MINUTES OF THE 30th MEETING OF THE RE-CONSTITUTED EXPERT APPRAISAL COMMITTEE ON ENIVORNMENTAL IMPACT ASSESSMENT OF THERMAL POWER & COAL MINING PROJECTS

The 30th Meeting of the reconstituted Expert Appraisal Committee (Thermal Power) was held on **29th & 30th January, 2015** at Bhramputra Meeting Hall, Vayu Wing, First Floor, Indira Paryavaran Bhawan (new building), Jorbagh, New Delhi-110003. The members present were:

1.	Dr. C.R. Babu	-	Vice Chairman (Acting Chair)
2.	Shri T.K.Dhar	-	Member
3.	Shri J.L Mehta	-	Member
4.	Shri N.K. Verma	-	Member
5.	Shri G.S. Dang	-	Member
6.	Shri N.S. Mondal	-	Member (Representative of CEA)
7.	Dr. S.S. Bala	-	Member (Representative of CPCB)
8.	Dr. Saroj	-	Member Secretary

In attendance: Dr. M. Ramesh, Scientist 'D' and Shri Deepak Gautam, R.O., MoEF.

Shri A.K. Bansal, Dr. S.D. Attri, Dr. Ratnavel, Dr. Asha Rajvanshi and Dr. C.B.S Dutt could not be present.

Item No.1: CONFIRMATION OF THE MINUTES OF THE LAST MEETING.

The Minutes of the 28th EAC meeting held during 22nd – 23rd December, 2014 were confirmed.

Item No. 2: CONSIDERATION OF PROJECTS

2.1 Enhancement of existing recycle paper production capacity, addition of new product (i.e. Coated Paper) and installation of 20 MW Captive Power Plant at Survey No. 56/1, Village Morai, Tehsil Pardi, District Valsad, Gujarat by M/s. MWV India Paperboard Packaging Pvt. Ltd. (formerly Ruby Macons Ltd.) - reg. EC.

1. The ToR for preparation of EIA/EMP report for the above proposal was accorded by the Ministry on 07.05.2014. The EIA/EMP report after conducting public hearing was submitted to the Ministry for consideration of environmental clearance. The committee noted that the existing and proposed paper production is from waste paper & wood pulp and neither pulp manufacturing nor bleaching is involved. Hence, the paper production does not require environmental clearance. Although the TPP (20 MW) is listed under Category 'B' of the schedule of EIA Notification, 2006, due to its location within 10 km of the boundary of U.T of Daman and applicability of General Condition, the proposal is treated as Category 'A' and appraised at Centre. The PP along with their environmental consultants, Eco Chem Sales & Service, Surat and EQMS India Pvt. Ltd., Delhi has made a presentation and inter-alia provided the following information.

2. The total project area is 78,419 m^2 and the proposed expansion will be carried out within the spare land of 35, 968.00 sq. m of existing premises. There are no National Parks, Wildlife Sanctuaries, Biosphere/Elephant/Tiger Reserves, Heritage sites within 10 km of the project site. River Kolak and Damanganga flow at a distance of 0.15 km and 3.0 km

respectively. The project cost is around Rs. 170 crores. There are no litigations pending against the project.

3. The existing production capacity is 15,000 MT/Month of Kraft Paper and the production capacity after the proposed expansion will be 30,000 MT/Month of Kraft Paper and/or Crafted Paper Board. The raw materials for paper production are waste paper, wood pulp, sizing & dyes, starch, coating pigments & binders and coal/lignite will be used as fuel for the CPP. The requirement of coal and/or lignite and HSD after the proposed expansion will be 750 TPD and 500 LPH respectively. MoUs have been signed with M/s. Adani Enterprises Ltd. for supply of imported coal (Sulphur 0.4-1.8%; ash 5-6%) and with GMDC for supply of lignite. As there is no coal yard facility at the nearest railway station, rail transport is not possible. Fuel shall be transported to the site in enclosed trucks only. Lignite shall be transported from GMDC mines by road. Imported coal shall be transported from Magdalla Port by closed trucks only to ensure minimal impact on ambient air quality. The power requirement after the proposed expansion will be 20 MW and will be sourced from the CPP. The existing 4.95 MW CPP will be decommissioned after the commissioning of the proposed 20 MW CPP and 3.0 MW DGVCL grid power will be used as standby for initial start-up of power plant and 2500 KVA DG set for emergency when total blackout occurs.

4. Ambient Air Quality (AAQ) was monitored at 8 locations in 10 km radial periphery of the project site for the period of March – May, 2014 and results were compared with the NAAQS. During the study, $PM_{2.5}$ was observed between 21.0 – 42.1 $\mu g/m^3$ and maximum concentration of $PM_{2.5}$ was found at Morai Village. PM_{10} was observed in the range of 58.2-91.8 $\mu g/m^3$. SO_2 concentration was observed in the range of 10.1 to 19.9 $\mu g/m^3$ and NOx concentration in the range of 21.5-46.1 $\mu g/m^3$. Monitoring and analysis was also carried out for Hg and Ozone. Maximum Concentration of Ozone was found to be 81 $\mu g/m^3$ at Bhimpore Village and Hg concentration as <1 $\mu g/m^3$. All the parameters were found within the limits. AAQ modeling has been carried out by ISCST-3 model for assessing incremental Ground Level Concentration (GLC) for the site & surrounding area and the resultant concentrations after the proposed expansion were also found to be within the limits. Sulphur content of 1.12 % and 1.07 % have been considered for imported coal and lignite respectively. Ash content of 5.23 % and 10.13 % has been considered for imported coal and lignite respectively. ESP with an efficiency of 99.9% will be installed to control the particulate emission within the prescribed norms. For dispersion of SO_2, a stack of 85 m height will be constructed as per applicable standards. Low NOX burner will be used. Sprinklers & dust suppression system shall be provided all around the stock pile and transfer points to suppress dust generation.

5. Total water requirement after the proposed expansion will be 2500 KLD and will be sourced from Damanganga Canal of River Kolak. The Damanganga Canal Water Authority vide letter dated 22.01.2015 has certified the availability of requisite water (3000 KLD) from River Kolak and that the same has been kept reserved for the subject project. All the formalities were fulfilled by the PP and the issue of sanction letter is under process. The existing unit is a zero discharge unit and after the proposed expansion also, the same shall be maintained. The existing ETP consists of conventional primary and secondary stage treatment units. All the treated wastewater is recycled to the system, thereby maintaining zero effluent discharge. Effluent generated from the unit is being treated at the existing adequately sized ETP. The existing ETP shall be upgraded & certain new units will be added to take care of the additional effluent generation due to the proposed expansion project. Proper sanitation facility with septic tank/ soak pit system has been provided for domestic wastewater discharge and same shall be utilized after proposed expansion. Adequately designed cooling tower/ system with optimized cooling water requirement & evaporative losses is already present within the existing premises. Optimization of COC in cooling system shall be undertaken.

6. To identify the impact of existing unit on River Kolak, a detailed survey was undertaken. Various locations were identified based on probability of contamination and water samples from the said locations were collected. These samples were analyzed for identifying the presence of organic & inorganic pollutants. D.O level was satisfactory and favorable for the survival of biological life. Presence of Fecal Coliform, E. coil and Fecal Streptococci shows the river water pollution due to direct or indirect discharge of sewage in the water body. Presence of Polychaetes, Odonata, Isopodes, Coleoptera and Insects is the indication of mild organic pollution. But this is because of disposal of untreated sewage. However, the test results of suspended impurities do not show any impact due to dust generated from the existing industry. Moreover, in the proposed expansion coal storage and ash storage have been planned in closed silos and transportation of coal shall be done in closed conveyor belt. Hence, all the adverse impacts on River Kolak due to proposed CPP are ruled out.

7. 100% utilization of ash shall be done through Bricks/Cement manufacturing industry for bricks or cement manufacturing. Ash pond is not proposed. A separate designated storage area shall be provided with sign boards/labels for each category of hazardous & non-hazardous waste. ETP sludge will be stored in 'sludge storage area' within Hazardous waste storage facility and disposed to TSDF site. Used oil will be stored in well labeled drums in/near CPP area and disposed through registered recyclers. Discarded containers will be sold to authorized scrap vendors or for return to suppliers. Proper handling, loading & unloading of waste shall be monitored during waste handling, storage & transportation to avoid spillage/leak causing contamination of soil/environment.

8. Noise generating equipments like pump, motors, compressors, blower, turbine/engines and power generator sets/ engines etc. shall be mounted on sturdy concrete foundations with proper & suitable rubber padding to reduce vibrations & thereby noise generation. Acoustic enclosure for DG set and similar provision like noise attenuator shall be provided wherever suitable/possible. Safety blow off valves, discharge pipes, relief valves, etc. will be equipped with silencers. Regular lubrication & preventive maintenance shall be done to reduce vibration & noise generation. Use of PPE like ear plugs and ear muffs shall be made compulsory near the high noise generating machines. Periodic monitoring of noise levels as per post-project monitoring plan shall be done on regular basis.

9. Public hearing/public consultation was conducted by the Gujarat Pollution Control Board held on 12.12.2014. It was noted that the issues raised in the public hearing include fulfilling the commitments made by the PP towards environmental protection and safety after proposed expansion, appreciation of company's activities for children welfare, hospital funding etc. The Committee discussed the issues raised in Public Hearing and the responses made by Project Proponent. The budget earmarked for CSR activities is Rs. 5 crores during 2015-19 in the area of community health, building sustainable communities, education & skill building and environmental stewardship.

10. Based on the information and clarifications provided by the Project Proponent and detailed discussions held on all the issues, the Committee *recommended the project for environmental clearance* subject to stipulation of the following specific conditions:

i) Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation shall be submitted periodically.
ii) 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.

iii) A stack of 85 m height shall be provided with continuous online monitoring equipments for SOx, NOx and $PM_{2.5}$ & PM_{10}. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.

iv) The sulphur content of imported coal & lignite shall not exceed 1.12 % & 1.07 % respectively and the ash content of imported coal & lignite shall not exceed 5.23 % & 10.13 % respectively. In case of variation of quality of coal, char & ESP dust at any point of time, fresh reference shall be made to the Ministry for suitable amendments to the environmental clearance.

v) Shall use the domestic waste paper as raw material for paper production to the maximum extent possible by minimizing the import of waste paper.

vi) As committed, the coal transportation by road shall be only through mechanically covered trucks.

vii) Avenue plantation of 2/3 rows all along the road shall be carried out by the project proponent at its own expenses in consultation with the State Government Authorities. Periodic maintenance of the road shall be done by the project proponent at its own expenses and shall also facilitate the traffic control on the road in consultation with the State Government Authorities.

viii) High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3. 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.

ix) COC of atleast 5.0 shall be adopted.

x) 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 be undertaken.

xi) 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.

xii) Fly ash shall be collected in dry form and storage facility (silos) shall be provided. *As committed, no ash pond shall be constructed and the fly ash shall be 100% utilized from day one.*

xiii) Green Belt consisting of three tiers of plantations of native species around the plant and at least 50 m width shall be raised. Wherever 50 m width is not feasible green belt of 20 m width shall be raised and detailed justification shall be submitted to the Ministry. Tree density shall not be less than 2500 per ha with survival rate not less than 80 %.

xiv) CSR schemes identified based on Public Hearing issues and 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.

xv) As committed, a minimum amount of Rs 5.0 Crores shall be earmarked for CSR activities during 2015-19. 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.

xvi) An Environmental Cell comprising of at least one expert each in environmental science/ engineering, ecology, occupational health and social science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate superiority and qualification. It shall be ensured that the Head of the Cell shall directly report to the Head of the Unit who would be accountable for implementation of environmental regulations and social impact improvement/mitigation measures.

2.2 4000 (6x660) MW Supercritical imported coal based thermal power plant and 60 MLD Desalination Plant at Village Layja Mota, Mandvi Taluk, Kutch District, Gujarat by M/s. Nana Layja Power Co. Ltd.- reg. EC

1. The ToR for preparation of EIA/EMP report was accorded on 28.12.2011 and an extension of validity of ToR till 27.12.2014 was accorded on 21.01.2014. The EIA/EMP report after conducting public hearing was submitted to the Ministry for consideration of environmental clearance. The PP along with their environmental consultant, L&T Infrastructure Engineering Ltd. (formerly known as L&T Ramboll) has made a presentation and inter-alia provided the following information.

2. The proposed TPP including 60 MLD desalination plant will be located in Multiproduct SEZ being developed by IL&FS group companies. Total SEZ area is 3473 acres and the area designated for TPP is 1298 acres. Commissionerate of industries, Gujarat has bonafide the land for industrial purpose (Letters dated May-June, 2010). SEZ Board of Approval, GoI has accorded in-principle approval to SEZ in June, 2010 and issued the official letter in May, 2014. IL&FS Group is also developing Shipyard cum Captive Jetties including LNG terminal at Nana Layja coast, Kutch District, Gujarat and the Shipyard cum Captive jetties site is at 8 km south of SEZ site. These jetties will cater the requirements of SEZ including Power Plants. An integrated/common EIA Report prepared after obtaining ToRs from respective EACs, MoEF. There are no litigations pending or otherwise with respect to project in any Court, Tribunal etc.

3. MoU signed between the PP & SEZ developers for transfer of required land on long term lease basis. Around 61% of required land for TPP has been acquired by SEZ developers. Utility corridor of 8.33 km long and 60 m wide involves 124 acres of land. Land identified for project is un-inhabited and no R&R due to Land Acquisition. Identified Government land is under process of transfer. Ecologically sensitive areas like Biosphere Reserves, National Parks, Wildlife Sanctuaries protected sites as per Ramsar convention and other protected areas (PA) are not present within 15 km radius of the project site. Letter and map duly authenticated by CWLW was obtained. Primary survey of flora and fauna was carried out in study area and Secondary data was collected from different sources including forest department & referred journals. Wild life conservation plan has been prepared for the scheduled species in consultation with forest department and monitoring mechanism with implementation schedule is prepared. Financial budget of Rs. 1.012 Crores is allocated for wildlife conservation as approved by CWLW. The proposed project cost is about Rs. 28,000 Crores and the cost towards capital cost towards environmental management is Rs. 1,374 Crores.

4. The land and sea water requirement (including Desalination Plant) based on imported coal are 1135 acres and 989 MLD respectively. Permission for sea water withdrawal was obtained from GMB. The imported coal requirement is 13.8 MTPA with GCV, sulphur and ash content of 4750 kcal/kg, 0.35 % and 12 % respectively. The fly ash and bottom ash generation would be 3628 TPD and 907 TPD respectively. Three no. (twin flue) of 275 m high stacks will be installed. Coal will be transported by ships to proposed Shipyard Cum Captive jetties facility near Nana Layja coast and will be transferred through covered conveyers upto power plant. The proposed Utility Corridor of 60 m wide and 8.33 km long connecting SEZ and

Captive Jetties shall contain closed coal conveyor system. Facilities for unloading/storage/stacking & reclaiming are part of the captive jetty facilities which has two coal Berths and can handle up to 20 MTPA.

5. The committee noted that the EIA/EMP report was prepared and Public Hearing conducted considering 100% imported coal and blended coal (domestic: imported - 70:30). However, the proposal is being appraised primarily for imported coal as there is no firm coal linkage for domestic coal. The PP shall obtain requisite amendment regarding quality of coal, transportation plan etc. after allocation of coal block/coal linkage.

6. One season site-specific meteorological data was generated during the study period (September to December, 2012) and in addition, one year (2012) met data was purchased. AAQ monitoring for one season (post monsoon) to collect site specific AAQ data for the mentioned parameters was carried out. To evaluate baseline air quality of study area, Twenty Four (24) monitoring locations were identified in all directions from project site. The AAQ model studies were conducted covering Point sources (proposed TPP, other SEZ and DTA Industrial Units, Shipyard cum Captive Jetties including LNG Terminal), Line source from increased vehicular activity on NH-8A extension & Utility Corridors and Area Sources i.e., Coal Stockyard of TPP & at Shipyard cum captive jetties for Particulate Matter (PM). Annual avg. resultant conc. and 1st highest 24 Hr avg. of NOX, PM_{10}, $PM_{2.5}$ & SO_2 at all receptor locations are found to be well within NAAQ Standards.

7. Check dam details obtained from Kutch Irrigation Circle Asset data for Mandvi Taluka has been referred and furnished. 12 Bandharas and 137 Check Dams were reported in the Study Area and no Check Dams in the Project Site. NIH, Roorkee has carried out the hydro-geological study which covered identification of various flooding sources, estimation of maximum floods and their routing to plant site for estimating maximum flood level. Three dams i.e. Vengadi, Rajda & Don and two rain fed Rivers namely Vengdi and Kharod were identified in study area. Flood Simulation & Dam Break Analysis was carried out. The Plant area is unaffected by flood due to 100 year return period rainfall and due to dam break if any. Drainage networks along project boundary to be designed to carry generated local runoff. Storm water drainage pattern has been designed for drains crossing project area and drainage pattern of the project region will be maintained.

8. Water requirement is based on 1.3 CoC. Condenser cooling will be closed cycle cooling using cooling towers (NDCT). Fresh water requirement is 22.8 MLD, which is within CEA norms. As per CEA norms, fresh water requirement per MW is 0.40 m^3/h i.e., 38.4 MLD for 4000 MW TPP. Rainwater Harvesting shall be implemented at proposed TPP and also at SEZ level. Approximate quantity of rainwater to be harvested at TPP is 16,734 m^3/d (with avg.18 rainy days/year). Portion of cooling water blow down will be utilized for ash water make-up. Recycled condensate, DM plant rejects, Boiler Area floor wash, Coal stockyard runoff water from settling pond, Bottom ash seal water and Wastewater from oil water separator will be treated in ETP and reused in coal/ash handling plant and greenbelt. Wherever possible Zero discharge option was considered such as all ETP and STP treated water will be reused for Greenbelt. Other areas like return seawater which cannot be reused will be sent to marine outfall.

9. Fly ash removal will be dry type pneumatic system with HCSD system as standby and bottom ash removal would be wet slurry disposal system. Ash slurry generated from the fly ash and bottom ash shall be collected in ash pond, which shall store three years capacity of fly ash generated. After three years, no fly ash will be stored in ash pond area and even stored ash will be removed for utilization in cement/road/brick manufacturing. Fly ash utilization

shall be as per MoEF Notification. MoU signed with M/s. SMPL, Vadodara and EoI received from M/s. Jaypee Gujarat Cement Plant, Vayor, Gujarat. Sahjanand Marketing Private Limited (SMPL) has been into the business of exports of fly ash and has entered into MoU with the PP for lifting of fly ash from the proposed power plant. In future, the fly ash generated in the TPP may also be exported from the proposed captive jetties at Nana Layja sea coast

10. Marine impact assessment study was carried out including model studies for identification of intake and outfall. Common marine outfall system is proposed for return cooling water discharges from power plants, reject brine from desalination plant, SEZ's CETP treated effluent discharge and treated wastewater from Shipyard cum captive jetties. NoC for sea water Intake and Outfall locations was obtained from GMB. Centre of Advanced Study (CAS) in Marine Biology, Annamalai University has carried out existing marine environmental conditions in the study area and validated by Dr. T. Balasubramanian, Former Director and Dean, Faculty of Marine Sciences, CAS, Annamalai University. Primary productivity was majored at all locations. L&T Ramboll has carried out mathematical modelling studies considering velocity caps with coarse screens at intake and diffusers at outfall. It is inferred that entrapment of marine organism at sea water intake is insignificant and outfall also equally has very minimal impact due to modern technology, extendable to TPPs that are in operation, using marine intake and outfall.

11. Detailed studies on fisheries have been carried out by MART and International Fisheries Expert Dr. Munir Ahmed. The study area of 15 km radius has 5 fishing villages with total 344 households, 2716 population and 650 active fishermen. Proposed project integrates adequate improved safeguards and mitigation measures in the project design to eliminate or reduce or mitigate the impacts due to intake and outfall on the fishermen. Based on the socioeconomics, livelihood and value chain assessment, the livelihood enhancement plan for fishermen has been prepared. Fishermen Welfare Fund has been prepared as a part of the CSR plan and Capital Cost of Rs. 1.5 Crores has been allotted for Fishermen Welfare Fund.

12. Detailed Social Impact Assessment study has been carried out by CEPT University, Ahmedabad. Study area of 15 km radius consists of 49 inhabited census villages with a population of 69,602 with 34,697 males and 34,905 females. Village Level Surveys of 49 villages within 15 km radius and Household Surveys in 30 villages in 10 km radius (10% of total households) were carried out. Social needs and gap assessment were undertaken. It was observed that Literacy rate in the study area is 72%. Main workforce comprises of 80% whereas marginal workforce comprises of 20% of the total workforce. Women workforce participation rate is low. Focused Group Discussions were held with Farmers, Fishermen, Cattle Rearers, Women Groups, Artisans, Community Based Organisations, NGOs and Government Agencies. It was noted that access to Primary Education and Primary Healthcare is adequate. However, needs improvement in quality of service delivery. The directly and indirectly affected people for SEZ have been identified. The project area is un-inhabitated and hence no R&R is involved. Private land acquired has been purchased by SEZ Developer through direct consent and negotiation. MoU signed between the PP and SEZ developers for transfer of required land on long term lease basis. Most of the land owners are non-residents. Government waste land has been identified and it is under process of transfer.

13. CSR plan was prepared based on comprehensive understanding of the project area through baseline study, community needs assessment & gap assessment and extensive community consultations. CSR plan designed by CEPT University, Ahmedabad, further detailed and supported by village micro-planning, Watershed study, Fishermen Livelihood Study and Model Clean Village study. Focus was laid on livelihood and economic value creation and Intervention designs based on devolved ownership by community for sustainable

process. CSR planning is based on creating shared value approach and prioritisation of developmental activities is based on critical stakeholders and real needs of the communities. The proposed CSR activities are livelihoods of fisherman, grazing land and animal husbandry livelihood, employment to locals, water resources, health, education and infrastructure. Capital CSR Cost for TPP would be 0.4% of power project cost i.e., Rs. 112 Crores and Recurring Cost would be 2% of average annual profit of last 3 preceding years (as per Company's Act 2013). The monitoring mechanism for CSR involves monthly monitoring of projects by CSR cell, quarterly monitoring by relevant Committee, CSR progress report to the Board bi-annually and annual social audits.

14. Public hearing/public consultation was conducted by the Gujarat Pollution Control Board on 12.12.2014. It was noted that the issues raised in the public hearing include loss of grazing land within the project area, affect of fishery and livelihood of fisherman, impact on fishing in creek area, harmful effect on agriculture, check dam, River and lake, health issues due to coal dust and fly ash, forest land patch falling in shipyard/captive jetty, survey nos. of the total area for the project including TPP, presence of Olive Reedley Turtles in the area, contamination of drinking water due to the project, impact of air pollution on public health and crop, impact of traffic on marine ecology and impact of project on the wandering birds. The Committee discussed the issues raised in Public Hearing, the responses made by Project Proponent including the action plan and the budgetary allocation under CSR.

15. Based on the information and clarifications provided by the Project Proponent and detailed discussions held on all the issues, the Committee *recommended the project for environmental clearance* subject to stipulation of the following specific conditions:

i) Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation shall be submitted periodically.
ii) 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.
iii) A stack of 275 m height shall be provided with continuous online monitoring equipments for SOx, NOx and $PM_{2.5}$ & PM_{10}. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.
iv) The sulphur and ash content of coal shall not exceed 0.35 % and 12 % respectively. In case of variation of quality at any point of time, fresh reference shall be made to the Ministry for suitable amendments to the environmental clearance.
v) The coal transportation from the captive jetty shall be through closed coal conveyor system.
vi) High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3. 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) COC of atleast 1.3 shall be adopted.
viii) *Explore the commercial utilization of brine instead of discharging into sea.*
ix) *Natural topography and surface drainage shall be maintained to the extent possible. The second order and third order drains passing through the Plant shall be diverted so as to maintain them free from dust and pollutants. Further, ponds and check dams shall be created in the nearby villages using the diverted streams in consultation with State Govt.*

x) 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 be undertaken.

xi) 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.

xii) The wild life conservation plan and the allocation of funds shall be for a period of minimum 30 years.

xiii) Sea water quality shall be continuously monitored for salinity, turbidity and temperature at selective sites across the impacted zone including estuarine waters. Mitigative measures shall be undertaken through institutes such as Annamalai University for continuous preservation of mangroves and their ecology. The monitoring data shall be uploaded on the company's website and also submit to Regional Office of the Ministry every six months.

xiv) To minimize entrapment of even small marine flora and fauna, state of the art low aperture intake screens with high effectiveness for impingement and entrainment and fishnet around intake shall be installed.

xv) Fish catch along the impacted zone of sea should be monitored periodically by the Department of Fisheries, Government of Gujarat. The project proponent shall accordingly take up the matter with the Fishery Dept., Govt. of Gujarat from time to time.

xvi) The project proponent shall upload environmental quality monitored data on a regular basis on its website.

xvii) Marginalized section of society particularly traditional fishermen communities shall be identified based on 2011 population census data and socio-economic study of the various strata of families such as those carrying out subsistence fishing, commercial fishing etc. shall be carried out and impact on their livelihoods shall be assessed separately. Accordingly, sustainable welfare scheme/measures shall be undertaken and status of implementation shall be submitted to the Regional Office of the Ministry within six months.

xviii) A state-of-the-art environmental laboratory at the project site shall be established such that the laboratory has facilities for long term monitoring of sea water quality and sediment in the impacted zone over and above and ambient air, soil quality analysis of the area. The proponent shall undertake mitigative measures if there are any negative impacts.

xix) Green Belt consisting of three tiers of plantations of native species around the plant and at least 50 m width shall be raised. Wherever 50 m width is not feasible green belt of 20 m width shall be raised and detailed justification shall be submitted to the Ministry. Tree density shall not be less than 2500 per ha with survival rate not less than 80 %. *The width of the green belt shall be the maximum possible towards the nearby Bhandaras.*

xx) CSR schemes identified based on Public Hearing issues and 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.

xxi) As committed, a minimum amount of Rs 112 Crores shall be earmarked as capital cost for CSR activities. 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.

xxii) An Environmental Cell comprising of at least one expert each in environmental science/ engineering, ecology, occupational health and social science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate superiority and qualification. It shall be ensured that the Head of the Cell shall directly report to the Head of the Unit who would be accountable for implementation of environmental regulations and social impact improvement/mitigation measures.

2.3 2x525 MW Coal Based TPP at Village Malibrahamani in Chandipada Block, Distt. Angul, Orissa by M/s. Monnet Power Company Ltd.- reg. Extension of validity of EC.

1. The PP made a presentation and inter-alia provided the following information. The above proposal was accorded EC by the Ministry on 29.06.2010.

2. Regarding the progress made, as on 30.09.2014, the Company has already invested Rs. 5329.75 Crores out of Rs. 7117 crores project cost and CA's certificate is available. Almost 70% work has already been completed and all necessary clearances have been obtained. Hydro test for Unit-1 boiler has been completed on 04.04.2013 and TG Deck for Unit-1 has already been completed. TG erection work has already been started for Unit-1 and Construction of chimney (height 275 m) has already been completed. Drum Lifting and TG Deck of Unit-2 have been completed. Approx. Rs.10 crores have already been spent on CSR & periphery development activities till date. 2.5 MTPA washery has already been setup with Japanese technology in collaboration of Indo-Japan Govt. under Green–Aid-Plan, which is expandable to 5 MTPA. The Unit-I and II were scheduled for synchronization by September and December, 2015 respectively. The photographs of various units/facilities including green belt development depicting the progress made were presented.

3. Regarding the reasons for delay in implementation of the project, CTE was accorded by SPCB only on 10.02.2011 i.e. after eight months of receiving EC. Rehabilitation of Village did not occur on time as villagers could not move from the site. State Govt. did not sign Mining Lease due to issues raised about the sanctity of allocation of Coal Mines by the Hon'ble Supreme Court. Financial issues raised by the Bankers due to non-availability of mining lease. Due to funds scarcity there is slow progress in infrastructural development, civil construction, erection of plant & machinery and there was a delay by vendors due to funds problems. Uncertainty about the availability of coal required for plant operation due to cancellation of allotted coal mine by the Hon'ble Supreme Court of India. Financial crunch due to uncertainty in power sector in view of the cancellation of all coalmines. The PP is participating in auction of coal blocks being conducted by Government of India and the PP has also been sanctioned part of the coal linkage on best effort basis.

4. *The committee noted that coal mine has been de-allocated. Hence, requisite amendment shall be sought from the Ministry regarding quality of coal, transportation plan etc. after allocation of coal block/coal linkage.*

5. *Based on the information and clarifications provided, the Committee noted that the project is in an advance stage of implementation and decided that, in public interest, the request for extension can be agreed to in accordance with the provisions of EIA Notification, 2006. The Committee further recommended that additional conditions which were earlier not prescribed but relevant now be stipulated while issuing the extension of validity.*

2.4 3x350 MW TPP at Villages Marudampallam, Keelaperumpallam and Vanagiri, Tarangambadi Tehsil, Ngapattinam Distt., Tamil Nadu by M/s. PEL Power Ltd. Extension of validity of EC.

1. The PP made a presentation and inter-alia provided the following information. The above proposal was accorded EC by the Ministry on 26.03.2010. Govt. of Tamilnadu accorded approval for the captive jetty on 07.01.2010 and EC & CRZ Clearance was accorded by the Ministry on 19.05.2011. NOC for Stack Height was accorded by Airports Authority of India on 21.12.2009. FSA was made with M/s. PT Anugrah Prima Coalindo, Indonesia on 20.04.2010 for coal linkage. Sea water Allocation was made by Tamilnadu Maritime Board on 12.10.2012. Financial closure has been achieved on 04.01.2011 for Rs. 3950 Crores. The entire land of 708 acres is in possession.

2. Regarding the reasons for delay in implementation of the project, Consent to Establish (CTE) is yet to be accorded by TNPCB although application for the same has been submitted in June, 2010. TNPCB returned the application on 10.8.2010 for want of relaxation of G.O.127/8.5.98 from the Govt. of Tamil Nadu and CRZ clearance from MoEF. CRZ clearance was received on 19.5.2011 and copy submitted to TNPCB on 09.06.2011. The Institute of Remote Sensing Agency, Anna University, Chennai reported that the distance between the Cauvery River and the proposed project site is 5.137 KMs (Report dated 29.01.2011). The Chief Engineer, WRO, PWD, Trichy also informed (11.3.2011) to DEE/TNPCB that the River Cauvery is functioning as a drainage carrier from its tail end regulator located in Melaiyur village of Sirkali Taluk up to the confluence point into Bay of Bengal.

Saline Environmental study was carried out between the tail end regulator and River mouth according to which the River and environment on the downstream of the tail end regulator remain as the marine environment. The Chief Engineer, WRO, PWD, Trichy informed the DEE/TNPCB (02.08.2011) that below the tail end regulator of the river Cauvery there is no irrigation channel and the River acts as drainage carrier to a length of 5 KM which drains flood water into sea during rainy season and there is backing up of sea water up to tail end regulator during high tide due to raise in sea level. The Member & Ex-officio Addl. Secretary to the GoI/CEA clarified the matter relating to the G.O.127/8.5.98 in his letter dt. 16.12.2011 and requested the Principal Secretary (Energy), Govt. of Tamil Nadu to grant CTE considering that the plant do not envisage to draw water from the Cauvery or any other River and instead propose to use sea water for cooling and desalinated sea water for sweet water requirements. No discharge of treated or untreated effluent envisaged into the River. Thermal Power Plant cannot be categorized as highly water polluting industries like the tanning and textile industries using River water for their operations and discharging the effluents into the Rivers.

TNPCB placed the subject before its Board. The Board in its meeting held on 28.09.2012 resolved to approve the proposal and recommend to the Government for permission under G.O.Ms.No.213/30.3.89 and G.O.Ms.No.127/8.5.98 for the proposed TPP and accordingly, TNPCB forwarded the proposal (22.12.2012) to Govt. of Tamil Nadu to consider permission. The Member Secretary, TNPCB finally informed (14.03.2014) that the proposal for CTE has already been forwarded to the Environment and Forest Dept., Government of Tamil Nadu by the Board on 22.12.2012 to decide the issue of G.O. relaxation. The PP has been vigorously pursuing the matter at highest level with the State Govt. and the Orders are still awaited.

3. *Based on the information and clarifications provided, the Committee noted that there was no physical progress on the ground. However, in public interest, recommended that the request for extension can be agreed to in accordance with the provisions of EIA Notification, 2006. The*

Committee further recommended that additional conditions which were earlier not prescribed but relevant now be stipulated while issuing the extension of validity.

2.5 3x660 MW Expansion of coal based power units at Koradi TPP, Distt. Nagpur, Maharashtra by M/s. Maharashtra State Power Generation Company Ltd.- reg. Extension of validity of EC.

1. The PP made a presentation and provided the following information. The above proposal was accorded EC by the Ministry on 04.01.2010. CTE was accorded by MPCB on 29.01.2010

2. Regarding the progress made, the Unit-8 (instant expansion Unit-I) Boiler Light Up was carried out on 11.09.2014 and is ready for steam blowing. Set was put on Barring on 03.03.2014 and TG insulation work is in progress. The Unit-9 Boiler Hydraulic Test, TG box up and Boiler ignition trial were completed on 06.01.2014, 28.07.2014 and 31.12.2014 respectively. Turbine oil flushing and Chimney common shell wall were completed. Flue cane work is in progress. The Unit-9 Boiler Hydraulic Test was completed on 05.07.2014 and Chimney common shell wall was also completed. Insulation & refractory work, HIP box up, Generator box up and Flue cane work are in progress. The CODs of Unit-8, Unit-9 and Unit-10 were scheduled for 31.03.2015, 31.08.2015 and 31.03.2016 respectively. The photographs of various units/facilities depicting the progress made were presented.

3. Regarding the reasons for delay in implementation of the project, there was a delay in supply of material for first Unit which was manufactured in Japan due to natural calamities. Prolonged and excessive monsoon in Nagpur region in the year 2013 resulted in water logging & delayed civil work. Financial crisis of M/s Lanco Infratech delayed BOP works and there was a staggered delivery of plant & machinery.

4. Regarding coal linkage, the proposed Units were originally allocated Machhakatta Coal Block in Orissa. However, all the coal blocks were de-allocated as per the recent Hon'ble Supreme Court's Order. The PP is making efforts for allocation of coal linkage from MoC as per GoI policy and negotiations are also in progress with WCL. The sulphur content, ash content and GCV of coal from Macchakata coal block are 0.5-0.8%, 33.3-44.8% and 3,800 Kcal/kg respectively. The sulphur content, ash content and GCV of proposed coal from WCL mines are 0.4-0.5%, 32-35% and 3,889 Kcal/kg respectively. The coal transportation from Macchakata coal block was envisaged by rail and the transportation from WCL mines will also be by rail as being done currently for the existing TPS.

5. *Based on the information and clarifications provided, the Committee noted that the project is in an advance stage of implementation and decided that, in public interest, the request for extension can be agreed to in accordance with the provisions of EIA Notification, 2006. The Committee further recommended that additional conditions which were earlier not prescribed but relevant now be stipulated while issuing the extension of validity.*

2.6 Expansion of 1080 MW TPP by adding 1x660 MW Lignite based Super Critical Power Plant at Village Bhadresh, Tehsil & District Barmer, Rajasthan by M/s Raj West Power Ltd. (a subsidiary of JSW Energy Limited.) - reg. ToR

1. The project proponent along with their environmental consultant, EMTRC Consultants Private Limited, Delhi made a presentation and provided the following information. The existing 8x135 MW Lignite Based CFBC Power Plant is under operation. The EC for existing plant was issued by MOEF on 20.07.2007 & 19.11.2009 and project was completed in March'13. The photographs of existing Unit including green belt development were presented.

2. The proposed expansion will be carried out in 220 acres of area within the existing premises (total 1186 acres) and no additional land will be acquired. There is no National Park, Wildlife Sanctuary, Biosphere Reserve, Protected & Reserved Forest and River within 10 km radius. The fuel source is nearby Jalipa and Kapurdi Lignite mines (Operated by Barmer Lignite Mining Co Ltd) and will be transported by belt conveyor. The water requirement (1562 m^3/h) would be met from Indira Gandhi Nahar Pariyojana (IGNP) Canal, (from the unutilized water allotment share) from Mohangarh - Dist. Jaisalmer through dedicated 185 KM pipeline. Agreement exists with GoR to draw 80 Cusecs water from IGNP Canal and at present only 35 Cusecs is being used. Power generated is supplied to GoR Discoms through PPA. The estimated project cost is Rs. 4620 Crores.

3. The committee noted that certified compliance report from the Ministry's R.O for the compliance of EC conditions of the existing units was received and termed to be satisfactory. The PP requested to use the AAQ data of December, 2014 and January, 2015 of the season (December, 2014 – February, 2015) collected from the existing Plant in the preparation of EIA/EMP. The committee agreed for the same and recommended to use both 24 hourly and annual average base-line data.

4. Based on the information provided and the presentation made, the Committee recommended the following ToR in addition to the standard TORs (as applicable) at ***Annexure-A1*** *for undertaking detailed EIA study and preparation of EMP.*

(i) A detailed study of wildlife in the study area shall be carried out and if any scheduled species are found, a conservation plan shall be submitted duly approved by the State Govt.

2.7 4x1000 MW Pudimadaka Super Thermal Power Project at Villages Lalamkoduru, Rambilli, Veduruvdda & Pudimadaka, Distt. Visakhapatnam, Andhra Pradesh by M/s NTPC Ltd. - Re-consideration for ToR

1. The proposal was earlier discussed in the 13th and 28th Meetings of the EAC (Thermal) held during **March 25-26, 2014 and December 22-23, 2014** respectively, the minutes of which are as under:

Quote "At the outset, the Committee noted that only one alternate site has been proposed by the PP and hence recommended that minimum two proper alternate sites shall be proposed on a topo sheet. The proposal was accordingly **deferred.**

The PP has submitted the details of an additional alternate site along with the two earlier proposed sites. The Committee after detailed deliberation opined that the proposed site is not environmentally and ecologically suitable site as there are large number of water bodies in the proposed site and are inter-linked. Further, the creek is only about 100 m away, the region falls in high flood zone/Tsunami prone area, has high rain fall and close to salt pans. Due to complex hydrological system, this area is ecologically sensitive. Hence, the proposed site in the present form **cannot be recommended.** The PP may re-locate/shift the site away from the ecological sensitive area in consultation with the State Government***" Unquote.***

2. The PP vide letter dated 09.01.2015 has informed that, after careful examination taking into account optimum locations of the project facilities, it has been decided to prepare a layout of the project in such a way so as to save or not disturb the water bodies located within the project area to the extent possible. It has also been decided to shift the boundary of the project

so as to make it further away from the salt pans/creek. Accordingly, a revised layout with a revised boundary of the proposed site has been prepared and submitted.

3. The Committee perused the revised plant layout and noted the following:

a. The proposed/selected site is primarily a low lying area receiving the drainage through streams /nallahs passing through different pond eco-systems and hence the site performs a major ecological service i.e. prevention of flooding the area which is inhabitated and cultivated. The salt pans are also located very close to boundary of the site.

b. Further, the site is situated close to creek that receives rain water drainage from the higher elevations (including Hills) through interconnected pond eco-systems. The creek and its base binge biologically rich provides breeding grounds for fish. The possibility of mangroves occurring in area is not ruled out.

c. The boundary of the site selected is about 200-500 m away from the tip of the creek and the site also includes about 7 ponds of varying sizes with the largest of about 20 acres.

4. In light of above, the site is primarily not an ideal site for location of a mega power plant. However, the State Government declared the area as an industrial area and given the site to NTPC for location of the power plant. In the absence of non-availability of land for a coastal power plant which is entirely dependent on the sea water, the committee suggested that the layout shall be further revised by protecting the natural drainage of the area, shifting the main pond of 20 acres, guard pond etc. and submitted.

5. As suggested above, the PP has re-revised the layout and submitted. After detailed deliberation and discussion, the Committee recommended the following ToR in addition to the standard TORs (as applicable) at ***Annexure-A1*** *and* ***Annexure-A2*** *for undertaking detailed EIA study and preparation of EMP.*

(i) As per CRZ Rules, the boundary of the plant should be 500 m away from the HTL (including the creek).
(ii) The area earmarked for Power Plant towards coastline need to be curtailed suitably in a way i.e. 500 m away from the creek and also exclude the major ponds and their connected streams / nallahs originating from higher elevations i.e. hills. The site should also be away from the salt pans and the area between the boundary & salt pans should be developed into thick green belt.
(iii) Modification of the re-revised lay out (lay out-2) keeping in view only one month coal storage as against two months coal storage as proposed by the PP should be carried out with a view to preserve the two pond systems and their connected nallahs. This modification also keeps the distance between the boundary of the plant and the creek more than 500 m. In fact, long storage of imported coal with high sulphur content may have the possibility of fire hazard and this makes it a necessity to reduce the coal storage area.
(iv) To ensure the preservation of larger ponds and their inter connecting nallahs, lateral shift of the plant area in lay out-2 towards the ash pond-1 is a necessity.
(v) The main plant lay out should be such that the nallahs/streams together with connecting ponds located within the main plant area are preserved.
(vi) The ponds located in ash pond-1 area should be relocated not in sand dune area but in areas where the water can be retained. This requires a detailed study and any shifting /

reallocation of hydrological structure should be done in consultation with irrigation and flood control Department of the State Govt.

(vii) In no case, the outfall and intake points should be from the creek and base, which are the breeding grounds for fish and other animals. A detailed study in this regard would be required.

(viii) Filling should be restricted only to the main plant area and should be avoided as far as possible.

2.8 500 MW (2x100 MW + 2x150 MW) Captive Thermal Power Plant at Village Hathneora, Champa Taluk, Janjgir-Champa Distt., in Chhattisgarh by M/s. Prakash Industries Ltd.- reg. EC and extension of validity of ToR.

1. The ToR for preparation of EIA/EMP report for the above proposal was accorded by the Ministry on 18.04.2011. The EIA/EMP report after conducting public hearing was submitted to the Ministry for consideration of environmental clearance in February, 2014. The validity of ToR was extended for three years by the Ministry. The PP along with their environmental consultant, EQMS India Pvt. Ltd., Delhi has made a presentation and inter-alia provided the following information. The EIA/EMP report was prepared by Sun Consultancy & Services, Bhubaneswar, who was accredited only for Category 'B' Thermal Power Plants. Hence, the EIA/EMP report was validated by EQMS India Pvt. Ltd., Category 'A' accredited consultant, by generation of one month additional data and the updated EIA/EMP report was submitted. Since the validation/updation of EIA/EMP report was done after three years i.e. ToR validity period, the PP requested for extension of validity of ToR, if required. The Committee noted that as per the recent policy of the Ministry, the outer limit of ToR validity is four years. Since the updated EIA/EMP report was submitted within four years of grant of ToR, the validity of ToR can be extended and the proposal appraised for EC.

2. The PP proposes to set up an additional 500 MW CTPP configuring 2x100 MW based on Atmospheric Fluidized Bed Combustion (AFBC) Boilers and 2x150 MW based on Circulating Fluidized Bed Combustion (CFBC) Boilers considering consumption of power for various expansion projects of the PP in Steel and Ferro Alloy making, The existing premises of 603 acres of Integrated Steel Plant will accommodate the proposed expansion of 500 MW Power Plant in an area of 128.7 acres. Land acquisition process has already been completed. No R&R is applicable. No ecologically protected area or archeologically protected site or any other environmental sensitive area exists within 10 km of the project site. River Hasdeo flows at a distance of 600 m from the Plant boundary. The cost of proposed project is Rs. 1750 crores. There are no litigations pending against the project.

3. The AFBC Boiler (2x100 MW) will be based on coal (184 TPH) as fuel and CFBC boiler (2x150 MW) will be based on mixed fuel of coal (192 TPH), char (64 TPH) and ESP dust (74 TPH). The PP was allocated Fatehpur Coal Block in joint venture for its proposed CTPP. However, all the coal blocks were de-allocated as per the recent Hon'ble Supreme Court's Order. The PP is entitled to get coal linkage for the existing as well as the proposed CTPP even if the PP is not a successful bidder in the auctioning process of the coal blocks. Moreover, coal is available through e-auction of CIL being announced regularly twice in a month and imported coal is also a viable option upto some extent for blending with low grade Indian Coal. The maximum sulphur content of coal, char & ESP dust will be 0.38%, 0.5% & 0.2% respectively and the maximum ash content will be 52%, 72.37% and 75.9% respectively. The coal will be transported through covered railway wagons and unloaded at the proposed coal handling area.

4. Regarding the use of ESP dust in CFBC Boilers, it is informed that the waste heat of the flue gases of sponge iron kilns is being used for generation of power in WHRB and the ESP dust coming out from the ESP attached with WHRB contains un-burnt carbon (LOI) ranging between 17 -20% and therefore the ESP dust has useful heat value (GCV-1500 kcal/kg). CFBC boilers are suitable for use of such solid wastes/low grade fuel. The additional pollution control measures for use of char and ESP dust include design of CFBC boiler with required margins considering the use of char and ESP dust, design of ash handling system to cater to the higher ash contents, processing of char to magnet separators to reduce the magnetic portion of char so that it does not erode the boiler cubes, transportation of ESP dust to CFBC boiler through pneumatic conveying system to avoid any fugitive emission.

5. Water requirement (28,176 m^3/day or 9.3 MCM) for the proposed CTPP will be met from River Hasdeo. Permission for drawl of 18.25 MCM of water/year was accorded by the Water Resources Department, Govt. of Chhattisgarh vide letter dated 12/01/2011. Apart from this, the PP has an earlier approval for drawl of 23,000 m^3/day of water. The water from Hasdeo River will be pumped through pipelines to the project site and stored at the site in a pond with a capacity of 2,00,000 m^3 (7 days storage). WCC and ACC will be used for the 2x100 MW and 2x150 MW respectively, minimizing the water requirement. COC of 5.0 will be maintained for the cooling water system. Suitable R.O. plant is proposed to meet the DM feed requirement and other utilities requirement. A de-mineralizing plant (DM plant) will meet the make-up requirement of steam generators. Fire hydrant water and other utilities water will be tapped from the R.O. permeate raw water storage tank. The raw water taken from the River for makeup will be treated in the pre-treatment plant. Total number of RWH structure at the existing facility is 8 nos. Location of RWH 1, 2 & 3 at Plant boundary near material gate (north Direction), RWH 4 – Near Temple, RWH 5 & 6 - In front of ADM (NE direction). Roof water harvesting system present in residential quarters. Apart from these, two nos. of big area beside main road is used for collection & storage of Rain water. Hydro-geological study of the area has been conducted by M/s. AMAY Environmental consultants, Bhopal and it has been provided as Annexure no. VII in the EIA report.

6. Wastewater management will be based on “Zero Discharge Approach”. Wastewater will be recycled back for ash dust suppression, road spraying & plantation. Underflow sludge from the raw water treatment will be sent to a settling pond. Clear overflow from the pond will be utilized for green belt development and dust suppression. Main plant drains consisting of wastewater will be neutralized before discharge to guard pond. Resultant clear water will be used in CHP dust suppression, Horticulture & green belt development. Effluent from CHP will also be led to a guard pond.

7. For fly ash utilisation, the PP has signed an MOU with the State Government to establish a 2 MTPA Cement Plant which is planned at a distance of 8 Km from the proposed project site in Village Bhada, District Janjgir Champa. The PP will also sign agreements with the existing cement plants for supply of fly ash (free of cost). An ash dyke is not being planned and ash will be collected & used in dry form in beneficial ways in cement plant as well as brick making. For dry fly ash collection, eight (8) nos. steel/concrete Silos will be constructed. To transport ash at regular intervals, a dedicated transport system will be provided with specially designed totally enclosed vehicles. Bottom ash will be sent to the abandoned mines for filling and low lying areas.

8. The maximum baseline concentrations (24 hourly) of SOx, NOx, PM_{10} and $PM_{2.5}$ in the study area are 8.9 µg/m^3, 14.70 µg/m^3, 61.10 µg/m^3 and 24.30 µg/m^3 respectively. Cumulative modeling analysis was conducted using ISCST3 model to compute Ground Level Concentration (GLC) of PM_{10}, $PM_{2.5}$, NOx and SOx. Worst case scenario was modeled using the

maximum sulfur and ash content. The meteorological data from March through May, 2014, was used. The resultant concentrations of SOx, NOx, PM_{10} and $PM_{2.5}$ after the proposed project are 60.56 µg/m^3, 52.48 µg/m^3, 73.10 µg/m^3 and 28.90 µg/m^3 respectively which are within the NAAQS. *The committee recommended for installation of Stacks of 275 m height and the PP has committed for the same.*

9. Dense plantation has been done under the scheme of Chhattisgarh Government Hariyali project. Plantation alongside the roads was done for 50 m along with plantation in 282 hectares at Durg Rajnandgaon & Raigarh region. For the proposed area for 500 MW Project, the PP has reserved 45.7 acres (33%) of land for greenbelt.

10. Public hearing/public consultation was conducted by CECB on 05.04.2013. It was noted that the issues raised in the public hearing include air and water pollution, ash disposal, development of greenbelt with local species, CSR activities. The Committee discussed the issues raised in Public Hearing and the responses made by Project Proponent.

11. The budget earmarked for CSR activities is 87.5 crores in the area of livelihood and entrepreneurship, women empowerment, empowering children and adults by bringing quality education to remote rural areas, investment in rural infrastructure to provide basic amenities and healthcare to villages.

12. The Ministry's R.O has monitored the compliance of the existing Unit on 29.10.2013 and inter-alia observed that implementation of most of the environmental safeguards is satisfactory except rain water harvesting, house keeping & recommendations of CREP, which are keeping slow progress and uploading of six monthly compliance reports on website also needs to be done. One WP (C) No. 3770/2011 has been filed in the Hon'ble High Court of Chhattisgarh against the Order dated 22.03.2011 of CPCB in which the High Court has issued a Stay Order on 15.07.2011 which is continuing till date.

13. In response to above, the PP submitted that 10 nos. of bore holes were already installed in the Plant for rain water harvesting purpose. Apart from this, Roof water harvesting system has been installed in all the residential quarters in the colony. Further, two big areas have been developed in the Plant for collection & storage of rain water which is being used in multiple applications in the Plant. Rain water harvesting structures have also been developed in the nearby Village as a part of CSR program. Proper arrangement has been made for housekeeping i.e. two nos. road sweeping machines (truck mounted) were purchased for proper cleaning of the roads in the Plant to avoid any fugitive emission because of vehicular movement. In addition, sufficient manpower is engaged for cleaning of other areas where road sweeping machines approach is not possible. *The committee noted that the PP is yet to upload the emission data etc. on their website and recommended that the PP shall immediately do the needful in this regard and inform the Ministry.*

14. A closure order was issued by CPCB on 22.03.2011 and for disconnection of water and electricity to the Plant. The PP has taken a stay on the closure order from Hon'ble High Court on 18.0.2011. The last hearing of the matter was on 17.07.2014, wherein the stay was continued till next hearing, which is yet to be decided.

15. Based on the information and clarifications provided by the Project Proponent and detailed discussions held on all the issues, the Committee *recommended the project for environmental clearance* subject to stipulation of the following specific conditions:

i) Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation shall be submitted periodically.

ii) 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.

iii) A stack of 275 m height shall be provided with continuous online monitoring equipments for SOx, NOx and $PM_{2.5}$ & PM_{10}. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.

iv) The sulphur content of coal, char & ESP dust shall not exceed 0.38%, 0.5% &0.2% respectively and the ash content of coal, char & ESP dust shall not exceed 52%, 72.37% & 75.9% respectively. In case of variation of quality of coal, char & ESP dust at any point of time, fresh reference shall be made to the Ministry for suitable amendments to the environmental clearance.

v) The coal transportation shall be by Rail through covered railway wagons.

vi) High Efficiency Electrostatic Precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50 mg/Nm^3. 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) COC of atleast 5.0 shall be adopted.

viii) 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 be undertaken.

ix) 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.

x) Fly ash shall be collected in dry form and storage facility (silos) shall be provided. *As committed, no ash pond shall be constructed and the fly ash shall be 100% utilized from day one.*

xi) Green Belt consisting of three tiers of plantations of native species around the plant and at least 50 m width shall be raised. Wherever 50 m width is not feasible green belt of 20 m width shall be raised and detailed justification shall be submitted to the Ministry. Tree density shall not be less than 2500 per ha with survival rate not less than 80 %.

xii) CSR schemes identified based on Public Hearing issues and 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.

xiii) As committed, a minimum amount of Rs 87.5 Crores shall be earmarked for CSR activities. 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.

xiv) An Environmental Cell comprising of at least one expert each in environmental science/ engineering, ecology, occupational health and social science, shall be created preferably

at the project site itself and shall be headed by an officer of appropriate superiority and qualification. It shall be ensured that the Head of the Cell shall directly report to the Head of the Unit who would be accountable for implementation of environmental regulations and social impact improvement/mitigation measures.

2.9 Construction of New ash pond on 111 ha. Land for Satpura TPS in Sarni, Dist. Betul, Madhya Pradesh by M/s. M.P Power Generation Co. Ltd. – Permission reg.

1. The proposal was earlier discussed in the 8th and 20th Meetings of the EAC (Thermal) held during **January 9-10, 2014 and August 28-29, 2014,** the minutes of which are as under:

Quote "The proposal is for construction of new ash pond on 111 ha. Land for Satpura TPS in Sarni, Dist. Betul, Madhya Pradesh by M/s M.P Power Generation Co. Ltd. (MPPGCL). The PP has made a presentation and provided the following information:

MPPGCL has a generating capacity of 1392.5 (1X62.5, 1X200, 3X210 and 2X250) MW at Satpura TPS in Sarni, M.P. MPPGCL, STPS has started functioning way back in the year 1967-70 with five units of 62.5 MW capacity and later on during 1979-83, 1X200, 3X210 MW units were commissioned. EC was accorded by MoEF for 2X250 MW extension units on 27.02.2009 which inter-alia stipulates that the existing units no. 1-5 shall be decommissioned within one year of the commissioining of the proposed units. In complicance to the same, Units 2-5 have been decommissioned in 2013.

The capacity of existing ash bund is almost full and likely to be exhausted by March 2014. The fly ash utilization was 25.866% in 2012-13. MoEF has granted approval for diversion of 111.00 ha of forest land for construction of new ash bund on 13.10.2009. The construction of ash bund is nearing completion except some finishing work. NEERI, Nagpur has carried out studies for ground water contamination and its remedial measures due to construction of ash bund and allied works of ash disposal at STPS, Sarni and found no contamintaion of ground water. The 111 hectare land is just adjacent to the existing ash bund (to be reclaimed and rehabilitated).

The Committee noted that the Fly ash utilization achieved in the power plant is only about 26%. That since the existing units are not able to comply with the fly ash utilization notification, other avenues/options shall need to be explored for fly ash utilization before the request can be agreed to. The Committee therefore declined to agree to the present request.

2. The PP vide letter dated 10.06.2014 inter-alia has submitted that all efforts are being made to achieve maximum fly ash utilization. For the new unit, it is committed to achieve 100 % fly ash utilization as per the Fly Ash Utilization Notification, 2009. The PP also made a presentation and inter-alia informed that MoU was executed on 25.08.2014 for a period of 30 years with M/s. RSD Trans Connect Ltd., Satna for supply of fly ash (5 lakh MT in the first year and more in the subsequent years) for cement grinding / blending and packaging units. An order was placed to M/s. Sanprifly, Indore Ash Supply Company on 20.08.2014 for supply of 5 lakh MT of pond ash from ash dam within 2 years period. Efforts are being made to increase ash utilization with the help of PWD, Municipal Corporation, Road Construction Authorities, Brick Manufactures etc. The ash utilization in the year 2013-14 is 39.01 % and from January – March 2014 is 56.96%. M/s. WCL has been requested to utilize ash for stowing of mines and the matter is sub-judice before Hon'ble, NGT, Bhopal.

3. After perusal of the presentation made and detailed discussion, the committee recommended that the 130 ha ash bund meant for Unit 10 and 11 (2X250 MW) may be utilized, by which time the PP shall achieve 100% fly ash utilization. Hence, the proposal for new ash pond of 111 ha is not agreed to." ***Unquote.***

4. Upon the repeated requests of PP/State Govt., the proposal was re-considered, wherein the PP has inter-alia submitted that Ministry has accorded EC dated 27.02.2009 to 2x 250 MW extension Units 10 & 11 at STPS, Sarni with the condition to rehabilitate the old ash pond and decommission the old units 1 to 5 within one year of commissioning of the proposed units. As the capacity of ash bund for existing power station was likely to exhaust, the PP has approached the Ministry to acquire 111 ha. forest land. The in-principle approval/Stage-I Forest Clearance and Final approval/ Stage-II Forest Clearance were accorded by the Ministry on 02.03.2009 and 13.10.2009 respectively. The land was handed over to PP by forest department on 28.07.2010 after compliance of all the conditions laid down in final approval.

5. The PP has paid Rs. 12.15 Crores to Forest Deptt. towards compensatory afforestation and NPV including additional payment of Rs. 2.26 crores towards compensatory afforestation. The reclamation plan was prepared by the State Forest Research Institute, Jabalpur and old ash pond shall be reclaimed after commissioning of 111 ha. ash pond in phased manner. The comprehensive wildlife plan was prepared by the State Forest research Institute, Jabalpur and accordingly, the PP has deposited Rs. 1.59 Crores for implementation. The 111 ha. forest land has only been used for construction of ash dam for STPS, Sarni. The construction of ash bund is almost complete and an amount of Rs 25 Crores has been incurred on the construction work.

6. The capacity of existing ash bund (373 ha.) for disposal of ash generated from 6 to 9 units will exhaust in next two months and it is not feasible to utilize the 130 ha ash bund meant for Unit 10 and 11 (2X250 MW). As such, the only alternative left is to utilize ash bund constructed in 111 hectare land in order to continue power generation from existing units; otherwise, old units will be under forced outages after two months. Further, this ash bund will also cater the ash generated from proposed 1x660 MW units at Sarni for which TOR has already been approved.

7. Regarding Action Plan for 100% fly ash utilization in 2015-16, the estimated fly ash generation is 17.0 LMT about 8.95 LMT will be used for bricks/tiles (M/s Sanpri fly ash Ltd., Indore, M/s Pankaj Road lines, Indore, other brick manufacturers and PPs own brick manufacturing Plant) etc., 1.0 LMT in ash dyke for free board & misc work, 5.0 LMT for construction of NH-69 & misc. roads sub-base and 3.0 LMT for cement manufacture (M/s RSD trans connect Ltd.).

8. Based on the information and clarifications provided by the Project Proponent and detailed discussions held on all the issues, as a special consideration and not as precedence, the Committee recommended permission for ash pond of 111 ha. subject to the following conditions.

(i) *The compliance to the proposed Action Plan for 100% fly ash utilization in 2015-16 shall be submitted to the Ministry and its Regional Ofiice on a quarterly basis.*
(ii) *A detailed feasibility study of competent experts shall be conducted regarding accommodating additional ash (in exigency) by increasing the height of existing ash dyke (373 ha.) etc.*
(iii) *Thick green belt shall be developed all around the ash pond.*

2.10 Continuation of permission for disposal of flyash generated from 410 MW TPP (110 MW of M/s Bhushan Steel Ltd. and 300 MW of M/s Bhushan Energy Ltd.) into mine void of Jagannath OPC of M/s MCL in Talcher, Distt. Angul, Orissa.

1. Permission for the above pilot project proposal was accorded by the Ministry on 05.09.2013 for a period of one year, subject to various studies on the impacts of ash disposal in mine voids. The PP and NEERI presented the work done on the characteristics of ground and surface waters and soils, fly ash characterization, transportation of solutes with ground water using transport model etc.

2. The Committee noted that the same studies were conducted by NEERI for NTPC regarding disposal of fly ash generated from 460 MW TPP of Talcher TPP into mine void of South Balonda OPC of M/s MCL in Talcher. The same were appraised in detail in the meeting held during 28th – 29th August, 2014. Hence, the same observations and recommendations hold true in the instant case also. What is required for making a policy decision are the following:

i) Chemical constituents of fly ash dumped in the mine void at different depths.
ii) The water quality at the bottom of the fly ash dumped void and also at different depths if, available from the depths of the fly ash dump corresponding to the levels of the unconfined, semi confined and confined aquifer levels in the area.
iii) The bioaccumulation and biomagnifications of trace elements in plants (herbs, shrubs and trees) and the invertebrates and also aquatic fauna from the mine void filled with fly ash should be investigated.
iv) The biota (herbs, shrubs and trees of plants and soil invertebrates and other animals) inhabiting the areas located at 500 m, 1000m , 2000 m, 5000 m and 10, 000 m from the mine void filled with fly ash should also be studied.
v) Ground water samples at different depths using piezometers should be analyzed from all the areas mentioned under item iv
vi) The distribution pattern of unconfined, semi confined and confined aquifers in the areas located within 10 km radius of the mine void filled with fly ash should be mapped and their connectivity with mine void filled with fly ash shall be investigated,
vii) The direction of the movement of the ground water in all the three aquifers should be investigated.
viii) The model of solute transportation should be based on the results obtained from the above mentioned studies.
ix) Appropriate controls (reference studies) should be used.
x) Radioactivity of fly ash sampled at different depths from the mine void fly ash dump should be analyzed.
xi) In all the above studies, the concentration of trace metals should be assessed.

3. *In view of above, the committee recommended that on a temporary basis for a further period of* ***maximum one year, subject to compliance of interim Orders and final Judgment of Hon'ble NGT****, the disposal may continue, by which time the studies may be continued/redone and appraised by the committee.*

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

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ANNEXURE- A1

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 for the conditions stipulated in the environmental and CRZ clearances of the previous phase(s) for the expansion projects shall be submitted.

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

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

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

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

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

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

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

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

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

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

xiv) Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes / wildlife corridor, if any, within 10 km of the project site shall be specified and marked on the map duly authenticated by the Chief Wildlife Warden of the State or an officer authorized by him.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

xxxviii) One complete season site specific meteorological and AAQ data (except monsoon season) as per latest MoEF Notification shall be collected and the dates of monitoring shall be recorded. The parameters to be covered for AAQ shall include PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO and Hg. The location of the monitoring stations should be so decided so as to take into consideration the upwind direction, pre-dominant downwind direction,

other dominant directions, habitation and sensitive receptors. There should be at least one monitoring station each in the upwind and in the pre - dominant downwind direction at a location where maximum ground level concentration is likely to occur.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

liii) 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.

ANNEXURE- A2

Additional TOR for Coastal Based TPPs:

Over and above the TOR mentioned in **Annexure- A1**, the following shall be strictly followed (as applicable):

a) Low lying areas fulfilling the definition wetland as per Ramsar Convention shall be identified and clearly demarcated w.r.t the proposed site.
b) If the site includes or is located close to marshy areas and backwaters, these areas must be excluded from the site and the project boundary should be away from the CRZ line. Authenticated CRZ map from any of the authorized agencies shall be submitted.
c) The soil leveling should be minimum with no or minimal disturbance to the natural drainage of the area. If the minor canals (if any) have to be diverted, the design for diversion should be such that the diverted canals not only drains the plant area but also collect the volume of flood water from the surrounding areas and discharge into marshy areas/major canals that enter into creek. Major canals should not be altered but their embankments should be strengthened and desilted.
d) Additional soil required for leveling of the sites should as far as possible be generated within the site itself in such a manner that the natural drainage system of the area is protected and improved.
e) Marshy areas which hold large quantities of flood water to be identified and shall not be disturbed.
f) No waste should be discharged into Creek, Canal systems, Backwaters, Marshy areas and seas without appropriate treatment. Wherever feasible, the outfall should be first treated in a Guard Pond and then only discharged into deep sea (10 to 15 m depth). Similarly, the Intake should be from deep sea to avoid aggregation of fish and in no case shall be from the estuarine zone. The brine that comes out from Desalinization Plants (if any) should not be discharged into sea without adequate dilution.
g) Mangrove conservation and regeneration plan shall be formulated and Action Plan with details of time bound implementation shall be specified, if mangroves are present in Study Area.
h) A common **Green Endowment Fund** should be created by the project proponents out of EMP budgets. The interest earned out of it should be used for the development and management of green cover of the area.
i) Impact on fisheries at various socio economic level shall be assessed.
j) An endowment **Fishermen Welfare Fund** should be created out of CSR grants not only to enhance their quality of life by creation of facilities for Fish Landing Platforms / Fishing Harbour / cold storage, but also to provide relief in case of emergency situations such as missing of fishermen on duty due to rough seas, tropical cyclones and storms etc.
k) Tsunami Emergency Management Plan shall be prepared wherever applicable and Plan submitted prior to the commencement of construction work.
l) There should not be any contamination of soil, ground and surface waters (canals & village pond) with sea water in and around the project sites. In other words necessary preventive measures for spillage from pipelines, such as lining of Guard Pond used for the treatment of outfall before discharging into the sea and surface RCC channels along the pipelines of outfall and intake should be adopted. This is just because the areas around the projects boundaries could be fertile agricultural land used for paddy cultivation.

(Dr. C.R. Babu)
Vice Chairman (Acting Chair)

(Shri T.K.Dhar)
Member

(Shri J.L Mehta)
Member

(Shri N.K. Verma)
Member

(Shri G.S. Dang)
Member

(Shri N.S. Mondal)
Member

(Dr. S.S Bala)
Member

(Dr. Saroj)
Member Secretary