Minutes of the 25th meeting of the re-constituted Expert Appraisal Committee (EAC) on Environmental ImpactAassessment (EIA) of Thermal Power Projects held on 22nd February, 2019

The 25th meeting of the re-constituted EAC (Thermal Power) was held on 22nd February, 2019 in the Ministry of Environment, Forest & Climate Change at Narmada Meeting Hall, Jal Wing, Ground Floor, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi under the Chairmanship of Dr. Navin Chandra. The following members were present:

1.	Dr. Navin Chandra	-	Chairman
2.	Shri Suramya D. Vora	-	Member
3.	Dr. N.P. Shukla	-	Member
4.	Shri G.P. Kundargi	-	Member
5.	Dr. J.K. Pandey	-	Member
6.	Dr. R.K. Giri	-	Member (Rep. of IMD)
7.	Shri N.S. Mondal	-	Member (Rep. of CEA)
8.	Dr. S.K. Paliwal	-	Member (Rep. of CPCB)
9.	Dr. S. Kerketta	-	Member Secretary

A Special Invitee, Dr. P.V. Murugan, Scientific Officer-D was requested to present during this meeting to discuss the issue on Item No. 25.4 and the Director, Institute of Plasma Research, Gandhinagar has nominated him for the same. Shri N. Mohan Karnat, Dr. S. Lele, Dr. (Mrs). Manjari Srivasta and Dr. S.K. Gupta (Representative of ISM/IIT Dhanbad) could not be present due to pre-occupation.

Item No.25.0: CONFIRMATION OF THE MINUTES OF THE 24thEAC MEETING.

The minutes of the 24th EAC (Thermal Power) meeting held on 23.01.2019 were confirmed in presence of members present during the meeting.

Item No. 25.0: CONSIDERATION OF PROJECTS

(25.1) Proposed 1x660 MW (Phase-III & Unit–5) Coal based Supercritical Sagardighi Thermal Power Project, Villages Manigram, Chandpara, Kanchanpara, Harirampur, District Murshidabad, West Bengal by M/s The West Bengal Power Development Corporation Ltd. –reg. ToR.
(F.No. J-13012/01/2019-IA.I (T) &Proposal No. IA/WB/THE/94262/2019)

(25.1.1) Project Proponent submitted online proposal on 5.2.2019 for consideration for grant of ToR. The Project Proponent along with the EIA Consultant, M/s. Development Consultants Private Limitedhave made the presentation *inter-alia* submitted the following information:

i. The Terms of Reference was earlier given by the Ministry on 15.01.2015 for expansion project with capacity of 500 MW Power generation which was valid for three years, i.e. 14.01.2018. Subsequently, it has been amended for increasing the capacity from 500 MW to 660 MW vide Ministry's letter dated 11.07.2016. Project Proponent conducted EIA studies during March-June, 2015 and submitted the EIA/EMP report to WBPCB. The Public Hearing has been conducted by WBPCB on 03.10.2016. Project Proponent has applied for grant of environmental clearance on 5.2.2019. The Ministry examined their application and noted that the proposal was submitted after expiry of ToR

validity. Further, the baseline data is older than three years. Accordingly, Project Proponent has been advised to initiate the process of environmental clearance process *de-novo* vide Ministry's letter dated 4.2.2019.

ii. The proposed Unit-5: 1x660 MW is to be setup within the premises of existing Sagardighi Power Station (Unit-3 & 4: 2x500 MW). The following units are under operations or in proposal stage:

Unit No.	Phase	Capacity	Date of Commissioning	Remarks
1.	Phase-I	300 MW	7.9.2008	EC issued on 6.10.2004 for 2x250 MW and amended on 4.9.2008 for changing the configuration to 2x300 MW
2.		300 MW	6.11.2008	
3.	Phase-II	500 MW	1.6.2015	EC issued on 18.5.2011
4.		500 MW	20.12.2017	
5.	Phase-III	660 MW	Proposed Project	ToR issued on 15.1.2015 and validity expired on 14.1.2018. PP could not submit the application for grant of EC within the validity period.

iii. Presently, WBPDCL have 365 ha (900 acres) of land under possession for Phases I, II & III of the plant and another 184 ha for ash disposal. This area would be sufficient for setting up proposed Unit-5: 660 MW.

iv. The main power plant would be built at an elevation of 34.5 m above mean sea level (MSL). The plot is well above highest flood level (HFL) of the area.

v. There are no national parks, wildlife sanctuaries and other protected areas/wildlife corridors under Wildlife (Protection) Act, 1972 and no eco-sensitive areas/zones under Environment (Protection) Act, 1986 within 10 km radius of the project.

vi. Coal consumption for 1x660 MW (Phase-III) is estimated to be around 453 TPH in TMCR condition and 497 TPH in BMCR running condition. Considering an average GCV of 3300 kcal/kg and average station heat rate of 2151 kcal/kWh approximate annual coal requirement of for Phase-III station at 90% PLF works out to be 3.39 million MT per Annum. Coal will be sourced from Pachwara (North) Coal Block, Jharkhand being developed by WBPDCL through Bengal EMTA. The geological reserve of the block is about 609.35 MMT whereas mineable reserve of the block is estimated as 392.84 MMT.

vii. The Coal block is located at a distance of 140 km from the power plant. The coal is brought by road from coal mine to Pakur Railway siding by road. From Pakur railways siding, it is transported by rail mode through existing Pakur-Tildanga-Dhulian-Monigram broad gauge line or through Pakur-Nalhati (proposed)–Takipara-GosaingramPoradanga-Monigram broad gauge line. The coal would be carried in rake loads of BOBR/BOX-N wagons. The coal handling plant of existing power plant will be used for proposed project also. Suitable extension from the end of Transfer Point (TP-19) will be done.

viii. The design parameters for coal intake would be GCV: 3300 kcal/kg, Total Moisture: 15%; Ash: 40%; Sulphur: 0.5%, Volatile Matter: 19%, Fixed Carbon: 26%.

ix. The existing two (2) Nos. of LDO tanks of 2000 m^3 each and two (2) Nos. of HFO tanks of 2000 m^3 each for the Phase-I and additional two (2) Nos. of HFO tanks of 2000 m^3 each being constructed under Phase-II project, will cater for storage of LDO and HFO which will be required for start-up and coal firing support purpose of the Phase-II & III units also.

x. The water withdrawal of 60 cusecs (6116 m^3/h) from river Bhagirathi has been permitted by Irrigation and Waterways Department, Govt. of West Bengal vide letter dated 10.9.2009. Presently, the estimated use of water for Phase-I and II (2x300 MW & 2x500 MW) is 34 cusecs (3466 m^3/h @ 2.17 m^3/MWh).The water requirement for the proposed unit is 16.2 cusecs (1,650 m^3/h @ 2.5 m^3/MWh. The existing water allotment would be sufficient for the proposed unit. The water will be sourced from the Bhagirathi River located at approximately 5 km from the proposed project. Intake pump house and pipeline are already under implementation for Units-3 & 4.

xi. Around 200 O & M personnel will be required during operation phase of the project. In addition, around 200 permanent staff shall be engaged in construction activities.The Estimated project Cost is Rs.4,402 Crores.

(25.1.2) Committee noted that the land requirement for the proposed 1x660 MW Unit is about 36 acres for main plant and the existing ash pond of 350 acres will be used for ash disposal incase of emergency. Committee noted that the available land is used for proposed project, achieving greenbelt in an area of 33% may not be possible. Presently, Committee has observed from the google satellite imagery that greenbelt is sparse in and around the plant area. Committee noticed that the ash is being disposed in lean slurry concentration system which consumes more fresh water from Bhagirathi river. Further, the installation of Flue Gas Desulphurisation System will also consume water. As informed, the tenders have been floated for selecting the contractor and it will be installed by April, 2023. Further, the zero effluent discharge concept is to adopted. Committee noted that the Public Hearing for the project was conducted on 16.09.2016. It has been noted that Project Proponent has requested for exemption of Public Hearing as it is less than 3 years old. Committee noted that Ministry's Office Memorandum dated 29.8.2017 prescribes that the public consultation should not be older than 3 years at the time of submission of the proposal for grant of EC to the Ministry.

(25.1.3) Committee after detailed deliberations, recommended for the following ToRs in addition to the Standard ToR:

i. Public Consultation shall be carried out by uploading the draft EIA/EMP report on West Bengal Pollution Control Board's website and publishing notice in newspapers (both in Bengali and English) for seeking comments from the general public. The comments received so shall be addressed in the final EIA report along with time bound action plan and financial budget allocation. The EAC opined that while submitting the final EIA/EMP report, the public hearing shall not be more than three years old from the date of public hearing conducted. In case, final EIA/EMP report is submitted after 3 years from the date of public hearing, a fresh public hearing is required to be conducted at the project site.

ii. One season (non-monsoon) baseline data shall be collected for preparation of EIA report.

iii. Time Bound Action Plan for conversion of existing ash disposal system from Lean Slurry System to High Concentrated Slurry System shall be provided.

iv. Action plan for dry and pneumatic collection system for flyash shall be prepared for all the units (existing and proposed)

v. 33% greenbelt around the periphery of the plant shall be clearly demarcated in the layout map along with the progress of greenbelt developed till date.

vi. The time bound action plan for installation of Flue Gas Desulphurisation (FGD) Unit shall be submitted.

vii. Permission from NMCG to withdraw water from Bhagirathi River shall be submitted.

viii. Non-compliances observed of the environmental clearance conditions by the Regional Office of the Ministry shall be attended and complied. An action plan for full compliances shall be submitted within a month.

ix. Online emissions and effluent monitoring systems are to be set up and the data is to be connected to the CPCB servers.

x. Cumulative environmental impacts assessment is to be done interms of impact on air quality, water quality, water consumption, ash utilisation and disposal.

xi. Details of quantity of flyash generated from all units since commissioning of units and the utilisation/disposal shall be submitted. Details of total volume of ash pond and the volume utilised till date shall be submitted to examine the adequacy of the existing ash pond for the proposed project as well.

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(25.2) 1x800 MW Sipat Advance Ultra Super Critical Technology Demonstration Project (Stage-III) at Village Sipat, Tehsil Masturi, Bilaspur District, Madhya Pradesh by M/s NTPC Limited - reg.ToR.
(F.No. J-13012/02/2019-IA.I (T) &Online no. IA/CG/THE/89473/2018)

(25.2.1)Project Proponent submitted online proposal on 29.01.2019 for grant of ToR for establishing 1x800 MW (Stage-III) Ultra Supercritical Technology project in the existing premises of Sipat Power Plant (Stage-I: 3x660 MW & Stage-II: 2x500 MW).

(25.2.2) Project Proponent started the presentation. Committee in the first instance noticed that QCI-NABET consultants for conducting EIA report have not been engaged by the project proponent. Ministry's Office Memorandum dated 04.08.2009 stipulates that project proponents should indicate the name consultants/firm they propose to hire for preparing EIA/EMP reports along with their complete details including their accreditation, if any, by an organisation such as Quality Council of India/National Accreditation Board for Education and Training (NABET).

(25.2.3) M/s NTPC has submitted that the EIA consultants will be engaged after obtaining ToR. It is because, if the ToR is not granted for particular project, the financial contract with consultants may have to be cancelled and end up with loosing time and money. Further, if the EIA consultants are engaged based on the standard ToR and the EAC/Ministry stipulates the additional ToR, the existing contract between M/s NTPC and consultant needs to be modified with increased scope. As the scope is increased, the contract value will also be increased. Further, the increased scope of work/studies will have additional financial burden and it cannot be assigned some other consultant as engaging two consultants will have difficulty in preparation of EIA/EMP and data sharing. Further, the existing consultants have to be engaged for increased scope and at the quoted price by the consultants. Once the consultants are technically acceptable based on the QCI-NABET certification and visits, the list of these consultants are given to Finance Department which

inturn will negotiate with technically accepted consultants and finalise the consultants with lowest price. This difficulty is being faced in all the Public Sectors.

(25.2.4) Committee noted that Project Proponent have given the justification for engaging consultants after obtaining ToR. In this regards, the Member Secretary informed the Committee that in the recent past, the Policy Sector of IA Division of the Ministry has given a clarification that it cannot be relaxed to Public Sectors and the compliance of the Ministry's OM dated 04.08.2009 has to be uniformly followed by all the project proponents. Accordingly, Committee opined that the Project Proponent may approach Ministry for taking a view on this. Accordingly, the proposal has been **deferred**.

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(25.3) 3x800 MW Super-Critical TPP at Village Annupurna Khamar, Taluk Kamakhyanagar, Dhenkenal District, Odisha by M/s. Odisha Thermal Power Corporation Ltd.- reg. reconsideration of grant of EC.
(F.No. 13012/43/2012-IA.II(T)& Proposal no. IA/OR/THE/10522/2012)

(25.3.1)Project Proponent has submitted the final EIA/EMP documents vide their online application dated 01.03.2017 for grant of environmental clearance. Earlier, the proposal was considered in the 5th EAC meeting held on 26.04.2017. However, PP could not be present in the meeting held on 26.04.2017. Subsequently, the proposal was appraised by the EAC in its meetings held on 29.05.2017 and 12.01.2018. The EAC in its meeting held on 12.01.2018 sought the following additional information:

i. Water sustainability studies to be conducted for determining the demand of instream users and environmental flow. The study should clearly bring out the impacts on the downstream users and instream biota due to the water drawal for the proposed project.

ii. Wildlife Management Plan be vetted by the Chief Wildlife Warden and a copy of the plan shall be submitted to the Ministry.

iii. Prediction of Air quality impacts shall be carried out for worst case scenario (Failure of ESP or FGD or NOx control systems)

iv. Status of Forest Clearance shall be submitted.

(25.3.2) Project Proponent vide online submission dated 13.02.2019 submitted the above information. Accordingly, the proposal has been considered in the present EAC meeting. The Project Proponent along with M/s MECON Ltd. have made the presentation and *inter-alia,* provided the following information:

i. M/s WAPCOS Ltd. has conducted the Water Sustainability Studies on River Brahmani to assess impacts on downstream users and instream biota due to water withdrawal for the proposed project.

ii. As per the run off data available with Water Resources Department, State Government of Odisha, 90% dependable flow of the base year 2002-2003 has considered for the assessment of water availability down stream of Samal Barrage.

iii. The proposed intake location is about 90 km down stream of Samal Barrage. The total flow available at proposed intake point considering the releases from Samal barrage and flow from intervening catchment is 2674.31 MCM. The total water requirement between Samal Barrage to intake location including irrigation, domestic and industrial allocations have been estimated to be as 1562 MCM and water requirement for

proposed Thermal Power Plant would be 80 MCM (2.3 cumecs), which is about 4.87% of the requirement for irrigation, domestic and other uses.

iv. For sustenance of aquatic biota, sufficient water depth are available even after meeting the demand of M/s OTPCL project.

v. The water available in Brahmini river down stream of intake point for OTPCL project would be sufficient for maintaining the down stream ecology and other water requirements including industrial, agriculture and drinking purposes even in the lean season.

vi. Two months i.e. November and December are the harvesting season in Odisha and therefore irrigation requirement would be negligible, which will further enhance the water availability for sustaining the ecological needs during the lean season.

vii. Majority of fish species reported in the area falls in the least concern category as per IUCN red data list (2018.1). None of the species is categorised as 'critically endangered', 'endangered' and 'vulnerable'. A total of 7 species are evaluated as 'near threatened' category, of which *Wallago attu* is one of the species contributing to capture fishery in the region.

viii. The wildlife management plan has been prepared by M/s Team Grow Green Consortium Pvt. Ltd. and the same has been approved by the Chief Wildlife Warden vide letter dated 29.12.2018 with financial budge of Rs.15.59 Crores. The plan will be implemented for a period of five years. Subsequently, Project Proponent has been asked by the Wildlife Department to prepare the Wildlife Conservation Plan for a period of 10 years.

ix. In order to limit pollutant concentrations within specifies norms, OTPCL has proposed for installation of high efficiency ESP, FGD system, Low NOx burners and SCR/SNCR system in each units separately. However, in order to predict the impacts on ambient air in worst case conditions because of failure of these PCEs, study has been conducted.

x. The FDP No. FP/OR/THE/29588/2017 for diversion of 38.098 ha of forest land has already been submitted to DFO, Dhenkanal by the Nodal Wing of the Office of the PCCF vide letter No.OR-062/2017. The DFO, Dhenkanal has already forwarded the proposal to RCCF, Angul vide his office Memo No.135 3F/Misc./96/2018, dated 05.01.2019.

(25.3.3) Committee noted that the project proponent and EIA consultants could not explain the salient points of wildlife management plan and air quality modelling predictions for worst case scenario. There are three Schedule-I species under Wildlife (Protection) Act, 1972 are within the study area viz. Elephant, Pavo Cristatus and Python. Further, it is reported that there are 7 species under Schedule-II. The number and extent of these wildlife in the core area and buffer area is not available. Further, the wildlife which is mentioned in the plando not indicate the location/geographical extent and the distance from the proposed project location. Further, it was noted that project impact zone is part of Mahanadi Elephant reserve and Maulabhanja – Jiridamali- Anantapur identified elephant corridor passes through the northern fringe of the impact zone. The specific measures with respect to Elephant conservation shall be made available. Further, Wildlife Management Plan mentions developing of greenbelt in an area of 236.00 acres (95.507 ha.) and avenue plantation of 9 km. It is not clear that whether this is part of greenbelt already

proposed in the project area or separate area. A map showing the project area, greenbelt area along with co-ordinates is required for understanding the extent of greenbelt proposed. Committee noted that cloud cover in the meteorology data has not been considered. If cloud cover is not given as input to the AERMOD model, the stability classes will be varied and may not represent the real scenario. Further, it was informed that the air quality expert from EIA consultants who has conducted the modelling could not be present and accordingly, the details could not be presented.

(25.3.4) **Committee after detailed deliberations, deferred the project** for want of following information:

i. The map showing distance between elephant corridor, project boundary, the geographical extent of Schedule-I and II species in and around the project area. Details of number of each species recorded in the impact zone.
ii. Details of greenbelt proposed in the project and in the wildlife management plan along with the map indicating the length, width and coordinates of the proposed greenbelt.
iii. Details of air quality modelling shall be presented. The emissions of SOx in case of failure of FGD for three units may be re-calculated. Further, the emissions may be calculated for stack height of 275 m, 100 m and as per the formula provided in the Ministry's Notification dated 28.06.2018. It should also take into account of exit velocities of the flue gas.
iv. Off set plan for cutting 13,264 trees in non-forest area and 2,829 trees in the forest area.

(25.4) 55 MW ha Proposed Solid Waste to Energy Facility (Using Cold Plasma Technology) to convert Green Power, Purified Water and Fuel at East Delhi Municipal Corporation Opposite to Gagan Theatre, Wazirabad Road, Mandoli Extension,Village Mandoli, Delhi by A.G. Dauters Waste Processing Private Limited- reg. reconsideration of ToR. (F.No. J-13012/13/2018-IA.I (T) & Proposal no. IA/DL/THE/84113/2018

(25.4.1) Project Proponent has submitted online application on 31.10.2018 for grant of ToR for establishing 55 MW Waste to Energy Power Project from 200 Tons per Day Municipal Solid Waste. The proposal is based on Cold Plasma Gasification Technology which will convert MSW into 55 MW of Green Power, 925 KLD Purified Water and 925 KLD fuel.

(25.4.2) The proposal has been considered by the EAC (Thermal Power) in its 23rd meeting held on 30.11.2018. The EAC has deferred the project for want of detailed project report along with the technology including the material balance. Project Proponent vide their letter dated 07.01.2019 submitted the information which has been placed before the EAC in the present meeting.

(25.4.3) Project Proponent along with their consultants M/s Perfact Envirosolutions Pvt. Ltd. made the presentation and submitted the following information:

i. Cold Plasma Gassification will generate zero emission and zero residue. There will not be any startup power required for the project. The fuel is used in this technology is generated from the process itself which is LT UltraGas. The area required for the project is 1/20th of the area used for conventional power plants.
ii. As waste enters the system its physical and chemical characteristics are identified, recorded and tracked in real time, allowing the master control unit to modify/monitor subsequent processing, including feedback loops to continually meet the output requirements. The waste stream is re-screened and separated into solids and liquids. The

solids are processed through multiple stages including grinding and liquefaction and further extraction of water/fluids. All particulate constituents are reduced, gasified and/or converted into LT fuels within the LT Plasma Unit.

iii. The proposed project is based on the Langenburg Technologies Waste-to-Power and Water Purification Technology.

iv. In the LT water purification process, liquid constituents are clarified through heat, pressure and proprietary processes leading to pure sterilized water. The remaining solids (down to microscopic level) are rerouted through the plasma unit. The resulting water is recalculated through a range of temperatures, pressure and catalyst processes that introduce and infuse oxygen from the LT Gas Extraction Unit, Balance pH and refine output water. Heat and electric power for this process comes from the LT turbine generator.

v. A fraction of the water is sent to the LT gas extraction system where a proprietary low-input-energy form of electrolysis is used to develop hydrogen and oxygen. These gases are stabilized using proprietary processes and catalysts – made available on demand to the LT water treatment unit, the LT Plasma process and the LT Turbine.

vi. The turbine powers up in 60 seconds or less. It includes multiple modifications from standard turbines allowing the use of LT fuels (from gas extraction and plasma fuel synthesis). It is also modified to recapture and recirculate much normally wasted energy (turbulence and heat) allowing cooler operation, reduced heat distortion and vibration resulting in minimal war of components for safe long-term performance. The LT generator is uniquely designed (materially mechanically and electrically) to neutralize the negative loads and resistance that standard generators encounter. Thus, it has a higher power density than any other systems and in tandem with the proprietary LT transformer it produces typical 3-phase alternating current (AC) at 50 Hz and 60 Hz and is fully compatible with international performance and power standards.

vii. LT plasma is fully integrated into the treatment of all wastes and the production of proprietary, high energy, clean, hydrogen-based fuels.

viii. All the molecules will be taken to atomic stage for converting into energy (Fuel & Gas) in the reactor of 6,000-14,000 ^{0}C. The molten Lava of approx.1% which does not get ionised is called Plasma Rock which will be used for construction purposes. The fuel generated in the process is highly enriched Hydrogen gas which can be used in fighter aircraft turbines. There is no plasma torch used in the process.

ix. The company has tied up with various State Governments, Municipal Corporations in India for setting up waste to energy power plants based in this technology having total capacity of 1760 MW with the range of 15-550 MW power generation.

x. The mass balance of the waste and wastewater conversion into energy and purified water is as below:

Input	Process	Outputs
200 TPD waste (30% moisture) 2000 KLD sewage/wastewater	Ultra Cold Plasma Gassification Process Waste to Energy 152 KLD water used in process	925 KLD potable water
		925 KLD zero carbon fuel
		25-30 KLD water vapors to atmosphere
		0.005 TPD recoverable material
		5-30 TPD Plasma rock (recoverable material)

(25.4.4)The committee noted that the waste to energy power plants less or equal to 15 MW do not require environmental clearance. It has been further noted that the project proponent is planning to set up several WtE Power Plants in different states of the country with total capacity of 1760 MW. Committee felt that this is the new technology and is not proven in India till date and the actual mass balance which was submitted is not very clear that how 200 TPD will generate 55 MW power along with fuel and purified water. Committee noted that if it recommends, it will become a precedence or clearance from Central EAC/MoEF&CC so that State Authorities can appraise and recommend these power plants confidently on pollution and safety related aspects. Accordingly, Committee felt that unless it is fully convinced with the technology, process, mass balance, conversion of materials into various states/stages, energy flow, it cannot recommend the proposal.

(25.4.5) Committee has made following observations:

i. There is no clarity in the kind of plasma used in the proposed cold plasma gasification technique proposed.
ii. The energy consumed in dissociation of water into hydrogen and oxygen, conversion of waste into syngas and all other processes involved in subsystems were not presented in detailed.
iii. The mass and energy balance of the proposed waste disposal plant is not clearly available for evaluation. It only mentions the conversion of waste and wastewater into energy and purified water. But, it does not mention any process of how it is converted.
iv. The details provided such as input waste characteristics, process reactions, process byproducts and plant output (55 MW power, water and fuel) are appearing superficial.
v. A complete process and technical detail along with the working principle of each process involved, mass and energy balance are required for further evaluation.
vi. Demonstration of the technology/waste disposal plant in the lower/pilot scale is appreciable before the establishment of the proposed 200 TPD capacity.

Accordingly, the Committee deferred the project.

(25.5)1x800 MW (Stage-V) Dr. Narla Tata Rao Thermal Power Station, Village and Taluk Ibrahimpatnam, Krishna District, AP by APGENCO- reg. amendment in EC.

(F.No. J-13012/26/2012-IA-II(T) & Proposal No. IA/AP/THE/10488/2012)

(25.5.1) Project Proponent submitted online application on 04.02.2019 for changing the coal source from imported coal to domestic coal.

(25.5.2) The Environmental Clearance for establishing 1x800 MW Power Plant has been issued by this Ministry's vide letter 26.06.2015. As per the Environmental Clearance, the unit will be based on 100% imported coal. The coal requirement is 2.65 MTPA (8,088 TPD). The imported coal is supposed to be brought from Krishnapatnam port to the plant premises by rail. The Ash and Sulphur content in the imported coal has been restricted to 12% and 0.8% respectively as per EC condition. Further, an ash pond of 70 acres is to be acquired for proposed unit.

(25.5.3) Project Proponent has made the presentation inter-alia submitted the following information:

i. Ministry of Coal vide letter dated 19.09.2017 granted long term coal linkage to Dr. NTTPS, Stage-V (1x800 MW). M/s MCL issued Letter of Assurance (LOA) for supply of 3.548 MTPA coal of grade G11 to G15.

ii. The imported coal requirement is 2.65 MTPA (8,088 TPD). If domestic coal is used the quantity will be increased to 3.39 MTPA (10,272 TPD). The ash generation will increase from 0.4 MTPA (1,294 TPD) to 1.27 MTPA (2,492 TPD).

iii. APGENCO has already established Coal Washery Plant of 11 MTPA capacity at Balaram OCP, Talcher through M/s Spectrum Coal Power Limited on BOO basis to supply washed coal to Dr. NTTPS. The washery will be used for beneficiation of the coal to be supplied for Stage-V power plant. M/s Mahanadi Coalfields Ltd. will deliver raw coal by road to washery set up by APGENCO. The washed coal will be transported to project site by rail.

iv. The washed coal characteristics would be as below:

Parameter	Value
GCV	4200 kcal/kg
Ash	34%
Sulphur	0.62%

v. The emission load for PM, SO_2 and NOx for the proposed domestic washed coal are as below:

Parameter	Emission Load
PM (with outlet dust level of 30 mg/Nm^3)	24.9 g/sec
SO_2 (with FGD of outlet SO_2 level of 100 mg/Nm^3)	81.5 g/sec
NO_X (with furnace modification to 300 mg/Nm^3)	250 g/sec
NO_X (with installation of De-NOx/SCR to limit NO_X level to 100 mg/Nm^3)	81.5 g/sec

vi. The maximum ground level concentrations have been predicted and the details are as below:

Parameter	PM_{10}	SO_2	NO_X
Baseline Scenario	95	36	45
Predicted GLCs for design emissions of PM : 30 mg/Nm^3; SO_2 : 100 mg/Nm^3 & NO_X: 300 mg/Nm^3	0.53	1.4	4.2
Post Project Scenario	95.53	37.4	49.2
NAAQS Standards	100	80	80

vii. Post project ground level concentrations are found to be within the NAAQS standard.

viii. The ash generation of existing 6x210 MW + 1x500 MW is in the range of 3.8 MTPA to 4.2 MTPA. The ash utilisation is in the range of 59.94-90.71%. The ash utilisation for the year 2018-19 (till January) is found to be 101.72%.

ix. Even though the 70 acres was permitted for ash disposal for Unit-5, the land acquisition proposal submitted to Revenue Department has been withdrawn considering the encouraging trend in the ash utilisation.

(25.5.4) Committee noted that the proposed change in coal source will increase the ash generation from 0.4 MTPA to 1.27 MTPA. Further, it was informed that the ash pond area of 70 acres permitted under EC will not be used as the existing ash pond of 425 ha will be used. It was further informed that the existing ash pond of 425 Hectares has been almost filled with nearly 40 Million Tonnes of ash. Considering the increase in ash generation, the utilisation mechanism needs to be prepared. It was informed that the project is under construction. However, the detailed status of construction/ commissioning of proposed project has not been made available. The ground level emissions predicted from stack are based on the emission standards of the stack (PM: 30 mg/Nm^3; SO_2: 100 mg/Nm^3 & NO_X: 300 mg/Nm^3). However, it was informed that the installation of FGD, SCR/SCNR to meet the compliance of new emission norms is in tendering stage. In case, the unit will be ready for commissioning and Flue Gas Desulphurisation System and NO_X control systems are not installed, the emission levels and respective ground level concentrations will increase.

(25.5.5) **Committee after deliberations, recommended for amendment in EC dated 26.06.2015 for change in coal source from imported coal to domestic coal with the coal quantity of 3.39 MTPA (10,272 TPD)** subject to following additional conditions:

i. The details of quantities of ash generation, utilisation to various purposes such as brick manufacturing, constructions, soil condition & cement manufacturing and disposal shall be provided for six months (April-September & October-March) in the six monthly compliance report.

ii. As proposed, 70 acres of ash pond which was permitted as part of EC will not be used for ash disposal. The unused ash generated from the proposed unit, if any will be disposed of in the existing ash pond. Greenbelt shall be developed in the 70 acres area. Progress report mentioning the number of saplings, details of saplings, density, survival rate, quantity and source of water, expenditure spent on maintenance shall be provided.

iii. As per the Ministry's flyash amendment Notification vide SO.254 (E) dated 25.01.2016, the company shall upload the details of stock of each type of ash generated/available from

all Stages (6x210, 1x500 MW and 1x800 MW) on Company's website and shall update the stock position at least once a Month.

iv. As per the Ministry's flyash amendment Notification vide SO.254 (E) dated 25.01.2016, the flyash shall be supplied to various utilising units. The cost of transportation of ash for road construction projects or for manufacturing of ash based products or use as soil conditioner in agriculture activity within a radius of hundred kilometers from Dr. Narla Tata Rao Thermal Power Station shall be borne by M/s APGENCO and the cost of transportation beyond the radius of hundred kilometers and up to three hundred kilometers shall be shared equally between the user and M/s APGENCO.

v. For achieving compliance of flyash notification, a map and details of ash utilising units within 100 km radius and 100-300 km along with quantity of ash required for each unit shall be prepared and submitted to the Ministry within 3 months.

vi. A public notice in major daily newspapers shall be published in both vernacular and English that the fly ash/bottom ash will be supplied free of cost for ahs utilising units located within 100 km radius and the cost of transportation will be shared equally between user and M/s APGENCO for ash utilising units located in the radius of 100-300 km, in compliance to the flyash amendment notification dated 25.1.2016. A copy of newspaper notice shall be submitted to Regional Office.

vii. While commissioning the proposed project, the compliance of revised emission norms vide Notification dated 07.12.2015 for the parameters PM: 30 mg/Nm^3; SO_2: 100 mg/Nm^3; NO_X : 100 mg/Nm^3 and Hg: 0.03 mg/Nm^3 shall be achieved along with specific water consumption as per the notification vide dated 28.06.2018. The FGD System, NO_X control measures such as SCR/SCNR/De-NO_X burners shall be installed to achieve the revised emission norms.

viii. The status of installation of FGD and De-NO_X/SCR/SCNR control systems to comply with new emission norms for Stage-V (1x800 MW) and existing operating units shall be submitted.

ix. The detailed progress report of construction of proposed project shall be submitted to the Ministry and its Regional Office along with six monthly compliance report till the unit is commissioned.

x. As per the Revised Tariff Policy notified of Ministry of Power issued vide dated 28.01.2016, project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality/ local bodies/ similar organization located within 50 km radius of the proposed power project to minimize the water drawl from surface water bodies. The details of Sewage Treatment Plants located within 50 km radius along with the capacities shall be submitted.

(25.6) 2x660 MW Super critical coal based Thermal Power Project at Village Dadri Khurd, Tehsil Mirzapur Sadar, District Mirzapur, Uttar Pradesh by M/s Welspun Energy UP Pvt. Ltd. - reg. amendment in EC
(F.No. J-13012/12/2011-IA.II(T) & Proposal no. IA/UP/THE/10331/2010)

(25.6.1) Project Proponent (PP) submitted the proposal online on 17.06.2017 for amendment of EC accorded vide dated 21.08.2014.

i. Environmental Clearance for establishing of 2x660 MW Super critical coal based Thermal Power Project at Village Dadri Khurd, Tehsil Mirzapur Sadar, Dist. Mirzapur, Uttar Pradesh has been issued vide Ministry's letter dated 21.08.2014.

ii. NGT, Principal Bench, Delhi in Appeal No.79/2014 in the matter of Debadityo Sinha vs Union of India in their judgment dated 21.12.2016 set aside the Environmental Clearance dated 21.8.2014 and directed the PP not to carry out any developmental work at the project site, restore the area to its original condition and work of restoration is stayed for a period of two months.

iii. NGT vide their judgment dated 01.05.2017 directed that Project proponent is at liberty to approach the MoEF&CC or any other competent authority for processing of the applications for grant of EC upon making up for rectifying the defects and deficiencies pointed out in the judgment. However, the authorities concerned are at liberty to process the same in accordance with law while strictly adhering to the content of the judgment.

iv. NGT vide their judgment dated 21.12.2016 mentioned the following defects in the EC process:

a. Deliberate concealment with regard to forest land within the proposed project site.
b. Non-submission of Form-1 dated 31.3.2011 for the project site at Mirzapur
c. Discrepancies in Form-1 dated 31.03.2011 and the Form-1 furnished later on vide dated 03.12.2011
d. Whether the project proponent required forest clearance before the grant of EC as the project site involve forest land
e. Concealment of presence of wildlife within the proposed project.
f. Usage of water in upper Khajuri Dam and withdrawal of water by the project proponent from the river Ganga to the upper Khajuri Dam would severely impact the nature of the water that is used for human consumption as well as irrigation.
g. Impact of the proposed project on Banaras Hindu University (BHU)
h. Presence of Kaimur, that is an important mineral resource to be found in the area of Mirzapur.
i. Whether the Public Hearing was conducted in a free and fair manner, in view of the fact that there was presence of men carrying arms in the video of the public hearing.

(25.6.2) The proposal was earlier considered in the EAC meeting held on 24.07.2017 and the EAC sought the following additional information:

i. Hydro-geological study and impact on in-stream uses due to water withdrawal from Ganga river.
ii. A certificate from State Mines and Geology Department regarding mineralogical map and presence of minerals in the project and surrounding areas.
iii. Clarification report from District Collector regarding conduct of Public Hearing including law and order issues.
iv. Recommendations from Standing Committee of National Board for Wildlife (SC-NBWL).
v. Details of STP within 50 km radius from the project site.
vi. Commitment for setting up of RO system for providing potable water to Banaras Hindu University.

(25.6.3) As the Project Proponent has not submitted the information within six months, the proposal has been delisted from the pendency list. Subsequently, on the request of project proponent, the proposal has been re-opened and the information sought by EAC was uploaded on 11.02.2019. Accordingly, the proposal has been re-considered in the present meeting. Project Proponent has made the presentation *inter-alia*, submitted the following information:

i. The water requirement during construction phase is 500 KLD and operation phase is 36 MCM (1 Lakh m^3/day or 100 MLD). The water during construction phase will be met from groundwater by installation of tube well at the site to meeting drinking and construction water requirement for a period of five years. The water during operation of phase will be sourced from the River Ganga through a pipeline at a distance of about 17 km from the project site for seven months (June-December).

ii. Hydrogeological Study within 10 km radius area of proposed project has been conducted by IIT, Roorkee.

iii. The entire study area consisted of Kaimur Sandstone and Alluvium deposits. The groundwater resources as per the CGWB report, 2012-13 indicates that out of 12 blocks in the study area, 7 blocks are in the safe category, 3 blocks are in the semi-critical category and 2 blocks are in the critical category as on 31.03.2009.

iv. The groundwater simulations in the study area has shown as 'Safe' category. The groundwater usage for irrigation and domestic use is 13.89 MCM and the annual groundwater recharge is 51.96 MCM. The usage of groundwater is about 27% of the available groundwater.

v. Groundwater quality has been analysed in the study area at 12 locations. The TDS levels in the groundwater at Villages Jhingura, Gopalpur and Agvar are 611 mg/l, 689 mg/land 877 mg/l, respectively and exceeding the BIS standard of 500 mg/l. Further, hardness in the groundwater at Villages Jaugarh, Jodhipur, Majhubani, Gopalpur, Chikesr, Agvar and Padari are 600 ppm, 610 ppm, 410 ppm, 360 ppm, 320 ppm, 480 ppm and 420 ppm, respectively and exceeding the BIS limit of 300 ppm.

vi. The Heavy metals such as Cadmium is high at Villages Haritara and Jhingura (3.9787 ppb and 3.661 ppb) as against BIS standard of 0.003 ppb. Further, Magnesium levels at Villages Kathinai and Agvar (33.3096 ppm and 32.991 ppm) are also exceeding the BIS standards of 30 ppm.

vii. The groundwater in the study area has enough potential to accommodate 500 KLD for five years during construction phase. It is recommended to replenish the extracted groundwater resources by recharging structures at sutable locations which can be constructed within or outside the plant boundary.

viii. Further, Water source Sustainability Study for the proposed project has been carried out by the CSIR-Advanced Materials and Processes Research Institute (AMPRI), Bhopal.

ix. Among the fish diversity, 10 species are catfishes which are the indicator of shallow and running water. The maximum species are under the 'Least Concern' category according to the International Union of Conservation of Nature (IUCN) category. One species belongs to the endangered category which needs immediate actions for protection. One species falls under near threatened category and six species fall under the vulnerable group.

x. The discharge data from River Ganga during 1981-2011 is in the range of 352.96 cumecs in 2009-10 to 2881.353 cumecs in 1981-82. The water discharge for 2018-19 has been predicted using ARIMA (Autoregressive Moving Average) model. The predicted discharge observed to be minimum in month of May is 264.34 cumecs for the year 2018-19. The equivalent discharge is 685.17 MCM/month.

xi. The water requirement for the proposed project is 36 MCM during June-December from Rive Ganga. The total requirement is 5% of the minimum monthly discharge. Therefore, it is safe to withdraw water in rainy season.

xii. It is recommended that maximum water may be withdrawn in July, August and September i.e. during high discharge period. Further, comparing the annual required water for project (36 MCM) to the least monthly available water 685.167 MCM in month

of May shows withdrawal of 36 MCM over a period of 07 months will not have any adverse impact at the upstream and downstream of intake facility in Mirzapur.

xiii. Study suggests that river flow upstream of intake point will not be affected by proposed withdrawal and there will be no significant impact at the downstream due to water withdrawal for the proposed Mirzapur TPP.

xiv. District Mining Officer, Mirzapur vide letter dated 17.4.2018 stated that there is no mining lease issued in the past in the proposed project area and there is no proposal in future to carry out mining activities in the proposed project area.

xv. District Collector, Mirzapur vide letter dated 10.4.2018 stated that the public hearing conducted for the proposed power project was concluded in undisputable manner with the Chairmanship of Additional District Magistrate.

xvi. Recommendations of Standing Committee of National Board for Wildlife is not applicable for the proposed project as the project area neither falls within National Park nor any Wildlife Sanctuary notified under Wildlife (Protection) Act, 1972. No Eco-Sensitive Zone notified under Environment (Protection) Act, 1986 also.

xvii. Regarding, use of treated Sewage Water for the proposed project, a technical feasibility study has been conducted to assess the availability of water for the proposed project.

xviii. There are 8 Sewage Treatment Plants (STP) within 50 km radius of the project. The details of the capacities are as below:

Sl.No.	Name	Distance	Existing Capacity (MLD)	Proposed Expansion (MLD)	Total (MLD)	Assured Capacity (MLD) given by UP Jal Nigam
1	Pakka-Pokhara, Mirzapur	20 km	14	8.5	22.5	18
2	Bisunderpur, Mirzapur	23 km	-	8.5	8.5	
3	Vindhyachal	26 km	4	3	7	
4	Chunar	27 km	-	2	2	
5	Ramana, Varanasi	44 km	-	50	50	40
6	DLW, Varanasi	44 km	12	-	12	
7	Bhagwanpur, Varanasi	45 km	9.8	-	9.8	9.8
8	Dinapur, Varanasi	54.33 km	80	140	220	150
9	Goithara, Varanasi	54.61 km	-	120	120	40
10	Ramnagar, Right Bank of Ganga, Varanasi	~43 km	DPR under preparation			
Total Capacity (MLD)			119.8	332	451.8	**257.8**

xix. These STPs are located at three places viz. Mirzapur, Chunar and Varanasi. The STPs near Varanasi are located on North Bank of Ganga River. A pipeline is to be laid across River Ganga to transport water to the plant premises. Several permissions are required to lay pipeline across Ganga. Further, Mirzapur and Chunar are located on Southern side of the Ganga River and pipelines can be laid by avoiding the Clearance from National Ganga River Basin Authority.

xx. The Uttar Pradesh Jal Nigam vide their letter dated 01.10.2018 has assured to provide this treated Sewage Water of 257.8 MLD from Bhagwanpur, Dinapur, Goithaha, Ramana and Mirzapur STP. The water requirement for the proposed project is 100 MLD. The water assured by UP Jal Nigam would be sufficient to meet the water requirements during operation phase.

xxi. It is technically feasibility for sourcing of treated Sewage from STPs located in and around Mirzapur Town. However, technical feasibility need to be established for sourcing sewage from Varanasi with environmental impact assessment. Crossing Ganga river with sewage pipeline be avoided and utilisation of sewage from STP on north side of Ganga be considered for industries located on North side only.

xxii. The cost estimate for drawal of 18 MLD treated sewage from 3 STP located in around Mirzapur town will be Rs.83.00 Crores.

xxiii. The company undertakes to install RO plant to supply drinking water to BHU in their campus.

(25.6.4) Committee noted that groundwater in some of the blocks in the study area is in Semi-critical and Critical zones. Further, Total Dissolved Solids, Hardness, Magnesium and Cadmium (Heavy Metal) are exceeding the BIS standards in some areas. Even though source sustainability study mentions availability of water, committee is of the opinion that treated Sewage shall be used as the assured quantity of about 258 MLD has been made available by Jal Nigam. Further, the water requirement for power project is only 100 MLD. Accordingly, treated Sewage Water would be sufficient to meet the requirement of power project. Further, Committee noted that District Collector, Mirazpur has certified that the public hearing has been concluded in undisputable manner. Further, District Mining Officer has also certified that there is no mining activity proposed in the project area. Project Proponent has given assurance that they will install and supply RO treated water to Banaras Hindu University. However, the capacity of RO treatment system and time bound action plan to implement this activity is yet to be made available.

(25.6.5) **Committee after detailed deliberations, recommended for amendment in Environmental Clearance dated 21.08.2014** subject to the following additional conditions:

i. As the assurance from UP Jal Nigam for supplying treated Sewage Water of 257.8 MLD to the proposed project has been given vide letter dated 01.10.2018, only treated Sewage water shall be used during operations. Necessary pipelines in this regard shall be laid. Final layout of the pipelines starting from STPs to the power project shall be submitted.

ii. No fresh water from Ganga River shall be drawn for the proposed project (Both construction and operation phase).

iii. The capacity of RO treatment plant to be installed at BHU and timebound action plan for implementation shall be submitted within three months.

iv. Before drawing the groundwater during construction phase (500 KLD), permission from Central Ground Water Board shall be obtained.

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(25.7) 1x350 MW (Phase-II) Imported Coal based Power Project, Village Kamalanga, Tehsil Odapada, District Dhenkanal, State Odisha by ` Kamalanga Energy limited-reg. extension of validity of EC.
(F.No. J-13012/73/2011-IA II (T) & Proposal no. IA/OR/THE/75/2011)

(25.7.1)Project Proponent submitted online application on 15.01.2019 for extension of validity of EC issued vide dated 05.12.2011 for further period of five years.

(25.7.2) The environmental clearance for 1x350 MW (Phase-II) Power Project has been accorded vide Ministry's letter dated 05.12.2011 which was valid for a period of five years, i.e. till 04.12.2016. The Ministry's notification dated 14.09.2016 has stipulated the validity of EC to seven years and can be maximum extendable for further period of three years. As the present EC is valid on the date of Ministry's Notification dated 14.09.2016, the existing validity of five years will automatically get extended to seven years, i.e. till 04.12.2019.

(25.7.3) Project Proponent has made the presentation and furnished the following information:

i. The project work has been completed up to 30%, further extension is required to achieve financial closure and completion of project activities.
ii. The detailed progress of the project is provided as below:

Sl. No	Plant Facilities	Status of implementation
1.	Boiler, Steam Turbine, Generator & Accessories and TG Building	Major Civil work completed, Coal Bunkers erected, rest to be done.
2.	Switch Yard	Civil work & Tower is erected, Electrical equipment to be installed.
3.	Cooling Towers & CW Pump house	Civil & building work of pump house completed, CT work to be done.
4.	River Water pump house and pipeline Reservoir & Pump House	Completed –Common facility
5.	Water treatment plant & accessories & ETP/STP/RO system	Completed-Common facility
6.	Ash Pond	Presently constructed in 212 Acres
7.	Coal handling Plant, Fuel Handling Plant and Ash handling plant with silo	Completed -Common facility
8.	Greenbelt	More than 320 Acres with 3,48,408 Nos. of Saplings planted till October 2018.

iii. There will be no change in project capacity, configuration, fuel consumption and thus, incremental pollution load. The expected completion of project is by December, 2023. Hence, validity extension for further five years i.e. up to 04.12.2023 is requested.

(25.7.4) Committee noted that 30% project work has been completed so far and some of them are common facilities for existing 3x350 MW and proposed 1x350 MW. Accordingly, EAC is of the opinion that the proposed unit can be commissioned within three years, if extended. However, committee noted that extension of five years cannot be recommended as the outer limit of validity is 10 years.

(25.7.5) Committee after detailed deliberation, **the EAC recommended for extension of validity of EC** granted vide dated 05.12.2011 for further period of three years, i.e. till 04.12.2021 subject to following additional conditions:

i. Progress of construction activities and expenditure incurred shall be submitted along with six monthly compliance report.

ii. While commissioning the proposed unit, the compliance of revised emission norms issued vide Notification dated 7.12.205 for the parameters PM: 30 mg/Nm^3; SO_2: 100 mg/Nm^3; NO_X: 100 mg/Nm^3; and Hg: 0.03 mg/Nm^3 shall be adhered along with specific water consumption as per the notification dated 28.6.2018. The Flue Gas Desulphurisation System, NO_X control measures such as SCR/SCNR/De-NO_X burners shall be installed to achieve the revised emission norms.

iii. As per the Revised Tariff Policy notified by Ministry of Power vide dated 28.01.2016, project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality/ local bodies/ similar organization located within 50 km radius of the proposed power project to minimize the water drawl from surface water bodies. The details of Sewage Treatment Plants located within 50 km radius along with the capacities shall be submitted.

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(25.8) Expansion by addition of 2x660 MW (Stage-II) Coal based Tanda Super Thermal Power Project, Village Bahadurpur, Tehsil Tanda, District Ambedkar Nagar, Uttar Pradesh by M/s NTPC Ltd-reg. amendment in EC.
(F.No. J- 13012/96/ 2007-IA II(T) & Proposal No. IA/UP/THE/12047/2011)

(25.8.1)Project Proponent submitted online application on 04.02.2019 for amendment in specific condition No. (xvi) of the EC condition issued vide dated 13.04.2011 regarding installation of continuous emission monitoring for $PM_{2.5}$ and PM_{10}.

(25.8.2) The Environmental Clearance to the 2x660 MW (Stage-II) Tanda Super Thermal Power Project has been accorded vide Ministry's letter dated 13.04.2011. The Specific Condition Nos. (xiv), (xvi) and (xvii) are as below:

Specific Condition No. (xiv): Provision for installation of FGD shall be provided for future use.

Specific Condition No. (xvi): Stack of 275 m height shall be installed and provided with continuous online monitoring equipments for SO_X, NO_X, $PM_{2.5}$ & PM_{10}. Exit velocity of flue gases shall not be less than 22 m/s. Mercury emissions from stack may also monitored on periodic basis.

Specific Condition No. (xvii): High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3.

(25.8.3) Project Proponent has made the presentation *inter-alia*, submitted the following information:

i. Online continuous monitoring instruments are available for $PM_{2.5}$ and PM_{10} in the ambient air. However, these instruments are not available for monitoring stack emissions for $PM_{2.5}$ and PM_{10} separately.
ii. Further, the revised stack emissions vide notification dated 07.12.2015 also stipulates PM emissions standards of 30 mg/Nm^3 but not $PM_{2.5}$ and PM_{10} separately.
iii. The PP informed that several vendors have been consulted and confirmed that there are no instruments available as on date for measuring $PM_{2.5}$ and PM_{10} emissions from the stack.
iv. In view of the above, the specific condition No. (xvi) may be suitably amended to "continuous online monitoring of PM in stack emissions."

(25.8.4) Committee noted that the condition regarding online monitoring of $PM_{2.5}$ & PM_{10} in the stack emissions may have been stipulated erroneously. Committee has no objection to suitably amend the condition.

(25.8.5) Committee after deliberations, recommended for amendment of the following specific conditions and stipulated additional conditions in the EC accorded vide dated 13.04.2011:

i. Specific Condition No. (xiv): Provision for installation of FGD shall be provided for future use.
ii. Specific Condition No. (xvi): Stack of 275 m height shall be installed and provided with continuous online monitoring equipments for SO_X, NO_X, PM emissions in the stack. Exit velocity of flue gases shall not be less than 22 m/s. Mercury emissions from stack may also monitored on periodic basis.
iii. Specific Condition No. (xvii): High Efficiency ESP shall be installed to ensure meeting of latest emission norms.
iv. Additional conditions:
    a. While commissioning the proposed unit, the compliance of revised emission norms issued vide Notification dated 07.12.205 shall be achieved along with specific water consumption as per the notification dated 28.06.2018. The FGD System and NO_X control measures such as SCR/SCNR/De-NO_X burners shall be installed to achieve the revised emission norms.
    b. As per the Revised Tariff Policy notified by Ministry of Power vide dated 28.01.2016, project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality/ local bodies/ similar organization located within 50 km radius of the proposed power project to minimize the water drawl from surface water bodies. The details of Sewage Treatment Plants located within 50 km radius along with the capacities shall be submitted.

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(25.9) 4x500 MW (Stage-II & III) Vindhyachal Super Thermal Power Project, Village & Tehsil Waidhan, District Singrauli, Madhya Pradesh by M/s NTPC Ltd.- reg. permission to dispose ash in an abandoned mine voids.
(F.No. J-13011/7/2001-IA.II(T)& Proposal No. IA/MP/THE/95055/2002)

(25.9.1) Project Proponent submitted online application on 08.02.2019 for permission to dispose fly ash generation from 4x500 MW (Stage-II & III) Vindhyachal Super Thermal Power Station in to an abandoned mine voids of Gorbi mines of M/s Northern Coalfields Ltd.

(25.9.2) M/s NTPC is operating Vindhyachal Super Thermal Power Station with capacity of 4760 MW at Vindhyanagar in the District of Singrauli of Madhya Pradesh state. The details of EC accorded by the Ministry are as follows:

Capacity	Date of grant of EC
Stage-I (6x210 MW)	25.11.1981
Stage-II (2x500 MW)	26.06.1990
Stage-III (2x500 MW)	19.07.2002
Stage-IV (2x500 MW)	05.02.2009
Stage-V (1x500 MW)	02.05.2012
Total: 4,760 MW	

(25.9.3) Project Proponent has made the presentation and inter alia provided the following information:

i. The ash generation from Stage-II & III (4x500 MW) is about 2.97 Million Tonnes per annum. The details of breakup of ash generated per day are provided as below:

Power Plant	Flyash	Bottom ash	Total
Stage-II (2x500 MW)	4000	1000	5000
Stage-III (2x500 MW	3600	900	4500
Total	7600	1900	**9500**

ii. Presently, the ash is disposed in the existing ash ponds located adjacent to Rihand Reservoir/Gobind Ballabh Pant Sagar.

iii. To reduce burden on existing ash ponds and reduce the load on additional ash ponds area, it is proposed to dispose the ash generated from Stage-II & III (4x500 MW) into the abandoned mine voids of Gorbi mines located about 38 km from the power plant.

iv. The present proposal is also inline with the directions of Core Committee constituted by Hon'ble NGT in the case No.276/2013.

v. NTPC has entered an MoU with M/s Northern Coalfields Ltd. for backfilling ash into Gorbi mines for 10 years. Initially, it was permitted to dispose 1 Million Tons in mine void by using closed tankers. After satisfactory filling of ash, the quantity can be further enhanced.

vi. After filling of complete void, it will be reclaimed and vegetated with native species.

vii. Currently, 25% ash generated from Stage-II & III (4x500 MW) is utilised in different industries like Flyash bricks, Cement, Asbestos, RMC and Dyke raising, etc.

viii. It is proposed to transport one Million Ton of ash by road to dispose in Gorbi mines and subsequently, the ash will transported through pipeline in lean surry mode to the Gorbi mines for disposal.

ix. The estimated volume of the acidic water filled in the mine void is approx.14 Million m^3. The total volume of the mine void may be 10-15% higher than the volume of water.

x. As per the MoU, NTPC will carry out treatment/management of acidic water in the mine. Incase, the water needs to be discharged, appropriate treatment shall be done to meet the discharge standards.

xi. As per MoU, NTPC Vindhyachal shall prepare a comprehensive sheme for flyash filling with a detailed methodology and mode of transportation in environmentally acceptable manner, acidic water treatment & management, safety and allied issues. Comprehensive EIA/EMP shall be prepared to obtain permission from MoEF&CC. Expert Body shall also ensure whether filling of soil over filled up flyash in the voids of Gorbi Mines is technically feasible. NTPC shall also ensure to avoid the groundwater contamination and seepage through ash bed.

xii. The stability of the mine around the periphery shall also be ensured.

xiii. The estimated cost of the proposed ash disposed system is Rs.40 Crores.

(25.9.4) Committee after seeing the google satellite imagery, in the first instance noted that the mine void of Gorbi mine is a water body nearly filled to its brim and surrounded by thick green vegetation/forest. Further, it was informed that the water is acidic. The quantity of water in the mine void is estimated to be 14 Million m^3. The ash disposal will displace huge quantity of water. It appears that the surrounding vegetation/forest is dependent on groundwater recharge from the water pond of the Gorbi mine. If the ash disposal displaces the water, it has to be treated adequately and an alternative arrangement is to be made whether to reuse such large quantity of water or to dispose treated water. Further, adequate treatment arrangements would be required to neutralise the acid water. Incase, the lean slurry ash is disposed into the mine void, it will not only increase the quantum of water but also increase the water levels in the void and may lead to spilling outside the pit area. The environmental impact assessment study, leachate studies and geotechnical studies are required for further examination. Further, the increase in water levels may weaken and destabilise the bund holding the water. Committee noted that traffic impact assessment is required for initial road transportation of 1 million Tons of ash by nearly 140 trucks. Committee has also noted that the present proposal is in the Singrauli Critically Polluted Area and the moratorium on developmental projects is still continued as the lifting of Moratorium vide Ministrys' OM dated 10.04.2014 has been set aside by the NGT.

(25.9.5) Committee after deliberations, **recommended for prescribing the following Terms of Reference** for conducting detailed environmental impact assessment studies for comprehensive appraisal:

i. The satellite image, topographical features including contours, spot levels, drainage network etc shall be submitted.

i. Detail design, drawing for site preparation and stowing methodology including pipeline alignment for backfilling of ash in abandoned mines.

ii. Details of quantity, source and quantity of water used for pumping flyash.

iii. The details of quantity and quality of water available in the Gorbi mine voids, wastewater treatment methodology along with capacity of treatment plant, the reuse of treated water or alternate discharge mechanism.

iv. Details of whether any aquatic life & wildlife is present in the water filled Gorbi mines.

v. Details of number of trees, species, girth to be cut for the proposed ash disposal and laying of pipeline shall be provided.

vi. Impact of water displacement on surrounding greencover shall be studied.

vii. Assessment of geotechnical properties of OB dump material and fly ash with different mixing ratios and to arrive at optimum blending ratio for OB/Flyash to attend the maximum dry density and least permeability.

viii. Stability study at the optimized ratio of OB and Flyash to the open cast mine of the proposed operating site. Incase, only flyash is proposed to dispose, the study may take flyash disposal into account.

ix. Base line data generation (AAQ, Water, Soil, plant and aquatic life) in and around abandoned mines including Bio magnifications study for the in and around abandoned mines/low lying area

x. Leaching study and radio tracer studies of fly ash and OB dump are to be conducted, which is going to be dumped in abandoned mines.

xi. Site specific piezometer design in and around abandoned mines area.

xii. Feasibility study exploring the utilisation avenues such as construction of road embankments, brick manufacturing, cement manufacturing, etc within 100 km radius of the power plant.

xiii. As the present proposal is located in the Singrauli Critically Polluted Area and moratorium is yet to be lifted on developmental projects, a certificate from Madhya Pradesh Pollution Control Board shall be submitted stating that there will not be any increase in pollution load due to proposed transportation of ash from Vindyachal Power Plant and disposal into Gorbi mines in line with Ministry's OM dated 17.09.2013.

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(25.10) Expansion of Municipal Solid Waste based Power Plant from (Waste to Energy) 16 MW to 23 MW, at NDMC Compost Plant Site near Okhla STP, Okhla, New Delhi by Timarpur Okhla Waste Management Company Private Ltd.- reg. amendment in EC. (File No. J-13012/09/2018-IA.I(T) & Online No. IA/DL/THE/75480/2006)

(25.10.1) Project Proponent submitted online application on 25.1.2019 for enhancing the power generation capacity from 16 MW to 23 MW without increasing the waste feed to the boiler as per the Environmental Clearances issued vide dated 21.03.2007 and 09.05.2007.

(24.10.2) Project Proponent has made the presentation and *inter-alia,* submitted the following information:

i. Total plot area is 6.07 ha, out of which plant area is 2.44 ha, green area is 1.2 ha, office and utilities is 0.85 ha and Road/parking area is 0.97 ha.

ii. The plant is located at a distance of 2.36 km from Okhla Bird Sanctuary and 4.77 km from Asola Bhati Wildlife Sanctuary (from ESZ Boundary).

iii. The unit has been made fully operational. During the course of operations of the plant, the power generation was achieved from 16 MW to 23 MW. The augmentation of 6 MW has been achieved due to increase in Calorific value of incoming solidwaste. Accordingly, less RDF is being consumed.

iv. The augmentation of 7 MW is also due to addition of brush seals in the turbine, and resultant steam path from the turbine bleeds modification has reduced the steam consumption.

v. Operating under wide valve condition has also aided in achieving enhanced generation.

vi. Accordingly, amendment in the EC for augmenting the power generation capacity from 16 MW to 23 MW has been applied.

vii. Existing fuel requirement for the power plant is 1,950 Tons per day. There are three boilers with intake waste capacity of 450 TPD. Cost of the project is Rs. 273 Crores and there is no additional cost for the augmentation.

viii. Total water requirement is 875 KLD and is sourced from treated Sewage from Okhla STP. Further, leachate treatment plant with capacity of 110 KLD has been installed to treat the leachate generated form Municipal Solid Waste during storage for 5-7 days. There is a backup of 1x320 kVA incase of power failure.

ix. Presently, there are two stacks with height of 60 m connected to three boilers. The details of flow rates and emissions are as follows:

Parameter	Stack-1	Stack-2
No. of flues connected	2	1
Stack height	60 m	60 m
Stack diameter	2 m	2 m
Volumetric flow rate	40 Nm^3/sec	22 Nm^3/sec
Fluegas Velocity	25 m/sec	19 m/sec
Temperature of flue gas	140 ^0C	140 ^0C
Emissions of NO_X	127 mg/Nm^3	143 mg/Nm^3
Dioxins & Furnace (ng TEQ/Nm^3)	0.0032	0.0030
Emission rate of SO_2	96 mg/Nm^3	83 mg/Nm^3
Emission rate of PM	24 mg/Nm^3	19 mg/Nm^3

x. The following air pollution control measures have been adopted:

a. 60 m tall stack for two units and another 60 m tall stack for single unit connected for flue gas dispersion at high elevation to minimise the GLC within limits.
b. High efficiency bag house filters with filtration efficiency of 99.9% installed to reduce PM emissions to below 30 mg/Nm^3.
c. Dust suppression of ash handling plant area to control fugitive emissions.
d. Greenbelt development and afforestation in the plant and ash disposal areas.
e. A minimum quenching water will be maintained in the bottom ash to prevent fugitive emissions.
f. Use of hydrated lime to control SO_2, HCl emissions, etc.
g. Use of Activated Carbon for reducing dioxins and furans as well as Heavy Metals.
h. Controlled temperature, maintaining low excess air and shortening the throughput time of the fuel which will reduce NO_X emissions.

xi. A Civil Appeal No.13120/2017 is pending before the Hon'ble Supreme Court.

(24.10.3) Committee noted that as per the submissionsof PP, there is no increase in municipal solidwaste loading into the boilers as per the existing environmental clearance. Project Proponent informed that only calorific value in the waste has increased which will result in higher power generation. Project Proponent has informed that neither there is change in project configuration nor there is addition of equipment.

(25.10.4) **Committee after detailed deliberations, recommended for amendment in EC for increase in power generation from 16 MW to 23 MW without increasing any MSW load and without installing any additional equipment** subject to following additional conditions:

i. Online emission monitoring equipment for all parameters provided in the 'Guidelines for Continuous Emission Monitoring Systems, CPCB' shall be installed and connected to CPCB and DPCC servers. The monitoring report of other parameters mentioned in the MSW Rules, 2016.

ii. The daily quantities of waste feed to the boilers, calorific value of the waste, power generation, lime and activated carbon dosage, flyash and bottom ash generation, leachate generation, water requirement shall be submitted along with six monthly compliance report.

iii. Online emission monitoring and periodic manual monitoring reports shall be submitted to Ministry as well as its Regional Office along with six monthly compliance reports.

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(25.11) 5x270 MW Coal based TPP at Sinnar Industrial Area, Dist. Nasik, Maharashtra by M/s RattanIndia Nasik Power Ltd.- reg. reconsideration of amendment of EC for temporary permission of coal transportation by road.
(F.No. J-13012/11/2008-IA.II (T) & Online no. IA/MH/THE/10301/2010)

(25.11.1)The Project Proponent submitted online application on 03.11.2017 for extension of temporary permission for grant of transportation of coal by road for another two years (till 31.08.2019).

(25.11.2) The proposal has earlier been considered by the EAC in its meetings held on 28.11.2017 and 19.04.2018. The EAC in its meeting held on 19.04.2018 recommended for road transportation for a period of three years as per the proposed the quantities and routes. However, the Ministry while processing the file found certain deficiencies in the traffic impact assessment report& progress of railway siding and also noted that Route No.4 (Kherwadi/Kasbe Sukane Railway siding) is inadequate to take the coal of 6400 TPD in 320 trucks (640 trips to and fro). Accordingly, the proposal has been referred to the EAC for further examination.

(25.11.3) The matter was placed before EAC in its meeting held on 25.10.2018. The EAC after deliberations, sought the following additional information as the Project Proponent sought some time to compile the information:

i. Details of villages/habitations along the proposed routes. The impact of coal transportation on the habitation (rural/urban population) and mitigation measures thereof.

ii. Justification and schedule for completion of the railway line by August, 2019.

iii. Certification from Rail Authorities regarding the status of the rail line/siding and its expected completion.

iv. The emission details from the proposed number of trucks, weather class and meteorology details along with the predicted concentrations for the proposed routes which would covered the total length.

v. Details of whether the ambient air quality data which has been collected is from representative locations of the villages/habitations along the proposed routes,

accompanying a map showing the location of all the habitations (hamlets/villages) overlaid with the location of the baseline air quality monitoring stations and wind rose and habitation-wise population data.

vi. An undertaking that PP would like to take out the Route No.4 (Kherwadi/Kasbe Sukhene Railway siding) from their proposal and transport only 9600 TPD (480 Trucks single side) from the remaining three routes. Further, an undertaking shall also clearly indicate that the transportation of coal by road has not been carried out since the COD of the plant.

(25.11.4) Project Proponent vide their letter dated 28.1.2019 submitted the information. Accordingly the proposal was placed before the EAC in the present meeting. Project Proponent along with EIA consultants M/s Greencindia Consulting Private Limited made the presentation and furnished the following information:

i. The rail route length if Take off Point at Odha to Plant is around 30 km with track length of 52 km. There are 58 bridges at several crossings are planned to connect the railway line. The construction work is hampered due to rough terrain conditions, number of bridges involved in construction and monsoon rains during last year. The construction work is expected to be completed by September, 2019. Subsequently, another six months is required for electrical works, overhead electrification, signalling, trail run, safety approvals, etc. The target date of operations of rail transportation is by March, 2020.

ii. The railway siding planned is owned by the private company. Railways only approve the relevant drawings and do not issue any certificate regarding expected date of completion.In principal approval for railway siding, engineering scale plan approval and approvals of various bridges received from Railways have been furnished.

iii. The following are the number of villages falling along the proposed routes:

Route	No. of villages	Population range
Igatpuri Railway siding (70 km)	24	492-24,838
Khlahare railway siding (35 km)	8	1025-65,299
Rahuri Railway siding (90 km)	29	665-38,813

iv. Among the proposed three routes the baseline air quality data has been collected at 5 locations and the details are as below:

Route	Village Name	Population
Igatpuri Railway siding (70 km)	Take	2,311
	Dhamangaon	3,613
Ekhlahare railway siding (35 km)	Sinnar	65,299
Rahuri Railway siding (90 km)	Guha	5,213
	Telegaon	1,136

v. The baseline air quality data and incremental prediction of GLC were calcluated based on infinite line source equation. The emission standards from vehicles were taken from CPCB, Automobile Association of India. Further, weather classes were considered for the calculation i.e. B (Moderatley unstable), C (Slightly unstable) and D (Neutral). The meteorological data has been collected from IMD station at Ozha, Maharashtra which is 52 km from the project site. The average annual wind speed of the study area is 10.4 km/h (2.9 m/sec). For calculation purposes, it has been assumed that the wind is blowing perpendicular to the road. The details of baseline data and calculated GLC are as below:

Village Name	Baseline data $PM_{10}/PM_{2.5}/SO_2/NO_2/CO$ ($\mu g/m^3$)	Incremental concentrations $PM_{10}/PM_{2.5}/SO_2/NO_2/CO$ ($\mu g/m^3$)	Resultant concentrations $PM_{10}/PM_{2.5}/SO_2/NO_2/CO$ ($\mu g/m^3$)	National Standard
Take	61.8/26/13.6/22.6/923	NC/NC/1.2/25/51	NC/NC/14.80/47.6/974	100/60/80/80/2000
Dhamangaon	62.5/26.3/15.6/24.3/789	NC/NC/0.4/9/19	NC/NC/16/33.3/808	
Sinnar	64.5/28.4/15.2/24.6/921	NC/NC/1.1/24/48	NC/NC/16.3/48.6/969	
Guha	56.6/23.5/12.4/20.5/840	NC/NC/0.6/13/26	NC/NC/13/33.5/866	
Telegaon	61.7/5.1/13/9/23/1/880	NC/NC/0.5/11/22	NC/NC/14.4/34.1/902	

vi. Project Proponent has submitted an undertaking that the Road transportation of coal from Kherwadi/Kasbe Sukene railways siding (Route No.4) is being dropped. Further, the undertaking mentioned that total of 9600 tonnes per day through 480 trucks/day (960 trips) will be transported by the three routes.

vii. Project Proponent has also mentioned in their undertaking that the plant was commssioned in May, 2017 and post commissioning, no coal transportation by road is done till date.

(25.11.5) Committee noted that the project proponent had already provided an undertaking to drop the Route No.4 and the quantity proposed earlier through that route 6400 TPD is also being dropped. Further, the air quality monitoring has been carried out at some of the representative locations along the routes. Committee also noted that the air quality impact assessment/prediction of ground level concentrations have been manually calculated by infinite line source equation. The justificaiton provided for not using CALINE software, a line soucre model which is widely used for transportation impacts is that CALINE model is ideal for predicting CO but not for other parameters. Committee noted that CALINE model is proven for prediction of air quality on from linear sources. Further, the prediction of ground level concentrations has not been done for Particulate

Matter which is the main pollutant in unpaved roads and generated due to pulverisation of road dust by the movement of vehicles. Further, the stability classessselected for prediction of air quality impacts are B (Moderatley unstable), C (Slightly unstable) and D (Neutral). However, the committee noted that the air quality impacts are to be predicted for the worst case scenario considering the Stability Class of F which is highly unstable as the average annual wind speed in the study area is 2.9 m/sec and moderate.

(25.11.6) **Committee after detailed deliberations, recommended for grant of temporary permission for transportation of 9,600 tonnes per day coal by road through 480 trucks/day (From Rahuri siding: 80; Ekhahare siding: 320; and Igatpuri siding: 80 with truck capacity of 20 tonnes) till March, 2020** subject to the following conditions:

i. Three water sprinklers along three routes shall be used continously for dust suppression during transportation.
ii. Avenue plantation along the road shall be carried out in consultation with Social Forestry Department. The details regarding number of trees planted along the road, species details, length of the road covered, expenditure and period of plantation shall be submitted to the Ministry and concerned Regional Office in the six monthly compliance report.
iii. The daily quantity of coal transported through each route along with number of trucks used for transportation, number of trips made by each truck, and total number of trips shall be submitted to the Ministry and its cocerned Regional Office in the six monthly compliance report.
iv. Speed limit in the internal roads will be restricted to 25 km/hr. Log book shall be kept for maintaining the record of total trips carried out during the day, vaidity of PCU certificate, whether the vehicles are compliant with BS-III/IV/VI emission standards.
v. The ambient air quality at the 5 stations for which baseline was collected shall be carried out once in quarter. The co-ordinates of the station along with the analysis report shall be submitted to the Ministry as well as Regional Office in the Six Monthly Compliance report.

25.12 ANY OTHER ITEM WITH THE PERMISSION OF THE CHAIR

As there being no agenda item left, the meeting ended with a vote of thanks to the Chair.

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ANNEXURE- A1

Standard Terms of Reference (TOR):

i) The proposed project shall be given a unique name in consonance with the name submitted to other Government Departments etc. for its better identification and reference.

ii) Vision document specifying prospective long term plan of the project shall be formulated and submitted.

iii) Latest compliance report duly certified by the Regional Office of MoEF& CC for the conditions stipulated in the environmental and CRZ clearances of the previous phase(s) for the expansion projects shall be submitted.

iv) The project proponent needs to identify minimum three potential sites based on environmental, ecological and economic considerations, and choose one appropriate site having minimum impacts on ecology and environment. A detailed comparison of the sites in this regard shall be submitted.

v) Executive summary of the project indicating relevant details along with recent photographs of the proposed site (s) shall be provided. Response to the issues raised during Public Hearing and the written representations (if any), along with a time bound Action Plan and budgetary allocations to address the same, shall be provided in a tabular form, against each action proposed.

vi) Harnessing solar power within the premises of the plant particularly at available roof tops and other available areas shall be formulated and for expansion projects, status of implementation shall also be submitted.

vii) The geographical coordinates (WGS 84) of the proposed site (plant boundary), including location of ash pond along with topo sheet (1:50,000 scale) and IRS satellite map of the area, shall be submitted. Elevation of plant site and ash pond with respect to HFL of water body/nallah/River and high tide level from the sea shall be specified, if the site is located in proximity to them.

viii) Layout plan indicating break-up of plant area, ash pond, green belt, infrastructure, roads etc. shall be provided.

ix) Land requirement for the project shall be optimized and in any case not more than what has been specified by CEA from time to time. Item wise break up of land requirement shall be provided.

x) Present land use (including land class/kism) as per the revenue records and State Govt. records of the proposed site shall be furnished. Information on land to be acquired including coal transportation system, laying of pipeline, ROW, transmission lines etc. shall be specifically submitted. Status of land acquisition and litigation, if any, should be provided.

xi) If the project involves forest land, details of application, including date of application, area applied for, and application registration number, for diversion under FCA and its status should be provided along with copies of relevant documents.

xii) The land acquisition and R&R scheme with a time bound Action Plan should be formulated and addressed in the EIA report.

xiii) Satellite imagery and authenticated topo sheet indicating drainage, cropping pattern, water bodies (wetland, river system, stream, nallahs, ponds etc.), location of nearest habitations (villages), creeks, mangroves, rivers, reservoirs etc. in the study area shall be provided.

xiv) Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes / wildlife corridor, if any, within 10 km of the project site

shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden of the State or an officer authorized by him.

xv) Topography of the study area supported by toposheet on 1:50,000 scale of Survey of India, along with a large scale map preferably of 1:25,000 scale and the specific information whether the site requires any filling shall be provided. In that case, details of filling, quantity of required fill material; its source, transportation etc. shall be submitted.

xvi) A detailed study on land use pattern in the study area shall be carried out including identification of common property resources (such as grazing and community land, water resources etc.) available and Action Plan for its protection and management shall be formulated. If acquisition of grazing land is involved, it shall be ensured that an equal area of grazing land be acquired and developed and detailed plan submitted.

xvii) A mineralogical map of the proposed site (including soil type) and information (if available) that the site is not located on potentially mineable mineral deposit shall be submitted.

xviii) Details of fly ash utilization plan as per the latest fly ash Utilization Notification of GOI along with firm agreements / MoU with contracting parties including other usages etc. shall be submitted. The plan shall also include disposal method / mechanism of bottom ash.

xix) The water requirement shall be optimized (by adopting measures such as dry fly ash and dry bottom ash disposal system, air cooled condenser, concept of zero discharge) and in any case not more than that stipulated by CEA from time to time, to be submitted along with details of source of water and water balance diagram. Details of water balance calculated shall take into account reuse and re-circulation of effluents.

xx) Water body/Nallah (if any) passing across the site should not be disturbed as far as possible. In case any Nallah / drain is proposed to be diverted, it shall be ensured that the diversion does not disturb the natural drainage pattern of the area. Details of proposed diversion shall be furnished duly approved by the concerned Department of the State.

xxi) It shall also be ensured that a minimum of 500 m distance of plant boundary is kept from the HFL of river system / streams etc. and the boundary of site should also be located 500 m away from railway track and National Highways.

xxii) Hydro-geological study of the area shall be carried out through an institute/ organization of repute to assess the impact on ground and surface water regimes. Specific mitigation measures shall be spelt out and time bound Action Plan for its implementation shall be submitted.

xxiii) Detailed Studies on the impacts of the ecology including fisheries of the River/Estuary/Sea due to the proposed withdrawal of water / discharge of treated wastewater into the River/Sea etc shall be carried out and submitted along with the EIA Report. In case of requirement of marine impact assessment study, the location of intake and outfall shall be clearly specified along with depth of water drawl and discharge into open sea.

xxiv) Source of water and its sustainability even in lean season shall be provided along with details of ecological impacts arising out of withdrawal of water and taking into account inter-state shares (if any). Information on other competing sources downstream of the proposed project and commitment regarding availability of requisite quantity of water from the Competent Authority shall be provided along with letter / document stating firm allocation of water.

xxv) Detailed plan for rainwater harvesting and its proposed utilization in the plant shall be furnished.

xxvi) Feasibility of near zero discharge concept shall be critically examined and its details submitted.

xxvii) Optimization of Cycles of Concentration (COC) along with other water conservation measures in the project shall be specified.

xxviii) Plan for recirculation of ash pond water and its implementation shall be submitted.

xxix) Detailed plan for conducting monitoring of water quality regularly with proper maintenance of records shall be formulated. Detail of methodology and identification of monitoring points (between the plant and drainage in the direction of flow of surface / ground water) shall be submitted. It shall be ensured that parameter to be monitored also include heavy metals. A provision for long-term monitoring of ground water table using Piezometer shall be incorporated in EIA, particularly from the study area.

xxx) Socio-economic study of the study area comprising of 10 km from the plant site shall be carried out through a reputed institute / agency which shall consist of detail assessment of the impact on livelihood of the local communities.

xxxi) Action Plan for identification of local employable youth for training in skills, relevant to the project, for eventual employment in the project itself shall be formulated and numbers specified during construction & operation phases of the Project.

xxxii) If the area has tribal population it shall be ensured that the rights of tribals are well protected. The project proponent shall accordingly identify tribal issues under various provisions of the law of the land.

xxxiii) A detailed CSR plan along with activities wise break up of financial commitment shall be prepared. CSR component shall be identified considering need based assessment study and Public Hearing issues. Sustainable income generating measures which can help in upliftment of affected section of society, which is consistent with the traditional skills of the people shall be identified. Separate budget for community development activities and income generating programmes shall be specified.

xxxiv) While formulating CSR schemes it shall be ensured that an in-built monitoring mechanism for the schemes identified are in place and mechanism for conducting annual social audit from the nearest government institute of repute in the region shall be prepared. The project proponent shall also provide Action Plan for the status of implementation of the scheme from time to time and dovetail the same with any Govt. scheme(s). CSR details done in the past should be clearly spelt out in case of expansion projects.

xxxv) R&R plan, as applicable, shall be formulated wherein mechanism for protecting the rights and livelihood of the people in the region who are likely to be impacted, is taken into consideration. R&R plan shall be formulated after a detailed census of population based on socio economic surveys who were dependant on land falling in the project, as well as, population who were dependant on land not owned by them.

xxxvi) Assessment of occupational health and endemic diseases of environmental origin in the study area shall be carried out and Action Plan to mitigate the same shall be prepared.

xxxvii) Occupational health and safety measures for the workers including identification of work related health hazards shall be formulated. The company shall engage full time qualified doctors who are trained in occupational health. Health monitoring of the workers shall be conducted at periodic intervals and health records maintained. Awareness programme for workers due to likely adverse impact on their health due to working in non-conducive environment shall be carried out and precautionary measures like use of personal equipments etc. shall be provided. Review of impact of

various health measures undertaken at intervals of two to three years shall be conducted with an excellent follow up plan of action wherever required.

xxxviii) One complete season site specific meteorological and AAQ data (except monsoon season) as per latest MoEF Notification shall be collected and the dates of monitoring shall be recorded. The parameters to be covered for AAQ shall include PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO and Hg. The location of the monitoring stations should be so decided so as to take into consideration of the upwind direction, pre-dominant downwind direction, other dominant directions, habitation and sensitive receptors. There should be at least one monitoring station each in the upwind and in the pre-dominant downwind direction at a location where maximum ground level concentration is likely to occur.

xxxix) In case of expansion project, air quality monitoring data of 104 observations a year for relevant parameters at air quality monitoring stations as identified/stipulated shall be submitted to assess for compliance of AAQ Standards (annual average as well as 24 hrs).

xl) A list of industries existing and proposed in the study area shall be furnished.

xli) Cumulative impacts of all sources of emissions including handling and transportation of existing and proposed projects on the environment of the area shall be assessed in detail. Details of the Model used and the input data used for modeling shall also be provided. The air quality contours should be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The windrose and isopleths should also be shown on the location map. The cumulative study should also include impacts on water, soil and socio-economics.

xlii) Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports.

xliii) Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished.

xliv) Quantity of fuel required, its source and characteristics and documentary evidence to substantiate confirmed fuel linkage shall be furnished. The Ministry's Notification dated 02.01.2014 regarding ash content in coal shall be complied. For the expansion projects, the compliance of the existing units to the said Notification shall also be submitted

xlv) Details of transportation of fuel from the source (including port handling) to the proposed plant and its impact on ambient AAQ shall be suitably assessed and submitted. If transportation entails a long distance it shall be ensured that rail transportation to the site shall be first assessed. Wagon loading at source shall preferably be through silo/conveyor belt.

xlvi) For proposals based on imported coal, inland transportation and port handling and rail movement shall be examined and details furnished. The approval of the Port and Rail Authorities shall be submitted.

xlvii) Details regarding infrastructure facilities such as sanitation, fuel, restrooms, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase should be adequately catered for and details furnished.

xlviii) EMP to mitigate the adverse impacts due to the project along with item - wise cost of its implementation in a time bound manner shall be specified.

xlix) A Disaster Management Plan (DMP) along with risk assessment study including fire and explosion issues due to storage and use of fuel should be carried out. It should take into account the maximum inventory of storage at site at any point of time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against

fire hazards should also be invariably provided. Mock drills shall be suitably carried out from time to time to check the efficiency of the plans drawn.

l) The DMP so formulated shall include measures against likely Fires/Tsunami/Cyclones/Storm Surges/Earthquakes etc, as applicable. It shall be ensured that DMP consists of both On-site and Off-site plans, complete with details of containing likely disaster and shall specifically mention personnel identified for the task. Smaller version of the plan for different possible disasters shall be prepared both in English and local languages and circulated widely.

li) Detailed scheme for raising green belt of native species of appropriate width (50 to 100 m) and consisting of at least 3 tiers around plant boundary with tree density of 2000 to 2500 trees per ha with a good survival rate of around 80% shall be submitted. Photographic evidence must be created and submitted periodically including NRSA reports in case of expansion projects. A shrub layer beneath tree layer would serve as an effective sieve for dust and sink for CO_2 and other gaseous pollutants and hence a stratified green belt should be developed.

lii) Over and above the green belt, as carbon sink, plan for additional plantation shall be drawn by identifying blocks of degraded forests, in close consultation with the District Forests Department. In pursuance to this the project proponent shall formulate time bound Action Plans along with financial allocation and shall submit status of implementation to the Ministry every six months.

liii) <u>Corporate Environment Policy</u>

a. Does the company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
b. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
c. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions. Details of this system may be given.
d. Does the company has compliance management system in place wherein compliance status along with compliances / violations of environmental norms are reported to the CMD and the Board of Directors of the company and / or shareholders or stakeholders at large? This reporting mechanism should be detailed in the EIA report.

All the above details should be adequately brought out in the EIA report and in the presentation to the Committee.

liv) Details of litigation pending or otherwise with respect to project in any Court, Tribunal etc. shall invariably be furnished.

ANNEXURE- A2

Standard EC Conditions for Thermal Power Sector:

A. Statutory compliance:

1. Emission Standards for Thermal Power Plants as per Ministry's Notification S.O. 3305(E) dated 7.12.2015, G.S.R.593(E) dated 28.6.2018 and as amended from time to time shall be complied.
2. Part C of Schedule II of Municipal Solid Wastes Rules, 2016 dated 08.04.2016 as amended from time to time shall be complied for power plants based on Municipal Solid Waste.
3. MoEF&CC Notification G.S.R 02(E) dated 2.1.2014 as amended time to time regarding use of raw or blended or beneficiated/washed coal with ash content not exceeding 34% shall be complied with, as applicable.
4. MoEF&CC Notifications on Fly Ash Utilization S.O. 763(E) dated 14.09.1999, S.O. 979(E) dated 27.08.2003, S.O. 2804(E) dated 3.11.2009, S.O. 254(E) dated 25.01.2016 as amended from time to time shall be complied.
5. Thermal Power Plants other than the power plants located on coast and using sea water for cooling purposes, shall achieve specific water consumption of 2.5 m^3/MWh and Zero effluent discharge.
6. The recommendation from Standing Committee of NBWL under the Wildlife (Protection) Act, 1972 should be obtained, if applicable.
7. No Objection Certificate from Ministry of Civil Aviation be obtained for installation of requisite chimney height and its siting criteria for height clearance.
8. Groundwater shall not be drawn during construction of the project. In case, groundwater is drawn during construction, necessary permission be obtained from CGWA.

B. Ash content/ mode of transportation of coal:

1. EC is given on the basis of assumption of ____% of ash content and ____km distance of transportation in rail/road/conveyor/any other mode. Any increase of %ash content by more than 1 percent, and/or any change in transportation mode or increase in the transport distance (except for rail) require application for modifications of EC conditions after conducting the 'incremental impact assessment' and proposal for mitigation measures.

C. Air quality monitoring and Management:

1. Flue Gas Desulphurisation System shall be installed based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO_2 emissions standard of 100 mg/Nm^3.
2. Selective Catalytic Reduction (SCR) system or the Selective Non-Catalytic Reduction (SNCR) system or Low NOX Burners with Over Fire Air (OFA) system shall be installed to achieve NO_X emission standard of 100 mg/Nm^3.
3. High efficiency Electrostatic Precipitators (ESPs) shall be installed in each unit to ensure that particulate matter (PM) emission to meet the stipulated standards of 30 mg/Nm^3.
4. Stacks of prescribed height ____m shall be provided with continuous online monitoring instruments for SO_X, NOx and Particulate Matter as per extant rules.
5. Exit velocity of flue gases shall not be less than 20-25 m/s. Mercury emissions from stack shall also be monitored periodically.
6. Continuous Ambient Air Quality monitoring system shall be set up to monitor common/criteria pollutants from the flue gases such as PM_{10}, $PM_{2.5}$, SO_2, NO_Xwithin the plant area at least at one location. The monitoring of other locations (at least three locations

outside the plant area covering upwind and downwind directions at an angle of 120° each) shall be carried out manually.

7. Adequate dust extraction/suppression system shall be installed in coal handling, ash handling areas and material transfer points to control fugitive emissions.
8. Appropriate Air Pollution Control measures (DEs/DSs) be provided at all the dust generating sources including sufficient water sprinkling arrangements at various locations viz., roads, excavation sites, crusher plants, transfer points, loading and unloading areas, etc.

D. Noise pollution and its control measures:

1. The Ambient Noise levels shall meet the standards prescribed as per the Noise Pollution (Regulation and Control) Rules, 2000.
2. Persons exposed to high noise generating equipment shall use Personal Protective Equipment (PPE) like earplugs/ear muffs, etc.
3. Periodical medical examination on hearing loss shall be carried out for all the workers and maintain audiometric record and for treatment of any hearing loss including rotating to non-noisy/less noisy areas.

E. Human Health Environment:

1. Bi-annual Health check-up of all the workers is to be conducted. The study shall take into account of chronic exposure to noise which may lead to adverse effects like increase in heart rate and blood pressure, hypertension and peripheral vasoconstriction and thus increased peripheral vascular resistance. Similarly, the study shall also assess the health impacts due to air polluting agents.
2. Baseline health status within study area shall be assessed and report be prepared. Mitigation measures should be taken to address the endemic diseases.
3. Impact of operation of power plant on agricultural crops, large water bodies (as applicable) once in two years by engaging an institute of repute. The study shall also include impact due to heavy metals associated with emission from power plant.
4. Sewage Treatment Plant shall be provided for domestic wastewater.

F. Water quality monitoring and Management:

1. Induced/Natural draft closed cycle wet cooling system including cooling towers shall be set up with minimum Cycles of Concentration (COC) of 5.0 or above for power plants using fresh water to achieve specific water consumption of 2.5 m^3/MWhr. (Or) Induced/Natural draft open cycle cooling system shall be set up with minimum Cycles of Concentration (COC) of 1.5 or above for power plants using sea water.
2. In case of the water withdrawal from river, a minimum flow 15% of the average flow of 120 consecutive leanest days should be maintained for environmental flow whichever is higher, to be released during the lean season after water withdrawal for proposed power plant.
3. Records pertaining to measurements of daily water withdrawal and river flows (obtained from Irrigation Department/Water Resources Department) immediately upstream and downstream of withdrawal site shall be maintained.
4. Rainwater harvesting in and around the plant area be taken up to reduce drawl of fresh water. If possible, recharge of groundwater to be undertaken to improve the ground water table in the area.

5. Regular (at least once in six months) monitoring of groundwater quality in and around the ash pond area including presence of heavy metals (Hg, Cr, As, Pb, etc.) shall be carried out as per CPCB guidelines. Surface water quality monitoring shall be undertaken for major surface water bodies as per the EMP. The data so obtained should be compared with the baseline data so as to ensure that the groundwater and surface water quality is not adversely impacted due to the project & its activities.
6. The treated effluents emanating from the different processes such as DM plant, boiler blow down, ash pond/dyke, sewage, etc. conforming to the prescribed standards shall be re-circulated and reused. Sludge/ rejects will be disposed in accordance with the Hazardous Waste Management Rules.
7. Hot water dispensed from the condenser should be adequately cooled to ensure the temperature of the released surface water is not more than 5 degrees Celsius above the temperature of the intake water.
8. Based on the commitment made by the Project Proponent, Sewage Treatment Plants within the radius of 50 km from proposed project, the treated sewage of ……..KLD from STP ….. (name) shall be used as an alternative to the fresh water source to minimize the fresh water drawl from surface water bodies.
9. Wastewater generation of …….KLD from various sources (viz. cooling tower blowdown, boiler blow down, wastewater from ash handling, etc) shall be treated to meet the standards of pH: 6.5-8.5; Total Suspended Solids: 100 mg/l; Oil & Grease: 20 mg/l; Copper: 1 mg/l; Iron:1 mg/l; Free Chlorine: 0.5; Zinc: 1.0 mg/l; Total Chromium: 0.2 mg/l; Phosphate: 5.0 mg/l;
10. Sewage generation of …….KLD will be treated by setting up Sewage Treatment plant to maintain the treated sewage characteristics of pH: 6.5-9.0; Bio-Chemical Oxygen Demand (BOD): 30 mg/l; Total Suspended Solids: 100 mg/l; Fecal Coliforms (Most Probable Number):<1000 per 100 ml.

G. Risk Mitigation and Disaster Management:

1. Adequate safety measures and environmental safeguards shall be provided in the plant area to control spontaneous fires in coal yard, especially during dry and humid season.
2. Storage facilities for auxiliary liquid fuel such as LDO and HFO/LSHS shall be made as per the extant rules in the plant area in accordance with the directives of Petroleum & Explosives Safety Organisation (PESO). Sulphur Content in the liquid fuel should not exceed 0.5%.
3. Ergonomic working conditions with First Aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.
4. Safety management plan based on Risk Assessment shall be prepared to limit the risk exposure to the workers within the plant boundary.
5. Regular mock drills for on-site emergency management plan and Integrated Emergency Response System shall be developed for all kind of possible disaster situations.

H. Green belt and Biodiversity conservation:

1. Green belt shall be developed in an area of 33% of the total project with indigenous native tree species in accordance with CPCB guidelines. The green belt shall inter-alia cover an entire periphery of the plant.
2. *In-situ/ex-situ* Conservation Plan for the conservation of flora and fauna should be prepared and implemented.
3. Suitable screens shall be placed across the intake channel to prevent entrainment of life forms including eggs, larvae, juvenile fish, etc., during extraction of seawater.

I. Waste management:

1. Solid waste management should be planned in accordance with extant Solid Waste Management Rules, 2016.
2. Toxicity Characteristic Leachate Procedure (TCLP) test shall be conducted for any substance, potential of leaching heavy metals into the surrounding areas as well as into the groundwater.
3. Ash pond shall be lined with impervious liner as per the soil conditions. Adequate dam/dyke safety measures shall also be implemented to protect the ash dyke from getting breached.
4. Fly ash shall be collected in dry form and ash generated shall be used in phased manner as per provisions of the Notification on Fly Ash Utilization issued by the Ministry and amendment thereto. By the end of 4th year, 100% fly ash utilization should be ensured. Unutilized ash shall be disposed off in the ash pond in the form of High Concentration Slurry. Mercury and other heavy metals (As, Hg, Cr, Pb, etc.) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. Flyash utilization details shall be submitted to concerned Regional Office along with the six-monthly compliance reports and utilization data shall be published on company's website.
5. Unutilized ash shall be disposed off in the ash pond in the form of High Concentration Slurry/Medium Concentration Slurry/Lean Concentration Slurry method. Ash water recycling system shall be set up to recover supernatant water.
6. In case of waste-to-energy plant, major problems related with environment are fire smog in MSW dump site, foul smell and impacts to the surrounding populations. Therefore, the following measures are required to be taken up:

    i) Water hydrant at all the dumpsites of MSW area to be provided so that the fire and smog could be controlled.
    ii) Sprayer like microbial consortia may be provided for arresting the foul smell emanating from MSW area.

J. Monitoring of compliance:

1. Environmental Audit of the project be taken up by the third party for preparation of Environmental Statement as per Form-V & Conditions stipulated in the EC and report be submitted to the Ministry.
2. Resettlement & Rehabilitation Plan as per the extant rules of Govt. of India and respective State Govt. shall be followed, if applicable.
3. Energy Conservation Plan to be implemented as envisaged in the EIA / EMP report. Renewable Energy Purchase Obligation as set by MoP/State Government shall be met either by establishing renewable energy power plant (such as solar, wind, etc.) or by purchasing Renewable Energy Certificates.
4. Monitoring of Carbon Emissions from the existing power plant aswell as for the proposed power project shall be carried out annually from a reputed institute and report be submitted to the Ministry's Regional Office.
5. Energy and Water Audit shall be conducted at least once in two years and recommendations arising out of the Report should be followed. A report in this regard shall be submitted to Ministry's Regional Office.
6. Environment Cell (EC) shall be constituted by taking members from different divisions, headed by a qualified person on the subject, who shall be reporting directly to the Head of the Project.
7. The project proponent shall (Post-EC Monitoring):

a. send a copy of environmental clearance letter to the heads of Local Bodies, Panchayat, Municipal bodies and relevant offices of the Government;

b. upload the clearance letter on the web site of the company as a part of information to the general public.

c. inform the public through advertisement within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment, Forest and Climate Change (MoEF&CC) at http://parviesh.nic.in.

d. upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same periodically;

e. monitor the criteria pollutants level namely; PM (PM_{10}& $PM_{2.5}$incase of ambient AAQ), SO_2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company;

f. submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB;

g. submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company;

h. inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project and the date of commencement of the land development work.

K. Corporate Environmental Responsibility (CER) activities:

1. CER activities will be carried out as per OM No. 22-65/2017-IA.II dated 01.05.2018 or as proposed by the PP in reference to Public Hearing or as earmarked in the EIA/EMP report along with the detailed scheduled of implementation with appropriate budgeting.

L. Marine facilities:

1. As the seawater intake systems are required for the plant fall in CRZ area, recommendations from State Coastal Zone Management Authority (SCZMA) as per CRZ Notification shall be implemented.
2. Marine intake and outfall pipelines shall be located as per the recommendations State Coastal Zone Management Authority (SCZMA).

M. Sea Water Intake:

1. Seawater intake system shall be so designed and constructed to ensure sufficient sweater in terms of quantity and quality.
2. The withdrawal of seawater shall be preferably through a pipeline with a riser equipped with a velocity cap arrangement and bar screen to arrest the impingement of large marine organisms.

3. In all tide conditions (particularly at spring low tides) the riser head must be flooded with the required submergence of seawater above its top.

N. Effluent Release:

1. At the effluent release point, maximum temperature of the discharge water shall not be more than 5^{o}C and salinity shall not exceed 50 ppt with respect to that of the ambient seawater.
2. Use of antifouling agents like chlorine / hypochlorite, shall be carefully controlled. The chlorine concentration shall not exceed 0.2 ppm at the effluent release point.
3. The effluent when released at the selected location shall attain sufficient dilution so that near ambient water quality (particularly temperature and salinity) is attained within 500 m from the release location, at low tide.
4. The location of the diffuser shall be marked with a solar lighted buoy to avoid accidents.
5. The site selected based on mathematical modeling shall ensure absence of recirculation of the effluent plume in the seawater intake area under all tidal conditions.
6. The effluent shall be released through a properly designed multiport diffuser above the seabed to facilitate its efficient initial mixing with the receiving seawater.
7. Efficacy of the diffuser shall be ascertained at least once in 2 years through scientific studies and corrective actions such as cleaning of the diffuser from marine growth, removal of silt deposits, etc. shall be taken up, if warranted.
8. Continuous online monitoring system for Temperature and Salinity shall be installed to monitor the quality of effluent.

O. Common to intake and effluent:

1. The pipeline shall be buried below the seabed at a depth to ensure its stability under rough sea conditions particularly during cyclone / tsunami. The depth of burial will depend on the seafloor strata but normally the top of the pipeline shall be at least 1 m below the bed level. In the surf and intertidal zones, the pipeline shall be buried below the maximum scour level.
2. In case of open channel, the channel shall be constructed as per the recommendations of State Coastal Zone Management Authority (SCZMA).
3. If the substratum is rocky the pipeline may be anchored to the rock provided the geology of the area satisfactorily supports the structure which shall be ascertained through geo-technical investigations.
4. Exposed pipeline section and riser shall be protected by armour stone from waves, boats anchoring, fishing activities etc.
5. The location of the riser & diffuser shall be marked with a solar lighted buoy to avoid accidents from boats.
6. Marine / Sea water quality shall be monitored at effluent release location at the center. Parameters to be monitored shall be as follows:
    a. *Physico-chemical:* Temperature, Salinity, pH and Dissolved Oxygen.
    b. *Biological:* Primary Productivity, Phytoplankton (Chlorophyll a, Phaeophytin, Population, Species), Zooplankton (Biomass, Population, Species) and Benthos (Biomass, Population, Species).
7. In case of Coastal Power Plants, the Mangrove plantation shall be taken up in an area of ……ha, along the coast/ on the banks of …… Estuary.

LIST OF MEMBERS (Attendance Sheet)

25th EXPERT APPRAISAL COMMITTEE MEETING (Thermal)

DATE & TIME : 22nd February, 2019, 10:00 AM
VENUE : Narmada Meeting Hall, Jal Wing, Indira Paryavaran Bhawan, New Delhi

Sr.No.	Name of Member	Signature
1.	Dr. Navin Chandra Chairman	
2.	Shri Suramya D. Vora, IFS (Retd.) Member	
3.	Dr. Narmada Prasad Shukla Member	
4.	Sh. N. Mohan Karnat, IFS Member	
5.	Dr. Sharachchandra Lele Member	
6.	Sh. N.S. Mondal, CEA Member	
7.	Dr. R.K. Giri, IMD Member	
8.	Dr. S.K. Paliwal, CPCB Member	
9.	Prof. S.K. Gupta (ISM/ IIT Dhanbad) Member	
10.	Dr. Jai Krishna Pandey Member	
11.	Dr. Manjari Srivastava Member	
12.	Dr. Gururaj P Kundargi Member	
13.	Dr. S. Kerketta Member Secretary, MoEFCC	
14.	P. Vadivel Murugan CIPR, Gandhinagar	

Approval of Minutes of the 25th Meeting of the Re-constituted Expert Appraisal Committee (EAC) of Thermal Power Projects by the Chairman.

Subject: **Re: Draft MoM of 25th meetings of Thermal Power Plants- reg.**
To: Dr S Kerketta <s.kerketta66@gov.in>,
"N. Subrahmanyam" <n.subrahmanyam@gov.in>,
"N. Subrahmanyam" <n.subrahmanyam@nic.in>,
"Dr S. Kerketta" <s.kerketta66@nic.in>

Date: 03/10/19 12:40 PM
From: navin chandra <navinchandrarrl@yahoo.com>
Reply-To: navin chandra <navinchandrarrl@yahoo.com>

10/03/219

Dear Dr. Kerketta Ji,

I have gone through the final draft of the Minutes of the 25th meeting of EAC held in February, 2019. The Minutes are in order and ready for up-loading at the web-site of the MoEF&CC. Please do the needful.
Regard,

(NAVIN CHANDRA)

Dr. Navin Chandra,
Director General
M P Council of Science and Technology (MPCST),
Vigyan Bhawan, Nehru Nagar, Bhopal - 462003 (M.P.) India
Phone : 91-755- 2671800 (Office)
e-mail : dg@mpcost.nic.in
navinchandrarrl@yahoo.com, navinchandraampri@gmail.com

From: Dr S Kerketta <s.kerketta66@gov.in>
To: Dr Navin chandra <navinchandrarrl@yahoo.com>; Dr Navin chandra <navinchandraampri@gmail.com>
Cc: S Kerketta <suna1466@rediffmail.com>
Sent: Friday, 8 March 2019 5:29 PM
Subject: Draft MoM of 25th meetings of Thermal Power Plants- reg.

Sir,

PFA. Included the comments of the Members in the Minutes and forwarded for kind approval please.

--
regards,

Dr. S. Kerketta
Director- IA (Thermal, River Valley & HEP)
MoEF&CC, New Delhi
Phone: 011-24695314 (O), 26113096 (R)

AGENDA OF 25th MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE ON THERMAL POWER PROJECTS
DATE : 22nd February, 2019

TIME : 10.30 A.M. ONWARDS
VENUE : NARMADA MEETING HALL, GROUND FLOOR, JAL WING, IPB, JORBAGH ROAD, NEW DELHI-110003.

ITEM	
Item No. 25.0	**CONFIRMATION OF MINUTES OF 24thEAC (THERMAL) MEETING**
Item No.	**CONSIDERATION OF PROJECTS**
25.1	Proposed 1x660 MW based Coal Supercritical Sagardighi Thermal Power (Phase-III Extension Unit–5), Village Manigram, Chandpara, Kanchanpara, Harirampur, atDistrict Murshidabad, West Bengal by **M/s The West Bengal Power Development Corporation Ltd- reg. ToR.** F.No. J-13012/01/2019-IA.I (T) &Proposal no. IA/WB/THE/94262/2019.
25.2	1x800 MW Sipat Advance Ultra Super Critical Technology Demonstration Project, (Stage-III) at Village Sipat, Tehsil Masturi, Bilaspur District. Madhya Pradesh by **M/s NTPC Limited - reg.ToR.** F.No. J-13012/02/2019-IA.I (T) &Online no. IA/CG/THE/89473/2018.
25.3	3x800 MW Super-Critical TPP at Village Annupurna Khamar, Taluk Kamakhyanagar, Dhenkenal Distt., Odisha by **M/s. Odisha Thermal Power Corporation Ltd.- reg. reconsideration in Environmental Clearance.** F.No. 13012/43/2012-IA.II(T)& Proposal no. IA/OR/THE/10522/2012.
25.4	55 MW ha Proposed Solid Waste to Energy Facility (Using Cold Plasma Technology to convert Green Power, Purified Water and Fuel at East Delhi Municipal Corporation Opp. Gagan Theatre, Wazirabad Road, Mandoli Extension,Village Mandoli, Delhi by **M/s A.G. Dauters Waste Processing Private Limited.- reg. reconsideration of ToR.** F.No. J-13012/13/2018-IA.I (T) &Proposal no. IA/DL/THE/84113/2018.
25.5	1x800 MW (Stage-V) Dr. Narla Tata Rao Thermal Power Station, Village and Taluk Ibrahimpatnam, Krishna District, Andhra Pradesh by **M/s APGENCO reg-amendment in EC.** F.No. J-13012/26/2012-IA-II(T)& Proposal No. IA/AP/THE/10488/2012.
25.6	2x660 MW Super critical coal based Thermal Power Project at Village Dadri Khurd, Tehsil Mirzapur Sadar, District Mirzapur, Uttar Pradesh by **M/s Welspun Energy UP Pvt. Ltd. - reg. amendment in Environmental Clearance.** F.No. J-13012/12/2011-IA.II(T)& Proposal no. IA/UP/THE/10331/2010.
25.7	1 x 350 MW Coal Based Power Project (Phase-II) in premise of Power Plant, Village Kamalanga, Tehsil Odapada N, District Dhenkanal, State Odisha by **GMR Kamalanga Energy limited-reg. extension of validity of EC.** F.No. J-13012/73/2011-IA II (T) & Proposal no. IA/OR/THE/75/2011.
25.8	Expansion by addition of 2x660 MW (Stage-II) Coal based Tanda Super Thermal Power Project, Village Bahadurpur, Tehsil Tanda, District Ambedkar Nagar, Uttar Pradesh by **M/s NTPC Ltd-reg. amendment in EC.** F.No. J- 13012/96/ 2007-IA II(T)& Proposal No. IA/UP/THE/12047/2011.
25.9	4x500 MW (Stage-II&III)Vindhyachal Super Thermal Power Project, Village& Tehsil Waidhan, at District Singrauli, Madhya Pradeshby **M/s NTPC Ltd.- reg. permission to dispose ash in abandoned mine voids.**

	F.No. J-13011/7/2001-IA.II(T)& Proposal No. IA/MP/THE/95055/2002.
25.10	Expansion of Municipal Solid Waste based Power Plant from (waste to Energy) 16 MW to 23 MW, at NDMC Compost Plant Site Near Okhla STP, Okhla, New Delhi by **M/s Timarpur Okhla Waste Management Company Pvt. Ltd.- reg. ToR.** File No: No. J-13012/09/2018-IA.I(T)&Online No.IA/DL/THE/75480/2006.
25.11	5x270 MW Coal based TPP at Sinnar Industrial Area, Dist. Nasik, Maharashtra by **M/s RattanIndia Nasik Power Ltd.- reg. reconsideration of amendment of EC for temporary permission coal transportation by road.** F.No. J-13012/11/2008-IA.II (T) & Online no. IA/MH/THE/10301/2010.
25.12	**ANY OTHER ITEM WITH THE PERMISSION OF THE CHAIR.**

Note: If project documents are not submitted to Committee Members on time along with brief summary/basic information as per pro-forma, it will be the Committee's discretion to consider the project. Project proponents shall bring shape file (.kml file) containing project boundaries & facilities and shall be saved on computer in the meeting hall. Project Proponents are required to bring hard copy (A0/A1 size) and soft copy (pdf) of a map showing project facilities superimposed on Survey of India Toposheet. Proponents shall submit the attendance form duly filled to the Member Secretary before starting the presentation.