



सत्यमेव जयते

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



Minutes of 07TH Meeting of the Expert Appraisal Committee meeting Thermal Projects held from 19/03/2024 to 19/03/2024

Date: 01/04/2024

MoM ID: EC/MOM/EAC/578057/3/2024
Agenda ID: EC/AGENDA/EAC/578057/3/2024
Meeting Venue: N/A
Meeting Mode: Virtual
Date & Time:

19/03/2024	10:30 AM	01:30 PM
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1. Opening remarks

The 7th Meeting of the EAC (Thermal Power) organized by the Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi was held on 19th March 2024 through Online Mode under the Chairmanship of Dr. Sharad Singh Negi. The list of Members who participated in the meeting is in 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 6th EAC (Thermal Power Projects) meeting held on 27th February 2024 were confirmed in the meeting.

3. Details of proposals considered by the committee

Day 1 -19/03/2024

3.1. Agenda Item No 1:

3.1.1. Details of the proposal

3 x 800 MW (Phase-I) Patratu Super Thermal Power Project at Patratu District Ramgarh, Jharkhand by PATR ATU VIDYUT UTPADAN NIGAM LIMITED located at RAMGARH, JHARKHAND			
Proposal For		Amendment in EC	
Proposal No	File No	Submission Date	Activity (Schedule Item)

IA/JH/THE/465391/2024	J-13012/21/2015-IA.I (T)	08/03/2024	Thermal Power Plants (1(d))
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3.1.2. Project Salient Features

Agenda Item No. 7.1

3x800 MW (Phase-I) Patratu Super Thermal Power Project in area of 499.393 Ha at Village Patratu, Gegda, Katia, Rasda etc, Sub-District Patratu, District Ramgarh, Jharkhand by M/s Patratu Vidyut Utpadan Nigam Limited - Amendment in Environmental Clearance (EC) – reg.

[Proposal No. IA/JH/THE/465391/2024; F. No. J-13012/21/2015-IA.I (T)]

7.1.1 The proposal of Patratu Vidyut Utpadan Nigam Limited is for amendment in Environmental Clearance dated 07.11.2017 granted for 3x800 MW (Phase-I) Patratu Super Thermal Power Project in area of 499.393 Ha at Village Patratu, Gegda, Katia, Rasda etc, Sub-District Patratu, District Ramgarh, Jharkhand. The PP applied vide proposal no. IA/JH/THE/465391/2024 and submitted an application for amendment in EC (Form-4) on 08.03.2024.

The amendment sought by the PP and justification for the same are as follows:

EC condition no.	Stipulation in EC	Amendment Requested	Justification of amendment
A. Specific conditions clause no. ix.	Minimum distance of 500 m from the HFL of Nalkari river shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each).	Permission for temporary dry ash storage facility having capacity of 12.55 lakh CuM (approx.) to be constructed within the plant boundary may be accorded.	<p>The Unit No. 1, No.2, No.3 of the Patratu STPP (3X800 MW, Phase-I) are scheduled to be commissioned in September'24, March'25 and September'25 respectively. As per the EC, an ash mound is to be constructed at Ash dyke-I area for storage of unused ash from the plant.</p> <p>However, due to opposition from local people, related to land issue, the construction work of the ash mound is getting delayed.</p> <p>To enable the operation of the u</p>

			<p>nits at initial stage, a temporary dry ash storage facility having capacity of 12.55 lakh CuM (approx.) is to be constructed within the plant premises as an interim arrangement to store the unused ash.</p> <p>Stored ash will also be disposed to ash users/off takers as much as possible. Once, the Ash mound at ash dyke-I area will be operational, the balance stored ash will be shifted to Ash dyke-I area and the ash storage facility shall be dismantled.</p>
<p>B. Point No. 11 (page 2/11).</p>	<p>The water requirement for the operation period is estimated to about 16 Cusecs (38,640 m³/day) for 3X800 MW Patratu STP, Phase-I, based on Air Cooled Condenser (ACC) Technology.</p>	<p>The water requirement may kindly be amended as:</p> <p>“The water requirement for the operation period is estimated to about 20.52 Cusecs (50,208 m³/day) for 3X800 MW Patratu STP, Phase-I, based on Air Cooled Condenser (ACC) Technology.”</p>	<p>Based on the initial design of the power plant, the water requirement of 16 Cusecs (38,640 m³/day) was estimated. However, during detailed design of the plant, the actual water requirement is estimated as 20.5217 Cusecs (50,208 m³/day) which is less than the allotted water quantity of 27 Cusecs for Patratu STP (Phase-I). The water requirement, 20.5217 Cusecs which is equivalent to 0.8717 m³/MWhr of power generation is well within the stipulated quantity of water requirement for power generation 3 m³/MWhr stipulated in MOEF&CC Notification dated 07.12.2015 (as amended on 28.06.2018).</p>

3.1.3. Deliberations by the committee in previous meetings

<p>N/A</p>

3.1.4. Deliberations by the EAC in current meetings

<p></p>

7.1.2 The EAC during deliberations noted the following:

Environmental Protection Cost

S. No.	Description	Amount (Rs. in Crores)
1	Electrostatic Precipitator	392.67
2	Chimney	91.0
3	Cooling Towers including Civil works	33.234
4	Ash Handling	350.482
5	Ash Dyke- First 9 years	228.600
6	Ash Water Recirculation incld. ETP	8.830
7	Dust Extraction & Suppression System	5.00
8	DM Plant Waste Treatment System	5.00
9	Sewerage Collection, Treatment & Disposal	4.00
10	Environmental Lab Equipment	1.500
11	Greenbelt, Afforestation & Landscaping	5.000
12	Flue gas Desulphurisation & NOx Control	1920.00
Total		3045.316

S. No.	Budget Head	Amount Provision (In Lakhs)
1	Wind Curtain for Stopping Fugitive dust	30
2	Water Curtain all around Temporary ash storage facility	150
3	Environment monitoring	10
4	Water Sprinklers on Road (Silo to Temporary Ash storage facility)	40
5	Tower Mounted Fog canon machine for Sprinkling (04 nos.)	25
6	Water tankers on ash dyke road	45
7	Network sprinklers in Ash dyke area	45
Total		345

Particulars	Year	Area as % of Project Area of 499.3	Total area
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		931 Ha.	(Hectares)
Area already planted with the help of forest department	Till 2023-24	8.67	43.30
Area proposed to be planted outside project area	2024-25 (Under approval)	8.10	40.8
	2025-26	5.69	28.4
	2026-27	5.69	28.4
Area proposed to be planted within project area after completion of construction activities	2025-26	1.60	8.00
	2026-27	3.26	16.29
Total		33.01	164.87

The Committee is of the view that PP shall expedite the green belt development with further increase plantation of native species in plant premises. Further, Committee did not consider the any deviation in green belt development as PP did not apply for any change in specific conditions no xxxix and xl of EC dated 7/11/2017.

EC condition no.	Stipulation in EC	Amendment Requested	Justification of amendment
Specific conditions clause no. ix.	Minimum distance of 500 m from the HFL of Nalkari river shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each).	PUVNL shall comply with the specific condition clause no.(ix). However, in addition to the condition stipulated under clause no(ix), Permission may be accorded for temporary dry ash storage facility on an area of 25 Ha within the existing plant premises having capacity of 12.55 lakh CuM (approx.) to be constructed within the plant boundary may be accorded for a period of one and half years i.e: till 30.09.2025.	The Unit No. 1, No.2, No.3 of the Patratu STPP (3X 800 MW, Phase-I) are scheduled to be commissioned in September'24, March'25 and September'25 respectively. As per the EC, an ash mound is to be constructed at Ash dyke-I area for storage of unused ash from the plant. However, due to opposition from local people, related to land issue, the construction work of the ash mound is getting delayed. To enable the operation of the units at initial stage, a temporary dry ash storage facility having over an area of 25 Ha capacity of 12.55 lakh CuM (approx.) is to be constructed within the plant premises as an interim arrangement to store the unused ash for one and half years i.e till 30.09.2025. Stored ash will also be disposed to ash users/off takers as much as possible. Once, the Ash mound at ash dyke-I area will be operational, the balance stored ash will be shifted to Ash dyke-I area and the ash storage facility shall be dismantled.
Point No. 11(p page 2/11).	The water requirement for the operation period is estimated to about 16 Cusecs (38,640 m ³ /day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology	The water requirement may kindly be amended as: "The water requirement for the operation period is estimated to about 20.52 Cusecs (50,208 m ³ /day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (AC	Based on the initial design of the power plant, the water requirement of 16 Cusecs (38,640 m ³ /day) was estimated. However, during detailed design of the plant, the actual water requirement is estimated as 20.5217 Cusecs (50,208 m ³ /day) which is less than the allotted water quantity of 27 Cusecs for Patratu STPP (Phase-I). The water requirement, 20.5217 Cusecs which is equivalent to 0.8717 m ³ /MWhr of power generation is well within the stipulated quantity of wa

	y.	C) Technology. “	ter requirement for power generation 3 m3/MWhr stipulated in MOEF&CC Notification dated 07.12.2015 (as amended on 28.06.2018).
EC condition no.	Stipulation in EC	Recommendation of EAC	
Specific conditions clause no. ix.	Minimum distance of 500 m from the HFL of Nalkari river shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each).	A minimum distance of 500 m from the HFL of Nalkari River shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each). However, till 30.09.2025, PP is permitted to construct and store dry ash in a temporary storage facility (over an area of 25 Ha) within the existing plant premises and having a capacity of up to 12.55 lakh CuM.	
Point No. 1 (page 2/11).	The water requirement for the operation period is estimated to about 16 Cusecs (38,640 m3/day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology.	The water requirement for the operation period is estimated to be about 20.52 Cusecs (50,208 m3/day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology. “	
<p>The EAC after detailed deliberation on the information submitted and as presented during the meeting recommended the amendment in Environmental Clearance to the project 3x800 MW (Phase-I) Patratu Super Thermal Power Project in an area of 499.393 Ha at Village Patratu, Gegda, Katia, Rasda etc, Sub-District Patratu, District Ramgarh, Jharkhand by M/s Patratu Vidyut Utpadan Nigam Limited, under the provisions of EIA Notification, 2006 (as amended) along with the following additional/specific conditions. All the other conditions mentioned in the EC dated 07.11.2017 and its subsequent amendment in EC dated 16.03.2022 shall remain unchanged.</p>			

3.1.5. Recommendation of EAC

Recommended

3.1.6. Details of Environment Conditions

3.1.6.1. Specific

Specific Condition	
1.	The design of ash dyke of temporary ash storage area shall be as per CPCB Guidelines. No ash shall be stored in this temporary facility after 30.09.2025.
2.	PP shall implement the mitigative measures proposed with respect to temporary ash storage facility in a time bound manner and the additional budget earmarked for the same is Rs 345 Lakh. The amount shall be kept in a separate account and audited annually. PP shall submit the details of the implementation of EMP to the concerned RO, MoEF&CC in its six-monthly compliance report.
3.	100 % Fly ash utilization shall be carried out with prevailing norms and guidelines. The long-term fly ash utilization plan shall be submitted to RO and MoEF&CC
4.	PP shall ensure to take all necessary precautions while transporting the ash to and from the temporary storage site.
5.	PP shall expedite the plantation activities and native species shall be planted. Further, an annual plantation audit

	shall be carried out through an institute of MoEF&CC (e.g. ICFRE).
6.	PP shall develop a natural wind barrier around the plant boundary.

3.2. Agenda Item No 2:

3.2.1. Details of the proposal

Gadarwara Super Thermal Power Project, Stage-II (2x800MW) by NTPC LIMITED located at NARSINGHPUR, MADHYA PRADESH			
Proposal For		Fresh ToR	
Proposal No	File No	Submission Date	Activity (Schedule Item)
IA/MP/THE/465459/2024	J-13012/125/2009-IA.II(T)	09/03/2024	Thermal Power Plants (1(d))

3.2.2. Project Salient Features

Agenda Item No. 7.2	
Expansion of Gadarwara Super Thermal Power Project from 2x800 MW (Stage-I) additional 2x800 MW (Stage II) in an area of 910.706 Ha located at village Gangai, Mehrakheda, Chorbarheta, Dongergaon and etc, Sub District Gadarwara, District Narsimhapur, Madhya Pradesh by M/s NTPC Limited – Terms of Reference – reg. [Proposal No. IA/MP/THE/465459/2024; F. No. J-13012/125/2009-IA.II (T)]	
EAC meeting/s	7 th Meeting of the Expert Appraisal Committee on Thermal Power Projects
Date of Meeting/s	19.03.2024
Date of earlier EAC meetings	Not Applicable
Category of the project	Thermal, Category - A
Capacity	Under Operation Stage-I: 1600 MW (2x800 MW) Proposed Expansion Stage-II: 1600 MW (2x800 MW)
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	This is an expansion of existing Gadarwara STPP Stage-I (2x800 MW) by addition of Gadarwara Stage-II (2x800MW) based on pulverised coal fired thermal power generation technology, Air Cooled Condenser System & compliant with new emission norms.

<p>Land Requirement:</p> <p>a) TPP Site</p> <p>b) Ash Pond</p> <p>c) Township</p> <p>d) Railway Siding & Others</p> <p>e) Raw Water Reservoir</p> <p>f) Green Belt</p> <p>g) others</p> <p>Total (if expansion state additional land requirement)</p>	<table border="1"> <thead> <tr> <th rowspan="2">Description</th> <th colspan="3">Area in Ha</th> </tr> <tr> <th>Stage-I</th> <th>Stage-II</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Main Plant Area</td> <td>217.729</td> <td>110.074</td> <td>327.803</td> </tr> <tr> <td>Ash disposal area</td> <td>190.707</td> <td>135.570</td> <td>326.277</td> </tr> <tr> <td>Greenbelt Area</td> <td>66.368</td> <td>12.140</td> <td>78.508</td> </tr> <tr> <td>Others (Township, Reservoir, Pipe corridors etc.)</td> <td>178.118</td> <td>-</td> <td>178.118</td> </tr> <tr> <td>Total</td> <td>652.922</td> <td>257.784</td> <td>910.706</td> </tr> </tbody> </table>	Description	Area in Ha			Stage-I	Stage-II	Total	Main Plant Area	217.729	110.074	327.803	Ash disposal area	190.707	135.570	326.277	Greenbelt Area	66.368	12.140	78.508	Others (Township, Reservoir, Pipe corridors etc.)	178.118	-	178.118	Total	652.922	257.784	910.706
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Total	652.922	257.784	910.706																									
<p>Status of Land Acquisition:</p>	<p>No additional land is proposed to be acquired for the proposed project of Stage-II.</p> <p>Total of 910.706 Ha of land has already been acquired to accommodate Main Plant, Township and Ash Dyke of Gadarwara STP P. Approx. 652.922 Ha land has been utilized for Stage-I Units, Ancillary Facilities, Ash Disposal Area and Township etc. Remaining 257.784 Ha of land shall be used for Stage-II Units, Ancillary Facilities & Ash Disposal Area etc.</p>																											
<p>Status of the project:</p> <p>If under construction phase: please specify the reasons for delay, works completed till date and balance works along with expected date of completion.</p> <p>If under operation phase, date of commissioning (COD) of each unit. Whether the plant was under shutdown since commissioning, details and reasons</p>	<p>At present, the proposal is under planning stage. The tendering of the project is yet to be taken up.</p> <p>Both units of Stage-I are under commercial operation.</p> <p>Construction of Gadarwara STPP Stage-II shall start after accord of Environmental Clearance for the Project and all other statutory clearances and approval by Board of NTPC.</p>																											
<p>Break-Up of land-use of TPP site:</p> <p>a. Total land required for the project components</p> <p>b. Private land</p> <p>c. Government land</p> <p>d. Forest Land</p>	<table border="1"> <thead> <tr> <th>Type</th> <th>Land (Ha)</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td>910.706</td> </tr> <tr> <td>Private</td> <td>746.536</td> </tr> <tr> <td>Govt.</td> <td>164.179</td> </tr> <tr> <td>Forest</td> <td>0</td> </tr> </tbody> </table>	Type	Land (Ha)	Total	910.706	Private	746.536	Govt.	164.179	Forest	0																	
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<p>Forest Land/Protected Area/ Environmental Sensitivity Zone</p>	<p>Yes/ No</p>	<p>Details of Certificate/ letter/Remarks</p>																										
<p>Reserve Forest/ Protected Forest Land</p>	<p>Yes</p>	<p>1. Chhawargaon R.F (4.33 km, S) 2. Badagaon R.F (6.08 km, S) 3. Chaugan R. F. (9.42 km, S) 4. Prempur R.F (8.94 km, SSE) 5. Belkhedi R. F. (6.72 km, SE) 6. Bijanpur R. F. (8.78 Km, SE)</p>																										
<p>National Park</p>	<p>No</p>																											

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	No National parks, Wildlife sanctuaries, Biosphere reserves, Archaeological Heritage sites exists within 10 Km radius. River Shakkar River & Sitarewa are flowing at a distance of 0.6 km in North-East towards North and 0.9 km South-West towards North direction respectively.
Availability of Schedule-I species in study area	-	Details shall be submitted with EIA report
Additional information (if any)	No	
If expansion, the details of ECs (including amendments and extension of validity) of existing Units etc.	<p>MoEF&CC accorded EC for Gadarwara STPP Stage-I (2x800MW) vide letter no. J-13012/125/2009-IA.II(T) dated 22.03.2013 and Amendment for</p> <ul style="list-style-type: none"> • Change in Coal Sources and temporary transportation of coal by road vide letter J-13012/125/2009-IA.II (T) dated 01.09.2017 • Change in Coal Sources and extension of temporary transportation of coal by road vide letter J-13012/125/2009-IA.II (T) dated 07.02.2019 • Extension of temporary transportation of coal by road vide letter J-13012/125/2009-IA.II (T) dated 22.10.2019 • Deletion of CSR expenditure related condition vide letter J-13012/125/2009-IA.II (T) dated 22.10.2019 • Continuous monitoring of PM10 & PM2.5 emissions in stack and radio activity and heavy metals vide letter J-13012/125/2009-IA.II (T) dated 24.12.2021 	
Expansion / Green Field (new): (IPP / Merchant / Captive):	Expansion	
If expansion, the date of latest monitoring done by the Regional Office (R.O) of MoEF&CC for compliance of the conditions stipulated in the environmental and CRZ clearances of the previous phases. A certified copy of the latest R.O. monitoring report shall also be submitted.	This proposal is for TOR application, Latest Certified EC Compliance Report shall be submitted during EC Application	
Specific webpage address where all EC related documents (including monitoring	https://ntpc.co.in/about-us/corporate-functions/environment/status-hyc-reports	

<p>and compliance related reports/document s) of the specific project under consideration are/will be available. Also contact details of PP's officer responsible for updating this webpage/ information.</p>	<p>Head of Project, Village – Gangai, Umariya, Mehrakheda, Chorbarheta, Dongergaon and Kudari Taluk – Gadarwara District – Narsinghpur State – Madhya Pradesh PIN – 487770</p>
<p>Co-ordinates of all four corners of TPP Site:</p>	<p>The geographical co-ordinates of the site are as follows: Main Plant: A) 22° 52' 13" (N) to 78° 51' 36" (E) B) 22° 52' 00" (N) to 78° 52' 26" (E) C) 22° 51' 15" (N) to 78° 52' 20" (E) D) 22° 51' 16" (N) to 78° 51' 23" (E) Township: A) 22° 51' 00" (N) to 78° 52' 29" (E) B) 22° 51' 59" (N) to 78° 52' 51" (E) C) 22° 51' 45" (N) to 78° 52' 52" (E) D) 22° 51' 40" (N) to 78° 52' 27" (E) Ash Dykes (Existing): A) 22° 52' 34" (N) to 78° 50' 30" (E) B) 22° 52' 27" (N) to 78° 51' 23" (E) C) 22° 52' 00" (N) to 78° 51' 20" (E) D) 22° 52' 00" (N) to 78° 50' 32" (E) Ash Dykes (Proposed): A) 22° 52' 00" (N) to 78° 50' 31" (E) B) 22° 52' 00" (N) to 78° 51' 22" (E) C) 22° 51' 30" (N) to 78° 51' 23" (E) D) 22° 51' 31" (N) to 78° 50' 35" (E)</p>
<p>Average height of: (a) TPP site, (b) Ash pond site etc. above MSL</p>	<p>378 m 372 m</p>
<p>District</p>	<p>Narsinghpur</p>
<p>Whether the project is in the Critically Polluted Area (CPA) or within 10 km of CPA. If so, the details thereof:</p>	<p>No</p>
<p>CRZ Clearance</p>	<p>Not Applicable</p>
<p>Cost of the Project (As per EC and revised): Cost of the proposed activity in the amendment:</p>	<p>Gadarwara STPP Stage-I ₹s.11,404.62 Crores (as per EC) ₹s.15,105.22 Crores (As per revised cost estimate) Gadarwara STPP Stage-II ₹s. 14,000.00 Crores (Estimated cost)</p>
<p>Employment Potential for entire project/plant and employment potential for the proposed amendment (specify number of persons and quantitative information).</p>	<p>The project will generate direct and indirect employment opportunities as well as opportunities for self-employment. Current employment at existing power plant (Gadarwara STPP Stage-I): Permanent- 278 nos. & Temporary-2490 nos.</p>

	<ul style="list-style-type: none"> • The estimated employment generation from the proposed project (Stage-II) <ul style="list-style-type: none"> (a) During Construction- Permanent-96 nos. & Temporary-2000 nos.; depending on the construction phase of the project) (b) During Operation- Permanent-186 & Temporary-1500 <p>However, the manpower shall be optimised and the exact number of manpower shall be decided during the construction/ operation phases of the project.</p> <p>In addition to the people directly involved in construction and operation of the power project, employment opportunities in subsidiary industries and service sectors as well as self-employment opportunities shall also be generated</p>
<p>Benefits of the project (specify quantitative information)</p>	<ul style="list-style-type: none"> • Proposed Gadarwara STPP Stage-II (2x800 MW) will have State-of-the-Art Ultra Super Critical Technology which has better efficiency and less carbon emissions in comparison to sub-critical technology. Installation of High efficiency ESP, FGD and NOx control System will comply the new emission norms of MoEF&CC. • An Air-Cooled Condenser (ACC) System is proposed which has much less water requirement. • The setting up of the proposed project will lead to direct and indirect benefits to the overall socio-economic development of the region. • These will also benefit the local population. NTPC has taken up several community welfare and community development activities under Corporate Social Responsibility and this will be strengthened during commissioning of Gadarwara STPP Stage-II.
<p>Status of other Statutory Clearances</p>	<p>Environmental Clearance, Consent to Establish and Consent to Operate and Authorizations are available for Gadarwara STPP (Stage-I). All the required clearances shall be obtained for Gadarwara STPP (Stage-II).</p>
<p>R&R Details</p>	<p>No R&R Issue since total of 910.706 Ha of land has already been acquired to accommodate Main Plant, Township and Ash Dyke of Gadarwara STPP. Approx. 652.922 Ha land has been utilized for Stage-I Units, Ancillary Facilities, Ash Disposal Area and Township etc. Remaining 257.784 Ha of land shall be used for Stage-II Units, Ancillary Facilities & Ash Disposal Area.</p>
<p>Capacity & Unit Configurations:</p>	<p>Under Operation Stage-I: 1600 MW (2x800 MW)</p> <p>Proposed Expansion Stage-II: 1600 MW (2x800 MW)</p>

Generation of Electricity Annually	<p>Stage-I (1600MW): 12.61 Billion Units @90% PLF</p> <p>Stage-II (1600MW): 12.61 Billion Units @90% PLF</p>
Fuel to be used:	Coal
Quantity of Fuel required per Annum	6.10 Million TPA at 90% PLF
Coal Linkage / Coal Block: (If Block allotted, status of EC & FC of the Block)	<p>SLC (LT) in meeting held on 03.01.2024, has recommended for grant of coal linkage. Likely coal source is NCL, however all location of coal mine is yet to be decided.</p> <p>Ash content in coal- 34 % GCV in coal- 4450 Kcal/Kg Sulphur in coal- 0.53% Moisture in coal- 13.77%</p>
Details of mode of transportation of coal from coal source to the plant premises along with distances	<p>Mode of coal transportation from the coal mines to the power plant shall be through Indian Railways.</p> <p>Total distance from the source by Rail: 520 km (from NCL to Gadarwara STPP)</p>
Fly Ash Disposal System Proposed	<p>High Concentration Slurry Disposal system.</p> <p>Ratio of water and ash: 40: 60 by Weight</p> <p>The fly ash shall be extracted in dry form from the electrostatic precipitator hoppers. This dry ash shall either be taken to buffer hoppers for its onward transportation in dry form for utilization or shall be slurrified in wetting units for its ultimate disposal in ash disposal area using HSCD System. The bottom ash shall be extracted and disposed off in wet form. It is envisaged to have disposal system sized for 100% generation of ash.</p> <p>The ash management scheme for fly ash and bottom ash involves dry collection of fly ash, supply of ash to entrepreneurs for utilisation, promoting ash utilisation and safe disposal of unused ash. NTPC shall make maximum efforts to utilise the fly ash for various purposes. Unused fly ash and bottom ash shall be disposed off in the ash pond. A blanket of water shall be maintained over the entire ash pond to control fugitive dust emission. After the ash pond is abandoned, it shall be reclaimed through green vegetation.</p>
<p>a. Ash Pond/ Dyke (Area, Location & Co-ordinates) Average height of area above MSL(m)</p> <p>b. Space left in the ash dyke Area</p>	<p>Stage-I: Existing Area of ash Dyke: 190.707 Ha Co-ordinates: A) 22° 52' 34" (N) to 78° 50' 30" (E) B) 22° 52' 27" (N) to 78° 51' 23" (E) C) 22° 52' 00" (N) to 78° 51' 20" (E) D) 22° 52' 00" (N) to 78° 50' 32" (E)</p> <p>Stage-II: Proposed Area for ash Dyke: 135.570 Ha Co-ordinates:</p>

	<p>A) 22° 52' 00" (N) to 78° 50' 31" (E) B) 22° 52' 00" (N) to 78° 51' 22" (E) C) 22° 51' 30" (N) to 78° 51' 23" (E) D) 22° 51' 31" (N) to 78° 50' 35" (E) 372 m Not Applicable as fresh ash dyke is proposed for expansion.</p>																								
<p>Quantity of a. Fly Ash to be generated b. Bottom Ash to be generated:</p>	<p>16,88,000 TPA 4,22,000 TPA</p>																								
<p>Fly Ash utilization percentage with details in last 5 years</p>	<table border="1"> <thead> <tr> <th>Fin Year</th> <th>Ash Production (LMT)</th> <th>Total AU (LMT)</th> <th>Total AU (%)</th> </tr> </thead> <tbody> <tr> <td>FY 2019-20</td> <td>2.88</td> <td>0.02</td> <td>0.69</td> </tr> <tr> <td>FY 2020 21</td> <td>9.44</td> <td>0.78</td> <td>8.26</td> </tr> <tr> <td>FY 2021 22</td> <td>16.85</td> <td>6.35</td> <td>37.66</td> </tr> <tr> <td>FY 2022 23</td> <td>19.59</td> <td>14.30</td> <td>73.00</td> </tr> <tr> <td>FY 2023 24 (till Feb)</td> <td>18.83</td> <td>18.89</td> <td>100.30</td> </tr> </tbody> </table> <p>The Ash Utilisation shall be done as per Ministry of Environment, Forests and Climate Change Notification dated 31-12-2021 as amended on 31.12.2022. To utilize ash and also to comply the stipulations of MoEF&CC's Gazette Notification on fly ash dated 31-12-2021 following actions would be taken up by NTPC:</p>	Fin Year	Ash Production (LMT)	Total AU (LMT)	Total AU (%)	FY 2019-20	2.88	0.02	0.69	FY 2020 21	9.44	0.78	8.26	FY 2021 22	16.85	6.35	37.66	FY 2022 23	19.59	14.30	73.00	FY 2023 24 (till Feb)	18.83	18.89	100.30
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<p>Stack Height (m) & Type of Flue</p>	<p>Stage-I Unit-1 & 2: 280 m, Bi-Flue Stage-II One bi-flue stack of 220 m or two single flue stack of 150 m height will be provided.</p>																								
<p>Source of Water:</p>	<p>The source of water for the existing Stage-I and Proposed Stage-II project is River Narmada at a distance of about 25 Km from the site. HFL of nearest River Shakkar is 0.6 km approx.</p>																								
<p>Quantity of water requirement:</p>	<p>Stage-I: 1,12,200 KLD i.e., 4,675 M3/Hr Stage-II: 66,960 KLD i.e., 2,790 M3/Hr</p>																								
<p>Distance of source of water from Plant:</p>	<p>25 km approx.</p>																								
<p>Whether barrage/ weir/ intake well/ jack well/ others proposed:</p>	<p>Intake structure available</p>																								
<p>Mode of conveyance of water:</p>	<p>Pipeline</p>																								

Status of water linkage:	WRD, Govt. of Madhya Pradesh, vide letter dated 09.09.2021 has accorded water commitment of 56 Million Cubic Meter River Narmada to the Gadarwara project. Additional allocation of 11 Million Cubic Meters has also been done by WRD, Bhopal vide letter dated 19.02.2024. An adequate quantity of water allocation is available to meet the water requirement of the Gadarwara STPP Stage-II (2x800MW).
(If source is Sea water) Desalination Plant Capacity	Not Applicable.
Mode / Management of Brine:	Not Applicable.
Cooling system	Air Cooled Condenser System
Any litigation/Court case pertaining to the project	Yes
Is the proposal under any investigation? If so, details thereof.	No
Any violation case pertaining to the project:	No
Additional information (if any)	PP submitted that total 71 cases are pending against them.

3.2.3. Deliberations by the committee in previous meetings

N/A

3.2.4. Deliberations by the EAC in current meetings

<p>7.2.3 The EAC during deliberations noted the following:</p> <p>7.2.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting deferred the proposal seeking the following additional information:</p> <p>i. Air pollution limits for existing units are very high including PM10 and PM2.5, therefore PP shall submit Monthly average data of PM 10 and PM 2.5 since operation of the plant till date.</p> <p>ii. Details of 10 years satellite image data shall be submitted w.r.t forest area, land use and land pattern of 10km radius from the plant boundary.</p> <p>iii. Submit predicted average/ total annual concentration for major air pollution monitoring parameters.</p> <p>v. An audit shall be carried out from third party stating that all equipment's set up for controlling air quality are working and maintenance is being done by the PP on the regular basis. Log of all air quality control equipments maintenance shall be submitted.</p> <p>vi. A green belt in 33% of the plant area shall be submitted, no expansion proposal shall be submitted without such a plan.</p> <p>vii. Fly ash utilization for existing units shall be submitted and its utilization plan for the next 5 years shall be submitted.</p> <p>viii. A short drone video of the plant shall be submitted indicating all components of the thermal power plant including the ash dyke area and green belt developed.</p> <p>ix. Certified EC compliance report from IRO, MoEF&CC shall be obtained before the grant of ToR.</p> <p>x. Green belt development Plan shall be submitted for the plant premises and its surrounding area particularly around</p>
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locations where PM values are considerably high.

3.2.5. Recommendation of EAC

Deferred for ADS

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	Present
2	Dr Santoshkumar Hampannavar	Member (EAC)	san*****@yahoo.com	Present
3	Shri K B Biswas	Member (EAC)	bis*****@gmail.com	Present
4	Dr Nazimuddin	Member (EAC)	naz*****@nic.in	Present
5	Shri Mahi Pal Singh	Member (EAC)	mps*****@nic.in	Absent
6	Sh Inder Pal Singh Matharu IFS	Member (EAC)	mat*****@gmail.com	Present
7	Sh Lalit Kapur	Member (EAC)	lka*****@yahoo.com	Present
8	Dr Umesh Jagannathrao Kahalekar	Member (EAC)	uka*****@gmail.com	Present
9	Sh Savalge Chandrasekhar	Member (EAC)	sav*****@gmail.com	Present
10	Prof Shyam Shanker Singh	Member (EAC)	sin*****@gmail.com	Present
11	Dr Vinod Agrawal	Member (EAC)	vin*****@yahoo.com	Present
12	Shri Harmeet Sahaney	Member (EAC)	har*****@imd.gov.in	Present
13	Prof R M Bhattacharjee	Member (EAC)	rmb*****@iitism.ac.in	Present
14	Amit Vashishtha	Scientist E	ami*****@nic.in	Present

MINUTES OF THE 07TH MEETING OF THE EXPERT APPRAISAL COMMITTEE FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF THERMAL POWER PROJECTS HELD ON 19TH MARCH, 2024

The 7th Meeting of the EAC (Thermal Power) organized by the Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi was held on 19th March 2024 through Online Mode under the Chairmanship of Dr. Sharad Singh Negi. The list of Members who participated in the meeting is in **Annexure I**.

Confirmation of the Minutes of the 6th EAC meeting

The Minutes of the 6th EAC (Thermal Power Projects) meeting held on 27th February 2024 were confirmed in the meeting.

Agenda Item No. 7.1

3x800 MW (Phase-I) Patratu Super Thermal Power Project in area of 499.393 Ha at Village Patratu, Gegda, Katia, Rasda etc, Sub-District Patratu, District Ramgarh, Jharkhand by M/s Patratu Vidyut Utpadan Nigam Limited - Amendment in Environmental Clearance (EC) – reg.

[Proposal No. IA/JH/THE/465391/2024; F. No. J-13012/21/2015-IA.I (T)]

7.1.1 The proposal of Patratu Vidyut Utpadan Nigam Limited is for amendment in Environmental Clearance dated 07.11.2017 granted for 3x800 MW (Phase-I) Patratu Super Thermal Power Project in area of 499.393 Ha at Village Patratu, Gegda, Katia, Rasda etc, Sub-District Patratu, District Ramgarh, Jharkhand. The PP applied vide proposal no. IA/JH/THE/465391/2024 and submitted an application for amendment in EC (Form-4) on 08.03.2024.

The amendment sought by the PP and justification for the same are as follows:

EC condition no.	Stipulation in EC	Amendment Requested	Justification of amendment
A. Specific conditions	Minimum distance of 500 m from the HFL of Nalkari river	Permission for temporary dry ash storage facility	The Unit No. 1, No.2, No.3 of the Patratu STPP (3X800 MW, Phase-I)

<p>clause no. ix.</p>	<p>shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each).</p>	<p>having capacity of 12.55 lakh CuM (approx.) to be constructed within the plant boundary may be accorded.</p>	<p>are scheduled to be commissioned in September'24, March'25 and September'25 respectively. As per the EC, an ash mound is to be constructed at Ash dyke-I area for storage of unused ash from the plant.</p> <p>However, due to opposition from local people, related to land issue, the construction work of the ash mound is getting delayed.</p> <p>To enable the operation of the units at initial stage, a temporary dry ash storage facility having capacity of 12.55 lakh CuM (approx.) is to be constructed within the plant premises as an interim arrangement to store the unused ash.</p> <p>Stored ash will also be disposed to ash users/off takers as much as possible. Once, the Ash mound at ash dyke-I area will be operational, the balance stored ash will be shifted to Ash dyke-I area and the ash storage facility shall be dismantled.</p>
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<p>B. Point No. 11(page 2/11).</p>	<p>The water requirement for the operation period is estimated to about 16 Cusecs (38,640 m³/day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology.</p>	<p>The water requirement may kindly be amended as: “The water requirement for the operation period is estimated to about 20.52 Cusecs (50,208 m³/day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology.”</p>	<p>Based on the initial design of the power plant, the water requirement of 16 Cusecs (38,640 m³/day) was estimated. However, during detailed design of the plant, the actual water requirement is estimated as 20.5217 Cusecs (50,208 m³/day) which is less than the allotted water quantity of 27 Cusecs for Patratu STPP (Phase-I). The water requirement, 20.5217 Cusecs which is equivalent to 0.8717 m³/MWhr of power generation is well within the stipulated quantity of water requirement for power generation 3 m³/MWhr stipulated in MOEF&CC Notification dated 07.12.2015 (as amended on 28.06.2018).</p>
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7.1.2 The EAC during deliberations noted the following:

- 1) The Environmental Clearance granted by the Ministry vide letter dated 07.11.2017 to the project 3x800 MW (Phase-I) Patratu Super Thermal Power Project in an area of 499.393 Ha at Village Patratu, Gegda, Katia, Rasda etc, Sub-District Patratu, District Ramgarh, Jharkhand by M/s Patratu Vidyut Utpadan Nigam Limited. Further, an amendment in EC was granted vide letter dated 16.03.2022.
- 2) The project/activity is covered under category A of item 1(d) ‘Thermal Power Plants’ of EIA Notification 2006 (as amended) as the power generation capacity of the

proposed project is beyond the threshold capacity of 500MW i.e. 3x800 MW and requires appraisal at Central level by the sectoral EAC in the Ministry.

- 3) PP reported that no litigation is pending against the project. The General Condition is not applicable for the project. The project does not require recommendation of NBWL.
- 4) The project involved 19.048 Ha of Forest Land and application for forest clearance is submitted vide proposal No FP/JH/THE/407694/2022 dated 23/11/2022 which is pending at Nodal Officer.
- 5) The PP informed that the Unit No. 1, No.2, No.3 of the Patratu STPP (3x800 MW, Phase-I) are scheduled to be commissioned in September'24, March'25 and September'25 respectively. Total 499.393 Ha area is available with PP for installation of Thermal Power plant as Land is provided by Govt. of Jharkhand but due to opposition from local people, related to land issue, the construction work of the ash mound is getting delayed. Therefore, PP applied for an amendment in the specific conditions no. ix of EC dated 7.11.2017. The Committee observed that PP also sought amendment in operating para 11 of the EC dated 07.11.2017.
- 6) The Committee asked the PP about the silo position. PP informed that the silo has only 5-6 days storage capacity available, afterwards, ash needs to be transferred from the silo to the ash pond for continued operation of the thermal power plant. PP also submitted that it has proposed 100% fly ash utilisation but still considering the unavoidable situations there is a need for a temporary storage site for storage of fly ash till the time construction of the ash mound/dyke work gets completed.
- 7) The PP also presented the proposed layout for the temporary storage site and precautions to be taken to address the environmental issues. The Committee observed that as per the Ministry's Notification S.O. 5481(E) dated 31/12/2021 wherein it has mentioned that *"(6) Any new as well as operational thermal power plant may be permitted an emergency or temporary ash pond with an area of 0.1 hectare per Mega Watt (MW). Technical specifications of ash ponds or dykes shall be as per the guidelines of Central Pollution Control Board (CPCB) made in consultation with Central Electricity Authority (CEA) and these guidelines shall also lay down a procedure for annual certification of the ash pond or dyke on its safety, environmental pollution, available volume, mode of disposal, water consumption or conservation in disposal, ash water recycling and greenbelt, etc., and shall be put in place within three months from the date of publication of this notification"*. The Committee, therefore, is of the view that PP shall first confirm the size of temporary storage to be maintained and the period for which it should be maintained. The PP vide letter dated 21/03/2024

informed that the size will be 25 Ha and it will be required for 1.5 years only i.e. till 30/09/2025. PP further submitted that the design of ash dyke of temporary ash storage area has been carried out as per IS code provisions of IS:12169 and prevailing engineering practices complying to CEA & CPCB Guidelines dated June'2023 on Design of Coal-ash ponds. The requirements for design of dyke embankments has been ensured for safety against slope stability, safety against internal erosion and safety against overtopping. The elements of the ash dyke are designed on the basis of design criteria available for earthen embankment dams resulting technically sound and structurally sustainable structure. PP also provided the various upstream slope, downstream slope protection and dyke top protection measures etc.

- 8) The Committee is of the view that although PP shall follow the CPCB Guidelines but still shall ascertain the possible impacts due to construction of temporary fly ash storage and mitigative measures to be implemented. PP vide letter dated 21/03/2024 submitted the impact of construction of temporary fly ash storage on Air Quality, Water Quality, Soil Quality, Noise Quality, topography & land use and the green belt. To mitigate the impacts, PP submitted that i) Water sprinklers shall be provided on road from silo to temporary storage facility for controlling of fugitive dust. The perimeter of the dyke where the fugitive dust could be severe, swivel type sprinklers shall be provided at every 50 metre. The sprinkler size shall be minimum 65 mm. Flexible portable Sprinkling system with suitable pumps shall be adopted as a convenient dust suppression technique from embankments, ii) Wind curtain shall be installed around the temporary storage facility to control the spreading of fugitive dust in nearby area. Sufficient height shall be maintained, iii) Dust suppression polymer shall also be used which form a crust on the open surface of the ash deposits and prevent fugitive emissions in temporary ash storage area at site, iv) Tower mounted fog canon machine shall be installed for sprinkling of water in sufficient number to control fugitive dust at temporary ash storage area. Regular inspection and maintenance of fog canon shall be insured, v) PUC shall be ensured to all the vehicles. Regular check and inspection at site to ensure all vehicle comply with Pollution under Control Certificates, and vi) impervious liner using Bentonite blended Clay will be provided on entire bed area inside ash storage area to prevent ground water contamination. PP also submitted the cost of mitigative measures:

Environmental Protection Cost

S. No.	Description	Amount (Rs. in Crores)
1	Electrostatic Precipitator	392.67

2	Chimney	91.0
3	Cooling Towers including Civil works	33.234
4	Ash Handling	350.482
5	Ash Dyke- First 9 years	228.600
6	Ash Water Recirculation incld. ETP	8.830
7	Dust Extraction & Suppression System	5.00
8	DM Plant Waste Treatment System	5.00
9	Sewerage Collection, Treatment & Disposal	4.00
10	Environmental Lab Equipment	1.500
11	Greenbelt, Afforestation & Landscaping	5.000
12	Flue gas Desulphurisation & NOx Control	1920.00
Total		3045.316

- Details of Cost Allocation for Environmental Protection Measures for Temporary Facility for Ash Storage is as under:

S. No.	Budget Head	Amount Provision (In Lakhs)
1	Wind Curtain for Stopping Fugitive dust	30
2	Water Curtain all around Temporary ash storage facility	150
3	Environment monitoring	10
4	Water Sprinklers on Road (Silo to Temporary Ash storage facility)	40
5	Tower Mounted Fog canon machine for Sprinkling (04 nos.)	25
6	Water tankers on ash dyke road	45
7	Network sprinklers in Ash dyke area	45
Total		345

- 9) The Committee also asked PP to confirm whether due proposed activity, if there is any change in the green belt area. PP vide letter dated 21/03/2024 confirmed that due to construction of temporary ash storage facility there will be no impact of green belt area as this area is neither a part of green belt nor a part of future green belt area. Additionally, it was informed by the PP that 33% of the total project area is 164.799 ha. As the said project, Phase-I is being constructed within an existing project, the

space available for green belt within the plant is limited. Green belt development over 24.29 Ha. area is planned within its premises after competition of construction activities. It was further informed that PP has already undertaken tree plantation over 43.3 Ha through Forest Department and has planned tree plantation over additional area of 97.28 hectares outside the project area to compensate for the shortfall in the green belt area within the main plant area. The plan for tree plantation is as follows:

Particulars	Year	Area as % of Project Area of 499.3931 Ha.	Total area (Hectares)
Area already planted with the help of forest department	Till 2023-24	8.67	43.30
Area proposed to be planted outside project area	2024-25 (Under approval)	8.10	40.8
	2025-26	5.69	28.4
	2026-27	5.69	28.4
Area proposed to be planted within project area after completion of construction activities	2025-26	1.60	8.00
	2026-27	3.26	16.29
Total		33.01	164.87

The Committee is of the view that PP shall expedite the green belt development with further increase plantation of native species in plant premises. Further, Committee did not consider the any deviation in green belt development as PP did not apply for any change in specific conditions no xxxix and xl of EC dated 7/11/2017.

- 10) During the deliberations related to land use of the ash dyke - II area, the EAC noted that the project land was allotted by the Government of Jharkhand which includes area of ash dyke - II area, which falls under forest land and PP confirmed that they will not utilize the land for Phase-I therefore, the EAC advised to the PP that they shall submit land to forest department. PP vide email dated 21.03.2024 submitted that has three parts -Main Plant Area, Ash Mound Area-I (Proposed to be used for ash disposal from Phase-I) and Ash dyke area-II (Not in use/not proposed to be used. The land marked as Ash Dyke-II is not in use/planned to be used for Patratu STPP Phase-I. However, PVUNL is planning to implement Patratu STPP Phase-II (2X800 MW) the feasibility study for which is still under progress. Depending on the land requirement for Patratu STPP Phase-II, the decision regarding retention/ surrender

of land shall be taken by PUVNL and the same shall be subject to approval by PUVNL Board.

- 11) Additionally, another amendment sought by the PP is for increment in water requirement from 16 Cusecs (38,640 m³/day) to 20.52 Cusecs (50,208 m³/day). The EAC noted that as per MOEF&CC Notification dated 07.12.2015 (as amended on 28.06.2018), Specific water consumption shall not exceed maximum of 3.0 m³/MWh for new plants installed after the 1st January, 2017 and these plants shall also achieve zero waste water discharge. So, the water requirement, 20.5217 Cusecs which is equivalent to 0.8717 m³/MWhr of power generation is well within the stipulated quantity of water requirement for power generation.
- 12) The EAC was of view that PP has sought complete amendment of specific condition no ix but the temporary storage is for a limited period and previous condition shall prevail thereafter. Further, Committee observed that as per the cover letter uploaded in the form-4 the quantity is mentioned as 12.55 Lakh CuM but at the same time while filling the form it has mentioned at 10.0 Lakh CuM. The Committee therefore asked the PP submit the revised details. Accordingly, PP submitted the following details:

EC condition no.	Stipulation in EC	Amendment Requested	Justification of amendment
Specific conditions clause no. ix.	Minimum distance of 500 m from the HFL of Nalkari river shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each).	PUVNL shall comply with the specific condition clause no.(ix). However, in addition to the condition stipulated under clause no(ix), Permission may be accorded for temporary dry ash storage facility on an area of 25 Ha within the existing plant premises having	The Unit No. 1, No.2, No.3 of the Patratu STPP (3X800 MW, Phase-I) are scheduled to be commissioned in September'24, March'25 and September'25 respectively. As per the EC, an ash mound is to be constructed at Ash dyke-I area for storage of unused ash from the plant.

		<p>capacity of 12.55 lakh CuM (approx.) to be constructed within the plant boundary may be accorded for a period of one and half years i.e: till 30.09.2025.</p>	<p>However, due to opposition from local people, related to land issue, the construction work of the ash mound is getting delayed.</p> <p>To enable the operation of the units at initial stage, a temporary dry ash storage facility having over an area of 25 Ha capacity of 12.55 lakh CuM (approx.) is to be constructed within the plant premises as an interim arrangement to store the unused ash for one and half years i.e till 30.09.2025.</p> <p>Stored ash will also be disposed to ash users/off takers as much as possible. Once, the Ash mound at ash dyke-I area will be operational, the balance stored ash will be shifted to Ash dyke-I area and the ash storage facility shall be dismantled.</p>
Point No. 11(page 2/11).	The water requirement for the operation period is	The water requirement may kindly be amended as:	Based on the initial design of the power plant, the water requirement of 16

	<p>estimated to about 16 Cusecs (38,640 m³/day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology.</p>	<p>“The water requirement for the operation period is estimated to about 20.52 Cusecs (50,208 m³/day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology. “</p>	<p>Cusecs (38,640 m³/day) was estimated. However, during detailed design of the plant, the actual water requirement is estimated as 20.5217 Cusecs (50,208 m³/day) which is less than the allotted water quantity of 27 Cusecs for Patratu STPP (Phase-I). The water requirement, 20.5217 Cusecs which is equivalent to 0.8717 m³/MWhr of power generation is well within the stipulated quantity of water requirement for power generation 3 m³/MWhr stipulated in MOEF&CC Notification dated 07.12.2015 (as amended on 28.06.2018).</p>
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7.1.4 The Committee recommended the following amendments:

EC condition no.	Stipulation in EC	Recommendation of EAC
Specific conditions clause no. ix.	Minimum distance of 500 m from the HFL of Nalkari river shall be maintained. Ash mound shall be developed in	A minimum distance of 500 m from the HFL of Nalkari River shall be maintained. Ash mound shall be developed in 340 acres and the height of the ash mound

	340 acres and the height of the ash mound shall be restricted to 35 m (in two benches of 20 m and 15 m height each).	shall be restricted to 35 m (in two benches of 20 m and 15 m height each). However, till 30.09.2025, PP is permitted to construct and store dry ash in a temporary storage facility (over an area of 25 Ha) within the existing plant premises and having a capacity of up to 12.55 lakh CuM.
Point No. 11(page 2/11).	The water requirement for the operation period is estimated to about 16 Cusecs (38,640 m ³ /day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology.	The water requirement for the operation period is estimated to be about 20.52 Cusecs (50,208 m ³ /day) for 3X800 MW Patratu STPP, Phase-I, based on Air Cooled Condenser (ACC) Technology. “

The EAC after detailed deliberation on the information submitted and as presented during the meeting **recommended** the amendment in Environmental Clearance to the project 3x800 MW (Phase-I) Patratu Super Thermal Power Project in an area of 499.393 Ha at Village Patratu, Gegda, Katia, Rasda etc, Sub-District Patratu, District Ramgarh, Jharkhand by M/s Patratu Vidyut Utpadan Nigam Limited, under the provisions of EIA Notification, 2006 (as amended) along with the following additional/specific conditions. All the other conditions mentioned in the EC dated 07.11.2017 and its subsequent amendment in EC dated 16.03.2022 shall remain unchanged.

Specific Condition:

- 1) The design of ash dyke of temporary ash storage area shall be as per CPCB Guidelines. No ash shall be stored in this temporary facility after 30.09.2025.
- 2) PP shall implement the mitigative measures proposed with respect to temporary ash storage facility in a time bound manner and the additional budget earmarked for the same is Rs 345 Lakh. The amount shall be kept in a separate account and audited annually. PP shall submit the details of the implementation of EMP to the concerned RO, MoEF&CC in its six-monthly compliance report.

- 3) 100 % Fly ash utilization shall be carried out with prevailing norms and guidelines. The long-term fly ash utilization plan shall be submitted to RO and MoEFCC
- 4) PP shall ensure to take all necessary precautions while transporting the ash to and from the temporary storage site.
- 5) PP shall expedite the plantation activities and native species shall be planted. Further, an annual plantation audit shall be carried out through an institute of MoEF&CC (e.g. ICFRE).
- 6) PP shall develop a natural wind barrier around the plant boundary.

Agenda Item No. 7.2

Expansion of Gadarwara Super Thermal Power Project from 2x800 MW (Stage-I) additional 2x800 MW (Stage II) in an area of 910.706 Ha located at village Gangai, Mehrakheda, Chorbarheta, Dongergaon and etc, Sub District Gadarwara, District Narsimhapur, Madhya Pradesh by M/s NTPC Limited – Terms of Reference – reg.

[Proposal No. IA/MP/THE/465459/2024; F. No. J-13012/125/2009-IA.II (T)]

7.2.1 The proposal is for grant of Terms of Reference (ToR) to Expansion of Gadarwara Super Thermal Power Project from 2x800 MW (Stage-I) additional 2x800 MW (Stage II) in an area of 910.706 Ha located at village Gangai, Mehrakheda, Chorbarheta, Dongergaon and etc, Sub District Gadarwara, District Narsimhapur, Madhya Pradesh 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 (EIA) Notification, 2006, as amended as the power generation capacity of proposed expansion is beyond threshold capacity of 500MW i.e. 2 x 800 MW (1600 MW) and requires appraisal at Central level by the sectoral EAC in the Ministry.

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

- i. M/s National Thermal Power Corporation (NTPC) proposes for to expansion of Gadarwara Super Thermal Power Project from 2x800 MW (Stage-I) additional 2x800

MW (Stage II) in an area of 910.706 Ha located at village Gangai, Mehrakheda, Chorbarheta, Dongergaon and etc, Sub District Gadawara, District Narsinghpur, Madhya Pradesh.

ii. The Ministry had issued EC earlier vide letter no. J-13012/125/2009-IA.II (T); dated 22.03.2013 to the existing project “2x800 (Stage-I) Gadawara Super Thermal Power Project at village Gangai, Umaraiya, Mehrakheda, Chorbarheta, Dongergaon and Kudari, Gadawara Tehsil, Narsinghpur District, in Madhya Pradesh ” in favour of M/s. NTPC Ltd.

iii. The salient features of the project are as follows:

- **EAC Meeting Details:**

EAC meeting/s	7 th Meeting of the Expert Appraisal Committee on Thermal Power Projects
Date of Meeting/s	19.03.2024
Date of earlier EAC meetings	Not Applicable

- **Category details:**

Category of the project	Thermal, Category - A
Capacity	Under Operation Stage-I: 1600 MW (2x800 MW) Proposed Expansion Stage-II:1600 MW (2x800 MW)
Attracts the General Conditions (Yes/No)	No
Additional information (if any)	This is an expansion of existing Gadawara STPP Stage-I (2x800 MW) by addition of Gadawara Stage-II (2x800MW) based on pulverised coal fired thermal power generation technology, Air Cooled Condenser System & compliant with new emission norms.

• **Land Area Breakup:**

Land Requirement:	Description	Area in Ha		
		Stage-I	Stage-II	Total
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)				
	Main Plant Area	217.729	110.074	327.803
	Ash disposal area	190.707	135.570	326.277
	Greenbelt Area	66.368	12.140	78.508
	Others (Township, Reservoir, Pipe corridors etc.)	178.118	-	178.118
	Total	652.922	257.784	910.706
	No additional land is proposed to be acquired for the proposed project of Stage-II.			
Status of Land Acquisition:	Total of 910.706 Ha of land has already been acquired to accommodate Main Plant, Township and Ash Dyke of Gadarwara STPP. Approx. 652.922 Ha land has been utilized for Stage-I Units, Ancillary Facilities, Ash Disposal Area and Township etc. Remaining 257.784 Ha of land shall be used for Stage-II Units, Ancillary Facilities & Ash Disposal Area etc.			

<p>Status of the project:</p> <p>If under construction phase: please specify the reasons for delay, works completed till date and balance works along with expected date of completion.</p> <p>If under operation phase, date of commissioning (COD) of each unit. Whether the plant was under shutdown since commissioning, details and reasons</p>	<p>At present, the proposal is under planning stage. The tendering of the project is yet to be taken up.</p> <p>Both units of Stage-I are under commercial operation.</p> <p>Construction of Gadarwara STPP Stage-II shall start after accord of Environmental Clearance for the Project and all other statutory clearances and approval by Board of NTPC.</p>										
<p>Break-Up of land-use of TPP site:</p> <p>a. Total land required for the project components</p> <p>b. Private land</p> <p>c. Government land</p> <p>d. Forest Land</p>	<table border="1"> <thead> <tr> <th>Type</th> <th>Land (Ha)</th> </tr> </thead> <tbody> <tr> <td>Total</td> <td>910.706</td> </tr> <tr> <td>Private</td> <td>746.536</td> </tr> <tr> <td>Govt.</td> <td>164.179</td> </tr> <tr> <td>Forest</td> <td>0</td> </tr> </tbody> </table>	Type	Land (Ha)	Total	910.706	Private	746.536	Govt.	164.179	Forest	0
Type	Land (Ha)										
Total	910.706										
Private	746.536										
Govt.	164.179										
Forest	0										

• **Presence of Environmentally Sensitive areas in the study area**

Forest Land/Protected Environmental Sensitivity Zone	Area/ Yes/ No	Details of Certificate/ letter/Remarks
Reserve Forest/ Protected Forest Land	Yes	<ol style="list-style-type: none"> 1. Chhawargaon R.F (4.33 km, S) 2. Badagaon R.F (6.08 km, S) 3. Chaugan R. F. (9.42 km, S) 4. Prempur R.F (8.94 km, SSE) 5. Belkhedi R. F. (6.72 km, SE) 6. Bijanpur R. F. (8.78 Km, SE)
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	No National parks, Wildlife sanctuaries, Biosphere reserves, Archaeological Heritage sites exists within 10 Km radius. River Shakkar River & Sitarewa are flowing at a distance of 0.6 km in North-East towards North and 0.9 km South-West towards North direction respectively.
Availability of Schedule-I species in study area	-	Details shall be submitted with EIA report
Additional information (if any)	No	

● **Project Description:**

If expansion, the details of ECs (including amendments and extension of validity) of existing Units etc.	<p>MoEF&CC accorded EC for Gadawara STPP Stage-I (2x800MW) vide letter no. J-13012/125/2009-IA.II(T) dated 22.03.2013 and Amendment for</p> <ul style="list-style-type: none"> • Change in Coal Sources and temporary transportation of coal by road vide letter J-13012/125/2009-IA.II (T) dated 01.09.2017 • Change in Coal Sources and extension of temporary transportation of coal by road vide letter J-13012/125/2009-IA.II (T) dated 07.02.2019 • Extension of temporary transportation of coal by road vide letter J-13012/125/2009-IA.II (T) dated 22.10.2019 • Deletion of CSR expenditure related condition vide letter J-13012/125/2009-IA.II (T) dated 22.10.2019 • Continuous monitoring of PM10 & PM2.5 emissions in stack and radio activity and heavy metals vide letter J-13012/125/2009-IA.II (T)
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	dated 24.12.2021
Expansion / Green Field (new): (IPP / Merchant / Captive):	Expansion
If expansion, the date of latest monitoring done by the Regional Office (R.O) of MoEF&CC for compliance of the conditions stipulated in the environmental and CRZ clearances of the previous phases. A certified copy of the latest R.O. monitoring report shall also be submitted.	This proposal is for TOR application, Latest Certified EC Compliance Report shall be submitted during EC Application
Specific webpage address where all EC related documents (including monitoring and compliance related reports/documents) of the specific project under consideration are/will be available. Also contact details of PP's officer responsible for updating this webpage/information.	https://ntpc.co.in/about-us/corporate-functions/environment/status-hyc-reports Head of Project, Village – Gangai, Umariya, Mehrakheda, Chorbarheta, Dongergaon and Kudari Taluk – Gadarwara District – Narsinghpur State – Madhya Pradesh PIN – 487770
Co-ordinates of all four corners of TPP Site:	The geographical co-ordinates of the site are as follows: Main Plant: A) 22° 52' 13" (N) to 78° 51' 36" (E) B) 22° 52' 00" (N) to 78° 52' 26" (E) C) 22° 51' 15" (N) to 78° 52' 20" (E) D) 22° 51' 16" (N) to 78° 51' 23" (E) Township: A) 22° 51' 00" (N) to 78° 52' 29" (E) B) 22° 51' 59" (N) to 78° 52' 51" (E) C) 22° 51' 45" (N) to 78° 52' 52" (E)

	<p>D) 22° 51' 40" (N) to 78° 52' 27" (E)</p> <p>Ash Dykes (Existing):</p> <p>A) 22° 52' 34" (N) to 78° 50' 30" (E)</p> <p>B) 22° 52' 27" (N) to 78° 51' 23" (E)</p> <p>C) 22° 52' 00" (N) to 78° 51' 20" (E)</p> <p>D) 22° 52' 00" (N) to 78° 50' 32" (E)</p> <p>Ash Dykes (Proposed):</p> <p>A) 22° 52' 00" (N) to 78° 50' 31" (E)</p> <p>B) 22° 52' 00" (N) to 78° 51' 22" (E)</p> <p>C) 22° 51' 30" (N) to 78° 51' 23" (E)</p> <p>D) 22° 51' 31" (N) to 78° 50' 35" (E)</p>
<p>Average height of:</p> <p>(a) TPP site,</p> <p>(b) Ash pond site etc. above MSL</p>	<p>378 m</p> <p>372 m</p>
District	Narsinghpur
Whether the project is in the Critically Polluted Area (CPA) or within 10 km of CPA. If so, the details thereof:	No
CRZ Clearance	Not Applicable
<p>Cost of the Project (As per EC and revised):</p> <p>Cost of the proposed activity in the amendment:</p>	<p>Gadarwara STPP Stage-I</p> <ul style="list-style-type: none"> Rs.11,404.62 Crores (as per EC) Rs.15,105.22 Crores (As per revised cost estimate) <p>Gadarwara STPP Stage-II</p> <ul style="list-style-type: none"> Rs. 14,000.00 Crores (Estimated cost)
Employment Potential for entire project/plant and employment potential for the proposed amendment (specify number of persons and quantitative information).	<p>The project will generate direct and indirect employment opportunities as well as opportunities for self-employment.</p> <ul style="list-style-type: none"> Current employment at existing power plant (Gadarwara STPP Stage-I): Permanent- 278 nos. & Temporary-2490 nos. The estimated employment generation from the proposed project (Stage-II)

	<p>(a) During Construction- Permanent-96 nos. & Temporary-2000 nos.; depending on the construction phase of the project)</p> <p>(b) During Operation- Permanent-186 & Temporary-1500</p> <p>However, the manpower shall be optimised and the exact number of manpower shall be decided during the construction/ operation phases of the project.</p> <p>In addition to the people directly involved in construction and operation of the power project, employment opportunities in subsidiary industries and service sectors as well as self-employment opportunities shall also be generated</p>
<p>Benefits of the project (specify quantitative information)</p>	<ul style="list-style-type: none"> • Proposed Gadarwara STPP Stage-II (2x800 MW) will have State-of-the-Art Ultra Super Critical Technology which has better efficiency and less carbon emissions in comparison to sub-critical technology. Installation of High efficiency ESP, FGD and NOx control System will comply the new emission norms of MoEF&CC. • An Air-Cooled Condenser (ACC) System is proposed which has much less water requirement. • The setting up of the proposed project will lead to direct and indirect benefits to the overall socio-economic development of the region. • These will also benefit the local population. NTPC has taken up several community welfare and community development activities under Corporate Social Responsibility and this will be strengthened during commissioning of Gadarwara STPP Stage-II.

Status of other Statutory Clearances	Environmental Clearance, Consent to Establish and Consent to Operate and Authorizations are available for Gadawara STPP (Stage-I). All the required clearances shall be obtained for Gadawara STPP (Stage-II).
R&R Details	No R&R Issue since total of 910.706 Ha of land has already been acquired to accommodate Main Plant, Township and Ash Dyke of Gadawara STPP. Approx. 652.922 Ha land has been utilized for Stage-I Units, Ancillary Facilities, Ash Disposal Area and Township etc. Remaining 257.784 Ha of land shall be used for Stage-II Units, Ancillary Facilities & Ash Disposal Area.

- Electricity generation capacity:**

Capacity & Unit Configurations:	<p>Under Operation</p> <p>Stage-I: 1600 MW (2x800 MW)</p> <p>Proposed Expansion</p> <p>Stage-II: 1600 MW (2x800 MW)</p>
Generation of Electricity Annually	<p>Stage-I (1600MW): 12.61 Billion Units @90% PLF</p> <p>Stage-II (1600MW): 12.61 Billion Units @90% PLF</p>

- Details of fuel and Ash Disposal**

Fuel to be used:	Coal
Quantity of Fuel required per Annum	6.10 Million TPA at 90% PLF

<p>Coal Linkage / Coal Block: (If Block allotted, status of EC & FC of the Block)</p>	<p>SLC (LT) in meeting held on 03.01.2024, has recommended for grant of coal linkage. Likely coal source is NCL, however allocation of coal mine is yet to be decided.</p> <p>Ash content in coal- 34 %</p> <p>GCV in coal- 4450 Kcal/Kg</p> <p>Sulphur in coal- 0.53%</p> <p>Moisture in coal- 13.77%</p>
<p>Details of mode of transportation of coal from coal source to the plant premises along with distances</p>	<p>Mode of coal transportation from the coal mines to the power plant shall be through Indian Railways.</p> <p>Total distance from the source by Rail: 520 km (from NCL to Gadarwara STPP)</p>
<p>Fly Ash Disposal System Proposed</p>	<p>High Concentration Slurry Disposal system.</p> <p>Ratio of water and ash: 40: 60 by Weight</p> <p>The fly ash shall be extracted in dry form from the electrostatic precipitator hoppers. This dry ash shall either be taken to buffer hoppers for its onward transportation in dry form for utilization or shall be slurrified in wetting units for its ultimate disposal in ash disposal area using HSCD System. The bottom ash shall be extracted and disposed off in wet form. It is envisaged to have disposal system sized for 100% generation of ash.</p> <p>The ash management scheme for fly ash and bottom ash involves dry collection of fly ash, supply of ash to entrepreneurs for utilisation, promoting ash utilisation and safe disposal of unused ash. NTPC shall make maximum efforts to utilise the fly ash for various purposes. Unused fly ash and bottom ash shall be disposed off in the ash pond. A blanket of water shall be maintained over the entire ash pond to control fugitive dust emission. After the ash pond is</p>

	abandoned, it shall be reclaimed through green vegetation.			
a. Ash Pond/ Dyke (Area, Location & Co-ordinates)	<p>Stage-I: Existing Area of ash Dyke: 190.707 Ha Co-ordinates: A) 22° 52' 34" (N) to 78° 50' 30" (E) B) 22° 52' 27" (N) to 78° 51' 23" (E) C) 22° 52' 00" (N) to 78° 51' 20" (E) D) 22° 52' 00" (N) to 78° 50' 32" (E)</p> <p>Stage-II: Proposed Area for ash Dyke: 135.570 Ha Co-ordinates: A) 22° 52' 00" (N) to 78° 50' 31" (E) B) 22° 52' 00" (N) to 78° 51' 22" (E) C) 22° 51' 30" (N) to 78° 51' 23" (E) D) 22° 51' 31" (N) to 78° 50' 35" (E)</p>			
Average height of area above MSL(m)	372 m			
b. Space left in the ash dyke Area	Not Applicable as fresh ash dyke is proposed for expansion.			
Quantity of				
a. Fly Ash to be generated	16,88,000 TPA			
b. Bottom Ash to be generated:	4,22,000 TPA			
Fly Ash utilization percentage with details in last 5 years	Fin Year	Ash Production (LMT)	Total AU (LMT)	Total AU (%)
	FY 2019-20	2.88	0.02	0.69
	FY 2020 21	9.44	0.78	8.26
	FY 2021 22	16.85	6.35	37.66
	FY 2022 23	19.59	14.30	73.00

	FY 2023 24 (till Feb)	18.83	18.89	100.30
(Ash Utilization data for last Five-Years)				
<p>The Ash Utilisation shall be done as per Ministry of Environment, Forests and Climate Change Notification dated 31-12-2021 as amended on 31.12.2022. To utilize ash and also to comply the stipulations of MoEF&CC's Gazette Notification on fly ash dated 31-12-2021 following actions would be taken up by NTPC:</p> <ul style="list-style-type: none"> • NTPC shall provide a system for 100% extraction of dry fly ash along with dedicated dry ash silos for storage of at least sixteen hours of ash based on installed capacity having separate access roads so as to ease the delivery of fly ash. Provision shall also be kept for segregation of coarse and fine ash, loading this ash to closed/ open trucks and also for loading fly ash into rail wagons. This will ensure availability of dry fly ash required for manufacture of Fly Ash based Portland Pozzolana Cement (FAPPC) for cement plants and Ready-Mix Concrete plants. • NTPC shall also promote, adopt and set up the ash-based product manufacturing facilities within its premises & fly ash brick thus produced shall be utilized in in-house construction works as well as for supply in the market on price. • NTPC shall make efforts to motivate and encourage entrepreneurs to set up ash-based building products such as fly ash bricks, blocks tiles, fly ash-based aggregate etc. in the vicinity of proposed power plant. 				

	<ul style="list-style-type: none"> • To promote use of ash in agriculture/low lying areas/wasteland development-show case project shall be taken up in the vicinity of proposed thermal power station. • NTPC shall make efforts with authorities of coal mines and other minerals mines for use of ash in reclamation of mines located within 300 km of proposed power station. • All government/ private agencies responsible for construction/ design of buildings, road embankment, flyover bridges and reclamation/ development of low-lying areas within 300 km of the plant areas shall be persuaded to use ash and ash-based products in compliance of MoEF&CC's Gazette Notification on fly ash. • With all the efforts mentioned above, it is expected that fly ash generated at proposed thermal power station shall be utilized in the areas of cement, concrete & building products manufacturing, road embankment construction, land development, mine filling, shoreline protection structure, agriculture etc.
Stack Height (m) & Type of Flue	<p>Stage-I</p> <p>Unit-1 & 2: 280 m, Bi-Flue</p> <p>Stage-II</p> <p>One bi-flue stack of 220 m or two single flue stack of 150 m height will be provided.</p>

• **Water Requirement:**

Source of Water:	<p>The source of water for the existing Stage-I and Proposed Stage-II project is River Narmada at a distance of about 25 Km from the site.</p> <p>HFL of nearest River Shakkar is 0.6 km approx.</p>
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Quantity of water requirement:	Stage-I: 1,12,200 KLD i.e., 4,675 M3/Hr Stage-II:66,960 KLD i.e.,2,790 M3/Hr
Distance of source of water from Plant:	25 km approx.
Whether barrage/ weir/ intake well/ jack well/ others proposed:	Intake structure available
Mode of conveyance of water:	Pipeline
Status of water linkage:	WRD, Govt. of Madhya Pradesh, vide letter dated 09.09.2021 has accorded water commitment of 56 Million Cubic Meter River Narmada to the Gadarwara project. Additional allocation of 11 Million Cubic Meters has also been done by WRD, Bhopal vide letter dated 19.02.2024. An adequate quantity of water allocation is available to meet the water requirement of the Gadarwara STPP Stage-II (2x800MW).
(If source is Sea water) Desalination Plant Capacity	Not Applicable.
Mode / Management of Brine:	Not Applicable.
Cooling system	Air Cooled Condenser System

● **Court case details:**

Any litigation/Court case pertaining to the project	Yes
Is the proposal under any investigation? If so, details thereof.	No
Any violation case pertaining to the project:	No
Additional information (if any)	PP submitted that total 71 cases are pending against them.

- iv. The estimated project cost is Rs 29,105.22 Crores including existing investment of Rs 15,105.22 Crores under Stage I and an estimated Rs.14,000.00 Crores under

Stage II. The cost of Pollution Control & Environment Management is approx. 12.5% of the project cost i.e. Rs.1,750 Crores out of Rs.14,000.00 Crores for 2x800 MW with ACC and the Recurring cost will be about Rs.35.00 Crores per annum.

- v. Industry proposes to allocate Rs.17.50 Crores @ of 0.125% towards CER (as per Ministry's OM dated 30.09.202).
- vi. Effluent of 3600 KLD & 75 KLD quantity will be treated through ETP & STP respectively in Stage II. The plant will be based on a Zero Liquid discharge system.
- vii. Power requirement after expansion will be 224 MW including the existing 100 MW and will be met from Gadawara STPP Stage-I. The existing unit has three DG sets of 2000 KVA capacity, additionally, 04 DG sets are used as standby during power failure. Stack (height 30 m) will be provided as per CPCB norms to the proposed DG sets.
- viii. The existing unit has 02 nos. of 2550 TPH pulverized coal-fired boiler. Additionally, 02 nos. 2600 TPH pulverized coal-fired boiler will be installed. ESP with a stack of height of 150/ 220 m will be installed for controlling the particulate emissions within the statutory limit of 30 mg/Nm³ for the proposed boilers.

7.2.3 The EAC during deliberations noted the following:

- 1) The proposal is for grant of Terms of Reference (ToR) for expansion of capacity from 2x800 MW (Stage-I) additional 2x800 MW (Stage II) in an area of 910.706 Ha. The proposed power plant is based on an air-cooled condensation system, which consumes significantly less water compared to a water-cooled condensation system.
- 2) The committee noted that the project falls in Narsinghpur District therefore said project does not fall under Critically Polluted Area/Severely Polluted Area/Other Polluted Area as per the Comprehensive Environmental Pollution Index (CEPI) carried out by CPCB in 2018.
- 3) The EAC further observed that the total land required for the project of 910.706 Ha and there is no involvement of forest land in the said area. Total land has already been acquired to accommodate the Main Plant, Township and Ash Dyke of Gadawara STPP and Approx. 652.922 Ha of land has been utilized for Stage-I Units, remaining 257.784 Ha of land shall be used for Stage-II Units.

- 4) It was further noted that no National parks, Wildlife sanctuaries, Biosphere reserves, or Archaeological Heritage sites exist within a 10 Km radius. River Shakkar River & Sitarewa flow at a distance of 0.6 km in the North-East towards the North and 0.9 km South-West towards the North direction respectively.
- 5) The EAC noted that an MOU was signed amongst NTPC, Govt. of Madhya Pradesh (M.P.) and M.P. TRADECO on 09.11.09 for setting up 4x660 MW TPP by NTPC in Narsinghpur (M.P.). Subsequently, the Gadarwara site was selected. Further, the unit configuration was changed from 660MW to 800 MW. It was decided to establish Gadarwara STPP (4x800MW) in two stages. Stage-I (2x800MW) has been established and both the units are under commercial operation.
- 6) Further it was noted that in 2023 Gadarwara STPP Stage-II (2x800 MW) ultra-supercritical project was identified as a candidate thermal power project (in planning likely to be commissioned by FY 2031-32) under the brownfield project category of NTPC. From inception, Gadarwara STPP was envisaged to have four units out of which two units have been already installed under Stage I and are under commercial operation. The remaining two units are proposed to be installed within the land already acquired and available with NTPC for the ultimate capacity of Gadarwara STPP (4x800MW). out of all 3 alternative site analyses, site 1 is located near Gangai and Umaraiya, Site – II is located at Khamghat near Village Kareli and Site – III located Near Village Chawarpatha. Out of all, site-1 is the proposed site due i) Availability of sufficient land –Unirrigated agricultural land, free from habitation and Mix of Pvt. & Govt. land, ii) No forest land is involved, iii) Availability of Water, and No major settlements, industries and ecologically sensitive areas within a radius of 10 Km. Besides this, alternate sites were studied with Govt. of Madhya Pradesh while selection of site for Gadarwara STPP during the initial stages. The present site was found to be most suitable land.
- 7) The Committee also found that there were discrepancies regarding the distance of the river Shakkar from the proposed project location. The details submitted by the PP state a distance of 2 kilometres, the presentation indicated a distance of 600 meters. Upon inquiry, the PP confirmed that the accurate distance from the plant boundary to the river Shakkar is indeed 600 meters.
- 8) EAC observed that out of the total land area of 910 hectares designated for the project, only approximately 9%, which amounts to 78.508 hectares, is proposed for the green belt. This allocation falls significantly short of the prescribed norms of 33% for a green belt in the plant premises.

- 9) The EAC, upon reviewing ambient air quality data, has noted that concentrations of particulate matter (PM 10 and PM 2.5) have exceeded permissible levels. Specifically, there have been instances where PM 10 values surpassed 150 µg/m³, raising concerns about the effectiveness of air quality control equipment during operation. Such exceedances may pose risks to public health and environmental quality, indicating potential shortcomings in pollution control measures.
- 10) In light of these findings and non-compliance with stipulated ambient air quality norms, the EAC has recommended that the Ministry shall communicate to the Madhya Pradesh Pollution Control Board to take necessary actions to address the observed breaches of air quality standards. Such actions may include conducting detailed investigations into the causes of exceedances, assessing the effectiveness of existing pollution control measures, and implementing corrective measures as deemed necessary to mitigate air quality issues. **Further, a site visit of the sub-committee shall be conducted to physically assess the present status and propose future strategies to be included in the proposed ToR related to i) High values of PM10 and PM2.5, ii) Existing Air Quality Monitoring System, iii) Present Status of Plantation work at the site, and iv) status of environmentally sensitive areas around the project site etc.**

7.2.4 The EAC after detailed deliberation on the information submitted and as presented during the meeting **deferred** the proposal seeking the following additional information:

- i. Air pollution limits for existing units are very high including PM10 and PM2.5, therefore PP shall submit Monthly average data of PM 10 and PM 2.5 since operation of the plant till date.
- ii. Details of 10 years satellite image data shall be submitted w.r.t forest area, land use and land pattern of 10km radius from the plant boundary.
- iii. Submit predicted average/ total annual concentration for major air pollution monitoring parameters.
- iv. Additional air quality control measures be taken up for existing unit and details submitted.
- v. An audit shall be carried out from third party stating that all equipment's set up for controlling air quality are working and maintenance is being done by the PP on the regular basis. Log of all air quality control equipments maintenance shall be submitted.
- vi. A green belt in 33% of the plant area shall submitted, no expansion proposal shall be submitted without such a plan.

- vii. Fly ash utilization for existing units shall be submitted and its utilization plan for the next 5 years shall be submitted.
- viii. A short drone video of the plant shall be submitted indicating all components of the thermal power plant including the ash dyke area and green belt developed.
- ix. Certified EC compliance report from IRO, MoEF&CC shall be obtained before the grant of ToR.
- x. Green belt development Plan shall be submitted for the plant premises and its surrounding area particularly around locations where PM values are considerably high.

The meeting ended with a vote of thanks to the Chair.



Attendance

S. No.	Name & Address	Role	Attendance
1.	Dr. Sharad Singh Negi (I.F.S. Retd.)	Chairman	P
3.	Shri Inder Pal Singh Matharu, IFS (Retd.)	Member	P
3.	Shri Lalit Kapur	Member	P
4.	Dr. Umesh Jagannathrao Kahalekar	Member	P
5.	Dr. Santosh Kumar Hampannavar	Member	P
6.	Shri Savalge Chandrasekhar	Member	P
7.	Shri K. B. Biswas	Member	P
8.	Prof. Shyam Shanker Singh	Member	P
9.	Dr. Vinod Agrawal	Member	P
10.	Dr Nazimuddin, Scientist - F	Representative of Central Pollution Control Board	P
11.	Shri Mahi Pal Singh, Chief Engineer	Representative of Central Electricity Authority (CEA)	A
13.	Shri Harmeet Sahaney	Representative of Indian Meteorological Department (IMD)	P
13.	Prof. R M Bhattacharjee	Representative of IIT/ISM Dhanbad	P
14.	Shri Amit Vashishtha	Member Secretary	P
MOEF&CC			
1.	Sh. Mohit Saxsena	Scientist 'D'	P

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 08.05.2016 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 15.09.1999, 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 m³/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 SO₂ emissions standard of 100 mg/Nm³.

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/Nm³.
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/Nm³.
4. Stacks of prescribed height ____m shall be provided with continuous online monitoring instruments for SO_x, NO_x and Particulate Matter as per extant rules.
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 PM₁₀, PM_{2.5}, SO₂, NO_x within the plant area at least at one location. The monitoring of other locations (at least three locations outside the plant area covering upwind and downwind directions at an angle of 120° each) shall be carried out manually.
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 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.
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 ofKLD from STP (name) shall be used as an alternative to the fresh water source to minimize the fresh water drawl from surface water bodies.

9. Wastewater generation ofKLD from various sources (viz. cooling tower blowdown, boiler blow down, wastewater from ash handling, etc) shall be treated to meet the standards of pH: 6.5-8.5; Total Suspended Solids: 100 mg/l; Oil & Grease: 20 mg/l; Copper: 1 mg/l; Iron:1 mg/l; Free Chlorine: 0.5; Zinc: 1.0 mg/l; Total Chromium: 0.2 mg/l; Phosphate: 5.0 mg/l;
10. Sewage generation ofKLD will be treated by setting up Sewage Treatment plant to maintain the treated sewage characteristics of pH: 6.5-9.0; Bio-Chemical Oxygen Demand (BOD): 30 mg/l; Total Suspended Solids: 100 mg/l; Fecal Coliforms (Most Probable Number):<1000 per 100 ml.

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 as well as for the proposed power project shall be carried out annually from a reputed institute and report be submitted to the Ministry's Regional Office.

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 (PM₁₀& PM_{2.5} in case of ambient AAQ), SO₂, NO_x (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°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 ofha, along the coast/ on the banks of Estuary.

APPROVAL OF THE CHAIRMAN

Final MoM 7th EAC(Thermal) held on 19-03-2024-Reg

2 messages



From: sharadnegi1957@gmail.com

April 1, 2024 4:57 PM

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Approved final MoM of 7th EAC thermal as proposed

