

## **MINUTES OF THE 6<sup>TH</sup> MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF THERMAL POWER PROJECTS**

The 6<sup>th</sup> Meeting of the re-constituted EAC (Thermal Power) was held on 29<sup>th</sup> May, 2017 in the Ministry of Environment, Forest & Climate Change at Indus 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. | Dr. Narmada Prasad Shukla | - | Member  |
| 3. | Shri N. Mohan Karnat      | - | Member  |
| 4. | Dr. Sharachchandra Lele   | - | Member  |
| 5. | Shri N. S. Mondal         | - | Member (Representative of CEA)                |
| 6. | Dr. R. K. Giri            | - | Member (Representative of IMD)                |
| 7. | Prof. S. K. Sinha         | - | Member (Representative of IIT (ISM), Dhanbad) |
| 8. | Dr. S. Kerketta           | - | Member Secretary                              |

Dr. Rajesh P. Gunaga and Dr. S. K. Paliwal (Representative of CPCB) could not be present due to pre-occupation.

### **Item No.6.0:CONFIRMATION OF THE MINUTES OF THE 5<sup>th</sup> EAC MEETING.**

The Minutes of the 5<sup>th</sup> EAC (Thermal Power) Meeting held on 26<sup>th</sup> April, 2017 were confirmed.

### **Item No. 6: CONSIDERATION OF PROJECTS**

#### **6.1 3x800 MW Super-Critical TPP at village Annapurna Khamar, Taluk Kamakhyanagar, Dhenkanal Distt., Odisha by M/s. ODISHA THERMAL POWER CORPORATION LTD.- reg. Environmental Clearance.**

(6.1.1) Project Proponent has submitted the final EIA/EMP documents vide their online application dated 1.3.2017 for grant of environmental clearance. The proposal was considered in the 5<sup>th</sup> EAC meeting held on 26.4.2017. However, PP could not be present in the meeting held on 26.4.2017. The proposal has been re-considered in the present meeting. Project Proponent along with the Environmental Consultants M/s MECON Limited made the presentation, *inter-alia* submitted the following information:

- i. The proposal is for establishing 3x800 MW (2400 MW) Super Critical Thermal Power Project at Village Annapurna Khamar, Taluk Kamakhyanagar, District Dhenkanal, Odisha. Terms of Reference (ToR) for the said project has been accorded by the Ministry vide letter dated 5.3.2013 which was valid for two years. The validity of the said ToR has been extended till 4.3.2017 vide Ministry's letter dated 8.11.2016. Ministry has stipulated that one season baseline data shall be collected and public notice shall be given for obtaining comments in the revised EIA.
- ii. The site is located adjacent to the State Highway connecting Dhenkanal town and Kamkshyanagar. The nearest National Highway (NH-42) connecting Sambalpur and Cuttack through Dhenkanal is at a crow fly distance of about 15 km south of this site. The neighbouring villages are Aluajharan, Kusumajodi, Annapurnapur Khamar, Kateni, Kantapal, Dhobaheli, Bhagirathipur Sasan,

Mahulapal, Bijadiha and Anlabareni. Kamakhyanagar will be at a distance of 11 km. The nearest airport is Bhubaneshwar Airport, which is about 90 km away from the project site. M/s OTPC Ltd. is a joint venture of two State PSUs viz: - Odisha Hydro Power Corporation Ltd. (OHPC) and Odisha Mining Corporation Ltd. (OMC)

- iii. Co-ordinates of the proposed plant and ash dyke are as in the table below:

<b>POINT</b>	<b>LATITUDE</b>	<b>LONGITUDE</b>
Main Plant Area		
1	20°50'45.6"N	85°30'40.6"E
2	20°50'46.0"N	85°31'29.0"E
3	20°50'14.3"N	85°31'43.9"E
4	20°49'47.8"N	85°31'38.0"E
5	20°49'30.6"N	85°31'14.1"E
6	20°49'35.7"N	85°31'03.6"E
7	20°50'05.6"N	85°30'37.0"E
Ash slurry and water corridor		
8	20°50'04.7"N	85°30'02.3"E
9	20°49'29.9"N	85°29'19.8"E
Ash dyke area		
10	20°48'56.7"N	85°29'19.8"E
11	20°48'25.9"N	85°29'38.2"E
12	20°48'58.9"N	85°30'16.5"E
13	20°49'35.3"N	85°30'14.6"E

- iv. Total land requirement for the proposed project is about 1,903 acres, out of which 95.18 acres is forest land, about 541 acres is Govt. land and 1,267 acres is private land which includes main plant (753.475 acres), ash pond (489.492 acrs), Township (123.58 acrs), R&R colony (128.67 acres), Ash slurry corridor (35.76 acres), Raw water corridor (73.18 acres) and rail corridor (298.07 acres). Forest land of 95.18 acres is part of proposed main plant and ash pond areas. About 1,216.02 acres is irrigated land and 362.61 acres is un-irrigated land and 160.11 acres is grazing land. The proposed land comprises mostly of privately owned land with agricultural land of low yield. The area has very few human dwellings with few forestland patches. Maximum efforts have been taken to minimize the forest area as a part of proposed plant. The land is mostly degraded forest land with patches of plantations. About 60% of the compensation has already been paid for private land and alienation of 100% Government land is under process. Diversion of forestland is under progress.
- v. There are no national parks/wildlife sanctuaries/any other protected areas/ESA/ESZs and critically polluted areas within 10 km radius of the proposed project.
- vi. The proposed project consists of three units of 800 MW each with supercritical parameters i.e. pressure 246 kg/cm<sup>2</sup> and main steam/reheat steam temperatures as 545°C and 564°C, respectively at the turbine stop valve. The higher steam cycle parameters result in improved plant efficiency. In view of the higher efficiency of supercritical unit, lesser amount of fuel is required for generating same quantum of electricity which in turn also reduces CO<sub>2</sub> emission in coal fired power plant. Super critical units also emit less SO<sub>x</sub> and NO<sub>x</sub>. Improvement in thermal efficiency also causes substantial reduction in emission of particulate matter to the environment

- vii. The estimated maximum coal requirement will be 12.07 MTPA at 85% PLF with design GCV of 3280 kcal/kg. The fuel shall be made available from the Tentuloi coal block/other sources. Tentuloi coal block is located in Talcher coal fields which is about 50 km away from the project site. The coal block having 1,234 MT geological reserves for which necessary allotment was made by Govt. of India vide letter No.13016/26/2004-CA-I (Pt.) dated 05.08.2013. However, State Government have requested Government of India to allocate and Open Cast Coal mine in the vicinity of Tentuloi Coal Block through Government Dispensation route which may be Chandapada, Machapadam, Patrapada or Mahanadi which are close to Tentuloi Coal Block. This is under active consideration of Government of India. Coal available from the new Open Cast Mine will have similar characteristics as of Tentuloi coal block. Coal characteristics of Tentuloi coal block are - Fixed Carbon: 24.6-27.5%; Moisture: 9.1-12%; Ash: 35.5-44.4%; Sulphur: 0.345-0.39% and GCV: 2350-4039 kcal/kg.
- viii. Coal from captive mine block shall be transported through railway line upto the nearest rail head of East Coast railway i.e. Jharapada Railway Station and from there, to Sadashivpur Railway Station on Talcher-Cuttack section of SE Railway. Coal would be transported through a double track captive railway system of about 20 km length. Total distance from the mine to the project site shall be around 70 km. M/s RITES have been appointed as a consultant for mapping the movement and transportation of coal from mines to project site.
- ix. Heavy Fuel Oil (HFO) / Low Sulphur Heavy Stock (LSHS) will be used for flame stabilization at low loads. LDO will be required for start-up and warm up of units. Two HFO storage tanks, each capacity 1250 m<sup>3</sup> and two LDO storage tanks each of capacity 550 m<sup>3</sup> to receive and store the unloaded fuel oils will be installed. This fuel will be transported to the plant by rail /road tankers from nearby depots.
- x. Total water requirement for proposed project is 5488 m<sup>3</sup>/hr (~53 cusecs). The specific water consumption has been reduced to 2.29 m<sup>3</sup>/MWh as compared to the Standard of 2.5 m<sup>3</sup>/MWh. Water Resources Department, Govt. of Odisha vide their letter dated 11.4.2016 has given permission for 2 cusecs during construction period (2017-18), 30 cusecs for operation phase from April, 2018 onwards and 80 cusecs for operation phase from April, 2020 onwards. Water pipeline with a length of 11 km is proposed to source water from Brahmani river.
- xi. As per Water Allocation Committee, demand for present industries including the proposed project is 1,357.74 cusec. The 30 years data reveals that lean season flow observed is 1,407.6 cusecs. The water shall be available throughout the year from Brahmani at Kantapal, depending upon the discharge/release of water from Samal Barrage during lean period. The study indicates that the total success with shortages is found to be from the month of April to June. Accordingly, a necessary storage facility for atleast 10 days is proposed in the plant.
- xii. Baseline data has been collected during March, 2013-May, 2013 (Summer) and October, 2016-December, 2016 (post monsoon). The predominant wind direction is towards West during the post monsoon and towards ESE during summer.
- xiii. AAQ monitoring has been carried out at 8 locations. Results indicated that the values of different air quality parameters such as PM<sub>10</sub>: 95-41 µg/m<sup>3</sup>, PM<sub>2.5</sub>: 29-60 µg/m<sup>3</sup>, SO<sub>2</sub>: 4-13 µg/m<sup>3</sup>, NO<sub>x</sub>: 10-39 µg/m<sup>3</sup>, CO: 142-2234 µg/m<sup>3</sup> and Hg: < 0.00005-0.00052 µg/m<sup>3</sup>, O<sub>3</sub>: 27-102 µg/m<sup>3</sup>, Pb: 0.000736-0.07721 µg/m<sup>3</sup>.
- xiv. Noise levels have been monitored at five locations during post-monsoon and summer. Noise levels are in the range of 39.1-59.1 dB(A) during daytime and 35.1-49.2 dB(A) during nighttime.

- xv. Seven Nos. of groundwater samples were collected during both monitoring seasons and carried out analysed for various parameters. Analysis results show that the groundwater quality parameters are meeting the prescribed norms of drinking water quality except for few parameters. When compared with earlier data, it is observed that Iron is exceeding the norms at two places, Kankarajhara and Bijodihi during both the monitoring periods. Fluoride concentration at Kateni and Tulapasi exceeded the acceptable limits but were within the permissible limits during Summer, 2013; in other locations it was well below the acceptable limits. Ca is slightly high at Tumasinga during both the monitoring periods.
- xvi. Surface water samples have been collected from three water bodies. DO: 6-6.4 mg/l; BOD: 2-3 mg/l; Total Hardenes: 44-132 mg/land Alkalinity: 42-128 mg/l have been recorded. Results show that surface water quality is conforming to both Class B and Class C (i.e, suitable for Outdoor bathing (organized) as well as Drinking water source after conventional treatment and after disinfection).
- xvii. Four soil samples have been analysed. In the study area, soil pH varies from 6.0 to 6.8 and from 6.2 to 7.0 in summer, 2013 & post-monsoon, 2016, respectively, which is slightly acidic to neutral. In the soil samples, the EC varies from 141  $\mu\text{s/cm}$  to 328  $\mu\text{s/cm}$  in summer season, 2013 and from 124  $\mu\text{s/cm}$  to 202  $\mu\text{s/cm}$  in post-monsoon season, 2016. It was found that organic carbon in the soil varied from 0.14% (low) to 1.11% (High). Nitrogen also varied from 147 kg/ha to 289 kg/ha which is in the range of low to medium. Available phosphorus is varies from 11 kg/ha to 36 kg/ha medium to high while available potassium is medium to high in post-monsoon season, 2016.
- xviii. Kadlupal RF (ES 5) & Sundrakhol RF (ES 6) falling in study area is well stocked and more so in the higher reaches of the hill slopes. On the plain area usually the forest is well stoked with patches of degraded forests, where biotic interference is more. The tree height is mostly more than 20 m. Sal is the most dominant species followed by Kendu, Kurch, Karanj, Sonari, Halda, etc. The species diversity in forests is 2.50. There are a number of forest stretches in the study area. The forest patches away from human habitations in difficult terrain are the good habitat for wild animals to be present in the study area. There are eight Schedule-I species are present in study area viz. Sloth Bear, Indian Elephant, Pangolin, Leopard, Leopard Cat, Land Monitor, Python and Peafowl. As per the ORSAC report, the Dhenkanal District falls under Zone - 4 of elephant regions of Odisha but the proposed project site does not falls under migratory corridor of elephant. However, elephant does visit the forests (Kadlupal RF, Sunajhari RF and Suniamaru RF) and nearby agricultural fields / Villages during paddy harvesting season in herds. The elephants visiting Kadlupal RF, Sunajhari RF and Suniamaru RF to Keonjhar through adjoining Rupabalia RF.
- xix. Cumulative air quality impact is predicted for the proposed power plant. The maximum incremental ground level concentration is predicted for PM is 3.63  $\mu\text{g/m}^3$ , SO<sub>2</sub> is 9.63  $\mu\text{g/m}^3$  and NO<sub>x</sub> is 9.63  $\mu\text{g/m}^3$ .
- xx. One multi-flue stack of 275 m high will be constructed to meet the norms set by MoEF&CC for dispersion of particulate matters, SO<sub>2</sub> and NO<sub>x</sub>. The boiler furnace with proper design with inbuilt SCR/SNCR unit facility will be provided to keep the emission of NO<sub>x</sub> to within 100 mg/Nm<sup>3</sup>. Similarly, FGD plant will be installed to keep the emission of SO<sub>2</sub> to within 100 mg/Nm<sup>3</sup>. Multiple field twin-path efficient ESP will limit particulate matter emission within 30 mg/Nm<sup>3</sup>. Oxides of mercury (Hg), if any, in the flue gas will be arrested in SCR/SNCR unit & FGD Plant. The cost of FGD is a part of total provision (Item-3 Mechanical) of Rs.11,854.673 Crores provided in the project estimate.

- xxi. The major sources of liquid effluents exclusively for the proposed project is generated from Cooling Tower Blow Down (629 m<sup>3</sup>/h), Boiler Blow Down, Power house and Boiler Area service wastewater, Coal handling plant's wastewater, run-off from coal pile area, back wash water from ETP, DM plant wastewater, etc.
- xxii. Cooling Tower Blow Down will be reused for ash handling. COC is optimized to 7 to reduce CTBD and in turn consumptive water requirement. Extra CTBD water will be treated in RO plant for recycling and reuse. The Guard pond will receive all treated effluents (approx. maximum quantity of 78 m<sup>3</sup>/h) as discussed above. The pond will serve as an equalization pond. A part of the discharged effluent from Guard pond will be treated in RO plant for recycling into plant raw water treatment system. 100% reuse and recycling of liquid effluents has been considered to ensure "Zero Discharge" approach and will be ensured.
- xxiii. The proposed power plant will produce a fly ash of 11,111 TPD (4.05 MTPA) during its operations. For the proposed project, maximum fly ash shall be kept for Cement manufacturers and about 10% will be kept for brick and other users. Utilisation of Bottom ash shall also be explored especially for using in mining voids.
- xxiv. The plant has been designed to collect fly ash in dry form from the ESP hoppers, air pre-heater hoppers and stack hoppers and stored in RCC silos. The ash silos will have capacity to store eight hours production. The fly ash storage silos will have arrangements to unload dry fly ash into road trucks. Pneumatic system will be provided to make available fly ash free of cost to potential users at the boundary of the plant. The bottom ash will be collected in the furnace hopper. The bottom ash hopper (BAH) will have the capacity to store eight hours production. A clinker grinder will be provided at the outlets of the BAH to crush the clinkers to -25 mm size. Ash clinker will be conveyed to the ash slurry sump through jet pumps.
- xxv. A number of affected people have applied for establishing fly ash bricks manufacturing units in the vicinity of plant area. In fact, two units have already been established closeby to the plant area and are producing 10 TPD of Fly ash bricks by utilizing ash from NTPC's Plant in Talcher.
- xxvi. The total land for development of green belt in main plant would be around 236 acres which is around 31.33% of total land used for the main plant. In addition, a 3 tier green belt around ash pond shall also be provided. The total area for green belt around ash pond is 43.8 ha. Green Belt with native species of appropriate width (50 to 100 m) and consisting of at least 3 tiers around plant boundary (except in areas not possible) with density of 2,500 trees per ha with a good survival rate of about 80%. Provision of Rs.250 crores exists in the project report as a part of site development item of project report.
- xxvii. Number of Displaced Families (Both original and extended) is 133. Number of Affected Families (Both original and extended) is 3,094. As regards R&R scheme, all facilities as per land acquisition and R&R Act, 2013 indicated in Schedule-II, have been provided. The compensation as facilitated in the schedule shall also be paid as a minimum. However, a comparison shall be made between State Govt. R&R Policy, 2006 & its latest amendment with compensation specified in land acquisition and R&R, 2013 shall be made and whichever is higher shall be paid to the displaced families.
- xxviii. Public Hearing has been conducted by Odisha Pollution Control Board on 5.8.2014 at Tumusingha R.I. Office Premises, Dhenkanal which has been presided by the Project Director, District Rural Development Agency, Dhenkanal. As informed by the CMD of the company, the Project Director was in-charge of ADM on the day of Public Hearing. Green belt development, complying to the

emission standards, strengthening of embankments of ash pond, protecting the ash pond against breaching, 100% ash utilisation, rubber plantation should not be affected, the project should not affect the minor irrigation/dams, agriculture and cultivation in the periphery area, massive Plantation Programme in barren land and vacant land shall be taken up, training and employment to local people, CSR and social improvement activities in the surrounding villages, electricity supply to local people are the major issues raised by the public during public hearing.

- xxix. Hazard identification, failure and scenarios and Risk assessment has been carried out for the storages of hazardous chemicals such as LDO & HFO (25,00 tonnes), Caustic Soda, Sulphuric Acid and Chlorine, etc. Control and mitigation measures have been proposed.
- xxx. The construction will involve generation of a lot of employment, both direct and indirect, which will improve the economy of the study area. About 3000 workers in peak time and on an average 1,500 workers are expected work during construction period. As indicated earlier nearby villages Arnapurnapur Khamar, Kusumajodi, Kateni, Kantapal, Dhobabahali, Aluajharana having about 12,000 population. Most of the workers will come from nearby villages. For outsiders, community sanitary toilets with soak pit will be constructed. The project is likely to create substantial impact on the social and economic conditions of the people of the region in terms of direct and indirect employment, skill diversification, infrastructure development, business development etc.
- xxxi. Total estimated project cost is Rs.16,265.425 crores. The capital cost of environmental control measures is Rs.11,854.673 crores which includes Rs.250 crores for greenbelt development and that of Environmental Monitoring facilities is Rs. 22 crores.

(6.1.2) Committee noted that the EIA is written in generic way. It is mentioned in the EIA that ESP will be installed to limit the Particulate Emissions to less than 100 mg/Nm<sup>3</sup> whereas the new emission standard for PM is 30 mg/Nm<sup>3</sup>. Details of tree enumeration and density of the forest land involved is not made available. Exact status of Stage-I forest clearance is not made available. There are seven Schedule-I species available in the study area. The total land requirement mentioned at various places as different (1,833 acres/1903 acres). The status of land is mentioned as non-irrigated rainfed single crop. Baseline ambient air quality is recorded as high (PM<sub>10</sub>: 95-41 µg/m<sup>3</sup> and PM<sub>2.5</sub>: 29-60 µg/m<sup>3</sup>). As per the project proponent, the surrounding area does not have dense habitation, traffic or industries. High values of ambient air quality could not be justified by the consultant as well as PP. Water availability in the lean season and the total demand of the all industries is almost equivalent which will hardly leave any water for the downstream uses. Firm coal linkage is available with Tentuloi block. However PP is trying to obtain other coal blocks. In case, the coal block is changed, the firm plan along with transport network shall be submitted. Committee also noted that the Public Hearing proceedings have been presided by the Project Director. The undertaking given by the CEO in page one of the EIA Report is dated 18.01.2014 whereas the some of the studies were undertaken in the year 2016

(6.1.3) Committee after deliberations, **deferred** the project and sought following additional information:

- i. Status of the land for the proposed project be submitted from the Revenue Department mentioning whether the land proposed for project is irrigated or not, if so, whether single or double crops.

- ii. The project proponent shall revise the justification of the Project based on present power demand - supply situation and considering 19<sup>th</sup> EPS published by CEA.
- iii. The undertaking submitted by CEO, Odisha Thermal Power Corpn. Ltd. dated 18.1.2014 shall be revised.
- iv. Data on distribution of water for other uses including industrial, agriculture and in-stream uses, in upstream and downstream locations and including both existing and commitments made for imminent projects, and the water availability for the proposed Thermal Power Plant be authenticated and submitted. The effect on downstream due to water withdrawal especially during lean season shall be studied further.
  - i. Base line air quality results along the incremental GLC values should be compared with the latest emission standards to maintain uniformity in the EIA report and submitted.
  - ii. Baseline ambient air quality results of the study area is to be rerun by using the Air Modelling in IMD, New Delhi. The verification be checked by the Expert Members jointly viz., Dr. S.K. Paliwal, CPCB representative and Dr. R.K. Giri, IMD Representative.
  - iii. Status of Forest clearance along with density and tree enumeration reports. Status shall clearly indicate whether it is pending at DCF/CF/Nodal Officer/RO, MoEF& CC/MoEF Delhi along with documentary support.
  - iv. Wildlife Conservation Plan shall be prepared in consultation with the State Forest Department.
  - v. An undertaking regarding use of alternate coal blocks along with transport network shall be submitted.

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**6.2 90 MW Captive Thermal Power Plant at village Vadnagar, Taluka: Kodinar, Dist. Gir Somnath (Erstwhile Junagadh) Gujarat by M/s GUJARAT AMBUJA CEMENT LTD.-reg. Amendment in EC.**

- (6.2.1) The proposal was listed in the agenda of 5<sup>th</sup> EAC (Thermal Power) meeting held on 26.4.2017. Project Proponent (PP) did not attend the meeting. The proposal has been again listed in the 6<sup>th</sup> EAC (Thermal Power) held on 29.5.2017. PP did not attend the meeting. Accordingly, the project is **deferred**.

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**6.3 1600 (2x800) MW Godda Thermal Power Project at Motia, Gangta, Gaighat and other Adjacent Villages, Tehsils Godda and Poraiyahaat, District Godda, Jharkhand by M/s ADANI POWER (JHARKHAND) LIMITED – reg. EC.**

- (6.3.1) Project Proponent (PP) submitted online application (IA/JH/THE/54853/2016) for grant of Environmental Clearance. PP along with their Environmental Consultant M/s Greencindia Consulting Pvt. Ltd., New Delhi made the presentation and *inter-alia*, submitted the following information.
- i. Terms of Reference (ToR) for setting up of 2x800 MW Godda Thermal Power Project at Villages Motia, Gangta and Gayghat, Dist. Godda, Jharkhand has been issued vide Ministry's letter dated 26.7.2016.
  - ii. The proposed project is located in villages Motia, Patwa, Gangta and Nayabad villages of Godda Block and Sondiha, Petbi, Gayghat, Ranganiya and Mali villages of Poraiyahaat Block, Dist. Godda, Jharkhand. Nearest Railway station is Hansdiha which is at 45 km from the proposed project. The nearest major water body is Beharajor Nadi present at a distance of 0.35 km in NE direction. There

are no national parks, wildlife sanctuaries or ecologically sensitive areas within 10 km radius of the proposed project. The 10 km radius buffer zone falls in Godda District of Jharkhand state and Banka District of Bihar state. Interstate boundary of Jharkhand and Bihar is at a distance of 3.2 km from the proposed project.

- iii. MoU has been signed between Government of India and Government of Bangladesh for supplying power to Bangladesh on 11.1.2010. Similarly, MoU has been signed between Bangladesh Power Development Board and Adani Power Ltd. for exporting power to Bangladesh on 11.8.2015.
- iv. Total land requirement for the proposed project is 1,255 acres (508.15 ha). Land use of the proposed project is agricultural land, fallow land and waste land including Surface Water. Land ownership is mostly private and classified as Santhal Pargana Land. Application for land acquisition has been submitted to concerned department of Godda of 1,363.15 acres out of which 1,214.49 acres is private land and 148.66 acres is Government land. In addition to 1255 acres, there will be additional land acquisition of 30 ha (6 km x 50 m) for laying railway line. Also, Right of Use (RoU) and Right of Way (RoW) will be acquired for laying water pipeline (15 km x 20 m) and transmission line (551 ha x 106 km). Laying of transmission line involves forestland.
- v. It is proposed to supply electricity from the plant to Bangladesh through a dedicated 400 kV DC transmission line which shall be constructed from the proposed site to an interconnection point near Bangladesh border.
- vi. Coal requirement for the proposed project is 7-9 MTPA at 85% PLF which will be imported from Indonesia/Australia/ South Africa. A commitment letter has been issued by M/s PT Limas Tunggal (Jakarta based company) to the company on 1.4.2017 for supplying 9 MPTA of coal. The specifications given in the commitment letter are GCV: 3,500-5,000 kcal/kg; Total Moisture: 9-20%; Ash: 25%, Volatile Matter: 21-26% and Sulphur: Not specified.
- vii. Water requirement for the proposed project is 36 MCM per annum (4,000 m<sup>3</sup>/h) and shall be met from Chir River which is located at a distance of 15 km from the proposed project. MoU has been signed between Water Resource Department and the company on 23.11.2016 for water withdrawal of 2 MCM during November, 2018- November, 2019, 18 MCM during November, 2019-November, 2020 and 36 MCM during November, 2020-November, 2021. To meet water requirement during non-monsoon period, a storage reservoir of 24 MCM capacity has been provided. Various sources of water have been explored including Sunder Dam Reservoir at Deonapur, which is at a distance of 30 km from the proposed site, but there is no sufficient water storage and also water from this reservoir is used for irrigation purpose. By water availability study of surrounding areas, it has been emerged that water requirement for the proposed project can be met from Chir River.
- viii. Baseline Environmental Studies were conducted during post monsoon season (October to December, 2016). The predominant wind direction is found to be towards South-West during the study period. AAQ monitoring has been carried out at 10 locations during the study period. The 98<sup>th</sup> percentile values of 24 hourly concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>2</sub> are in the range of 49.5-69.7 µg/m<sup>3</sup>, 18.2-36.4 µg/m<sup>3</sup>, 8.4-13.2 µg/m<sup>3</sup> and 13.3-22 µg/m<sup>3</sup>, respectively. Highest concentration of PM<sub>10</sub> (89.7 µg/m<sup>3</sup>), PM<sub>2.5</sub> (36.4 µg/m<sup>3</sup>), SO<sub>2</sub> (14.2 µg/m<sup>3</sup>) and NO<sub>2</sub> (22.4 µg/m<sup>3</sup>) were recorded at Siktia village. CO is in the range of 0.9-1.45 mg/m<sup>3</sup>. The observed concentrations at all locations were found to be below the National Ambient Air Quality Standards (NAAQMS 2009).

- ix. Noise monitoring was carried out at eight residential areas. Noise levels (Leq) in the study area varied from 47.6-55.8 dBA during daytime and 32.3-39.1 dBA during nighttime. Increase in noise levels may be attributed to traffic movement nearby highway.
- x. Surface water samples collected from 5 water bodies. pH varied between 6.98-7.94. DO varies from 4.6-5.9 mg/l. BOD varies from 2.1-10.8 mg/l. COD is in the range of 5.1-10.8 mg/l. MPN varies between 180-2,000 per 100 ml. Beharjor Nadi and Baksara nadi conform to Class-D: Suitable for propagation of wildlife and fisheries, and remaining water bodies conform to Class-B: Suitable for outdoor bathing (Organized).
- xi. Five groundwater samples have been collected in the study area. Values of ground water are in the range of pH: 7.32-8.06; Turbidity: <1 NTU; Alkalinity: 139.5-182.5 mg/l; TDS: 329-469 mg/l; Chlorides: 41.6-79.5 mg/l; Sulphate: 21.5-42.1 mg/l; Fluoride: 0.49-0.97 mg/l; Zinc: 1.5-4.8 mg/l; Iron: 0.17-0.28 mg/l and heavy metals: BDL.
- xii. Soil samples have been collected from 7 locations. The pH of the soil samples was found to be slightly acidic to slightly alkaline. Moisture content of the soil samples were found in the range of 3.5-6.9% by mass. The predominant texture of the soil was found to be sandy loam and clay loam. Organic content of the soil samples was found to be in the range of 0.5-0.96% by mass, which indicates average to sufficient fertility of the soil. NPK values are in moderate levels. The soil in the study area is moderately fertile.
- xiii. Air quality impact has been predicted for the proposed power plant. The maximum incremental ground level concentrations have been found at a distance of 4 km NE. First highest concentrations have been predicted for PM<sub>10</sub> is in the range of 1.63 µg/m<sup>3</sup>, SO<sub>2</sub>: 1.63 µg/m<sup>3</sup> and NO<sub>x</sub>: 5.44 µg/m<sup>3</sup> at a distance of 3.11 km in the NE direction.
- xiv. The project site is more or less undulated land thus, there will not be much cutting filling and also leveling of land. Some first order drains and an unlined (Kachha) canal is passing through the project site which will not be altered. The general trend of the drainage of the area is from SE-NW. The drains will be made RCC and interconnected with the main drainage. There is an unlined (Kachha) canal passing through the site which will be aligned along the western boundary of the project keeping the incoming and outgoing points same. The project is based on zero discharge concept during non-monsoon period and therefore no effluents from the plant will be discharged into the nearby water bodies.
- xv. It is estimated that around 1.77 MT of ash (About ~ 237 TPH) shall be generated every year. Around 80% of the ash is fly ash (about 1.41 MT) and 20% is bottom ash (about 0.35 MT). MoU signed for flyash utilisation up to 5,000 TPD with four companies. The PP has already signed MoUs with four companies viz., Ambuja Cements Limited, Ashtech (India) Private Limited, Marshall Corporation Limited and Leonard Exports for utilizing up to 5,000 TPD of fly ash generated at the plant. Fly ash generated from the plant will be supplied as raw material to the cement plants based in West Bengal, Bihar, NE regions of India and export to Bangladesh, Nepal and Bhutan. The unutilized ash shall be stored in ash pond
- xvi. Twin flu RCC stack with a height of 275 m will be installed for dispersion of emissions. High Efficiency Electrostatic precipitators with each boiler to limit the particulate matter to less than 30 mg/Nm<sup>3</sup>, Low NO<sub>x</sub> burners with Selective Catalytic Reduction to limit NO<sub>x</sub> emissions to less than 100 mg/Nm<sup>3</sup> and Flue Gas Desulphurisation (FGD) to limit the SO<sub>2</sub> to less than 100 mg/Nm<sup>3</sup> will be installed. Mercury emissions will also be restricted to less than 0.03 mg/Nm<sup>3</sup>.

- xvii. There are total of 5,339 Project Affected People (PAP) with 841 families comprising of 2,883 males and 2,456 females. R&R plan has been prepared with the cost of Rs.507 Crores.
- xviii. Public Hearing for the proposed project was held on 5.3.2017 at the campus of Motiya High School in Godda District of Jharkhand. Public Hearing proceedings have been prepared in Hindi and signed by the Presiding officer (ADM) and Jharkhand Pollution Control Board- Greenbelt development in one third area, employment to locals, CSR activities and complying to environmental standards are the major issues raised by the public. Public also requested to carry out deepening of ponds within 10 km radius of the project. Rs.1.43 Crores has been allocated for deepening of the ponds within 10 km radius.
- xix. 252 acres, out of total 1,255 acres will be allocated for greenbelt development. Greenbelt will be developed in an area of 252 Acres where 80 Acres in Main Plant & remaining i.e. 172 Acres in RWR (raw water reservoir) & Ash pond, in consultation with the State Forest Department authorities and as per CPCB guidelines.
- xx. PP shall provide infrastructure to help setup local schools, centers for primary learning and education, repair/construction of primary schools in neighboring villages. PP is committed to do inclusive development and will further strengthen its activities for improvement in education, sanitation and health, livelihood, rural infrastructure and rural sports. There are plans to provide an outlay of about 0.4% of the project cost in the coming years under its CSR program. It is usually envisaged that setting up of an industry helps in developing the infrastructure of the locality. It has been committed to develop the surrounding area in a well-coordinated and balanced manner while safe guarding the environmental and social aspects. Training would be provided to the eligible local people for attaining skills in construction field with recognized institutions. PP agrees to share the amenities and facilities with members of the local community. This includes sharing education and medical facilities, sports and recreation. During construction phase, project would provide employment to more than 5,000 skilled, semi-skilled and unskilled labourers. During operational phase, power plant would employ more than 300 personnel. In addition, more than 1,500 people would be required for various ancillary services in power plant like housekeeping, security, ash management, horticulture and maintenance of infrastructure.
- xxi. Company has earmarked Rs.55.62 crores for implementation of CSR activities in the surrounding villages for improvement in education, sanitation, health, livelihood, rural infrastructure and rural sports. Cost of Environmental Protection measures including Solar Power installation and Rainwater Harvesting is Rs.2,225.6 Crores. Estimated project cost is Rs.13,906 Crores.

(6.3.2) Committee noted that the water in the Chir River is not available during the lean season. The project proponent has proposed to draw the total annual water requirement in the monsoon period leaving insufficient water to the downstream for needs of agriculture, eco-hydrology and other in-stream uses. Committee also noted that Public Hearing Proceedings in English have not been signed by the Jharkhand State Pollution Control Board and ADM who is the presiding officer. However, PP submitted translated copy by private agency. Committee also noted that there have been many representations received from local people stating that the project will abstract ground water which will create drinking water problems in the surrounding region. There are about 45 villages have given representations to re-conduct the public hearing as it is alleged by them that the opportunity was not given during public hearing to express their concerns/opinions. Committee noted that there are about 13 people who have

expressed their concerns which were recorded in the proceedings. Committee noted that some villagers shouted slogans in the public hearing stating not to provide the land to project. Similarly, some representations have also come in favour of implementations of the project at the proposed location. Therefore, there is a balance situation and Committee noted the same.

(6.3.3) Committee after detailed deliberations, **deferred** the proposal and sought the following information for re-consideration:

- i. Status and documents related to land acquisition.
- ii. Water sufficiency and in-stream users during monsoon due to withdrawal of water for 36 MCM.
- iii. Reply to the public representations and action plan to address the concerns of the public.
- iv. Water bodies are present in the proposed site. Map showing the details of water bodies. Details of diversion, if any.

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#### **6.4 Modernization & Expansion in Power Plant from 125.3 MW to 141 MW at Tehsil - Ladpura, District - Kota, Rajasthan by M/s DCM LTD. reg. ToR**

(6.3.1) The Project Proponent (PP) along with their environmental consultant, *M/s Kadam Environment Consultants* made a presentation and *inter-alia* provided the following information:

- i. The proposal is for modernization and expansion of Power Plant from 125.3 MW to 141 MW at existing facility of Shriram Nagar Industrial Area, Tehsil- Ladpura, Dist. Kota, Rajasthan.
- ii. 573 TPH steam generation is currently required by the sister companies namely Shriram Vinyl & Chemicals Industries, Cement Unit, Fertilizer Unit, etc. which are within the Kota Complex. Power will be utilized for captive purpose, within the Kota complex of DCM Shriram Ltd. Power will be used to operate the different plants existing within the complex.
- iii. Nearest Railway station is Dakaniya station at ~1.5 km NW, Nearest Major Railway station is Kota Railway station at 8.9 km from project site and Nearest Airport is Jaipur at 185 km from the project site. SH-51 is at 1.1 km NE, NH-76 is at 0.5 km SE and NH-12 is 1.7 km SW from the proposed project.
- iv. No forest land involved in the project. Chambal and Alina River are located at 6.2 km NW and 3.6 km NE, respectively from the project site. Ladpura, Satakpur and Umedganj Reserve Forests are at 0.1 km S, 7.5 km NW and 2.5 km SE from the project site, respectively. Army Head Quarters is located at 5.3 km north from the project site.
- v. The present proposal for modernization and expansion proposal from 125.3 MW Power Project to 141 MW will be set up in the existing premises of 125.3 MW Power Plant which is under operation. The entire capacity of 125.3 MW has been established in stages, between the years 1968 to 2005 and did not necessitate obtaining environment clearance. Rajasthan State Pollution Control Board vide letter dated 31.7.2014 granted Consent to Operate and the validity of the said Consent has expired on 31.1.2017.
- vi. The proposed modernization and expansion will include dismantale of of existing 10 MW, 10.3 MW and 30 MW units and addition of a new 66 MW CFBC

technology based power plant. However, the old captive power plants will be kept as standby/ backup and operated as and when required after meeting all the stipulated environmental norms. In no case, total power generation will exceed 141 MW.

<b>Sl. No.</b>	<b>Particular</b>	<b>Existing Capacity</b>	<b>Additional proposed</b>	<b>Total after expansion</b>
1.	Power Plant	125.3 MW	Addition of 66 MW & De-commissioning of 50.3 MW (10 MW+ 10.3 MW+ 30 MW)	141 MW
2.	Steam (including process and power)	573 TPH	Addition of 270 TPH & De-commissioning of 218 TPH	625 TPH

- vii. The proposed modernization and expansion will require 170 acre of land within the 791 acre of overall DCM Kota Complex. The proposed location along with existing industry is in Notified Industrial area vide Govt. of Rajasthan Notification No.1532/Rev/A/60 dated 31.3.1960. Exact co-ordinates of the boundary are given in the table.

<b>POINT</b>	<b>LATITUDE</b>	<b>LONGITUDE</b>
A	25° 7'54.94" N	75° 52'57.70"E
B	25° 7'56.97" N	75° 53'00.77"E
C	25° 8'13.82" N	75° 52'48.21"E
D	25° 8'11.28" N	75° 52'43.73"E
E	25° 8'02.17" N	75° 52'34.16"E
F	25° 7'30.99" N	75° 53'02.21"E
G	25° 7'38.46" N	75° 53'13.63"E
H	25° 7'42.72" N	75° 53'10.89"E
I	25° 7'41.68" N	75° 53'07.50"E

- viii. No alternate sites analysis was considered because the land required for proposed project is 170 acres which is within the existing complex of PP. No additional land to be acquired and there is no displacement involved.
- ix. National Ghariyal Sanctuary is located at 6.2 km NW from project site. Application for obtaining recommendations of NBWL will be submitted.
- x. Coal requirement is 2,592 TPD which will be 265 TPD lesser than existing coal requirement of 2,857 TPD. Pet Coke requirement is 219 MTPD which will be sourced from Open market. Coal will be sourced from SECL or open markets and pet coke will be sourced from open market. Characteristics of Coal would be Net Calorific Value: 3,600 kcal/kg; Fixed Carbon: 38%; Moisture: 8%; Ash content: 42.6% & Sulphur: 0.4% and of pet coke would be Net Calorific Value: 8,000 kcal/kg; Fixed carbon: 87%; Moisture: 0.11%; Ash content: 2.3% & Sulphur: 6%. Coal and pet coke will be blended in the ratio of 75:25. Transport of coal and pet coke will be through rail route only.

- xi. The water requirement is met from RMC division of Command Area Development through the Right Main Canal (RMC) of Chambal River which is at approx 1.0 km from project site. Water consumption for the proposed modernization will be reduced from 12,900 KLD (existing consumption) to 11,702 KLD.
- xii. Fly ash and bottom ash generation will be much lower (~1,00,055 TPA) than that of existing plants of 50.3 MW capacity (~1,69,025 TPA). Thus, total fly ash and bottom ash generation will be reduced from 4,17,081 TPA to 3,48,112 TPA. It will be stored in closed storage silos and used in Shriram Cement works (in same complex) or sold to other cement factories & Brick Manufactures. Estimated Project Cost is Rs. 224 Crores.

(6.3.2) Committee noted that though the proposed project is located in the notified industrial area, public hearing is required as the industrial area has been notified in 1960 which is prior to EIA Notification. Also, the existing industry does not have environmental clearance. Committee also noted that PP has to immediately submit the application for Wildlife clearance and submit the authenticated map showing project location vis-a-vis Ghariyal Sanctuary. The status of ESZ of Ghariyal Sanctuary is not made available by PP. Committee also noted whether use of petcoke as fuel in captive power plants is allowed or not may be confirmed by the Ministry as NGT Delhi vide their order dated 16.5.2017 in OA No.471/2016 has directed State Govt. and Ministry to declare whether the petcoke is an approved fuel or not.

(6.3.3) Committee after detailed deliberations, **recommended for grant of following ToRs** in addition to standard ToR appended as Annexure-A1.

- i. Recommendations of Standing Committee of National Board for Wildlife shall be obtained as the proposed project shall be located at 6.2 km away from the National Ghariyal Sanctuary. Authenticated map showing proposed project location and wildlife sanctuary and its ESZ (if proposed/notified) along with the recommendations of Chief Wildlife Warden shall be submitted.
- ii. Baseline data on one season shall be collected for all the parameters listed in NAAQS, 2009. Total of 10 monitoring locations shall be located as per guidelines.
- iii. Impact Assessment study shall also be conducted by including the pollution potential of other units which are under operation and located within the same boundary.
- iv. As the Environmental Clearance is not available for the plant under operation, certified RO compliance report of the State Pollution Control Board on Consent to Operate (CTO) shall be submitted.
- v. The ToR is subject to outcome of the Ministry/State Govt. decision on NGT Delhi vide Order dated 16.5.2017. Petcoke fuel will not be permitted in case Ministry/State Govt. determines petcoke as not approved fuel. In that case, only coal as fuel will be permitted.

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## **6.5 4x660 MW, Stage-I, Barethi Super Thermal Power Project near village Barethi, Tehsil Rajnagar, District Chhatarpur, Madhya Pradesh by M/s NTPC LTD.- reg. reconsideration for EC.**

(6.5.1) Earlier, the proposal for grant of environmental clearance has been appraised by the EAC in its meetings held during 19-20<sup>th</sup> May, 2015, 16-17<sup>th</sup> June, 2016, 29-30<sup>th</sup>

August, 2016 and 14<sup>th</sup> February, 2017. EAC in its meeting held on 14.2.2017 sought additional information on eco-hydrology of dams, impact of aquatic ecology and agriculture in the downstream, characterisation and analysis of storm water sludge, justification for not installing holding tank for storm water, fugitive dust modelling, plan to bring down the ash content from 39% to 34%, feasibility of setting up of washery, coal characteristics of Banai coal block, mercury emission study and installation of air cooled condenser for reduction in water consumption.

(6.5.2) PP vide their letter dated 6.4.2017, submitted the reply on the additional details sought. PP made the presentation and *inter-alia* their reply submitted the following information:

- i. Syamri stream and Bada nalla are monsoon fed streams. There is practically no flow in both streams during lean season. The construction of dams and creation of reservoir with assured minimum release of environmental flows on non-flowing period will lead to development of the fishes as well as promotion of aquatic flora and fauna. The creation of water body will lead to the qualitative and quantitative improvement of the agriculture yield, eventually leading to sustainable family income. **It would be feasible for conducting eco-hydrology study only after the said reservoirs are created and both the streams get the minimum flow.** The recommendations of the study reports will be communicated to the State Govt. for implementation after completion of aforesaid studies.
- ii. **It has been proposed to optimize the water consumption to 58 Million Cubic Metres per annum (1,75,757 m<sup>3</sup>/day considering 330 working days in a year) in compliance to the latest MoEF&CC Notification** dated 7.12.2015 which will be fulfilled from proposed Shyamri ( 40 MCM) and Majhgaon Dams (21.90 MCM) considering 90% water dependability. A letter from Office of the Executive Engineer, Chhatarapur Water Resources Division vide dated 4.4.2017 mentioned that water of 40 MCM from proposed Shyamri Dam and 21.90 MCM from proposed Majhgaon dam are allocated for power project.
- iii. Storm water drainage system and plant effluents collection & treatment are independent and do not mix at any stage. Accordingly, storm water is not contaminated and does not need any monitoring before being discharged into the natural drain. However, part of the clean storm water from drainage network is proposed to be collected in the raw water reservoir for reuse.
- iv. Fugitive dust modeling has been carried out for PM<sub>10</sub> and PM<sub>2.5</sub> at loading & unloading and material transfer points. The incremental GLC are in the range of 1.9-20.7 µg/m<sup>3</sup> and 1-10.47 µg/m<sup>3</sup> for PM<sub>10</sub> and PM<sub>2.5</sub>, respectively.
- v. Blending of coal will be done from the different coal mines of Korba/Riagarh and Korea Rewa fields of SECL to bring down the ash content from 39% to 34%. Also, setting up of coal washery within plant is not feasible as it requires huge volume of water and the region has water insufficiency.
- vi. MoC vide its letter dated 31.3.2015, allotted the Banai Coal Block of Mand Raigarh, Chhattisgarh. Indicative characteristics of Banai Coal Block are as below:
  - a. Ash content: 34-38%,
  - b. Total moisture: 5-7%,
  - c. Sulphur: 0.58-0.62%,
  - d. GCV (kcal/kg): 4,000-4,200.
- vii. Average mercury content in coal is 0.14 mg/kg. Mercury emission balance has been made. The estimated average emissions are in the order of 0.001 mg/Nm<sup>3</sup> (Min: 0.005 mg/Nm<sup>3</sup> and Max: 0.026 mg/Nm<sup>3</sup>) as against the standard of 0.030 mg/Nm<sup>3</sup>.

viii. Regarding water conservation, 58 MCM (6,600 m<sup>3</sup>/h) of water has been optimized in compliance with vide MoEF&CC Notification dated 7.12.2015. To reduce water consumption, closed cycle cooling system with induced draft cooling towers has been proposed with designed COC of 5.0 recycling of ash water decantation, service water waste recycling has been envisaged. In view of this, air cooled condenser is not envisaged for the proposed project.

(6.5.3) Committee after deliberation and facts as presented by the PP, it has been noted that the additional information sought in the previous meeting held on 14.2.2017 was not adequately addressed in their reply. PP mentioned that eco-hydrology study and its downstream impacts shall be conducted only after dams are constructed which is not justifiable. The downstream impacts shall be conducted during the planning stage which is the main objective of the impact assessment methodology and appraisal. Committee further noted that the Bundelkhand region has faced acute water shortage in the past. Committee also noted that MoEF&CC has written to MoP for reconsideration of the project and its viability as the area is facing acute shortage.

(6.5.4) Committee after deliberations, **deferred the project** for seeking the same information which was sought in its meeting held on 14.2.2017 along with the following additional information.

i. NTPC shall justify the project as per 19<sup>th</sup> EPS published by CEA.

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## **6.6 2x660 MW Coal based TPP, Unit-7 & 8 at Suratgarh, Rajasthan by M/s RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED - reg. Amendment in EC.**

(6.6.1) PP could not attend the meeting. Member Secretary briefed the Committee that PP applied vide their online application dated 5.5.2017 for amendment in condition No.4A(v) of EC dated 23.5.2012. The condition No.4A(v) of the said EC is "Stack of 275 m height shall be installed and provided with continuous online monitoring equipments for SO<sub>x</sub>, NO<sub>x</sub> and PM<sub>2.5</sub> & PM<sub>10</sub>. Exit velocity of flue gases shall not be less than 22 m/s. Mercury emissions from stack may also monitored on periodic basis." PP in their application submitted that there are no vendors available for continuous online monitoring of PM<sub>2.5</sub> and PM<sub>10</sub> from the stack emissions.

(6.6.2) EAC noted that in their meeting held on 16.3.2017, recommended for the similar amendment for one of the RRUVNL project.

(6.6.3) **After detailed deliberations, EAC recommended for amendment of the said EC condition for monitoring PM emissions as below:**

i. Stack of 275 m height shall be installed and provided with continuous online monitoring equipment for SO<sub>x</sub>, NO<sub>x</sub> and PM. Exit velocity of flue gases shall not be less than 22 m/s. Mercury emissions from stack may also be monitored on periodic basis. Emission monitoring shall be carried out preferably during winter (December to February) and pre-monsoon (March to May) period where impacts will be more prominent and effective.

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## **6.7 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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**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<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, 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.
- xl ii) Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports.
- xl iii) Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished.
- xl iv) 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
- xl v) 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.
- xl vi) 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.
- xl vii) 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.
- xl viii) 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.
- xl ix) 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<sub>2</sub> 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) Corporate Environment Policy
  - 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.

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**Specific Conditions related to Thermal Power Projects:**

- (i) Vision document specifying prospective plan for the site shall be formulated and submitted to the Regional Office of the Ministry within **six months**.
- (ii) Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation including actual generation of solar power shall be submitted along with half yearly monitoring report.
- (iii) A long term study of radio activity and heavy metals contents on coal to be used shall be carried out through a reputed institute and results thereof analyzed every two year and reported along with monitoring reports. Thereafter mechanism for an in-built continuous monitoring for radio activity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.
- (iv) Online continuous monitoring system for stack emission, ambient air and effluent shall be installed.
- (v) High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 30 mg/Nm<sup>3</sup> or as would be notified by the Ministry, whichever is stringent. Adequate dust extraction system such as cyclones/bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided along with an environment friendly sludge disposal system.
- (vi) Adequate dust extraction system such as cyclones/ bag filters and water spray system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.
- (vii) Monitoring of surface water quantity and quality shall also be regularly conducted and records maintained. The monitored data shall be submitted to the Ministry regularly. Further, monitoring points shall be located between the plant and drainage in the direction of flow of ground water and records maintained. Monitoring for heavy metals in ground water shall also be undertaken and results/findings submitted along with half yearly monitoring report.
- (viii) A well designed rain water harvesting system shall be put in place within six months, which shall comprise of rain water collection from the built up and open area in the plant premises and detailed record kept of the quantity of water harvested every year and its use.
- (ix) No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up/operation of the power plant.
- (x) Additional soil for leveling of the proposed site shall be generated within the sites (to the extent possible) so that natural drainage system of the area is protected and improved.
- (xi) Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Mercury and other heavy metals (As, Hg, Cr, Pb etc.) shall be monitored in the bottom ash. No ash shall be disposed off in low lying area.
- (xii) No mine void filling will be undertaken as an option for ash utilization without adequate lining of mine with suitable media such that no leachate shall take place at any point of time. In case, the option of mine void filling is to be adopted, prior detailed study of soil characteristics of the mine area shall be undertaken from an institute of repute and adequate clay lining shall be ascertained by the State Pollution Control

Board and implementation done in close co-ordination with the State Pollution Control Board.

- (xiii) Fugitive emission of fly ash (dry or wet) shall be controlled such that no agricultural or non-agricultural land is affected. Damage to any land shall be mitigated and suitable compensation provided in consultation with the local Panchayat.
- (xiv) Green Belt consisting of three tiers of plantations of native species all around plant and at least 50 m width shall be raised. Wherever 50 m width is not feasible a 20 m width shall be raised and adequate justification shall be submitted to the Ministry. Tree density shall not be less than 2500 per ha with survival rate not less than 80 %.
- (xv) Green belt shall also be developed around the Ash Pond over and above the Green Belt around the plant boundary.
- (xvi) The project proponent shall formulate a well laid Corporate Environment Policy and identify and designate responsible officers at all levels of its hierarchy for ensuring adherence to the policy and compliance with the conditions stipulated in this clearance letter and other applicable environmental laws and regulations.
- (xvii) CSR schemes identified based on need based assessment shall be implemented in consultation with the village Panchayat and the District Administration starting from the development of project itself. As part of CSR prior identification of local employable youth and eventual employment in the project after imparting relevant training shall be also undertaken. Company shall provide separate budget for community development activities and income generating programmes.
- (xviii) For proper and periodic monitoring of CSR activities, a CSR committee or a Social Audit committee or a suitable credible external agency shall be appointed. CSR activities shall also be evaluated by an independent external agency. This evaluation shall be both concurrent and final.

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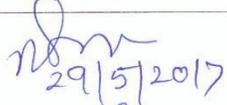
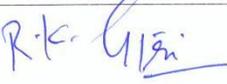
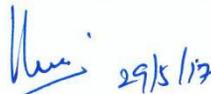
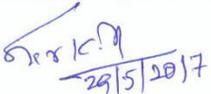
Attendance of the 6<sup>th</sup> EAC Meeting of the Re-constituted Expert Appraisal Committee (EAC) for Thermal Power Projects Meeting held on 29<sup>th</sup> May, 2017.

LIST OF MEMBERS (Attendance Sheet)

6<sup>th</sup> EXPERT APPRAISAL COMMITTEE MEETING (Thermal Power Projects)

DATE & TIME : 29<sup>th</sup> May 2017, 9:30 AM

VENUE : INDUS HALL, INDIRA PARYAVARAN BHAWAN,

Sr.No.	Name of Member	Signature
1.	Dr. Navin Chandra Chairman	
2.	Dr. Narmada Prasad Shukla Member	
3.	Dr. Rajesh P. Gunaga Member	Absent
4.	Sh. N. Mohan Karnat, IFS Member	
5.	Dr. Sharachandra Lele Member	
6.	<del>Sh. P.D. Siwal</del> / Sh. N.S. Mondal Representative of Central Electricity Authority (CEA)	 29/5/2017
7.	Dr. R.K. Giri, Scientist 'E' Representative of Indian Meteorological Department (IMD)	
8.	Dr. S.K. Paliwal, Scientist 'D' Representative of Central Pollution Control Board (CPCB)	Absent
9.	Prof. D.C. Panigrahi/ Prof. S.K. Sinha/ Prof. OM PRAKASH Representative of IIT (ISM) Dhanbad	 29/5/17
10.	Dr. S. Kerketta Member Secretary MoEFCC	 29/5/2017

Approval of Minutes of the 6<sup>th</sup> Meeting of the Re-constituted Expert Appraisal Committee (EAC) on Environmental Impact Assessment (EIA) of Thermal Power Projects by the Chairman.

6/12/2017

[https://mail.gov.in/iwc\\_static/layout/shell.html?lang=en&3.0.1.2.0\\_15121607](https://mail.gov.in/iwc_static/layout/shell.html?lang=en&3.0.1.2.0_15121607)

Subject: **Re: Draft minutes of 6th EAC meeting of Thermal sector held on 29.05.2017-approval regarding.** Date: 06/09/17 06:46 PM  
From: navin chandra <navinchandrarrl@yahoo.com>  
To: Dr S Kerketta <s.kerketta66@gov.in>

09/06/2017

Dear Dr. Kerkaetta Ji,

I have gone through the Draft approval sent by you today. It is in order. You may upload it on MoEF & CC web site after approval of competent authority.

Regards,  
yours sincerely,

(NVIN CHADRA)

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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

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On Friday, June 9, 2017, 1:06:03 PM GMT+5:30, Dr S Kerketta <s.kerketta66@gov.in> wrote:

Sir,

Draft minutes of 6th EAC meeting of Thermal Sector held on 29.05.2017 is attached. It is requested to kindly approval of the same to enable to upload in the website of the Ministry.

regards,

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

**6<sup>th</sup> MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE ON  
THERMAL POWER PROJECTS**

**DATE : 29<sup>th</sup> May, 2017**

**TIME : 10.30 A.M. ONWARDS**

**VENUE : INDUS MEETING HALL, JAL WING, GROUND FLOOR, INDIRA PARYAVARAN  
BHAWAN, JORBAGH ROAD, NEW DELHI-110003.**

**AGENDA**

<b>ITEM</b>	
<b>29.05.2017</b>	
<b>Item No. 6.0</b>	<b>CONFIRMATION OF MINUTES OF 5<sup>th</sup> EAC (Thermal) MEETING</b>
<b>Item No.</b>	<b>CONSIDERATION OF PROJECTS</b>
6.1	3x800 MW Super-Critical TPP at village Annupurna Khamar, Taluk Kamakhyanagar, Dhenkenal Distt., Odisha by <b>M/s. ODISHA THERMAL POWER CORPORATION LTD.- reg. EC.</b>
6.2	90 MW Captive Thermal Power Plant at village Vadnagar, Taluka: Kodinar, Dist. Gir Somnath (Erstwhile Junagadh) Gujarat by <b>M/s GUJARAT AMBUJA CEMENT LTD.-reg. Amendment in EC.</b>
6.3	1600 (2x800) MW Godda Thermal Power Project at Motia, Gangta, Gaighat and other Adjacent Villages, Godda 8- Poraiyahaat Tehsil, Godda District in Jharkhand, By <b>M/S ADANI POWER (JHARKHAND) LIMITED – reg. EC</b>
6.4	Modernization & Expansion in Power Plant from 125.3 MW to 141 MW at Tehsil - Ladpura, District - Kota, Rajasthan by <b>M/S DCM LTD. reg. ToR</b>
6.5	4x660 MW, Stage-I, Barethi Super Thermal Power Project near village Barethi, Tehsil Rajnagar, District Chhatarpur, Madhya Pradesh by <b>M/S NTPC LTD.- reg. reconsideration for EC.</b>
6.6	2x660 MW Coal based TPP, St-V at Suratgarh, Rajasthan by <b>M/S RAJASTHAN RAJYA VIDYUT UTPADAN NIGAM LIMITED reg. Amendment in EC</b>
6.7	<b>ANY OTHER ITEM WITH THE PERMISSION OF THE CHAIR.</b>

**Note:** Soft copy of the shape file showing project boundary with all facilities like coal transportation/water transportation pipelines in .kml form and Brief summary/basic information as per pro-forma shall be made available during the presentation. 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.