



**F.No. J-13012/02/2019-IA.I (T)**  
**Government of India**  
**Ministry of Environment, Forests and Climate Change**

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

Dated: 03.05.2019.

To,

Dr. Vijay Prakash  
GM & HOD (Environmental Engineering)  
**M/s NTPC Limited**  
Engineering Office Complex,  
NTPC Ltd, Plot No. A-8A, Sector-24  
Post Box No. 13, Noida – 201301.

**Tele No:** 01202416930; **Fax:** 0120 2410206; **E-mail:** environment.ntpc@gmail.com.

**Sub: 1x800 MW Sipat Advance Ultra Super Critical Technology Demonstration Project, (Stage-III) at Village Sipat, Tehsil Masturi, Bilaspur District, Chhattisgarh by M/s NTPC Limited - reg. ToR.**

Sir,

The undersigned is directed to refer to your online application no. IA/CG/THE/89473/2018 dated 29.01.2019 on the above mentioned subject.

2. It has been noted that you have proposed a power project with capacity of 800 MW (Stage-III) based on Advanced Ultra Super Critical Technology within the premises of existing Sipat Power Plant (3x660 MW and 2x500 MW). The project is proposed under Clean Coal Technology as part of National Action Plan on Climate Change to be set up in the premises of Sipat Power Plant. It has been informed that it is a collaboration project between NTPC, BHEL and IGCAR under the aegis of the PSA to GoI.

3. The total land requirement for the proposed project is 170 acres. There is no forest land involved in the project. Sipat village is adjacent to the proposed site. Bitkuli reserved forest and Dalha protected forest are within 10 km radius. Bilaspur city is 12 km from the proposed project site. Lilagarh river is about 3 km East and Kharung River (5 km, West), Arpa (12 km SW) from the project site. Further, there are no wildlife sanctuaries, national parks and other protected areas under Wildlife (Protection) Act, 1972 within 10 km radius of the project.

4. The Environmental Clearances for Sipat Stage-I (3x660 MW) and Stage-II (2x500 MW) Power Plants has been accorded on 30.4.2002 and 8.6.2004, respectively. Both stages are under operation.

5. The target efficiency of the plant is 46% as against 38% in subcritical plants. The temperature and pressure are in the range of steam for the Advanced Ultra Super Critical Project is 710-720°C and 310 bar respectively.

6. The coal requirement is 3.34 Million Tons/annum at 90% Plant Load Factor. Coal from coal blocks with GCV of 3700 Kcal/Kg has been considered. Mode of coal transportation from the coal mines to the power plant is by rail (MGR/IR). The same shall be used for Stage-III also.

7. The water requirement is estimated to be about 24 cusecs (2450 m<sup>3</sup>/hr, 58,752 m<sup>3</sup>/day), which is proposed to be drawn from the Right Bank Canal (RBC) originating from Hasdeo Barrage pondage. No additional water commitment is

required for the expansion project. The water requirement for the proposed project will be met from the available committed quantity of 120 MCM from WRD, Govt. of Chhattisgarh for Sipat STPS.

8. It is estimated that about 1.3 MTPA (4000 Tons/day) of ash shall be generated annually. Gypsum 15 TPH generated from FGD plant shall also be utilized. The existing ash ponds of Stage-I and II will be used for the proposed expansion also.

9. Approximate capital cost of the project would be about Rs. 9,484 Crore. The manpower during operation phase of the project is estimated to be about 150. However, during construction phase, the total no. of workers likely to be employed will be much higher about 1000.

10. The proposal has been considered by the Re-constituted EAC (Thermal Power) in its 25<sup>th</sup> and 26<sup>th</sup> meetings held on 22.2.2019 and 27.3.2019. Based on the recommendations of the Re-constituted EAC (Thermal Power) in its meeting held on 27.3.2019, and the information/clarifications submitted by you with regard to the above-mentioned project proposal, **the Ministry hereby prescribes the following TORs along with the standard ToR (as applicable)** for preparation of the EIA and EMP Report for the proposed project under Schedule 1(d) of EIA Notification, 2006 and its amendments.

- i) *The environmental impact (includes impact on air quality, flora and fauna, impact of raw water withdrawal, wastewater discharge of existing power plant, impact of air borne flyash and flue gas emissions on forest biodiversity and noise on wildlife, etc) on surrounding Reserved and Protected Forests (Bitkuli RF- 6 km NE, Dalha PF- 8 km E) due to proposed power project shall be assessed. Further, specific comments/recommendations in the form of mitigation measures from State Forest Department by not below the Divisional Forest Officer shall be obtained. Further, a wildlife management plan vetted by State Wildlife Department shall be submitted.*
- ii) Ambient air quality sampling location shall also be kept in the downwind direction.
- iii) Cumulative impact assessment by taking into the existing operating plants in the same premises shall also be considered.
- iv) The risk assessment shall also be carried out for the worst case scenarios such as boiler failure and mitigation measures shall be incorporated in the EMP.
- v) The implementation of FGD/SCR/SCNR systems for control of SO<sub>2</sub> and NO<sub>x</sub> emissions as per Ministry' Notification dated 7.12.2015 and its compliance achievement shall be submitted for existing stages (Stage-I & II).
- vi) The prediction of air quality impacts shall be carried out considering the existing plants with and without SO<sub>2</sub>/NO<sub>x</sub> control systems.
- vii) The details of ash pond such as area & volume of all ponds, quantity of ash disposed, available volume and fly ash utilisation in the last five years for various purposes shall be incorporated in the EIA report.
- viii) Water availability and sufficiency studies for drawing nearly 60,000 m<sup>3</sup>/day shall be carried out by including the impact of such withdrawal on competing users and downstream users, including e-flows.

- ix) 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.
- x) Vision document specifying prospective long term plan of the project shall be formulated and submitted.
- xi) Latest compliance report duly certified by the Regional Office of MoEF& CC for the conditions stipulated in the environmental of the previous phase(s) for the expansion projects shall be submitted.
- xii) 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.
- xiii) 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.
- xiv) 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.
- xv) 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.
- xvi) Layout plan indicating break-up of plant area, ash pond, green belt, infrastructure, roads etc. shall be provided.
- xvii) 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.
- xviii) 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.
- xix) 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.
- xx) The land acquisition and R&R scheme with a time bound Action Plan should be formulated and addressed in the EIA report.
- xxi) 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.
- xxii) 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.
  - xxiii) 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.
  - xxiv) 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.
  - xxv) 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.
  - xxvi) 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.
  - xxvii) 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.
  - xxviii) 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.
  - xxix) 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.
  - xxx) 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.

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- xxxvi) 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.
- xxxvii) 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.
- xxxviii) Detailed plan for rainwater harvesting and its proposed utilization in the plant shall be furnished.
- xxxix) Feasibility of near zero discharge concept shall be critically examined and its details submitted.
- xl) Optimization of Cycles of Concentration (COC) along with other water conservation measures in the project shall be specified.
- xli) Plan for recirculation of ash pond water and its implementation shall be submitted.
- xlii) 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.
- xliiii) 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.
- xliiii) 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.
- xl) 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.
- xli) 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

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the people shall be identified. Separate budget for community development activities and income generating programmes shall be specified.

- xlii) 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.
- xliii) 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.
- xliv) 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.
- xliv) 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.
- xlvi) 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 PM10, PM2.5, SO2, NOx, 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.
- xlvii) 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).
- xlvi)  xlviii) A list of industries existing and proposed in the study area shall be furnished.

- xlix) 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.
- l) Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports.
  - li) Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished.
  - lii) 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
  - liii) 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.
  - liv) 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.
  - lv) 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.
  - lvi) 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.
  - lvii) 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.
  - lviii) 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.

- lix) 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<sub>2</sub> and other gaseous pollutants and hence a stratified green belt should be developed.
- lx) 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.
- lxi) Corporate Environment Policy
  - i. 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.
  - ii. 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.
  - iii. 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.
  - iv. 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.

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

11. Besides the above, the following general points shall be followed:

- a. All documents to be properly referenced with index, page numbers and continuous page numbering.
- b. Where data is presented in the report especially in table, the period in which the data was collected and the source should invariably be indicated.
- c. Where the documents provided are in a language other than English, an English translation should be provided.
- d. The Questionnaire for environmental appraisal of thermal power projects as devised earlier by the Ministry shall also be filled and submitted.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI) / National Accreditation



Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/ EMP reports prepared by them and data provided by other organization / Laboratories including their status of approvals etc. In this regard circular no. F.No. J-11013/77/2004-IA-II (I) dated 2<sup>nd</sup> December, 2009 is posted on the Ministry's website <http://www.moef.nic.in> may be referred.

In addition to the above, information on the following may also be incorporated in the EIA report.

1. Is the project intended to have CDM-intent?

(i) If not, then why?

(ii) If yes, then

- a. Has PIN (Project Idea Note) {or PCN. (Project Concept Note)} submitted to the ?NCA? (National CDM Authority) in the MoEF?
- b. If not, then by when is that expected?
- c. Has PDD (Project Design Document) been prepared?
- d. What is the Carbon intensity? from your electricity generation projected (i.e. CO<sub>2</sub> Tons/MWH or Kg/KWH)
- e. Amount of CO<sub>2</sub> in Tons/year expected to be reduced from the baseline data available on the CEA?s web-site ([www.cea.nic.in](http://www.cea.nic.in))

2. Notwithstanding 1(i) above, data on (d) & (e) above shall be worked out and reported.

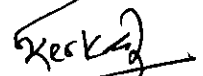
**12. The Environmental Clearance shall be applied only after fuel and water linkages are firmed up.**

13. After preparing the Draft EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned issues, the same shall be submitted to the SPCB for conducting the public hearing as per procedure of EIA notification 2006. The issues emerged during public hearing shall be further incorporated in the Draft EIA/EMP report. The final EIA/EMP report along with public hearing report and the requisite documents (*including written objections, if any*) shall be submitted to the Ministry for appraisal by the Expert Appraisal Committee for consideration of awarding environmental clearance under the provisions of Environmental Impact Assessment notification dated September 14, 2006.

14. The TORs prescribed shall be valid for a period of **three years** from the date of issue for submission of final EIA/ EMP reports, after public consultation.

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 Additional Director General of Forests (C), Ministry of Environment Forests and Climate Change, Regional Office (WCZ), Ground Floor, East Wing, New Secretariat Building Civil Lines, Nagpur-440001.
5. The Chairman, Chhatisgarh Pollution Control Board, Paryavas Bhavan, North Block Sector-19, Naya Raipur, Chhattisgarh.
6. The Principal Secretary, Department of Environment, Paryavas Bhavan, North Block Sector-19, Naya Raipur, Chhattisgarh.
7. The District Collector, Bilaspur District, Govt. of Chhasttisgarh, Nehru Chowk, Bilaspur, Chhattisgarh -495001.
8. Guard file/Monitoring file.
9. Website of MoEF&CC.

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