

MINUTES OF THE 21st MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE (EAC) ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF THERMAL POWER PROJECTS

The 21st Meeting of the re-constituted EAC (Thermal Power) was held on 26th September, 2018 in the Ministry of Environment, Forest & Climate Change at Brahamaputra Meeting Hall, Vayu Wing, First Floor, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi under the Chairmanship of Dr. Navin Chandra. The following members were present:

1. Dr. Navin Chandra - Chairman
2. Shri Suramya D. Vora - Member
3. Dr. N. P. Shukla - Member
4. Shri N. Mohan Karnat - Member
5. Dr. Jai Krishna Pandey - Member
6. Shri N.S. Mondal - Member (Representative of CEA)
7. Prof. S.K. Gupta - Member (Representative of ISM/IIT Dhanbad)
8. Dr. S. Kerketta - Member Secretary

Dr. S. Lele, Dr. (Mrs.) Manjari Srivastava, Shri G.P. Kundargi, Dr. R.K. Giri (Representative of IMD) and Dr. S.K. Paliwal (Rep. of CPCB) could not be present due to preoccupation.

Item No.21.0: CONFIRMATION OF THE MINUTES OF THE 20th EAC MEETING.

The Minutes of the 20th EAC (Thermal Power) meeting held on 30.08.2018 were confirmed in presence of members present in the meeting.

Item No. 21.0: CONSIDERATION OF PROJECTS

21.1 Proposed 25 MW Municipal Solid Waste based Thermal Power Plant (Waste to Energy) (WtE) at Tehkhand, Okhla, South East Delhi, New Delhi by M/s Tehkhand Waste to Electricity Project Limited -reg. amendment in EC. (F.No. J-13012/03/2018-IA.I(T) & Online No: IA/DL/THE/71979/2017).

(21.1.1) Project Proponent submitted this proposal online on 30.08.2018 for amendment in Environmental Clearance (EC). EC for 25 MW Municipal Solid Waste based Thermal Power Project has been issued vide Ministry's letter dated 26.07.2018. Project Proponent has made the presentation *inter-alia*, submitted the following information:

- i. The Special Purpose Vehicle (SPV) i.e. M/s Tehkhand Waste to Electricity Project Ltd. has been handed over to M/s JITF Urban Infrastructure Limited, Jindal ITF Center, 28, Shivaji Marg (Najafgarh Road), New Delhi-110 015.
- ii. Further, Letter of Award has been issued by the M/s South Delhi Municipal Corporation (M/s SDMC) to M/s JITF Urban Infrastructure Ltd. vide letter dated 01.03.2018. Concession Agreement has also been signed between M/s SDMC and M/s Tehkhand Waste to Electricity Project Ltd. on 10.05.2018. The Members of Board of Directors of M/s Tehkhand Waste to Electricity Project Ltd. were earlier included from M/s SDMC and now the SPV has been transferred to M/s JITF Urban Infrastructure Ltd. Accordingly, the Members of the present Board of Directors are only from M/s JITF Urban Infrastructure

- Ltd. In this regard, the PP requested to change the contact details in the EC letter.
- iii. New WtE plants are being designed to store MSW in a single pit considering 3 to 5 days retention time which, as per the PP submission, is enough for drying and reduction of moisture of MSW in controlled environment of storage pit. Therefore, it is proposed to store MSW in a single pit with 5 days of retention time having size of 110x22.5x10 m (virtual pit) instead of 30x22.5x5 m, as proposed earlier.
 - iv. This drying pit and tipping floor will be equipped with EOT crane and grab bucket for MSW aeration and feeding to the hoppers for segregation/processing. Tipping Bay will be in the front side. Hence, maximum leachate will be collected here.
 - v. In the EC, it was proposed that the material below 10 mm contains organic matter and will be sent to composting. Further, the fraction above 80-100 mm will be retained on the top screen and sent to shredder for further size reduction. The middle fraction between 10-80 mm will be fed to the boiler. However, with the experience in the existing waste to energy plants, it has been found that Municipal Solid Waste having size between 20-200 mm does not need any shredding/size reduction and can be directly fed to the boiler. Further, waste having size more than 200 mm requires shredding for use in RDF boilers. Further, it has been found that the MSW with less than 10 mm size has low efficiency of composting as the percentage of sand and silt increases. Accordingly, it is proposed to send the MSW with size less than 20 mm to composting for increasing the efficiency.
 - vi. It is submitted that the amount of Rs 27.05 crores is total capital cost of air & noise pollution control systems, occupational health and safety, greenbelt, odour control system and sanitization process combined including cost of Environmental Management Plan, whereas Rs. 6.7 crores is recurring cost for all these activities combined. Out of this only Rs. 1.2 Crores (capital) and Rs. 40 lakhs (recurring) per annum is planned for Environment Management Plan. Accordingly, it is proposed to change the cost of Environmental Management Plan is Rs. 1.2 crores (capital) and Rs. 45 lakhs (recurring) instead of Rs 27.05 crores (capital) and Rs. 6.7 Crore (recurring).
 - vii. Specific Condition No.vii of the Environmental Clearance stipulates to install Electro Static Precipitators (ESP) for controlling Particulate Matter (PM) emissions from the flue gas. Baghouse with force Jet PTFE membrane or equivalent Fabric Filters are extensively being used all over the world in Waste to Energy Plants due to its higher dust removal efficiency of up to 99% or more. Therefore, it is proposed to install Baghouse with force Jet PTFE or equivalent fabric filters instead of ESP.

(21.1.2) Committee noted that the ownership of the SPV (M/s Tehkhand Waste to Electricity Project Limited) has been transferred to M/s JITF Urban Infrastructure Ltd. by the SDMC vide letter of award dated 1.3.2018. As informed, the board of directors of the company was earlier from M/s SDMC and now from M/s JITF Urban Infra Ltd. As the ownership is changed, it is to be treated as transfer of EC under para 11 of EIA Notification. Accordingly, the No Objection Certificate from SDMC, an undertaking by the present owner and the Certificate of Incorporation issued by the Registrar of Companies for changing the ownership of the company are to be furnished. Committee further

noted that the amendment related to Capital and recurring cost of EMP is requested for decreasing the cost of 27.05 crores (Capital) and Rs. 6.7 crore/annum (Recurring) to Rs.1.2 Crores (capital) and Rs. 40 lakhs (recurring) per annum whereas project proponent during the presentation only sought amendment in the recurring cost which increased from Rs.6.7 Crore/annum to Rs.6.75 Crore/Annum as there is an increase of Rs.5 Lakhs in the environmental monitoring.

(21.1.3) **Committee after detailed deliberations, recommended for amendment of EC** w.r.t. MSW storage pit, variations in the size of MSW for composting, boiler feed and shredding, changing from high efficiency ESP to Bag Filters as proposed and increasing the recurring cost of Environmental Management Plan from Rs.6.7 Crores to Rs.6.75 Crores subject to submission of following documents for transfer of EC:

- i. No Objection Certificate from M/s SDMC.
- ii. An undertaking by the present SPV that the conditions prescribed in the Environmental Clearance be complied with.
- iii. The Certificate of Incorporation issued by the Registrar of Companies for changing the ownership of the company.

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(21.2) **2x800 MW Coal based Lara Super Thermal Power Project at Villages Armuda, Chhapora, Bodajharia, Devalpura, Mahloi, Riyapalli, Lara, Jhilgitar and Kandagarh in Taluk Pussore, in District Raigarh, in Chhattisgarh by M/s NTPC Ltd. – reg. re-consideration of amendment of EC. (F.No. J-13012/97/2007-IA.II(T) & Online No. IA/CG/THE/12048/2012).**

(21.2.1) Project Proponent submitted online application on 31.7.2018 for re-consideration of amendment of EC.

(21.2.2) The Environmental Clearance for the 2x800 MW Power Project has been accorded vide Ministry's letter dated 13.12.2012. A temporary permission for transporting 6,913 TPD (for one Unit) coal by road from Lakhanpur Coal Block has been issued vide Ministry's letter dated 26.04.2017 which was valid till 25.4.2018.

(21.2.3) Further, an online application was submitted vide dated 10.08.2017 for change in coal source from Talaipalli Coal Mining project of NTPC to mines of MCL, SECL and Korea-Rewa Mines and transportation of coal by road for temporary period. The proposal has been considered in the EAC (Thermal Power) in its meeting held on 30.08.2017 and recommended for transportation of coal of 6,913 TPD from three mines sources viz. Lakhanpur mines of MCL (already permitted), SECL and other MCL mines through road for temporary period of one year. Subsequently, Ministry has sought point-wise EC compliance report vide letter dated 17.09.2017. M/s NTPC has submitted the compliance report vide their letter dated 22.09.2017. Ministry sought the

additional information vide letter dated 14.12.2017 as the proposed route contains the roads having width of 3-5.7 m in rural areas:

- i. Axle load *vis-à-vis* strength of the road to assess whether the road have adequate load bearing strength due to proposed transportation.
- ii. Action plan for widening and strengthening of the road in consultation with the custodian of the road viz. Panchayat/PWD/NHAI wherever there is an insufficient width and load bearing capacity. A certificate in this regard was sought after strengthening the road from Panchayat/PWD/NHAI.
- iii. Details of nature of the road (Morum/ Concrete/Asphalt/Bitumen/NH) along the proposed routes.

(21.2.4) M/s NTPC have not submitted the requisite information in response to the Ministry's letter dated 14.12.2017 even after six months. Accordingly, the proposal was de-listed on 14.6.2018 with the approval of Competent Authority. Subsequently, Project Proponent has submitted another proposal for grant of ToR (IA/CG/THE/75138/2012 dated 20.07.2018) for taking up of an expansion project (2x800 MW) in the same premises. An EDS (Essential Details Sought) was raised again to submit the reply which was pending more than six months to consider the new proposal for grant of ToR. Accordingly, M/s NTPC have submitted the reply on 26.06.2018.

(21.2.5) In addition, M/s NTPC have also submitted another application vide dated 31.07.2018 for transporting 11,000 TPA coal by road for temporary period of 16 months (i.e. from August, 2018-November, 2019). It has been decided that the earlier proposal dated 10.08.2017 and the present proposal dated 31.07.2018 to be appraised before the EAC comprehensively. Accordingly, the proposal has been placed before the EAC (Thermal Power Sector) in the present meeting. Project Proponent along with the consultants M/s Min Mec Consultancy Pvt. Ltd. have made the presentation *inter-alia* submitted the following information:

- i. As the mines from where coal shall be supplied are not specified in the bridge linkage, Lara STPP may get coal from various mining areas of Mahanadi Coalfields Ltd. (MCL) and South Eastern Coalfields Ltd. (SECL) viz. Basundhara-Garjanbahal Area (Basundhra mines and Kulda mines), Ib Valley Area (Samleshwari mines and Lajkura mines) and Lakhanpur area (Belpahar, Lakhanpur & Lilhari mines) of MCL. Further, SECL has offered coal from Raigarh Coalfields Mines (Baroud mines, Jampali mines & Chhal mines) as an alternate to Korea Rewa fields since, Raigarh Coalfield Mines are nearer to Lara STPP.
- ii. NTPC also plans to use coal from its own mines i.e. Dulanga Coal Mine Project (Dulanga CMP) since the coal requirement for Unit-1 (800 MW) is 4 MTPA and the bridge linkage available for Unit-1 (800 MW) is maximum 3.225 MTPA. Accordingly, NTPC plans to meet the requirement of balance coal from Dulanga CMP which has already started its coal production.

- iii. Further, the railway line which is to be built is delayed and requires another year for completion. At many stretches, the land acquisition is to be completed. At several stretches, the construction is in full swing. About 500 m length of the rail line is part of the closed mines which needs to be levelled for laying railway line.
- iv. As the proposed railway route involves forest land, diversion of forest land of 35.413 ha Reserved forest and revenue forest has been made vide Ministry's Regional Office, Nagpur letter dated 02.02.2018. Further, Wildlife Conservation Plan for Sloth Bear has been prepared and vetted by the Chief Wildlife Warden vide letter dated 02.05.2017. The Chief Wildlife Warden has requested to deposit Rs.2.53 Crores for implementing the Wildlife Conservation Plan.
- v. The following routes and sources for total of 11,00 TPD is proposed:

Routes	From	Mines/Source	Distance (km)	Quantity of coal	Remarks
Route-1	MCL	Basundhra-Garjanbahal Area (Kulda and Basundhara mines)	101 km	2500 TPD	200 Nos. to and fro trucks with 25 T capacity
Route-2		Ib Valley Area (Samleshwari mines and Lajkura mines)	65.6 km	500 TPD	68 Nos. to and fro trucks with 15 T capacity
Route-3		Lakhanpur area (Belpahar, Lakhanpur & Lilhari mines)	49.4 km	700 TPD	94 Nos. to and fro trucks with 15 T capacity
Route-4	SECL	Raigarh Coal fields (Baroud and Jampali mines)	76.6 km	1800 TPD	144 Nos. to and fro trucks with 25 T capacity
Route-5	MCL/ SECL	Kotarliya Railway siding	43.9 km	3500 TPD	Only one route is used, out of Route Nos. 5 & 6. 280 Nos. to and fro trucks with 25 T capacity
Route-6		Bhupdeopur Railway siding	42.7 km	3500 TPD	280 Nos. to and fro

					trucks with 25 T capacity
Route-7	NTPC	Dulanga Mines	117.8 km	2000	200 Nos. to and fro trucks with 20 T capacity
Total				11,000 TPD	986 Trips to and fro with 15/25 T trucks

vi. The total route length along with the break-up of road widths are as follows:

Route	Length (km)	Single Lane (<5.5 m)	Intermediate Lane (5.5-7 m)	Two Lane (7-10 m)	Multi-lane (≥ 10 m)	Remarks
Route-1	101	0	12.22	60.6	27.67	
Route-2	65.6	0	1.96	10.62	53.00	
Route-3	49.4	0	4.19	1.87	43.32	
Route-4	76.6	0	21.37	33.85	21.37	
Route-5	43.9	8.34	7.06	8.99	19.49	3.22 km road has width of 3-3.7 m and 4.75 km has width of 3.1-4.3 m
Route-6	42.7	0	0	9.43	33.26	
Route-7	117.8	5.89	12.25	62.55	37.22	5.9 km of the road has width of 3.8-3.85 m through villages.

vii. The incremental traffic volumes have been computed and the resultant traffic which includes baseline traffic and proposed traffic is compared with the design volume of the roads. The volume of the road occupied by the total traffic after proposed transportation is as follows:

Route	Length (km)	% of utilisation of the road after incremental traffic	Remarks
Route-1	101	27.6-71.5	

Route-2	65.6	27.6-86.7	
Route-3	49.4	27.6-57.4	
Route-4	76.6	27.6-71.5	
Route-5	43.9	27.6-111.4	3.7 m village road has existing traffic of 37.3%. The proposed traffic increased to total volume of 111.4%
Route-6	42.7	27.6-140.5	13.3 m Urban road near Bhagwanpur Village has existing traffic volume of 135.4%.
Route-7	117.8	27.6-92.7	

- viii. Ambient Air quality in the study area and incremental air quality due to proposed traffic is as below:

Route	Range of PM ₁₀ (µg/m ³)	Range of PM _{2.5} (µg/m ³)	Range of SO ₂ (µg/m ³)	Range of NO _x (µg/m ³)	Incremental concentrations (µg/m ³)
Route-1	63.5-90.6	35.5-47.1	10.8-27.2	14.8-32.1	PM ₁₀ : 0.022 PM _{2.5} : 0.013 SO ₂ :1.71 NO _x :11.66
Route-2	58.1-79.6	35.3-47.0	7.1-12.6	12.2-18.2	
Route-3	70.4-79.6	37.1-41.1	10.8-12.6	14.8-16.6	
Route-4	68.2-90.6	35.5-47.1	10.8-27.2	14.8-32.1	
Route-5	64.3-118	33.4-61.4	10.8-27.2	14.1-32.1	
Route-6	65.4-90.6	36.4-51.2	7.2-27.2	14.8-32.1	
Route-7	60.5-90.6	35.5-50.2	5.9-27.2	7.5-32.1	

- ix. The transportation of coal from Kotarliya railway siding to Lara STPP will be feasible via Urdana bypass but needs widening/ strengthening which is under process by PWD, Raigarh. NTPC shall provide necessary financial assistance for widening and strengthening/construction of the 6.275 km length at two stretches. It was observed that the baseline air quality at Kotarliya Railway siding was beyond the limit because of material handling and on-going construction activities at Kotarliya Railway siding.
- x. The impact/ range of reduction of yield is 0.122% only due to proposed transportation of coal through 986 (to and fro) tippers.

(21.2.6) Committee noted that the construction of the railway line is underway at several stretches. However, at some places, the construction is yet to start. Further, Committee felt that land has been acquired for double line whereas only single rail line is sufficient considering the coal requirement for the Lara STPP. Committee felt that the agriculture and forest land has been acquired/diverted more than necessary. Further, wildlife passes which were constructed will be sufficient only for Sloth Bear for the free movement of the wildlife. Further, committee noted that considering the present progress of the rail line, it may take more than a year for completion. Committee also felt that the two routes (Route-5: Kotarliya siding and Route-7: Dulanga mines) have very narrow stretches of 3-4 m width for a length of 8 km and 6 km. Committee noted that these routes shall not be used till the roads are widened and strengthened which PP agreed to it.

(21.2.7) **Committee after detailed deliberations on the facts presented by the PP including Public Representations, recommended for transportation of coal by road except for the routes (Route Nos. 5 & 7) i.e. from SECL/MCL Mines to Kotarliya Railway siding and then to power plant site and Dulanga Mines (NTPC) to the power plant site, for a temporary period of one-year subject to the following conditions:**

- i. Transportation through villages and other routes during night shall not be carried out.
- ii. Road transportation from Bhupdeopur Railway siding shall be carried out instead of Kotarliya Railway siding as the road of 8 km does not have sufficient width. An application may be submitted along with traffic assessment after widening/strengthening the road in the route of Kotarliya railway siding.
- iii. Road transportation through Dulanga mines shall not be carried out at present as the road of approximately 6 km has width of 3-4 m. The proposal may be submitted along with traffic assessment after widening/strengthening the road.
- iv. Road transportation shall be done by tarpaulin covered trucks only.
- v. Avenue plantation shall be carried out along the roads.
- vi. The progress report regarding the strengthening/widening of roads along the routes of Kotarliya siding and Dulanga mines shall be submitted.

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**(21.3) 4x660 MW Imported Coal based Thermal Power Plant at notified Dahej industrial area near village Suva, in Vagra Taluk, in Bharch District, in Gujarat by M/s Adani Power Dahej Ltd.- reg. re-consideration of extension of EC.
(File No:J-13012/39/09-IA.II(T) & Online No.: IA/GJ/THE/2082/2009).**

(21.3.1) Project Proponent submitted online application on 05.07.2018 for extension of EC dated 25.10.2011 for further period five years, i.e. till 25.10.2023. The

validity of Environmental Clearance was for five years, i.e. till 24.10.2016. As the EC is valid on the date of EIA amendment notification dated 14.9.2016, the five years validity automatically becomes seven years. Accordingly, the EC is valid for seven years, i.e. till 24.10.2018. As per the EIA Amendment Notification dated 14.9.2016, the validity can be extended by maximum period of three years. Thus, the outer limit of the validity of EC is 10 years. However, Project Proponent has sought for extension of five years which becomes total validity of 12 years from the date of grant of EC. The proposal was earlier considered in the EAC (Thermal Power) in its 20st meeting held on 26.9.2018. EAC in its meeting held on 30.8.2018 deferred for submitting the PERT chart showing the timelines and completion of all the activities for commissioning the power plant within three years.

(21.3.2) The project proponent has submitted the PERT chart stating the timelines for implementation of the project construction activities. The proposal was considered in the present meeting. Project Proponent inter-alia made the presentation and submitted the following information:

- i. The construction activities and all the units will achieve COD in 36 months.
- ii. The Power Purchase Agreement (PPA) is expected to be made in the near future.
- iii. The Zero date in the PERT chart will start from the date of PPA is signed.

(21.3.3) Committee noted that the Environmental Clearance is valid for seven years, i.e. till 24.10.2018. The provision in the EIA Notification allows only for extension of three years beyond 7 years. In other words, the outer limit of the validity of the EC is 10 years beyond which it cannot be extended as per the provisions of the EIA Notification. Further, the provision of the extension of three years is given in the notification which is to be used only in case of substantial physical progress achieved by the project. In the present case, there is only provision in the EIA notification for extending the validity for three years. Initially, Project Proponent has requested for extension of validity of EC for five years which is not possible as per the provisions of the EIA Notification. However, Project Proponent has now submitted the PERT chart showing timelines to complete and achieve COD in three years. However, Committee noted that Project Proponent will start constructions only after signing Power Purchase Agreement (PPA). The date of signing of PPA is not certain. However, Project Proponent informed that PPA will be signed within 6 months. The project timelines had already been reduced from five years to three years. Further, the three years timeline may be reduced to two or two and half years, if the PPA is not signed which will lead to non-completion of the project by 24.10.2021 (outer lime of EC validity 10 years).

(21.3.4) **Committee after detailed deliberations on the facts presented by the PP including Public Representations, recommended for extension of the EC for further period of three years, i.e. till 24.10.2021 subject to the following additional conditions:**

- i. Revised emission standards as per the Ministry's notification dated 07.12.2015 and subsequent amendments notified from time to time shall be complied. In case, plant is ready for commissioning and not meeting revised emission norms, operations shall be stopped unless there is an extension

- given through a specific direction by MoEFCC/CPCB or amendment in notification issued.
- ii. As per the Revised Tariff Policy notified by Ministry of Power vide dated 28.01.2016, project proponent shall explore the use of treated sewage water from the Sewage Treatment Plant of Municipality/ local bodies/ similar organization located within 50 km radius of the proposed power project to minimize the water drawl from surface water bodies.
 - iii. The detailed progress report of the project construction activities shall be submitted to the concerned Regional Office.

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(21.4) Expansion by addition of 1x80 MW and 1x160 MW Coal Based Thermal Power Plant at village Peria Obulapuram and Papankuppam, in Gummidipoondi Taluk, in Thiruvallur District in Tamil Nadu by M/s OPG Power Generation Pvt. Ltd.- reg. reconsideration in amendment in EC. (F.No.J-13012/111/2009-IA.I(T) & Proposal no. IA/TN/THE/10308/2011).

- (21.4.1) The Project Proponent (PP) submitted online application on 11.07.2018 for amendment in the EC dated 31.03.2008 for increasing the configuration of the power plant from 2x77 MW to 2x81 MW. The proposal was earlier considered in the EAC (Thermal Power) in its 19th 25.7.2018. Project proponent could achieve the production of 2x81 MW by reducing the leakages from HP steam to LP steam and without installing additional equipment. The EAC deferred the proposal to project proponent may submit a safety compliance certificate from the manufacturer (BHEL) that the proposed additions in the rotor and HP//LP steam side do not lead to unsafe situations.
- (21.4.2) Project Proponent has submitted the safety certificate issued by BHEL vide dated 17.9.2018 stating that there will not be any impact on operational safety for running the power plant at 2x81 MW. Project Proponent made the presentation and briefed the safety aspects during operations.
- (21.4.3) **EAC after detailed deliberations, recommended for amendment in EC for increasing the capacity of the power plant from 2x77 MW to 2x81 MW.**

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(21.5) Proposed expansion of 2x660 MW (Stage-III) Super Thermal Power Project at Village Shaktinagar, Tehsil Dudhi, District Sonbhadra, Uttar Pradesh by M/s NTPC Ltd.-reg. re-consideration of amendment in ToR. (File No: J-13012/09/2016-IA. II (T) & Online No: IA/UP/THE/59577/2016).

- (21.5.1) Project Proponent submitted online application on 05.07.2018 for amendment in ToR for change in configuration from 2x660 MW to 2x800 MW. The proposal was earlier considered in the EAC in its 19th meeting held on 25.7.2018. EAC in its meeting held on 25.7.2018 deferred the project for conducting a site visit by the sub-committee comprising of following members for reviewing of the status of compliance specific to ash utilisation and ash disposal and issues mentioned in the complaints:

(i) Dr. N.P. Shukla

- Chairman

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| (ii) Prof. S.K. Gupta | - Member |
| (iii) Shri G.P. Kundargi | - Member |
| (iv) Rep. of RO, MoEF&CC, Lucknow | - Member |
| (v) Dr. S. Kerketta, Director, MoEF & CC | - Member Secretary |

(21.5.2) Accordingly, the Sub-committee conducted the site visit during 1st-2nd September, 2018. Shri G.P. Kundargi and representative from RO, Lucknow could not be present due to pre-occupation. The sub-committee made the following observations:

- i. At present Ash disposal is done in two Ash Dykes i.e. S-1 and S-2.
- ii. Utilization pattern of ash generation of existing project found that ash utilization has been achieved between 10-28% towards filling of low lying areas, ash dyke raising and small quantity in Brick Plants. The Committee found that there is no substantial efforts have been made by the Project Proponent towards utilization of flyash as per the Fly Ash Notification.
- iii. Five Bricks Plants (@8000 bricks per day) are in operation for internal use of NTPC.
- iv. There are public grievances mainly on disposal of ash on the periphery of Rihand dam due to which the supernatant water of ash dyke is going into the dam and polluting the water.
- v. Rihand dam is a 91.44 m high concrete gravity dam on River Rihand, about 46.2 km upstream from its confluence with river Son. The ashdyke has been constructed near Rihand Reservoir.
- vi. Ash dyke has been constructed for Singrauli STPP based on the maximum factor of safety for stability of the ash dyke at different conditions as per IS: 7894-1975 code i.e. Steady Seepage and Earthquake conditions. The dyke has been inclined from highest slope to lowest slope to easily make away to flow the slurry water from the toe drain into the lowest point. Therefore, this has helped to flow the slurry water away from the Rihand dam.
- vii. As the dyke is a porous structure, it allows a gradual movement of water through its pores. In order to keep the downstream slope dry and stable, a sand chimney and sand blanket are provided to intercept the seepage, if any and channelize the same through the rock toe and toe drain.
- viii. The water collected from the toe drains is not the leachate but the seepage intercepted through sand chimney/ sand blanket and it is also collected and recycled.
- ix. The groundwater analysis at the upstream and downstream locations of the ash dykes reveals that there has not been much differences of the water quality parameters at both the ends, thus it can be inferred that leaching from the ash ponds is negligible.

- x. All the environmental clearance conditions have been satisfactorily complied with.

(2.5.3) Sub-committee made the following recommendations:

- i. Amendment of Terms of Reference i.e. change in configuration from 2x660 MW to 2x800 MW for this project be allowed to carry out the base line data for preparation of EIA/EMP report.
- ii. There should be a concerted effort to utilize fly ash for making cement and bricks so that maximum ash utilization can be achieved every year.
- iii. Back filling of mine voids seems a good option, but care should be taken to implement the recommendation of expert institutions for ensuring strength, stabilization and feasibility. A detailed study on these aspects are required.

(2.5.4) The report of the sub-committee (**Annexure-A3**) has been placed before the EAC. The Committee after deliberation, agreed with the recommendations of the Sub-committee and **recommended for amendment in ToR for increasing the configuration from 2x660 MW to 2x800 MW subject to following additional ToRs:**

- i. Action plan to utilize fly ash for manufacturing cement and bricks shall be submitted so that maximum ash utilization can be achieved every year.
- ii. Back filling of mine voids seems a good option, but care should be taken to implement the recommendation of expert institutions for ensuring strength, stabilization and feasibility. A detailed study on these aspects are required.
- iii. The environmental impact assessment study shall be carried out considering the changes in resources and pollution load for 2x800 MW instead of 2x660 MW.

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**(21.6) 2x250 MW (Phase-II) Thermal Power Plant at Village Tamnar, District Raigarh, Chhattisgarh by M/s Jindal Power Ltd.-reg. reconsideration of amendment in EC.
(F.No. J-13012/08/2006-IA. II (T) & Online no. IA/CG/THE/10253/2006).**

(21.6.1) Project Proponent vide online application dated 28.03.2017 requested for amendment in EC dated 08.06.2006. Environment Clearance for setting up of 2x250 MW (Stage-II) Thermal Power Plant at Village Tamnar, Dist. Raigarh, Chhattisgarh has been accorded on 08.06.2006. Specific Condition No. 3(iii) stipulates that "No additional land for ash pond shall be acquired during Phase-II of the project. The height of the existing ash dyke shall be limited to 10 m". Project Proponent has proposed to raise the height of the ash dyke from 10 m to 18 m to avoid the acquisition of additional land for disposal of unutilised ash from the power plant. Ash dyke is proposed to be raised in two stages of 4 m each. The present elevation of RL 278 m will be raised to RL of 286 m. Total ash

pond area is 198 ha. Ash pond No.1 consists of 118.14 ha of area and ash pond No.2 consists of 79.86 ha of area.

(21.6.2) The proposal was earlier considered by the EAC in its 5th, 9th and 17th meeting held on 26.04.2017, 30.08.2017 and 25.05.2018, respectively and recommended in all the meetings for increasing the height of the ashdyke to 4 m. Further, Ministry while processing the proposal found that there are certain aspects related to utilisation of the flyash and the repeated requests of project proponent to use the existing ash pond due to non-readiness of other ash dykes due to land acquisition problems, etc, need to be dealt in detail. Accordingly, Ministry vide Order dated 30.08.2018 constituted a Committee comprising of following members to verify the necessity of increasing the ash dyke and various options for utilisation of flyash. **Though, the Committee was constituted by the Ministry, it has been necessitated to place once again in the EAC meeting to confirm the suggestion and opinion of the Committee.**

- | | | | |
|------|----------------------------------------------------------------|---|------------------|
| i. | Dr. G.P. Kundargi | - | Chairman |
| ii. | Dr. S.K. Paliwal, CPCB | - | Member |
| iii. | Rep. of Flyash Mission Unit,
Deptt. of Science & Technology | - | Member |
| iv. | Rep. from RO, MoEF&CC, Nagpur | - | Member |
| v. | Dr. S. Kerketta, Director, MoEF&CC | - | Member Secretary |

(21.6.3) Committee has conducted the site visit on 13.09.2018 and 14.09.2018. The representative of Flyash Mission Unit, Department of Science & Technology, New Delhi could not make it up with the Committee due to pre-occupation. The report of the Committee (enclosed as **Annexure-A4**) has been placed before the EAC for discussion. EAC after deliberations, agreed with the recommendations of the Sub-committee and the recommendations are as follows:

- 1) Increase of 4 m height of the dyke as earlier recommended by the EAC be allowed so that fly ash can be dumped from both the Stages.
- 2) There should be a concerted effort to utilize fly ash for making cement and bricks so that maximum ash utilization can be achieved every year.
- 3) Back filling of mine voids seems a good option, but care should be taken to implement the recommendation of expert institutions.

(21.6.4) Accordingly, **EAC re-iterated the recommendation of amendment in EC for increasing the ash dyke height to 4 m, as earlier recommended by the EAC meeting held on 26.04.2017.**

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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 PM₁₀, PM_{2.5}, SO₂, NO_x, CO and Hg. The location of the monitoring stations should be so decided so as to take into consideration of the upwind direction, pre-dominant downwind direction, other dominant directions, habitation and sensitive receptors. There should be at least one monitoring station each in the upwind and in the pre-dominant downwind direction at a location where maximum ground level concentration is likely to occur.
- xxxix) In case of expansion project, air quality monitoring data of 104 observations a year for relevant parameters at air quality monitoring stations as identified/stipulated shall be submitted to assess for compliance of AAQ Standards (annual average as well as 24 hrs).
- xl) A list of industries existing and proposed in the study area shall be furnished.
- xli) Cumulative impacts of all sources of emissions including handling and transportation of existing and proposed projects on the environment of the area shall be assessed in detail. Details of the Model used and the input data used for modeling shall also be provided. The air quality contours should be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any. The windrose and isopleths should also be shown on the location map. The cumulative study should also include impacts on water, soil and socio-economics.
- xlii) Radio activity and heavy metal contents of coal to be sourced shall be examined and submitted along with laboratory reports.
- xliii) Fuel analysis shall be provided. Details of auxiliary fuel, if any, including its quantity, quality, storage etc should also be furnished.
- xliv) Quantity of fuel required, its source and characteristics and documentary evidence to substantiate confirmed fuel linkage shall be furnished. The Ministry's Notification dated 02.01.2014 regarding ash content in coal shall be complied. For the expansion projects, the compliance of the existing units to the said Notification shall also be submitted
- xlv) Details of transportation of fuel from the source (including port handling) to the proposed plant and its impact on ambient AAQ shall be suitably assessed and submitted. If transportation entails a long distance it shall be ensured that rail transportation to the site shall be first assessed. Wagon loading at source shall preferably be through silo/conveyor belt.

- xlvi) For proposals based on imported coal, inland transportation and port handling and rail movement shall be examined and details furnished. The approval of the Port and Rail Authorities shall be submitted.
- xlvii) Details regarding infrastructure facilities such as sanitation, fuel, restrooms, medical facilities, safety during construction phase etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase should be adequately catered for and details furnished.
- xlviii) EMP to mitigate the adverse impacts due to the project along with item - wise cost of its implementation in a time bound manner shall be specified.
- xlix) A Disaster Management Plan (DMP) along with risk assessment study including fire and explosion issues due to storage and use of fuel should be carried out. It should take into account the maximum inventory of storage at site at any point of time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be invariably provided. Mock drills shall be suitably carried out from time to time to check the efficiency of the plans drawn.
- l) The DMP so formulated shall include measures against likely Fires/Tsunami/Cyclones/Storm Surges/Earthquakes etc, as applicable. It shall be ensured that DMP consists of both On-site and Off-site plans, complete with details of containing likely disaster and shall specifically mention personnel identified for the task. Smaller version of the plan for different possible disasters shall be prepared both in English and local languages and circulated widely.
- li) Detailed scheme for raising green belt of native species of appropriate width (50 to 100 m) and consisting of at least 3 tiers around plant boundary with tree density of 2000 to 2500 trees per ha with a good survival rate of around 80% shall be submitted. Photographic evidence must be created and submitted periodically including NRSA reports in case of expansion projects. A shrub layer beneath tree layer would serve as an effective sieve for dust and sink for CO₂ 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.

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/Nm³ 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.

ANNEXURE-A3

SITE VISIT OF THE SUB-COMMITTEE TO THE 2x660 MW (STAGE-III) COAL BASED SUPER THERMAL POWER PROJECT AT VILLAGE SHAKTINAGAR, TEHSIL DUDHI, SONEBHADRA DISTRICT, UTTER PRADESH BY M/s NTPC

The Project Proponent applied online application on 05.07.2018 for amendment for amendment of Terms of Reference i.e. change in configuration from 2x660 MW to 2x800 MW for this project and to carry out the base line data for preparation of EIA/EMP report. The proposal was appraised in the EAC meeting on 25.07.2018 and the EAC recommended that a site visit to be carried out by the Sub-Committee to assess the suitability and importance of setting up of this power plant. The Sub-committee has been constituted vide Ministry Office Order No. J-12012/09/2006-IA-I(T) dated 29.08.2018 to visit the project site and to submit a factual report for reconsideration of amendment of Terms of Reference. The Committee was constituted having the following Members:

- | | |
|--------------------------------------------------|--------------------|
| (i) Dr. N.P. Shukla | - Chairman |
| (ii) Prof. S.K. Gupta | - Member |
| (iii) Shri G.P. Kundargi | - Member |
| (iv) Rep. of RO , MoEF&CC, Lucknow | - Member |
| (v) Dr. S. Kerketta , Director, MoEF & CC | - Member Secretary |

2. During the visit of the project site by the Committee, the following aspect would be looked into:

- (i) Status of ash utilization and ash disposal.
- (ii) Issues on Public Complaints.
- (iii) Status of Compliances of existing Environmental Clearance Conditions.

3. The following officials and Senior Executives were present from the Project site during visit of the Sub-committee and held discussion:

From Project site:

- (i) Shri A.K. Tiwari, ED (VSTPP)
- (ii) Shri Debashis Sen, CGM (SSTPS)
- (iii) Shri Alok Gupta, GM (O&M)
- (iv) Shri Sanjay Mishra, GM (Operation)
- (v) Shri S. Mathews, GM (Maintenance)
- (vi) Shri R. Padmakumar, GM (O&M)

From Corporate Office:

(vii) Dr. Vijay Prakash, GM (ES, Corporate)

4. The Committee visited the project site on 02.09.2018 and held discussion on 01.09.2018 with the Officials of the Project Proponent. Shri G.P. Kundargi and Representative of RO, MoEF & CC, Lucknow could not make it up with the Committee due to pre-occupation, the other members visited the project site.

Background of the project:

5. During visit to the Project site, the Project Proponent inform the following to the Committee:

- i. Singrauli STPP was set up by NTPC Limited as a pit head coal based super thermal power plant. The environmental clearance for the project was accorded by the then Department of Science and Technology vide letter dated 17.01.1977. The project was commissioned in two stages comprising of five units of 200 MW in Stage-I and two units of 500 MW in Stage-II. The first unit of 200 MW capacity was commissioned during February, 1982 and last unit of 500 MW capacity was commissioned during November, 1987. Environmental clearances for the S-1 and S-2 dykes of the project were accorded by MoEF & CC vide letters No. J-13011/32/92-IA.II(T) dated 13.03.2000 and 27.10.2008, respectively.
- ii. The project is located on NW Bank of Rihand Reservoir. Co-ordinates of the proposed plant is 23°05'53" N to 24°05'56" N and 82°41'15" E to 82°43'17" E. The ash dyke area of 350 acres is proposed in the state of Madhya Pradesh and is located at the existing township of Singrauli STPS. The township will be relocated to accommodate ash pond. New land requirement for Power Project is 42 acres within the existing Singrauli STPS. The new Township proposed in 40 acres at Vindhychal STPS. Coal requirement is 6.5 MTPA at 90% PLF which will be met from Jayant Mine of Northern Coalfields Limited located at 17 km from the project site. Fly ash and bottom ash generation would be 2.08 MTPA and 0.52 MTPA, respectively. Water requirement is 33 cusecs, which will be sourced from Condensate Water (CW) of existing power plants.
- iii. The proposed Project is a pulverized coal fired power plant based on Super Critical Boiler techniques. Main components of the project include coal handling system with dust extraction and suppression system, steam generator, turbine generator, Air Cooled Condenser System, Water & ETP, ESPs, NOx Control and Flue Gas Desulphurization System, Chimney with Continuous Emission Monitoring System, Automatic AQQ monitoring System, Limestone and Gypsum Storage and Handling System, Ash handling system with dry ash extraction and storage system, high concentration slurry disposal system and electric systems.
- iv. Project is located in Singrauli critically polluted area. However, the re-imposition of moratorium is kept in abeyance vide Ministry's OM dated 10.05.2014. Project site is located in Earthquake Zone-II. Gobind Ballabh Pant

Sagar (known as Rihand Reservoir) is located at 1 km from the project site. The estimated of the project is Rs. 9,240 crores.

v. Presently, Singrauli Super Thermal Power Station (SSTPS), Stage-I & II (2000 MW) is under commercial operation. In addition, NTPC has two projects of renewable energy within its –

- a. A 15 MW Solar Photo Voltaic (SPV) based project in the MGR loading bulb at the mine end, at about 15 km from power plant boundary (Commissioned).
- b. A 8 MW Small Hydro Project at the outfall of cooling water return channel (under commissioning stage).

iii. The following changes will take place for increasing the configuration to 2x800 MW:

Subject	2x660 MW	2x800 MW
Land requirement	562 acres	No change
Coal requirement	6.5 MTPA	8.4 MTPA
Source of coal	SLC (LT) recommended the grant of coal linkage from CIL	Amendment in Coal linkage will be obtained with increased coal requirement
Water requirement	3,300 m ³ /h	1,620 m ³ /h
Cooling system	Closed Cycle with Cooling Towers	Air Cooled Condensers
Technology	Super Critical	Super Critical

iv. Air Cooled Condenser may reduce station output by 3.83% as compared to Water Cooled Condenser system i.e. from 1,600 MW to 1,541 MW. Accordingly, the coal requirement will also increase in case of Air Cooled Condenser system.

Site visit and Observation of the Committee:

6. The Committee visited the existing Power Plant, Ash Disposal site, plantation area, etc. power point presentation on concerning issues were made by the Project Proponent and discussion was held with the officials of the Project on 01.09.2018.

7. Based on the ToR prescribed, the following observation made by the Committee:

Point No (i): Status of Ash Utilization and ash disposal

Present Status:

At present Ash disposal is done in two Ash Dykes i.e. S-1 and S-2. The

detailed of ash to be disposed and its balance life period are provided below:

Sl. No.	Ash disposal area	Area (Acres)	Total capacity (LMT)	Utilized capacity (LMT)	Available capacity (LMT)	Balance Life	Remark
1	S-1 dyke	400	234	130	104	Up to Feb., 2026	2 nd raising in service
2	S-2 Dyke	400	275	100	175	Up to Mar., 2027	Starter
3	Khadia dyke	630	410	410	0	Already Exhausted	Capacity exhausted

The Project Proponent has submitted the ash utilization for last 5 years. For the existing plant, about 36 lakhs metric tonnes of ash per year is generated. However, during 2017-18, 34.82 lakhs metric tonnes of ash was generated and of which, 10.58 lakhs metric tonnes was utilized and 24.24 lakhs metric tonnes was disposed in the Ash dyke. The following table depict the action plan for utilization of ash:

Quantity in lakh metric tonne

Ash Utilization	2013-14	2014-15	2015-16	2016-17	2017-18
Cement Making	4.44	0.61	-	-	-
Ash Dyke raising	1.02	5.25	3.74	3.04	1.93
Landfill	0.21	-	-	-	8.50
Brick manufacturing	0.25	0.14	0.82	0.11	0.03
Agriculture use	0.002	-	-	-	-
Asbestos	0.69	0.20	0.15	0.19	0.12
Others	3.45	-	-	-	-
Total	10.06	6.20	4.71	3.34	10.58

The Sub-committee while reviewing the utilization pattern of ash generation of existing project found that ash utilization has been achieved between 10-28% towards filling of low lying areas, ash dyke raising and small quantity in Brick Plants. The Committee found that there is no substantial efforts have been made by the Project Proponent towards utilization of flyash as per the Fly Ash Notification. Gorbi Mines of M/s NCL has been allocated to M/s NTPC for which EIA study is underway. Committee perused the pendency with NLC regarding Gorbi Mines for which in principle approval was given. sFive Bricks Plants (@8000 bricks per day) are in operation for internal use of NTPC.

Point No. (ii): Issues on Public Complaints
Present Status:

It is mainly on disposal of ash on the periphery of Rihand dam due to which the supernatant water of ashy dyke is going into the dam and polluting the water. There was no leakage of fly ash was seen enroute to the pipeline laid.

Rihand dam is a 91.44 m high concrete gravity dam on River Rihand, about 46.2 km upstream from its confluence with river Sone. The dam is located near village Pipri in district Sonbhadra of Uttar Pradesh. The dam was completed in 1962. It impounds 10,608.32 MCM of water at FRL of RL 268.224 m with water spread area of 469.45 km²; partly in UP (347 km²) and partly in MP (122 km²).

River Rihand is the biggest tributary of Sone River travels a total length of 322 km before joining Sone river near Chopan. The riparian states of upstream catchment area of Rihand dam are UP, MP and Chhattisgarh. The catchment area upstream of Rihand dam is 13,930 km² which is 98.5% of total catchment area of Rihand river and 19.98% of the area of entire Sone basin. Around its periphery, 2 Ash Dykes of Rihand STPP, NTPC, 2 Ash Dykes of Singrauli STPP, 4 Ash Dykes of Vindhyaachal STPP are located and dumping their ash in these Ash Dykes since achieved COD for each unit.

It has been informed that the ash dyke has been constructed for Singrauli STPP **based on the maximum factor of safety for stability of the ash dyke at different conditions as per IS: 7894-1975 code i.e. Steady Seepage and Earthquake conditions. The dyke has been inclined from highest slope to lowest slope to easily make away to flow the slurry water from the toe drain into the lowest point. Therefore, this has helped to flow the slurry water away from the Rihand dam.**

The ash dykes are designed as earthen retaining structures as per best prevailing engineering practices/software/codal provisions. These are trapezoidal in shape, to ensure safety and stability. The slope, towards which the ash slurry is filled, is called the upstream slope while the other side is called the downstream slope. Both the sides of the slopes are protected with stone pitching, aggregate filter and sand filter to prevent their erosion by wave action of slurry/ water. As the dyke is a porous structure, it allows a gradual movement of water through its pores. In order to keep the downstream slope dry and stable, a sand chimney and sand blanket are provided to intercept the seepage, if any and channelize the same through the rock toe and toe drain.

It is pertinent to mention here that the water collected from the toe drains is not the leachate but the seepage intercepted through sand chimney/ sand blanket and it is also collected and recycled.

The ash slurry is deposited in the ash dyke in the form of layers, which get

consolidated over the years due to overburden pressure from subsequent deposits. Tests conducted on the ash deposits of the ash filling indicates that it has no free pore water and due to its fine particle size, behaves like impermeable layer of stiff clay deposits.

Further, the fine particles of ash during the initial charging of the dyke clog the pores of the soil and its micro cracks and make the soil impermeable. The highly consolidated and impermeable state of ash layers at the bottom of the ash deposits were experimentally observed during the scientific studies by NEERI and IIT, Roorkee.

The groundwater analysis at the upstream and downstream locations of the ash dykes reveals that there has not been much differences of the water quality parameters at both the ends, thus it can be inferred that leaching from the ash ponds is negligible.

Point No. (iii): Status of Compliances of existing Environmental Clearance Conditions.

Present Status:

All the environmental clearance conditions have been satisfactorily complied with. However, the latest point-wise environmental clearance conditions to be certified by the Regional Office, MoEF & CC, Lucknow and to be submitted to the Ministry during appraisal of Environmental Clearance.

8. In view of the above, the Sub-committee opined the following:

- 4) Amendment of Terms of Reference i.e. change in configuration from 2x660 MW to 2x800 MW for this project be allowed to carry out the base line data for preparation of EIA/EMP report.
- 5) There should be a concerted effort to utilize fly ash for making cement and bricks so that maximum ash utilization can be achieved every year.
- 6) Back filling of mine voids seems a good option, but care should be taken to implement the recommendation of expert institutions for ensuring strength, stabilization and feasibility. A detailed study on these aspects are required.

Sd/-
(Dr. S. Kerketta)
Member Secretary

Sd/-
(Prof. S.K. Gupta)
Member

Sd/
(Dr. N.P. Shukla)

Chairman of Sub-committee

ANNEXURE-A4

SITE VISIT OF THE COMMITTEE TO THE 2x250 MW (PHASE-II) COAL BASED THERMAL POWER PROJECT AT VILLAGE TAMNAR, RAIGARH DISTRICT, CHHATISGARH BY M/s JINDAL POWER LIMITED

The Project Proponent applied online application on 28.3.2017 for amendment of environmental clearance (EC) (granted on 08.06.2006) to increase the height of ash dyke and acquisition of additional land for setting up of 2x250 MW (Phase-II) thermal plants at village Tamnar, Raigarh, Chhatisgarh. The proposal was appraisal in the EAC meetings on 26.04.2017, 30.08.2017 and 25.05.2018 and also sought some additional information/clarification from the Project Proponent including the Certified EC compliance report from the RO, MoEF & CC, Nagpur. Though, earlier the EAC had recommended for amendment in EC conditions, however, MoEF & CC has constituted a 4-member Committee vide Ministry letter No. J-12011/08/2006-IA-II (T) dated 30.08.2018 to visit the project site and to submit report as per the Para-2 below. The Committee was constituted having the following Members:

- (i) **Shri G.P. Kundargi**, Member of EAC for - Chairman
Thermal Sector
- (ii) **Dr. S.K. Paliwal**, Scientist "D", CPCB - Member
- (iii) **Representative of Flyash Mission Unit**, - Member
Deptt. of Science & Technology, New Delhi
- (iv) **Representative of RO**, MoEF&CC, Nagpur - Member
- (v) **Dr. S. Kerketta**, Director, MoEF & CC - Member Secretary

2. During the visit of the project site by the Committee, the following aspect would be looked into:

- (i) A strategic plan for utilization of fly ash.
- (ii) Requirement of raising the height of the ash dyke *vis-à-vis* utilization options available for Flyash/bottom ash in the 300 km radius of the Power Plant.
- (iii) Reasons for not able to comply with Ministry's Notification on Flyash notified vide dated 25.01.2016.

3. The Committee visited the project site on 13.09.2018 and held discussion on 14.09.2018 with the Officials of the Project Proponent. The representative of Flyash Mission Unit, Department of Science & Technology, New Delhi could not make it up with the Committee due to pre-occupation, the other members visited the project site. Dr. P.R. Sakhare, Scientist 'D' from RO, MoEF&CC, Nagpur had joined the Committee.

Background of the project:

4. During visit to the Project site, the Project Proponent inform the following to the Committee:

- i. Environment Clearance for setting up of 2x250 MW (Stage-II) Thermal Power Plant at Village Tamnar, Dist. Raigarh, Chhattisgarh has been accorded on 08.06.2006 for which amendment of EC has been submitted.
- ii. There are 8 units of Power Plants at the existing units. The details of EC granted and COD achieved for each unit are as below:

Phase	Unit	Date of EC	COD achieved		Remarks	
4x250 MW Power Plants:						
Phase-I	1&2	24.09.1997	Unit-1	08.12.2007	Disposal of fly ash/ bottom ash in the existing ash pond & mine voids of Gare Pelma IV/2 & IV/3 Coal Mines for which now the custodian is SECL.	
			Unit-2	15.06.2007		
Phase-II	3&4	08.06.2006	Unit-3	16.04.2008		
			Unit-4	05.09.2008		
4x600 MW Power Plants:						
Phase-I	1&2	18.03.2011	Unit-1	27.08.2014		
			Unit-2	09.11.2014		
Phase-II	3&4	04.11.2011	Unit-3	15.01.2015		
			Unit-4	12.12.2016		

- iii. Specific Condition No. 3 (iii) stipulates “No additional land for ash pond shall be acquired during Phase-II of the project. The height of the existing ash dyke shall be limited to 10 m.”
- iv. Application for amendment of EC condition was submitted to raise the height of the ash dyke from 10 m to 18 m to avoid the acquisition of additional land for disposal of ash from the power plant. Ash dyke is proposed to raise in two stages of 4 m each. The present elevation of RL 278 m will be raised to RL 286 m. However, the EAC in its 5th meeting held on 26.04.2017 has recommended to increase the height of ash dyke by 4 m only i.e. from RL 278 m to RL 282 m.
- v. M/s L&T Sargent & Lundy Ltd have done a detailed construction designing and stability analysis. This report has been duly vetted by the Department of Civil Engineering, IIT, Chennai and also confirmed for **increasing the height of the ash dyke based on maximum factor of safety for stability of the ash dyke at different conditions as per IS: 7894-1975 code i.e. Steady Seepage and Earthquake conditions. For slope stability, all inter-slice forces have been considered which satisfy all the equations of statics.**

- vi. The total generation of ash from 4x240 MW and 4x600 MW is 0.412 MCM per month. As the proposed ash pond for disposal of flyash/bottom ash of 4x600 MW power plants at village Dolesara/Roadapalli (239 ha area) could not be constructed due to delay in land acquisition, permission has been taken to dispose ash in the existing ash pond of 4x250 MW power plants vide letter dated 10.01.2014 for three years i.e. till 09.01.2017 which was further extended vide letter dated 26.04.2017 for two years i.e. till 25.04.2019.
- vii. Total ash pond area is 198 ha for disposal of 4x250 MW power Plants. Ash Pond No.1 consists of 118.14 ha of area (Two lagoons i.e. 1A and 1B) and Ash Pond No.2 consists of 79.86 ha of area (Two Lagoons i.e. 2A and 2B).
- viii. All the Lagoons i.e. 1A, 2A and 2B have been exhausted except Lagoon 1B and the balance storage capacity exists is about 1.875 MCM. If @5,000 TPD of ash is disposed in the mine voids, then the residual life of this Lagoon would be around 7 months at 50% PLF. It has been further submitted that the total storage capacity after raising the dyke of ash pond by 4 m (as recommended by the EAC), the storage capacity would be 4.7 MCM. The residual life of ash ponds with 50% PLF would be about less than 20 months considering 40% (maximum) of ash disposal in the mine voids of Gare Pelma IV/2 and IV/3 Open Cast Coal Mines. So, after nearly about 27 months, there will be no ash ponds left out for filling up of ash except into the mine voids.
- ix. The proposed ash pond at village Dolesara/Roadapalli (239 ha area) has been approved by the Ministry on 26.04.2017 for disposal ash from 4x600 MW Power Plants. Vide dated 11.09.2018, the District Trade & Industry Centre (DTIC) has directed the Land Acquisition Officer for possession and transfer of land to DTIC which may take another 2-3 months. Construction of Ash Ponds at village Dolesara and making readiness for disposal of ash would take a maximum of about 9 months of time period.

5. The following officials and Senior Executives were present from the Project site during visit of the Committee and held discussion:

From Project site:

- (viii) Shri Gautam Chandra, Plant Head
- (ix) Shri Govind Rao, Head Environment
- (x) Shri D.K. Bhargava, VP Land
- (xi) Shri S.K. Pal, AVP (Mines)
- (xii) Shri J. Tripathi, DGM (Land)
- (xiii) Shri K.K. Sharma, AGM (Horticulture)

From Corporate Office:

- (xiv) Dr. J.K. Soni, Executive Vice President
- (xv) Shri Rajan Annad, GM (Corporate Affairs)

Site visit and Observation of the Committee:

6. The Committee visited the existing Ash Disposal site, location of the Piezometers, Plantation developed on the bank of the pond, backfilling (with ash and OB) site of Gare Pelma IV/2 and IV/3 Coal Mines, etc. Discussion was held with the officials of the Project.

7. Based on the ToR prescribed, the following observation made by the Committee:

Point No (i): A strategic plan for utilization of fly ash.

Response of the Committee:

Earlier the Project Proponent has submitted the ash utilization for next 10 years to the Ministry based on the Medium Term and Short Term Power Purchase Agreements for the capacity range of 400-700 MW and Long Term PPA for 800 MW capacity and the same was also provided to the Committee during visit at the project site. The following table depict the action plan for utilization of ash for 3,400 MW TPP:

Quantity in lakh metric tonne

Plant	Year	PLF (%)	Coal Used	Ash		%
				Generation	Utilization	
4x250 MW TPP	2018-19	45	27.59	11.037	11.050	>100
	2019-20	45	27.59	11.037	11.050	
	2020-21	50	30.66	12.264	12.272	
	2021-22	50	30.66	12.264	12.272	
	2022-23	55	33.72	13.490	13.498	
	2023-24	55	33.72	13.490	13.518	
	2024-25	60	36.79	14.717	14.743	
	2025-26	60	36.79	14.717	14.743	
	2026-27	65	39.85	15.943	15.949	
4x600 MW TPP	2018-19	35	51.51	17.513	15.570	~89
	2019-20	35	51.51	17.513	16.040	~92
	2020-21	40	58.87	20.015	20.120	>100
	2021-22	40	58.87	20.015	20.110	
	2022-23	45	66.23	22.517	22.550	
	2023-24	45	66.23	22.517	22.700	
	2024-25	50	73.58	25.019	25.200	
	2025-26	50	73.58	25.019	25.100	
	2026-27	55	80.94	27.520	27.600	
	2027-28	55	80.94	27.520	27.550	

The Committee while reviewing the utilization pattern of ash generation of both 4x250 MW TPP and 4x600 MW TPP, it has been noted that ash utilization has been achieved more than 100% only towards filling of low lying areas, ash dyke raising, back filling of mine voids and small quantity in Brick Plants. The Committee found that there is no substantial efforts have been made by the Project Proponent towards utilization of flyash as per the Fly Ash Notification.

Point No. (ii): Requirement of raising the height of the ash dyke *vis-à-vis* utilization options available for Flyash/bottom ash in 300 km radius of the Power Plant.

Response of the Committee:

CPCB has provided ash utilization of the Raigarh District, Chhatisgarh from January 2015 to December, 2016. The following are details:

Sl. No.	Purpose	%	Remarks
January, 2015 to December, 2015 : Generation 59.400 Lakh MT and Utilization 47.97 Lakh MT and % of Utilization is 80.75.			
1.	Cement Making	5.07	
2.	Brick Manufacturing	4.50	
3.	Road Construction	2.39	
4.	Ash Dyke Raising	11.84	
5.	Mine Voids Filling	37.27	
6.	Low Lying land filling	19.33	
7.	Others	Balance	
January, 2016 to December, 2016 : Generation 60.77.400 Lakh MT and Utilization 40.87 Lakh MT and % of Utilization is 67.25.			
1.	Brick Manufacturing	4.45	
2.	Road Construction	1.5	
3.	Ash Dyke Raising	11.55	
4.	Mine Voids Filling	26.58	
5.	Low Lying land filling	23.03	
6.	Others	Balance	

From the above, it is cleared that ash generation is being utilization for Backfilling of Mines, Ash Dyke raising and low lying land filling. There is not

much avenue in utilization ash for cement making, construction of roads, and brick manufacturing. Similarly, the PP has also utilized the ash at maximum for ash dyke raising and back filling of mine voids. **As there is a condition for 2x250 MW (Stage-II) that no extra land to be acquired for disposal of fly ash thus requirement of raising of the height of the existing ash dyke is necessitated.**

Point No. (iii): Reasons for not able to comply with the Ministry's Notification on Flyash notified vide dated 25.01.2016.

Response of the Committee:

It is once again reiterated that ash generation is being utilization for Backfilling of Mines, Ash Dyke raising and low lying land filling. There is not much avenue in utilization ash for cement making, construction of roads and brick manufacturing in the district of Raigarh, Chhatisgarh. Similarly, the PP has also utilized the ash at maximum for ash dyke raising and back filling of mine voids. Therefore, the Fly ash notification issued vide dated 25.01.2016 could not be complied fully.

Point No. (iv): Other Observation

- a. Groundwater analysis is to be carried out at the upstream / downstream of the existing fly ash pond by creating a network with the existing wells and installing new piezometers and report be submitted that no leaching is taking place due to fly ash dumping.

The groundwater analysis from the 3 piezometers located at near Ash Dyke, South-East site of Ash Dyke and West Site of Ash Dyke reveals that the groundwater quality at the upstream and downstream has not much differences, thus it can be inferred that leaching from the ash ponds is negligible.

- b. Plantation on the Toe of Ash Dykes

It has been informed that ~3,79,125 Nos. of saplings from 2006-07 to till date has been raised in and around the existing Ash Dyke and its nearby areas. During 2018 (June to September), a total of 31,400 Nos. of saplings (including gap plantation) has been planted. Species includes *Azadirachta indica*, *Peltophorum pterocarpum*, *Cassia siamea*, *Anthocephalus*, *Kadamba*, *Alstonia Scholaris*, *Tectona Grandis*, etc.

8. In view of the above, the Committee opined the following:

- 1) Increase of 4 m height of the dyke as earlier recommended by the EAC be allowed so that fly ash can be dumped from both the Stages.
- 2) There should be a concerted effort to utilize fly ash for making cement and bricks so that maximum ash utilization can be achieved every year.
- 3) Back filling of mine voids seems a good option, but care should be taken to implement the recommendation of expert institutions.

Sd/-
(Dr. P.R. Sakhare)
RO, Nagpur/Member

Sd/-
(Dr. S. Kerketta)
Member Secretary

Sd/-
(Dr. S.K. Paliwal)
Member

Sd/-
(Shri G.P. Kundargi)
Chairman of Committee

LIST OF MEMBERS(Attendance Sheet)

21st EXPERT APPRAISAL COMMITTEE MEETING (Thermal)

DATE & TIME : 26th September, 2018, 10:00 AM

VENUE : Brahamaputra Meeting Hall, Vayu Wing, Indira Paryavaran Bhawan, New Delhi.

Sr.No.	Name of Member	Signature
1.	Dr. Navin Chandra Chairman	<i>Navinchandra</i>
2.	Dr. Narmada Prasad Shukla Member	<i>NS</i> 25.9.18
3.	Sh. N. Mohan Karnat, IFS Member	<i>N. Mohan Karnat</i> 26/9/2018
4.	Dr. Sharachchandra Lele Member	<i>Sh. Lele</i>
5.	Sh. N.S. Mondal Member	<i>N.S. Mondal</i> 26/9/18
6.	Dr. R.K. Giri, Member	<i>Abs</i>
7.	Dr. S.K. Paliwal, Member	<i>Abs</i>
8.	Prof. S.K. Gupta (ISM Dhanbad) Member	<i>S.K. Gupta</i>
9.	Dr. Jai Krishna Pandey, Member	<i>J. Krishna Pandey</i>
10.	Dr. Manjari Srivastava, Member	<i>Abs</i>
11.	Dr. Gururaj P Kundargi, Member	<i>Abs</i>
12.	Shri Suramya D. Vora, IFS (Retd.) Member	<i>S. D. Vora</i>
13.	Dr. S. Kerketta Member Secretary, MoEFCC	<i>S. Kerketta</i> 26/9/2018

10/4/2018 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 1/1

Subject: **Approval of the EAC meeting held in September, 2018**

To:

Date: 10/04/18 04:51 PM

"Dr S. Kerketta" <s.kerketta66@gov.in>, From:

"Dr S. Kerketta" <s.kerketta66@nic.in>,

"Dr S. Kerketta" <sunamani1466@gmail.com>,

"Dr S. Kerketta" <suna1466@rediffmail.com>,

"N. SUBRAHMANYAM" <n.subrahmanyam@gov.in>,

"N. SUBRAHMANYAM" <n.subrahmanyam@nic.in>

navin chandra <navinchandrarrl@yahoo.com>

04/10/2018

Dear Dr. Kerketta,

I have gone through the finalized draft minutes of the EAC (Thermal). The Minutes are in order and can be uploaded on the web site of MoEF&CC.

Regards,

(NAVIN CHANDRA)

Dr. Navin Chandra,

Director General

M P Council of Science and Technology (MPCST),

Vigyan Bhawan, Nehru Nagar, Bhopal - 462003 (M.P.) India

Phone : 91-755- 2671800 (Office)

e-mail : dg@mpcost.nic.in

navinchandrarrl@yahoo.com, navinchandraampri@gmail.com

AGENDA OF 21st MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE ON THERMAL POWER PROJECTS

DATE : 26th SEPTEMBER, 2018

TIME : 10.30 A.M. ONWARDS

VENUE : BRAHMAPUTRA MEETING HALL, VAYU WING, FIRST FLOOR, IPB, JORBAGH ROAD, NEW DELHI-110003.

ITEM	
Item No. 21.0	CONFIRMATION OF MINUTES OF 20th EAC (THERMAL) MEETING
Item No.	CONSIDERATION OF PROJECTS
21.1	Proposed 25 MW Municipal Solid Waste based Thermal Power Plant (Waste to Energy) at Tehkhand, Okhla, South East Delhi, New Delhi by M/s Tehkhand Waste to Electricity Project Limited -reg. amendment in EC. F.No. J-13012/03/2018-IA.I(T) & Online no: IA/DL/THE/71979/2017.
21.2	2x800 MW Coal based Lara Super Thermal Power Project at villages Armuda, Chhapora, Bodajharia, Devalpura, Mahloi, Riyapalli, Lara, Jhilgitar and Kandagarh in Taluk Pussore, in District Raigarh, in Chhattisgarh by M/s NTPC Ltd. – reg. re-consideration of amendment of EC. F.No. J-13012/97/2007-IA.II(T) & Online no. IA/CG/THE/12048/2012.
21.3	4x660 MW Imported Coal based Thermal Power Plant at notified Dahej industrial area near village Suva, in Vagra Taluk, in Bharch District, in Gujarat by M/s Adani Power Dahej Ltd.- reg. re-consideration of extension of EC. File No:J-13012/39/09-IA.II(T) & Online No.: IA/GJ/THE/2082/2009.
21.4	Expansion by addition of 1x80 MW and 1x160 MW Coal Based Thermal Power Plant at village Peria Obulapuram and Papankuppam, in Gummidipoondi Taluk, in Thiruvallur District in Tamil Nadu by M/s OPG Power Generation Pvt. Ltd.- reg. reconsideration in amendment in EC. F.No.J-13012/111/2009-IA.I(T) & Proposal no. IA/TN/THE/10308/2011.
21.5	Proposed expansion of 2x660 MW (Stage-III) Super Thermal Power Project at Village Shaktinagar, Tehsil Dudhi, District Sonebhadra, Uttar Pradesh by M/s NTPC Ltd.-reg. re-consideration of amendment in ToR. File No:J-13012/09/2016-IA.II(T) & Online No: IA/UP/THE/59577/2016.
21.6	2x250 MW (Phase-II) Thermal Power Plant at Village Tamnar, District Raigarh, Chhattisgarh by M/s Jindal Power Ltd.-reg. reconsideration of amendment in EC. F.No. J-13012/08/2006-IA.II (T) & Proposal no. IA/CG/THE/10253/2006.
21.7	ANY OTHER ITEM WITH THE PERMISSION OF THE CHAIR.