F.No. J-13012/01/2019-IA.I(T)
Government of India
Ministry of Environment, Forest and Climate Change

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

Dated: 13.07.2020

To

The General Manager (Environment)
M/s NTPC Ltd.
Engineering Office Complex
Plot No.A-8A, Sectr-24, Post Box No.13,
NOIDA, Uttar Pradesh-201301.

Sub: **2x800 MW (Stage-III) Coal based Singrauli Super-crticial Thermal Power Project at Village Shaktinagar, Tehsil Dudhi, District Sonbhadra, Uttar Pradesh by M/s NTPC Limited. - reg. Environment Clearance.**

Sir,

This has reference to your online application No. **IA/UP/THE/117100/2016** dated 12.09.2019 regarding grant of Environmental Clearance for the the above mentioned project.

2. It has been noted that the Terms of Reference (ToR) for establishing 2x660 MW expansion project was issued by the Ministry on 6.3.2017. Subsequently, the said ToR was amended by the Ministry for increasing the configuration from 2x660 MW to 2x800 MW on 10.12.2018.

3. It has been noted that M/s NTPC Ltd. had established the coal based Singrauli Super Thermal Power Station (SSTPS) of total 2000 MW capacity under Stage-I (5x200 MW) and Stage-II (2x500 MW) at Shakti Nagar, Sonbhadra district of Uttar Pradesh which have been operating since 1982-87.

4. It has been noted that M/s NTPC Ltd. proposes to augment the capacity by addition of 1600 MW (2x800 MW) under Stage-III. It has been informed that Stage-I (5x200 MW) plant will be decommissioned after commissioning of the proposed project (Stage-III). The total capacity of the project after expansion will be 2,600 MW.

5. It has been informed that the the Proposed project is located on the northern bank of Rihand reservoir near Shakti Nagar, Tehsil Dudhi in District Sonbhadra of Uttar Pradesh close to the neighbouring inter-state boundary of Madhya Pradesh. The Singrauli STPS is approachable from Renukoot-Singrauli road through an approach road already constructed during Stage-I of this Station.

6. It has been informed that there are no Wildlife Sanctuaries/ National Parks or any ecological sensitive area of national importance, including Reserve Forests exist within 10 km radius from Singrauli STPS. However, Dudichua and Mehrauli protected forests are located at 4.1 km and 8.8 km, respectively. No archaeological monument of national importance & defense installations exist within 10 km radius of the Singrauli STPS.

7. The total available land in the plant area is 4,491 acres which is under industrial land use category. Out of this land, about 562 acres will be required for

Proposed Project (Stage-III: 2x800 MW). The break-up of facility-wise land details are as below:

Use of Land	Approx. Land Requirement (acres)
Main Plant + Switch Yard Area	106
Air Cooled Condenser	38
DM and PT Plant Area	11
Coal Handling Plant	42
Greenbelt/Plantation	65
Others	300
Total	**562 acres**

8. It has been noted that there is no involvement of Rehabilitation and Resettlement (R&R) issue as the land required for proposed project is already in the possession of M/s NTPC Ltd.

9. The proposed project is based on super-critical technology. The design steam parameters are as below:

Sl. No.	Particulars	Details
1.	Main steam flow at superheater outlet	2660 TPH
2.	MS Pressure at superheater outlet	281kg/cm^2(abs)
3.	MS Temperature at SH outlet	603 ^{0}C
4.	Steam flow to Reheater	2090 TPH
5.	Steam temperature at reheater outlet	603 ^{0}C
6.	Feed water temperature at economizer inlet	305.8 ^{0}C

10. The coal requirement for the proposed expansion of Singrauli STPP Stage-III (2x800 MW) power plant shall be about 8.4 MTPA at 90% Plant Load Factor. Standing Linkage Committee (Long-Term) for power sector, Ministry of Coal has recommended the long term coal linkage for proposed project in its meetings held on 10.04.2018 and 21.12.2018.

11. The coal expected quality of the coal used for proposed project is estimated as follows:

Sl. No.	Particulars	Value
1.	Total Moisture	20 %
2.	Sulphur content (Max)	0.5 %
3.	Ash content (Avg.)	34%
4.	Gross Calorific Value	3300-3700 Kcal/Kg

12. The daily coal requirement shall be about 26,000 tonnes based on gross calorific value of 3500 Kcal/ kg, 100% plant load factor and 2247.97 Kcal/ Kwh unit heat rate. Transportation of coal from coal mines to Singrauli Stage-III project is proposed by MGR system and Indian Railways. Presently, coal to Singrauli STPS is being sourced from Jayant and Dudhichua coal mines of Northern Coalfields Ltd (NCL) by MGR system/ Indian Railways. Suitable augmentation of existing MGR system and unloading systems shall be required.

13. The requirement of limestone will be 20 TPH for FGD system. Limestone received by trucks shall be unloaded using truck tipplers and box feeders/ bulk material receiving unit/ truck unloading system/ surface feeder. Provision shall be kept for unloading of 2 trucks continuously. Double stream conveyors are considered for both limestone and gypsum handling system. The conveying capacity for limestone shall be 150 TPH and for gypsum handling shall be 150 TPH.

14. Singrauli STPS, Stage-I and II are operating with once through cooling system with water drawn from Rihand reservoir. A closed cycle cooling system using air cooled condenser as cooling system is proposed for Stage-III of the project.

15. Normal make up water requirement for the proposed expansion project would be about 38,880 m^3/day (16 cusecs or 1620 m^3/h) with ash water re-circulation system in operation. The water consumption is approximately 1 m3/MWhr which is due to proposed air cooled condenser system. The fresh water requirement for various stages of Singrauli Power Station is as below:

Stages	Fresh water consumption	Discharge
Stage-I	1,51,329 m^3/h	1,43,881 m^3/h
Stage-II	1,23,061 m^3/h	1,22,399 m^3/h
Stage-III	1620 m^3/h	Zero discharge

16. The Govt. of Uttar Pradesh vide letter dated 28.1.2004 permitted to draw 20 cusecs from Rihand Reservoir for Singrauli Power Station. Presently, fresh water is drawn from Rihand Reservoir for Stage-I and II plants. However, it is proposed to draw water required for proposed project from the discharge channel of Singrauli STPS Stage-II power plant. Hence, no additional fresh water drawl is required for proposed project.

17. The primary environmental data has been collected during 15th May, 2017 to 14th May, 2018. The ambient air quality collected in the study area is within the national ambient air quality standards. Ambient noise levels have also been recorded to be below the CPCB prescribed ambient noise levels. Ten surface water, fifteen ground water sources covering 10 km radial distance were examined for physico-chemical, heavy metals and bacteriological parameters in order to assess the effect of industrial and other activities on surface and ground water. The analysis of surface water indicate the pH values in the range of 6.6 to 8.31, TDS in the range of 79-612 mg/l, DO in the range of 4.8-6.2 mg/l.

18. The water quality results indicate that the Baliya nallah is moderately polluted since the concentrations of BOD and COD are exceeding the permissible standards. Further, Coliforms are also exceeding the standard of drinking water. Ballia Nala drains off the northern part of Bina (Extn.) and southern part of Dudhichua coal mines. Further, Senduri, Hadwaria and Khadia Nallahs are tributaries of Ballia nallah. As the Nallah carries the effluents from various coal mining areas and human settlements, the BOD & COD values may be higher.

19. Ground water analysis that the pH in in the range of 6.16 to 8.47, Total hardness is in the range of 66-679.8 mg/l, Chlorides in the range of 14.2- 348.2 mg/l, Sulphates in the range of 2.8-128.1 mg/l, TDS in the range of 132-1,240 mg/l. Soil in the study area is found to be slightly to moderately alkaline. Soil fertility levels are less in Nitrogen and less to sufficient in Phosphorous and Potassium.

20. The reservoir area (Gobind Ballabh Pant Sagar/Rihand Reservoir) contains total of 32% of the 10 km study area. There are two protected forest blocks within 10 km radius which are listed as below:

Sl .No	**Name of the Forest Block**	**Distance (km)**	**Direction**
1	Dudhichua PF	4.1	N
2	Mehrauli PF	8.8	NW

21. The following wild animals are reported in the buffer zone of project area as there are Dudhichua and Mehrauli protected forests are located at 4.1 km and 8.8 km, respectively from the project area. Further, no elephant is report in the study area of the project.

Type	Details
Fauna	3 Species: Mugger Crocodile (Schedule-I & Vulnerable), Phython (Schedule-I, near threatened) & Shikra (Schedule-IV & Least Concern). 11 Species: Jackals, Nilgai, Black napped Indian hare, Hanuman langur, Squirrels, Wild boars, common mongoose under Schedule-II, Schedule-III, schedule-IV, and Schedule-V of the Indian Wildlife (Protection) Act, 1972.
Avi-fauna	51 bird species of the Indian Wildlife (Protection) Act, 1972
Flora	Neem, Banyan, Peepal, Cluster Fig, Myrtaceae, Sal, Arjuna, Saaj, Karanj, Ber, Kadamb (All are local names).

22. The pollution load from existing plant (Stage-I:5x200 MW & II:2x500 MW) and proposed power project (Stage-III: 2x800 MW) has been estimated as below:

Parameter	**Stage-I & II**	**Proposed Stage-III with FGD**	**Total Pollution Load**
PM	29.15 Tons/day	18.54 Tons/day	47.69 Tons/day
SO_2	173.36 Tons/day	43.18 Tons/day	216.54 Tons/day
NO_X	100.63 Tons/day	57.14 Tons/day	157.77 Tons/day

23. The incremental concentrations have been predicted by using dispersion modeling software which considered the stacks from existing power plants (only Stage-II considered as Stage-I will be decommissioned after commencement of proposed project) and proposed project. The incremental concentrations were

superimposed on baseline concentrations to assess the resultant concentrations and the details are as below:

Pollutant, (µg/m³)	**Maximum Concentrations (µg/m³) considering Stage-II (with FGD) -& Stage-III Units (with New emission Norms)**		**Resultant**	**National Standard**
	Maximum baseline, (µg/m³) in study area	**Incremental (µg/m³)**	**(µg/m³)**	**(µg/m³)**
PM	73.6	1.58	75.18	100
SO_2	46.1	5.27	51.37	80
NO_2	51.3	5.27	56.57	80

24. Risk assessment for Maximum credible failure scenarios in the LDO storage tanks in Stage–II and Stage–III of NTPC Singrauli STPP have been estimated.

25. It is estimated that about 2.85 MTPA flyash will be generated annually considering the ash content of indigenous coal less than 34%. The ash shall be utilized in cement, concrete, brick making and agriculture field on sustainable basis. Full utilization of ash shall, be achieved once abandoned mine is given to NTPC and or filling of ash along with over burden on operating coal mines.

26. The ash generation from existing power plants is in the range of 29-46 Lakh Metric Tons per annum. Present utilization is low mainly because of huge availability of ash in the vicinity due to number of large capacity coal based plants. The flyash utilisation is in the range of 9-35% during last six years. The remaining ash is disposed in the ash ponds. The following ash ponds are used for disposal of unutilised ash.

Sl.No.	Name of Dyke and co-ordinates	Area (acres)	Total capacity (Lakh Metric Tonnes)	Quantity of ash filled till date (Lakh MT)	Available Volume (Lakh MT)	Dyke height	Remarks
1	S-1 dyke (24⁰ 6' 53" N, 82⁰ 42' 84" E)	400	234	155	79 (34%)	13.7 m	2nd raising in service
2	S-2 dyke (24⁰ 3' 22.68" N, 82⁰ 42' 34.2" E)	400	275	124	151 (55%)	8 m	Starter dyke (OFL 3 acres)
3	Khadia dyke (24⁰6'30.2"N, 82⁰44'59.8"E)	600	410	410	0 (0%)	22 m	Capacity exhausted
Total area		1400 acres					

27. The Gypsum generation is estimated as 35 Tons/Hour. Gypsum produced by the FGD system is envisaged to be removed by conveyors to a storage shed (7 days storage capacity). Gypsum stored in storage area will be further disposed in environmentally safe manner to end users (like Cement Industries) through railway/road.

28. It is proposed to install high efficiency electrostatic precipitator having an efficiency that limits the outlet emission to 30 mg/Nm^3 while the boiler is operating at its MCR, firing worst coal having maximum ash content.

29. Wet limestone based Flue Gas Desulphurisation (FGD) system shall be installed at the tail end of the steam generator downstream of the ESP to capture SO_2. The FGD shall have a scrubber as the main reaction vessel in which SO_2 gas shall be captured in limestone slurry to produce gypsum. The FGD shall be provided with lime stone preparation system which shall grind raw lime stone to desire fineness. The scrubber shall be provided with bypass system.

30. Zero Liquid Discharge (ZLD) system will be adopted and no effluent will be discharged from proposed project. Blow down from air cooled condenser of cooling towers will be the main sources of the wastewater. Besides this, DM plant waste, domestic waste from canteen and toilets will be the other wastes generated. The treated wastewater from sewage & effluent treatment plant will be used in greenbelt development. The complete power plant Stage-III shall be designed as a Zero Liquid Discharge (ZLD) Plant.

31. Wildlife Conservation plan has been prepared and submitted for vetting by Chief Wildlife Warden in the State Wildlife Department and implemented after approval of the project. The Financial outlay of Rs 25 Lakhs/annum has been allocated for implementation of Wildlife Conservation Plan.

32. The Regional Office of the Ministry has submitted the Certified EC Compliance Report vide letter dated 22.11.2019. Further, CPCB vide Order dated 11.12.2017 extended the time lines for installing FGD and other pollution control equipment to meet new emission norms for the existing units upto December, 2022. It has been informed that R&M of ESP in all units is in progress. It is in advanced stage of awarding FGD package for all the units. NO_X control measures in coal fired power plants is presently achieved by controlling its production by adopting best combustion practices (primarily through excess air and combustion temperature optimisation). Work for combustion modification awarded and under execution to lower down NOx emissions.

33. It has been informed that the CPCB vide Order dated 25.6.2019 gave an extension for installing of cooling towers for various units of existing plant up to 30.06.2022.Further, the consumptive use of water at Singrauli STPS is 6,713 m^3/hr (3.36 m^3/MWhr).

34. The public hearing for the proposed project was conducted on 9.7.2019 under the Chairmanship of the Collector & District Magistrate, Uttar Pradesh at Ambedkar Bhavan, Shakti Nagar, Sonbhadra district of Uttar Pradesh state. About 500 people attended from various villages were present for the said public hearing. It has been informed that draft EIA report and Executive Summary in English & Hindi was submitted to Madhya Pradesh Pollution Control Board, intimating about the Public Hearing is being held on 09.07.2019. Banners/public announcement was done in the villages of Madhya Pradesh to attend the Public hearing. As per the proceedings and attendance list, people from villages in Madhya Pradesh were also present during Public Hearing. The issues raised in the public hearing and various

representations have been addressed and necessary commitments have been given by the Company.

35. It has been noted that the proposed project has been located in the Singrauli Critically Polluted Area. As per the directions of Hon'ble NGT dated 19.8.2019 in the OA No.1038/2018, the Ministry vide Office Memorandum dated 31.10.2019 prescribed a mechanism to appraise the projects located in Critically Polluted Areas for grant of Environmental Clearance. It has been informed that plant specific action plan had already submitted to minimise the impact on environment. These include retrofitting ESP's, installation of Dry ash collection system, and improving ash utilisation by supplying to NHAI & PWD and backfilling in NCL mines.

36. The total area acquired by Singrauli STPP is 4,491 acres. An area of 1478 acres has been developed as Green Belt in Township, Pump House area, MGR, Ash Dyke etc. The total greenbelt area developed in the project area is Rs.1478.16 acres. For Phase-III project, 65 acres of green belt is proposed to be developed out of 562 acres which is nearly 12%. Till date Singrauli STPP has planted 16 Lakh sapling as greenbelt which covers an area of 1,192 acres.

37. It has been informed that the capital cost of the proposed Singrauli Stage-III (2x800 MW) is Rs. 11,363 Crores. An EMP cost of Rs. 2,459.58 Crores towards the environmental measures for electrostatic precipitator, chimneys, air cooled condensers, ash handling including AWRS, dust extraction and suppression system, DM plant waste treatment systems, sewerage collection treatment & disposal, systems, environment lab equipment, greenbelt/afforestation & landscaping, FGD & SCR, etc.

38. The total CER budget earmarked for Singrauli STPP Stage-III (2x800 MW) is Rs. 16.0 Crores (0.125% of Rs.11,363 Crores). This is in line with the Ministry's OM dated 01.05.2018. However, actual implementation of CER would be carried out under the guidance of District Magistrate, Sonbhadra & in consultation with Stakeholders.

39. The employment generation from the existing power plant (Stage-I & Stage-II) is 700 persons. The estimated employment generation from proposed project (Stage-III) is 2,000 persons during construction and 260 persons during operations.

40. The proposal was appraised by the EAC (Thermal) in its 33rd and 38th meetings held on 25.9.2019 and 21.2.2020, respectively. In acceptance of the recommendations of the Re-constituted EAC (Thermal Power) in its meeting held on 21.2.2020 and in view of the information, clarifications and documents submitted by PP, **the Ministry hereby accords the Environmental Clearance** to the above project under Schedule 1(d) of the EIA Notification dated September 14, 2006 and subsequent amendments therein subject to compliance of the following conditions:-

i. *As the Khadiya Ash Dyke dyke (600 acres) exhausted its capacity, the time bound reclamation plan (along with financial allocation) for developing the land into greenbelt with adequate biological and engineering measures shall be submitted within six months. The land shall not used for any other purpose other than greenbelt development. The said area shall be demarcated and progress of implementation shall be submitted as part of compliance report.*

ii. No additional ash pond is permitted for the proposed Unit. Existing ash ponds (S1: 400 acres & S2: 400 acres) are to be used only in case of emergency. High Concentrated Slurry Disposal system shall be followed. Ash water recycling system (AWRS) shall be set up to reuse the decanted water.

iii. As the existing ash utilisation is less than 35%, an undertaking in the form of an Affidavit shall be submitted that M/s NTPC shall pay the compensation/penalty as per the guidelines framed by CPCB as part of Joint Working Group constituted by NGT on monitoring of flyash utilisation.

iv. Ash utilisation of the proposed project shall be in compliance with the flyash utilisation notification. 100% utilisation shall be achieved within 4 years. Balance unutilised legacy ash shall be utilised in next 4 years. The ash generation, utilisation (including utilisation mode), disposal to ash ponds and % utilisation shall be submitted as part of compliance report.

v. As committed, existing units (Stage-I: 5x200 MW) shall be shut down after commencement of operations of the proposed project (2x800 MW). An undertaking to this effect shall be submitted.

vi. Stack height of 275 with exit flue velocity of 21-25 m/sec shall be set up as the project is located in the Critically polluted area.

vii. Wildlife Conservation Plan shall be prepared by reputed Instituted for protection of biodiversity (Habitat protection) in the study area and needs of the fauna in selection conservation activities proposed. Accordingly, budget is to be arrived for implementing conservation measures. Once the plan is prepared, vetting of Wildlife department is to done. The report shall be submitted to the Ministry within 6 months.

viii. Air cooled condenser system shall be established as cooling system for the project. Accordingly, water requirement shall not exceed 1620 m^3/hr (39,000 m^3/day, Specific water consumption: 1 m^3/MWh).

ix. Monthly water withdrawal, number of units generated, specific water consumption (m^3/MWh), shall be submitted. Further, details of water consumption (including ash slurry mixing), wastewater generation, treatment, reuse and discharge shall be submitted. In any case, discharge of effluents is not permitted. Zero effluent discharge shall be implemented.

x. The pollution control measures to be implemented to meet new emission norms and specific water consumption for existing units shall meet the various timelines given by CPCB vide Orders dated 11.12.2017 & 25.6.2019. The status of compliance shall be submitted to the Ministry & its Regional Office.

xi. ESP, FGD (Ammonia based/Limestone based), De-NO_X (SCR/SNCR) control measures shall be implemented to meet emission norms of PM: 30 mg/Nm^3, SO_2: 100 mg/Nm^3 and NOx: 100 mg/Nm^3, Hg: 0.03 mg/Nm^3. There shall not be any relaxation of emission norms in future considering the project location in Singrauli Critically Polluted area.

xii. The air quality of surrounding villages in the study area where baseline was collected shall be carried out at least once a month in addition to the continuous monitoring (CAAQMS) at project location. Where CAAQMS is installed, manual sampling is also to be done by laboratory once a quarter to cross check the results. The air quality collected during every month shall be compared with the baseline results collected during EIA study.

xiii. The greenbelt of 40% of the total project area shall be developed. At present, 65 acres (12%) out of 562 acres shall be augmented to 40% by acquiring or annexing additional area. A layout map showing greenbelt around the project area along with total project area & co-ordinates shall be submitted in a month.

xiv. The cost of CER is to be increased from proposed Rs.16 Crores to Rs.28.5 Crores (0.25% of project cost Rs.11,363 Crores).

xv. Transportation of coal is to be carried out by rail (MGR) only. Suitable augmentation of MGR system and unloading systems shall be implemented to accommodate additional coal required for the proposed project.

xvi. The coal requirement for the proposed expansion of Singrauli STPP Stage-III (2x800 MW) power plant shall be about 8.4 MTPA at 90% PLF. The Standing Linkage Committee (Long-Term), MoC, recommended the long term coal linkage for 6.9 MTPA to proposed Singrauli STPP Stage-III in its meeting held on 10.04.2018 and subsequently, the committee also recommended to the enhance quantity due to increase in capacity (2x660 MW to 2x800 MW) in its meeting held on 21.12.2018. Final copy of long term coal linkage issued by Ministry of Coal shall be submitted.

xvii. Third party Environmental Audit shall be conducted once a year by independent organisation to monitor and evaluation of the compliance of conditions prescribed in the EC and Consent. The audit report shall be submitted to the Ministry and its Regional Office.

xviii. The Standard EC conditions for Thermal Project to be complied with on uploaded in the website of the Ministry (http://moef.gov.in/wp-content/uploads/2018/03/E12Q0QNG_Standardisation-of-Conditons-of-EC-for-TPP-19112018.pdf).

41. Once the project construction is complete, the final layout of the Plant including the existing one to be submitted stating the scope/extent of work envisaged in the EIA along with estimated cost vis-à-vis the actual cost incurred.

42. The Ministry reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction. The Ministry may also impose additional environmental conditions or modify the existing ones, if necessary.

43. The environmental clearance accorded **shall be valid for a period of 7 years** from the date of issue of this letter to start operations by the power plant.

44. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

45. In case of any deviation or alteration in the project proposed including coal transportation system from those submitted to this Ministry for clearance, a fresh reference should be made to the Ministry to assess the adequacy of the condition(s) imposed and to add additional environmental protection measures required, if any.

46. The above stipulations would be enforced among others under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and rules there under, Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 and its amendments, the Public Liability Insurance Act, 1991 and its amendments.

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

This issues with the approval of the Competent Authority.

Yours faithfully,

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

Copy to:-

1. **The Secretary, Ministry of Power**, Shram Shakti Bhawan, Rafi Marg, New Delhi 110001.
2. **The Chairman, Central Electricity Authority**, Sewa Bhawan, R.K. Puram, New Delhi-110066.
3. **The Chairman, Central Pollution Control Board**, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
4. **The Deputy Director General of Forests (C), Ministry of Environment Forests and Climate Change, Regional Office**, Lucknow.
5. **The Principal Secretary, Environment Department, Govt. of Uttar Pradesh**, Lucknow.
6. **The Chairman, Uttar Pradesh Pollution Control Board**, Lucknow.
7. **The District Collector, Sobhadra District, Govt. of Uttar Pradesh**.
8. Guard file/Monitoring file.
9. Website of MoEF&CC.

Director, IA.I

Annexure-I

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 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 3.0 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 34 % of ash content and 50 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 275 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_X within the plant area at least at one location. The monitoring of other locations (at least three locations outside the plant area covering upwind and downwind directions at an angle of 120° each) shall be carried out manually.
7. Adequate dust extraction/suppression system shall be installed in coal handling, ash handling areas and material transfer points to control fugitive emissions.
8. Appropriate Air Pollution Control measures (DEs/DSs) be provided at all the dust generating sources including sufficient water sprinkling arrangements at various locations viz., roads, excavation sites, crusher plants, transfer points, loading and unloading areas, etc.

D. Noise pollution and its control measures:

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

E. Human Health Environment:

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

F. Water quality monitoring and Management:

1. 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.
2. Records pertaining to measurements of daily water withdrawal and river flows (obtained from Irrigation Department/Water Resources Department) immediately upstream and downstream of withdrawal site shall be maintained.
3. 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.
4. 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.
5. The treated effluents emanating from the different processes such as DM plant, boiler blow down, ash pond/dyke, sewage, etc. conforming to the prescribed standards shall be re-circulated and reused. Sludge/ rejects will be disposed in accordance with the Hazardous Waste Management Rules.
6. 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 'NIL' KLD from STP 'NIL' shall be used as an alternative to the fresh water source to minimize the fresh water drawl from surface water bodies. (not applicable as there is no STP).
7. Wastewater generation of 4080.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;
8. Sewage generation of 360.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 water from reservoir .

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.

J. Monitoring of compliance:

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

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

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

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

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

    e. monitor the criteria pollutants level namely; PM (PM_{10} & $PM_{2.5}$ in case 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.
