCP Mine Void, accorded to SCCL by MOEF&CC vide letter dated 17.08.2023 and stipulates as follows:

> (x) The project proponent should rejuvenate the mine pit so that same may be used for the purpose of Ground water recharge as well as the water may be used for the nearby villagers. Water treatment plant facility should also be setup near to the mine pit subsequently after the treatment the mine pit water should be supplied to villagers through permanent water tank facility having capacity not less than 1000 Kilo litres.

SCCL shall obtain the amendment in above mentionedcondition from MOEF&CC (Coal Wing) separately.

v. <u>Amendment sought:</u>

a. The OM dated 28.08.2019 stipulates that the ash filling in the Mine Void may be undertaken with the permission from SPCB, the present application is being submitted to MOEF&CC for amendment of the following conditions of Ramagundam STPP, Stage-IV (Telangana STPP, Phase-I) 2x800 MW:

<u>Specific condition no (xxvi)</u>

"Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash. No ash shall be disposed off in low lying area".

b. <u>Amendment Proposed</u>

"Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash. Ash shall be disposed off in low lying area and Mine Void as per CPCB Guidelines".

c. <u>Justification</u>

As the Telangana STPP has limited area of ash dyke, it is requested that the amendment to the above-mentioned condition may be considered as.

4.2.3 The EAC during deliberations noted the following:

The proposal is for grant of amendment in EC to the project Expansion of Ramagundam STPP by addition of 2x800 MW (Stage-IV, Telangana STPP, Phase-I) at village & Mandal Ramagundam, District Peddapalli (Telangana) by M/s NTPC Limited.

The project/activity is covered under category A of item 1(d) 'Thermal Power Plants' of the Schedule to the Environmental Impact Assessment Notification, 2006 and requires appraisal at Central level by the sectoral EAC in the Ministry.

The EAC noted that the Ministry vide its OM dated 29.08.2019has replaced the existing conditions (Specific & General) which prohibited the use of fly ash in abandoned mines/low lying areas/soil conditioner in agriculture by allowing them to dispose of flyash in abandoned mines with several conditions stipulated therein. One of the conditions is as follows:

".....ii. There should at least be clearance of 500 m of safe distance be maintained from River and water body in case of ash disposal in abandoned mines to prevent embankment failures and flyash flowing into the nearby water body……"

Further, it was observed by the EAC that the proposed location of dumping fly ash in allocated mine voids of Medapalli OCP for disposal of ash from Telangana STPP, Phase-I and Phase-II is surrounded by the water body. The EAC was of the view that the PP could not show a map which clearly indicate the distance of ash dumping site from Godavari River therefore PP shall submit a certified map from river development board / state water department which clearly mentioning about the all the distance from all water bodies.

The EAC was of the view that if the Medapalli OCP Mining operations has been closed, then SCCL need to amend mining closure plan and take necessary amendment initially from the Ministry for disposing of fly ash in the proposed area.

The EAC after detailed deliberation on the information submitted and as presented during the meeting if of the view that the distance of water bodies/river is not clear from the plan and photograph submitted by the PP. The Committee therefore, decided to conduct site visit by EAC sub-committee before making any recommendations on proposal and **deferred** the proposal.

The proposal was ***deferred*** on the above lines.

Agenda Item No.4.3

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 – Reconsideration for Environmental Clearance (EC) - reg.

[Proposal No. IA/WB/THE/451957/2023; F. No. J-13011/22/2007-IA. II (T)]

4.3.1 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.

4.3.2 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. The salient features of the project are as under: -

Project details:

Name of the Proposal	Proposed Expansion of Raghunathpur Thermal Power Station by installing capacity 1320 (2x660) MW (Phase - II)
Proposal No.	IA/WB/THE/451957/2023
Location	Village: Dumdumi, P.O. - Nildih, P.S.: Raghunathpur, District: Purulia, West Bengal
Company's Name	M/s Damodar Valley Corporation
Accredited Consultant and certificateno.	Envirotech East Pvt. Limited NABET/EIA/2225/RA 0279 VALIDITY – 12th September, 2025
Inter- state issue involved	No
Seismic zone	Zone-III

Category details:

Category of the project	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.
Capacity	1320 (2x660) MW
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	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 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.

Electricity generation capacity:

Capacity & Unit Configurations:	82.5 MW (Source : Captive)
Generation of Electricity Annually	2 X 600 MW : 1200 MW 2 X 660 MW : 1320 MW (Proposed)

	Total : 2520 MW

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, & co-ordinates Average height of the area above MSL (m)	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. Average height of the area 176m (577.42 ft.) above MSL
Quantity of a. Fly ash to be generated b. Bottom ash to be generated	Fly ash - 23.76 Lakh Metric Tonne per Annum Bottom ash - 5.94 Lakh Metric Tonne perAnnum

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.

Water Requirement:

Source of Water:	Panchet Dam of DVC
Quantity of water requirement:	95,049 Kilo Litres per Day (KLD)
Distance of source of water from Plant:	12 Km.
Whether barrage/ weir/ intake well/ jack well/ others proposed:	Barrage
Mode of conveyance of water:	Pipe line
Status of water linkage:	Damodar Valley Corporation ids the Authority for drawl of water from Panchet Dam. Therefore, water linkage is not required.
(If source is Sea water) Desalination Plant Capacity	Not applicable
Mode / Management of Brine:	Not applicable
Cooling system	Water Cooling

Land Area Breakup:

LandRequirement: a) TPP Site b) Ash Pond c) Township d) Railway Siding & Others e) Raw Water Reservoir f) Green Belt g) others Total (if expansion state additional land requirement)	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.
Status of Land Acquisition:	Already acquired

Presence of Environmentally Sensitive areas in the study area

Forest Land/ Protected Area/Environmental Sensitivity Zone	**Yes/No**	**Details of Certificate/letter/Remarks**
Reserve Forest/Protected Forest Land	No	No Environmentally Sensitive areas are present within the study area
National Park	No	
Wildlife Sanctuary	No	
Archaeological sites monuments/historical temples etc	No	
Names & distance of National parks, Wildlife sanctuaries, Biosphere reserves, Heritage sites Rivers, Tanks, Reserve Forests etc. Located within 10 Km from the plant boundary:	No	

Court case details:

Court Case	Original Application No. 104/2021/EZ before Hon'ble NGT, Eastern Zone Bench, Finance Centre, Kolkata
Complaint	On receiving a reference from the West Bengal Human Rights Commission with reference to media report dated 9.7.2021 in Bengali Daily Newspaper "Gana Shakti". Media report was that effluents were being discharged by Raghunathpur Thermal Power Plant on agricultural lands in Villages Ghutitora, Lachhiara, Valdubi, Asta, Pathuriadanga and Khairabad in District Purulia, West Bengal resulting in damage to agricultural fields which were covered by the fly ash.
Present Status	The application is disposed of vide order dated 10.04.2023

Baseline Environmental Scenario: The area falling within the radius of 10 km around the proposed expansion of existing Steel Plant at Village: Raghunathpur, Dist.-Purulia in the state of West Bengal has been considered as study area.

Period	**1st December, 2022 – 28th February, 2023**
AAQ parameters	• PM_{10} = 50 to 88 µg/m^3

at 10 locations (min. & Max.)	• $PM_{2.5}$ = 19 to 43 µg/m^3 • SO_2 = 4 to 18µg/m^3 • NOx = 11 to 40 µg/m^3. • CO =0.111 to 1.158 mg/m^3
Incremental GLC Level	• PM = Max. GLC -0.24 µg/m3 • SO_2 = Max GLC- 0.80 µg/m^3 • NOx = Max GLC- 0.80 µg/m^3
River water samples (Two samples)	pH 7.2- 7.5. Dissolved Oxygen: 6.7- 7.7 mg/lit; Total Dissolved Solids: 196-206 mg/lit; Total Hardness (as CaCO3): 102 - 117 mg/lit & total Alkalinity (asCaCO3): 109 - 119 mg/lit; Calcium (as Ca): 29 – 30 mg/lit; Magnesium (as Mg) :7 - 10 mg/lit ; Oil and grease: BDL (<1.4 mg/lit) Sulphate (as SO4): 14 - 20) mg/lit , Nitrate (asNO3) : 2.7 3.3) mg/lit; Chloride (as Cl) :40 - 43 mg/lit; Iron (as Fe): 0.15-0.19 mg/lit; BOD (2 - 2) mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Pond water samples quality at 8 locations	pH: 7.02 – 7.82; Dissolved Oxygen: 6.08 – 7.19 mg/lit; Total Dissolved Solids: 290 – 394 mg/lit; total Hardness (as CaCO3): 131 - 172 mg/lit; total Alkalinity(asCaCO3): 109 - 119 mg/lit; Calcium (as Ca): 30 – 52 mg/lit; Magnesium (as Mg): 8 – 17 mg/lit; Oil and grease was below detection limit (<1.4 mg/lit); Sulphate(asSO4): 13 – 36 mg/lit, Nitrate (as NO3): 3.8 – 6.6 mg/lit; Chloride (as Cl): 64– 112 mg/lit; Iron (as Fe): 0.16–0.25 mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Ground Water samples at 9 locations	pH: 6.6 – 7.5; Total Dissolved Solids: 336 – 552 mg/lit, Total Hardness (as CaCO3): 158 – 222 mg/lit; Alkalinity (as CaCO3): 135 – 251) mg/lit; Calcium (as Ca): 43 – 70) mg/lit; Magnesium(as Mg): 8–16 mg/lit; Sulphate (as SO4): 10 – 38 mg/lit, ; Nitrate (as NO3): 3.0 – 5.7 mg/lit ; Chloride (as Cl) : 778 – 145 mg/lit; Iron (as Fe): 0.23 – 0.43 mg/lit; Zinc (as Zn): 0.08–0.11 mg/lit; Heavy metals like Copper (as Cu), Lead (as Pb), Cadmium(as Cd),Chromium (as Cr), Manganese (as Mn), Arsenic (as As) and Mercury(as Hg) :below their respective detection limits.
Noise levels Leq (Day & Night) at 10 locations	The Leq values for day time was observed to be 54.1 - 67.8 dB (A) in residential area, while during night time 42.9 - 52.9 dB (A).
Soil Quality at 4 Locations	Bulk density: 1.16 - 1.36 gm/cm3; pH range 6.5 - 6.); Electrical conductivity (EC); 524 – 616 µmhos/cm; calcium content: 369 - 442 mg/kg; sodium: 135 - 172 mg/kg; potassium: 122 - 137 mg/kg; Nitrogen: 59 - 78) mg/kg; Phosphorous: 27.9 - 31.4 mg/kg; Cation

	Exchange Capacity (CEC): 22.3 – 25.5) meq/100gm; Magnesium: 150-208)mg/kg; Sulphur: 25.1 - 28.2 mg/kg; Organic Matter: 1.1 – 1.7%./
Flora & Fauna	No Schedule-I species were observed in the study area. A total of 14 species of mammals, 21 species of birds, 11 species of reptiles and 4species of amphibians were observed during the study

Green Belt Development (RTPS):

Total Land For Green Belt	**Green Belt Area**		**Number of Trees**		**Total**
	Existing	**Proposed**	**Existing**	**Proposed**	
222.983 Hectares (551 acres) of land (33% of 840.5 hectares / 2077 acres)	222.983 hectares (551 acres)	-	3,13,300Trees on 222.983 hectares. [@1405 trees per hectare]	1,88,420 (@ 845 number of trees per hectare for 222.983 hectares)	5,01,720 (3,13,300 + 1,88,420) number of trees on 222.983Ha i.e. (@ 2250 number trees per hectare

Rs. 3 lakhs has been estimated for every 2250 no. of trees, therefore, budgetary estimate of Rs. 252 lakhs have been kept for the expansion proposal of RTPS.

The land use breakup of the project site has been presented in Table below.

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, JharukhamarGhutitara plant gate)	19	-
13	Plant area approach road & Free space	20	-
14	Green belt	551	-
	TOTAL	**1927**	**150**

ii. The MoEF&CC vide its letter dated 10.05.2023 has issued a 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.

iii. 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 16thJuly, 2023 in Bengali newspaper "Ajkal", English newspaper "Millennium Post" and Hindi news paper "Sanmarg".

iv. The IRO, Kolkata visited the site on 9.10.2023 and submitted the compliance status of the existing EC dated 18.10.2007.

v. The PP after conducting PH, prepared EIA/EMP Report and applied for grant of EC vide proposal No. **IA/WB/THE/451957/2023. The** proposal was thereafter considered by the EAC in its 3rd meeting held on 30.11.2023 wherein the Committee deferred the proposal for want of additional information. PP vide letter dated 09.01.2024 submitted the reply on Parivesh Portal and the proposal in now considered in 4th EAC meeting held on 18/01/2024. The Point wise reply submitted by PP w.r.t information sought by EAC is as follows:

Query 1: Requisite amendment shall be obtained w.r.to change in land area.

Reply: The land requirement of 1820 Acres was considered as per the EC issued for Phase-l in 2007 project i.e. 2600MW capacity.

Additionally, 257 acres land was acquired for the project, however the total requirement of 2077 Acres is also reflected in the EC granted in the year 2012 [Ref F. No. J-13012/258/2007-IA (T) dated 23rd may 2012] by MOEF&CC for our Phase-II to facilitate the green belt development & improvement of railway siding & associated infrastructure.

However, Phase-II project could not be implemented and the validity of the EC granted in the year 2012 also got expired. Now, we have proposed the same Phase-II project within total 2077 acres for both Phase-I & Phase- II projects as mentioned in the EC, granted in the year 2012.

Query 2: Action plan for development of 3 layer peripheral greenbelt with 90% survival rate for the empty spaces shall be submitted.

Reply: Action plan for development of 3 layer peripheral greenbelt has been submitted along with ADS reply. It has been mentioned about the Choice of Species and Quality plating material, Planting techniques and methods and Post Planting Maintenance Operations.

Also, MoU between Damodar Valley Corporation RTPSs and West Bengal Forest Development Corporation Ltd for Green-belt / Afforestation / Landscaping & Beautification / Soil Moisture Conservator/ Watershed management and other Forestry and Wild Life related works and Damodar Valley Corporation's land within RTPS as well as in the land ofGovernment degraded Forest Land, Wasteland & farmer's land within the aerial distance of approximately 10 Km RTPS Project vide letter dated 01.04.2023**.**

M/s Damodar Valley Corporation has already developed green belt covering an area of 222.983 Hectares (551 Acres) for its thermal power plant located at Raghunathpur (RTPS).

Around 3,13,300 number trees [@1405 number trees per hectare] have been planted.

Green Belt Area Developed	222.983Hectares(551Acres)
Number of trees planted	3,13,000
Tree Density [Number of trees planted per Hectare]	1,405

Query 3: Compliance of non-compliances noted by the IRO during site inspection shall be ensured and a compliance report duly certified by the IRO be submitted along with the present proposal.

Reply: 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.

Accordingly, review of Action Taken Report related to the project has been submitted by the IRO, Kolkata vide letter 08.01.2024.

Query 4: Fly ash utilization plan shall be submitted for proposed and existing unit for ensuring 100% Ash utilization shall be submitted as per extent rules and regulations of the Ministry.

Reply: Details of Fly ash utilization plan has been prepared for proposed and existing unit for ensuring 100% Ash utilization.

Ash generation utilization of RTPS from FY: 23-24 to FY: 32-33

FY	Legacy ash at the starting of the FY in LMT	Capacity of Phase# I in MW	Capacity addition due to Phase# II in MW	Total capacity in MW	Approx. Ash generation in LMT	Pond ash utilization in LMT		Dry Fly Ash utilization in LMT	Total ash utilization in LMT	% ash utilization	Unutilized ash in current year in LMT
						NHAI	Mines				
2023-24	70.0	1200	0	1200	21.0	2.0	6.0	4.0	12.0	57.1	9.0
2024-25	79.0	1200	0	1200	21.0	40.0	10.0	8.0	58.0	276.2	-37.0
2025-26	42.0	1200	0	1200	21.0	40.0	10.0	10.0	60.0	285.7	-39.0
2026-27	3.0	1200	0	1200	21.0	14.0		10.0	24.0	114.3	-3.0
2027-28	0.0	1200	0	1200	21.0	11.0		10.0	21.0	100.0	0.0
2028-29	0.0	1200	660 MW in the month of July'28 and another 660MW in the month of Jan'29.	1200 MW till June'28, from July'28 to Jan'28 is 1860 MW and Jan'29 onwards is 2520 MW.	30.0	16.0		14.0	30.0	100.0	0.0
2029-30	0.0	1200	1320	2520	43.0	25.0		18.0	43.0	100.0	0.0
2030-31	0.0	1200	1320	2520	43.0	25.0		18.0	43.0	100.0	0.0
2031-32	0.0	1200	1320	2520	43.0	25.0		18.0	43.0	100.0	0.0
2032-33	0.0	1200	1320	2520	43.0	25.0		18.0	43.0	100.0	0.0

(-) sign indicate ash utilization is more than ash generation.

Calculation based as per bellow:
1. Sp. Coal coalconsumption= 0.60 for all the units. 2. % Ash in Coal=42% to 45%. 3. PLF for FY: 23-24 to 28-29 is 70-80% for RTPS Ph#1 units. 4. PLF for FY: 28-29 is 55 to 65% for RTPS Ph#2 units.
5. PLF for FY: 30-31 to 32-33 is 70 - 80 % for RTPS Ph# 1 & 2 units. 6. Expected COD of the PH#2 unit#1 in the month of July'28. & 7. Expected COD of the PH#2 unit#2 in the month of Jan'29

Query 5: Detailed Action plan with timelines for addressing the issues/activities raised during public hearing shall be submitted along with budget proposed for future issues/activities.

Reply: Detailed Action plan with timelines for addressing the issues/activities raised during public hearing submitted along with budget proposed for future issues/activities has been submitted.

Query 6: Action plan for installation of emission control devices for existing unit as well asexpansion unit to limit emissions level within as per extent rules and regulations of the Ministry.

Reply: Installation of emission control devices for existing unit

<u>Control at Particulate matter</u>

- High efficient ESPs in Boilers
- High efficient Bag filters at all strategic locations
- Dry fog System

Control of SO_2

The commissioning of FGD systems to control SO_x levels in flue gases are on the verge of completion. The likely date of completion of FGD far unit#1 is March 2024 and Unit#2 is May 2024. Total cost of installation of FGD project is Rs/- 560 Crores

Control of NO_X

Regarding control of NOx levels, DVC has issued the work orders for installation of De-NOx burners in both the units of RTPS Phase-l.

The installation of De-NOx burner is already completed in unit#1 and its fine tuning and commissioning is under progress which will be completed by February 2024.

The commissioning of De-NOx burners in Unit shall be completed by April 2024.

Total cost of installation of De-NOx burner is Rs. 20.81 Crores

Work order De NOx has been submitted as ANNEXURE -8

Control at Dust Emission on roads

DVC has already deployed External Agencies to carryout water sprinkling on different roads inside the Plant. Work order for mobile water sprinklers has been submitted as ANNEXURE -9.

Installation of emission control devices for proposed units (RTPS-II)

Commercial operation of RTPS-I is already started therefore, expansion of RTPS by installing additional two units of 660 MW (RTPS-II) within the same shall be environmentally compatible as the site conforms to the environmental guidelines of MoEF&CC for sitting of thermal power projects.

Moreover, many of the activities related to development of site and establishment of Infrastructure has already been taken up under RTPS-I, the Impact due to construction of RTPS-II will be less as compared to construction at green field site.

Sources	**Mitigation Measures**
Unloading of Raw Material	Sprinkler/Dry Fog Dust Suppression System
Raw Material Handling System for Power Plant	Bag Filter/Dry Fog Dust Suppression System
Boiler Flue Gases	Electrostatic Precipitator (ESP)
Ash Handling Area	Fixed and Mobile water Sprinkler

Electrostatic Precipitator

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, so as 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.

In order to meet the environment norms and maintain the sustained efficiency of ESP it shall be adequately designed with sufficient margins for all operating conditions. The Electrostatic Precipitator Management System (EPMS) in conjunction with opacity monitor shall continuously monitor and

In order to meet the environment norms and maintain the sustained efficiency of ESP, it shall be adequately designed with sufficient margins for all operating conditions The Electrostatic Precipitator Management System (EPMS) in conjunction with opacity monitor shall continuously monitor and maintain the optimum energy level to achieve higher efficiency of ESP

Flue Gas Desulphurization System (FGD)

Wet limestone-based flue gas desulphurization (FGD) system shall be installed at the tall end of the steam generator downstream of the ESP, in which SO2 gas shall be captured in limestone slurry to produce gypsum.

The FGD System shall be provided with bypass system. Necessary auxiliary equipment and systems like cyclones, vacuum filters, belt conveyors, pumps, storage vessels for different liquids, piping and fittings, zero liquid discharge (ZLD) etc shall complete the FGD plant.

NOX Control System (SCR - Selective Catalytic Reduction)

NOx emission from the steam generator shall be controlled by employing low NOx burners (LNB), combustion staging and reducing NOx in the tail flue gas. Suitable technology, taking into consideration the boiler furnace conditions and high ash Indian coals, for reduction of NOx to N_2 using either SNCR (selective non catalytic reduction) or SCR (selective catalytic reduction) technology as applicable shall be employed.

Tall Stack:

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 for wide dispersion of the emitted pollutants

Query 7: Air monitoring and stack emissions shall be carried out by third party. Latest data of continuous online air quality monitoring shall be submitted.

Reply: Stack emissions monitoring was carried out by M/s RV BRIGGS & CO PRIVATE LTD (AN ISO SOOL 2015 8 IS0 4500L 2018CERTIFIED COMPANY) on 02.12.2023.

Details are as under:

NameoftheMonitoringAgency	M/s.R.V.BRIGGS&CO.PRIVATELTD. (ANISOSOOL:2O15&ISO45OOL:2018CERTIFIEDCOMPANY) OfficeAddress: TAHERMANSION,ISTFLOOR. 9,BENTINCKSTREET,KOLKATA-7OOOOI	
SampleDescription	StackGas/FlueGas	
Date&TimeofSampling	02.12.2023(04:00P.M.to04:30P.M.)	
SamplingPlan&Method	RVB/FM/45&IS:11255(Part-l,2&3)	
Emissiondueto	Combustion of Coal	
Analysiscompletedon	04.12.2023	
Stack Connected to	Boiler Unit – 1	Boiler Unit - 2
Stack Height (mtr)	275	275
Stack dia (m)	7.1	7.1
Palticulate Matters (mg/nm3)	31	35
SO2(mg/nm3)	789	819
NOx(mg/nm3)	533	519

4..3.3 The EAC during deliberations noted the following:

The proposal is for grant of Environment 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.

The project/activity is covered under category A of item 1(d) 'Thermal Power Plants' of the Schedule to the Environmental Impact Assessment (EIA) Notification, 2006, as amended as the power generation capacity of proposed expansion is beyond threshold capacity of 500MW i.e. 1320 MW and requires appraisal at Central level by the sectoral EAC in the Ministry.

The ToR for the project was granted by MoEF&CC vide its letter dated 10.05.2023 for conducting EIA study to the project for expansion of Raghunathpur Thermal Power Station. Public hearing was held on 17th August, 2023 at 12.00 hrs at Outside campus of Administrative Building Raghunathpur Thermal Power Station. Major issues raised during public hearing were related to Job opportunities, pollution related, peripheral development, and other miscellaneous issues such as sports events, speed of trucks etc.

The EAC noted that the IRO, Kolkata visited the site on 9.10.2023 and submitted the compliance status of the existing EC dated 18.10.2007 wherein several non-compliance of EC conditions was observed. Accordingly, Action taken report (ATR) has been submitted by the Project proponent vide letter dated 26.12.2023 to the IRO, Kolkata against the non- compliances therefore, review of Action Taken Report related to the project has been submitted by the IRO, Kolkata vide letter 08.01.2024. It was observed that in latest IRO report conclusion given was as under:

PAs have complied or are in the process of complying the conditions stipulated by the Ministry. In most of the stipulated condition PAS, have assured to comply with the condition. This may be appraised in the Ministry and accordingly the action taken report may be considered for further necessary action

The project proponent has submitted the year wise proposed expenditure for next three years to address the issues raised during Public Hearing is Rs. 16.17 Crores.

The EIA/EMP report is in compliance of the ToR issued for the project, reflecting the present environmental concerns and the projected scenario for all the environmental components. Issues raised during the public hearing have been duly addressed by the project proponent.

The EAC observed that as submitted by the PP 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. 880 Crores. Rs. 88 Crores have been estimated as recurring per year for EMP and as per discussion held during the meeting submitted the revised capital cost of environmental mitigation measures as Rs. 937.87 Crores, and Rs. 89.03 Crores as annual cost for the same.

During the discussion the Committee asked the PP to submit an undertaking for the commitments made during the meeting. The PP vide letter dated 24.01.2024 submitted an undertaking wherein it has mentioned the following:

a) M/s Damodar Valley Corporation has already developed green belt covering an area of 222.983 Hectares (551 Acres) for its thermal power plant located at Raghunathpur (RIPS). Around 3,13,300 number trees [©1405 number trees per hectare] have been planted.

Therefore, to make-up the existing short fall (2500 - 1405 = 1,095), DVC will carry out additional plantation of 2,44,170 on 222.983 Hectares [© 1,095 number of trees per hectare]. Total 5,57,470 (3,13,300 + 2,44,170) number of trees will be planted on 222.983 Ha of land i.e. (©2500 number trees per hectare). This additional plantation will be completed within 3 years during the implementation of the project. The total expenditure estimated will be around Rs. 293 Lakhs (considering Expenditure on Formation/ Establishment ©Rs. 3 lakhs per 2500 trees).

b) 100 % Fly Ash Utilization will be done within the year 2027-28 and thereafter.

Observation of EAC: The Committee is 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.

c) 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.

d) 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)

4.3.4 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 following specific environmental safeguard conditions, in addition to the standard EC conditions (Annexure-II of MoM) stipulated for the thermal power plants:

Specific Conditions:

i. 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.

ii. 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.

iii. 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.

iv. 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.

v. 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.

vi. 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.

vii. 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.

viii. Environment Audit of plant shall be done annually and report shall be submitted to Regional office of the Ministry.

ix. 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.

x. 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.

xi. Oil and grease recovered from the treatment plant should be disposed only through authorized recyclers.

xii. 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.

xiii. 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.

xiv. 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.

xv. 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.

xvi. 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.

xvii. 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.

xviii. 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.

xix. 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.

xx. 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.

xxi. 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.

xxii. PP shall ensure that legacy ash shall be completely utilized within 1 year after the start of construction of roads by NHAI.

xxiii. For both the existing unit of TPP, FGD will be installed by May, 2024.

xxiv. Fly ash disposal/ utilization shall be done as per CPCB guidelines and Notifications issued by the MoEF&CC from time to time.

xxv. 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.

xxvi. 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.

xxvii. 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.

xxviii. Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

xxix. 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.

xxx. 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.

xxxi. 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.

xxxii. 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.

xxxiii. 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.

xxxiv. All necessary clearance from the concerned Authority, as may be applicable should be obtained prior to commencement of project or activity.

The meeting ended with vote of thanks to the Chair.

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Annexure I

Attendance Sheet for 17-18 January, 2024 EAC meeting for Coal Mining Sector
(Dated 18-01-2024)

Sr. No.	Name	Signature	Contact No.
1.	Dr. Sharad Singh Negi (Chairman)		9711173154
~~2.~~	Sh. Inder Pal Singh Matharu (Member)	Absent	
3.	Sh. Lalit Kapur (Member)		9911135444
4.	Dr. Umesh Jagannathrao Kahalekar (Member)		9422207177
5.	Dr. Santosh Kumar Hampannavar (Member)	Joined through VC	
6.	Sh. Savalge Chandrasekhar (Member)	Joined through VC	
7.	Sh. K.B. Biswas (Member)	Joined through VC	
~~8.~~	Prof. Shyam Shanker Singh (Member)	Absent	
9.	Dr. Vinod Agrawal (Member)		9829040780
10.	Sh. Nazimuddin (Representative of CPCB)	Joined through VC	
11.	Sh. Mahipal Singh (Representative of CEA)	Joined through VC	9818399045
~~12.~~	Mr. Harmeet Sahaney (Representative of IMD)	Absent	
13.	Prof. R. M. Bhattacharjee (Representative of IIT/ISM)	Joined through VC	
14.	Shri Amit Vashishtha (Member Secretary)		8860485857

Annexure II

Standard EC Conditions for Thermal Power Sector:

A. Statutory compliance:

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.
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.
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.
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.
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.
6. The recommendation from Standing Committee of NBWL under the Wildlife (Protection) Act, 1972 should be obtained, if applicable.
7. No Objection Certificate from Ministry of Civil Aviation be obtained for installation of requisite chimney height and its siting criteria for height clearance.
8. Groundwater shall not be drawn during construction of the project. In case, groundwater is drawn during construction, necessary permission be obtained from CGWA.

B. Ash content/ mode of transportation of coal:

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.

C. Air quality monitoring and Management:

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.
2. Selective Catalytic Reduction (SCR) system or the Selective Non-Catalytic Reduction (SNCR) system or Low NOX Burners with Over Fire Air (OFA) system shall be installed to achieve NO_X emission standard of 100 mg/Nm^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.
4. Stacks of prescribed height ____m shall be provided with continuous online monitoring instruments for SO_X, NOx and Particulate Matter as per extant rules.
5. Exit velocity of flue gases shall not be less than 20-25 m/s. Mercury emissions from stack shall also be monitored periodically.
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_Xwithin 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.

7. Adequate dust extraction/suppression system shall be installed in coal handling, ash handling areas and material transfer points to control fugitive emissions.
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.

D. Noise pollution and its control measures:

1. The Ambient Noise levels shall meet the standards prescribed as per the Noise Pollution (Regulation and Control) Rules, 2000.
2. Persons exposed to high noise generating equipment shall use Personal Protective Equipment (PPE) like earplugs/ear muffs, etc.
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.

E. Human Health Environment:

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.
2. Baseline health status within study area shall be assessed and report be prepared. Mitigation measures should be taken to address the endemic diseases.
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.
4. Sewage Treatment Plant shall be provided for domestic wastewater.

F. Water quality monitoring and Management:

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.
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.
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.

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.
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. 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.
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.
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 of ……..KLD from STP ….. (name) shall be used as an alternative to the fresh water source to minimize the fresh water drawl from surface water bodies.
9. Wastewater generation of …….KLD 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;
10. Sewage generation of …….KLD 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.

G. Risk Mitigation and Disaster Management:

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.
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%.
3. Ergonomic working conditions with First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.
4. Safety management plan based on Risk Assessment shall be prepared to limit the risk exposure to the workers within the plant boundary.
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.

H. Green belt and Biodiversity conservation:

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.
2. *In-situ/ex-situ* Conservation Plan for the conservation of flora and fauna should be prepared and implemented.
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.

I. Waste management:

1. Solid waste management should be planned in accordance with extant Solid Waste Management Rules, 2016.
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.
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.
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.
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.
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.

J. Monitoring of compliance:

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.
2. Resettlement & Rehabilitation Plan as per the extant rules of Govt. of India and respective State Govt. shall be followed, if applicable.
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.

4. Monitoring of Carbon Emissions from the existing power plant aswell 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.
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.
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.
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 (PM_{10}& $PM_{2.5}$incase of ambient AAQ), SO_2, 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.

K. Corporate Environmental Responsibility (CER) activities:

1. CER activities will be carried out as per OM No. 22-65/2017-IA.II dated 01.05.2018 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.

L. Marine facilities:

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.
2. Marine intake and outfall pipelines shall be located as per the recommendations State Coastal Zone Management Authority (SCZMA).

M. Sea Water Intake:

1. Seawater intake system shall be so designed and constructed to ensure sufficient sweater in terms of quantity and quality.
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.
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.

N. Effluent Release:

1. At the effluent release point, maximum temperature of the discharge water shall not be more than 5^{o}C and salinity shall not exceed 50 ppt with respect to that of the ambient seawater.
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.
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.
4. The location of the diffuser shall be marked with a solar lighted buoy to avoid accidents.
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.
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.
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.
8. Continuous online monitoring system for Temperature and Salinity shall be installed to monitor the quality of effluent.

O. Common to intake and effluent:

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.
2. In case of open channel, the channel shall be constructed as per the recommendations of State Coastal Zone Management Authority (SCZMA).
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.

4. Exposed pipeline section and riser shall be protected by armour stone from waves, boats anchoring, fishing activities etc.
5. The location of the riser & diffuser shall be marked with a solar lighted buoy to avoid accidents from boats.
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).
7. In case of Coastal Power Plants, the Mangrove plantation shall be taken up in an area of ……ha, along the coast/ on the banks of …… Estuary.

APPROVAL OF THE CHAIRMAN

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Final MoM 4th EAC (Thermal) held on 18/01/2024-Reg

From: sharadnegi1957@gmail.com

To: Amit Vashishtha

Final MoM approved

From: Amit Vashishtha

To: sharadnegi1957@gmail.com lkapoor2000@yahoo.com ukahalekar@rediffmail.com Santoshkumar777@yal rmbhattacharjee@iitism.ac.in Nazimuddin Show more...

Cc: MOHIT SAXENA

Final MoM of 4t...dified 27.1.24.docx (600.5 KB) Download | Briefcase

Sir,

Please find attached herewith the **final MoM of 4th EAC meeting Thermal Sector** held on 18 January, 2024 for

With Regards

Amit Vashishtha
Sc 'E'
MoEF&CC