

MINUTES OF THE 75th EXPERT APPRAISAL COMMITTEE (EAC) (THERMAL & COAL MINING) MEETING HELD ON 3rd - 4th JUNE, 2013 IN NEW DELHI.

COAL MINING PROJECTS

The 75th meeting of the reconstituted EAC (T&C) was held on 3-4 June, 2013 in Scope Complex, New Delhi to consider the projects of coal mining sector. The list of participants of EAC members and the proponents are given at Annexure 1 and 2 respectively. The minutes of the 73rd meeting of EAC (T&C) held on 6-7 May, 2013 were confirmed.

The agenda items were taken up as given below:

75.1: Kesla North Opencast and Underground mine project (0.30 MTPA in an ML area of 750 ha) of M/s Rathi Steel and Power Ltd., Dist. Korba, Chhattisgarh – EC based on TOR granted on 28.05.2010 - Further Consideration.

75.1.1 The proposal is of Kesla North opencast and underground mine project (0.30 MTPA in an ML area of 750 ha) of M/s Rathi Steel and Power Ltd., Dist. Korba, Chhattisgarh. The proposal was considered in 47th EAC meeting held during 23-24th April, 2012. The Committee sought additional information with regard to mining process, water channel, sparing of dense forest, coal transportation, Railway siding at Murga, mitigative measures for pollution control, and Permission under PESA.

75.1.2 The Committee after deliberation in its 71st meeting held during 8th – 9th April, 2013 sought additional information viz. the proponent to explore the possibilities of installing a siding near the mines; the transportation plan for coal and OB dumps including the time schedule for dumping be presented; the time schedule for OC and UG mining be presented; MOC approval for mine closer plan be submitted etc.

75.1.3 The proponent made the presentation and informed that:

- i. The TOR was proposed for open cast mining in four quarries comprising total 191.02 ha having 112.11 ha protected forest area. The MOEF had suggested to reduce the area under dense forest land, especially in Pit/ Quarry 4 where the quality of coal was inferior in comparison to the balance reserves. Thus, we modified the proposal to reduce the forest area under opencast mining from 52.97 ha by excluding the forest in pit no. 4
- ii. The proponent had informed the MOEF on 04.07.2011 that as per the updated statement of Superintendent of Land Records, Korba, Chhattisgarh the total forest area within ML is 471.687 ha.
- iii. The proponent had, in accordance to the MOEF's letter, dated 19.05.2012, left out high density forest from open cast areas other than Quarry no. 1 & 3 and therefore reduced the protected forest required for open cast mining in ML to 24.07 ha. The summary of the reduction in forest area is as under:

Quarry no.	Area under opencast mining			Area under protected forests in OC pits		
	Submitted with Form 1	Amendment after TOR presentation	Amendment after EC presentation	Submitted with Form 1	Amendment after TOR presentation	Amendment after EC presentation
1	39.50	39.50	39.50	17.80	17.80	17.80
2	46.51	46.51	17.15	28.90	28.90	0
3	40.71	40.71	40.71	6.27	6.27	6.27
4	64.3	0	0	59.14	0	0
Total PF in quarries	191.02	126.72	97.36	112.11	52.97	24.07

- iv. The PP has reduced the forest disturbance to the extent of 78.5% at the cost of losing precious mineral reserves. The coal reserves are of high grade with low ash coal.
- v. With respect to the mine being in virgin forest area and the reference given to various wildlife species, especially of a snake, a detailed note prepared by ecological expert on the present status of the forest.
- vi. The forest in the applied lease area is nowhere a virgin forest. The forest in the applied lease area is under heavy anthropogenic pressure in the form of source for timber, fuel wood and NWFP by the people of the nearby villages. The area is under grazing by the domestic animals. At places old sal (*Shorea robusta*) trees are standing without any regeneration, due to human activities. At places bushes of tendu (*Diospyros melanoxylon*), and tussocks of the grass *Aristida* sp. are there indicating again heavy interference to natural regeneration. Some part of the forest area has been converted in to savanna like structure with scattered trees with some shrub and herbaceous growth. At some places thick growth of buta chhind (*Phoenix acaulis*) is observed indicating recurrent fire in the area. At places bullock cart roads are crossing the forest. These activities indicate that the area is not a virgin forest but a forest under heavy anthropogenic pressure.
- vii. Animals, inhabiting the core and buffer zones of the applied lease area have all been mentioned in the report on flora and fauna of the region with a plan to conserve the wildlife, particularly the wildlife belonging to schedule I. As far as the presence of a snake named "Paharchitti" is concerned, it is hypothetical as no one in the area, either local persons or the forest officers, have seen the snake. A perusal of the list of snakes provided in Korba Division's Forest Working plan shows seven snakes which does not include Paharchitti.
- viii. Regarding Lemru Reserve- although in March 2005, the Chhattisgarh assembly initially passed a resolution seeking Central approval for two elephant reserves, only one of them at i.e. the Lemru reserve in Korba district was later dropped by the Chhattisgarh Govt.
- ix. As planned, none of the main drains pass through the mine lease area will be disturbed.
- x. Precautions to minimise suspended solid with rainfall runoff from OB dumps have been proposed as (i) Toe walls at the base of the dump; (ii) Garland drains will be constructed around the dump to collect rain water leading to settling tanks where

settlement of suspended solids will take place; (iii) Testing facility to monitor the water quality at the exit of the settling tanks will be provided; (iv) If the exit water is not within permissible norms for suspended solids, it will be retreated; (v) Water will be released only after complying to the norms; (vi) pH shall also be monitored even though acid mine drainage is not possible from OB dumps; (vii) Rehandling of entire dumps at the end of open cast mining shall be done.

- xi. With respect to acid mine drainage, it cannot occur merely by rain water runoff on surface of the earth unless there is sulphur containing mineral or pyrite on the surface. In the mining lease area, the entire area is covered by soil. Water has to come in touch with coal and only those coals which have high sulphur content or pyrite, generate acidic water. In case of Kesla Coal Block, the same coal seams are extending into the operational Rajgamar coal mine of M/s SECL (6.9 km, SE from ML).
- xii. No acidification of mine water has been observed in Rajgamar as the pH monitored by CPCB at the settling tank outlet (Source: Impact of Coal Mine Waste Water Discharge on Surroundings with reference to heavy metals, CPCB, 2011) which shows it to be 6.41. The report has studied various mines under WCL, NCL & SECL in the states under jurisdiction of Zonal Office, Bhopal and found no acid mine drainage. It is inferred that although there is no possibility of acid mine drainage due to the nature of coal, still provision shall be kept for neutralizing of water with lime dozer and mixer at settling tank site.
- xiii. Water table will be intersected during mining. As illustrated above, the mine water shall be around neutral while leaching of heavy metals occurs at lower pH, thus, contamination of ground water by heavy metals will not occur. As per "Impact of Coal Mine Waste Water Discharge on Surroundings with reference to heavy metals" of CPCB, 2011, the settlement tank discharge from Rajgamar mine (6.9 km from ML) shows Zn as 0.068 mg/l and Mn as 0.068 mg/l, which are within the permissible limits as per MOEF Gazette Notification no. GSR 742 (E) dt. 25.09.2000 (Zn- 5 mg/l, Mn-2 mg/l). Lead, Chromium, Copper, Nickel and Cadmium were also analysed and found below detectable limit.
- xiv. Modern techniques of blasting are environment friendly due to which noise and dust generation are minimised to a great extent. After the start of mine operations, the ground vibration study shall be carried out and according to its recommendations blasting shall be carried out to ensure minimum impact on environment. ANFO will not be used in water logged holes due to the pollution potential to ground water. Alternate, non-polluting explosives for water logged holes are available commercially, which shall be used. For example, IDL Explosives makes various explosives for watery holes by market names such as Emulking, Super mix, Emul blast, Emul mix etc. which are used from soft to medium hard strata.
- xv. At the time of application for allotment of coal blocks, no coal block was available in Orissa for sponge iron units. Thus, the Company made application to Ministry of Coal for two nearest coal blocks within a distance of 300 km in state of Chhattisgarh, which is adjacent to Orissa, to minimise transportation. The nearest available coal block is Kesla, which has been allotted by the Ministry of Coal as per its procedures after assessing the applications. The distance of the mine from the sponge iron plant is around 260 km by road. However, the proposed mode of transport from Mine to Sponge Iron Plant will not be entirely by road. In an

endeavour to minimise the impact due to road transport, the PP has proposed a combination of road transport upto nearby railway sidings at Sarag bundia siding (approx. 35 km) or Manikpur (approx. 20 km), whichever is available and permitted for use by Indian Railways at the time of commencement of production.

- xvi. To ensure that the pollution due to transportation is minimum, mitigation measures have been proposed which include that the trucks shall be maintained leak proof; mechanically covered trucks shall be used; the trucks shall be maintained as per the schedule prescribed by the manufacturer; they shall have their PUC certification done as per norms; to reduce the number of truck trips, higher capacity trucks of 30 T shall be used

75.1.4 The Committee after a detailed deliberation, recommended the underground mining proposal for Environmental Clearance. Further, the Committee desired that:

- i. In view of the thick forest cover, the proponents were suggested to reconsider for mining for the opencast portion also by underground method; or they may come back after the Forest Clearance.
- ii. Since substantial dense forest is still a part of the open cast mining, the proponent should re-examine the possibility of underground mining in place of open cast mining in these forest segments so as to avoid fragmentation of dense forests. The Proponent has agreed to re-examine the issue and submit the proposal for further consideration.
- iii. The Stage-I FC, which is still awaited, shall be obtained before the issue of the EC.
- iv. There shall be no relocation of villages as has been proposed by the Proponent.

75.2: Sondiha OC-cum-UG Coalmine Project (1 MTPA peak in an ML area of 810 ha) of M/s Chhattisgarh Mineral Development Corp. Ltd., located in Dist. Sarguja, Chhattisgarh - EC based on TOR dated 23.12.2010 – Further Consideration.

75.2.1 The proposal is for Sondiha OC-cum-UG Coalmine Project (1 MTPA peak in an ML area of 810 ha) of M/s Chhattisgarh Mineral Development Corp. Ltd., located in Dist. Sarguja, Chhattisgarh.

75.2.2 The proposal was considered in the 47th EAC meeting held on 23rd -24th April, 2012. The EAC sought additional information. The proposal was further considered in the 73rd EAC meeting held on 6th -7th May, 2013, which sought additional information viz.: as per the Stage- 1 FC, phase wise mining has been suggested. The Committee suggested that the PP should provide the details of phase-wise mining (as mentioned in clause (xiii) of para 2 of the FC no. 8-50/2012-FC dated 4.3.2013); the CSR capital cost is Rs. 3 crores and the recurring cost is Rs. 1.7 cr per annum, which should be adjusted as per the annual inflation.; it has been brought to the notice of the Committee that the ML area is located within the radius Tamor-Pingla wild life sanctuary and is within 12 km of Semarsot wild life sanctuary. In the light of this, the Committee has suggested that the proponent should submit a map showing the wild life sanctuary and the project area. The distance should be clearly demarcated and authenticated by the Chief wild life warden; since the project is surrounded by dense forest and the elephant corridor, the details conservation plan with budgetary provision alongwith the action plan be submitted to the Committee for further consideration; the additional responses, if any, to the views of the

NGO be also submitted; the Committee suggested that a detailed Action Plan for the welfare of the tribal people in consultation with reputed expert in the area of tribal issue in the State of Chhattisgarh and MP etc.

75.2.3 The proponent made the presentation and informed that:

- i. The density of Geological Reserve of Tatapani-Ramakola Coalfield is 6.22 Mt/Sq.km as compared to 6.98 Mt/Sq.km of SECL. Hence, there is no significant variation in Coal Reserve in this Coalfield.
- ii. Ministry of Coal has allotted the coal block to CMDC to supply coal to small industries situated in the state of Chhattisgarh.
- iii. The vegetation map 64 M/2 issued by the Chhattisgarh Forest Department clearly shows that the boundary of Tamor Pingla is not within the radius of 10 kilometer from the mining lease boundary. The issues of tiger and other Schedule-I flora and fauna related to the protected area (i.e. Tamor pingla and Samarsot wild life sanctuaries), both these protected areas are away from the radius of 10 kilometer from the project site. As per authenticated vegetation map the forest area within the mining lease area is isolated small patches of forest and not connected to any continuous patch of forest. Therefore, the wild animals will avoid taking refuge in this area. DFO, North Surguja, vide its letter no. 2936 dated 13.5.2013, has certified, inter alia, that there are no national parks, wildlife sanctuary, biosphere reserves and any place of historical importance is neither located nor proposed within the 10 km buffer zone.
- iv. The proponent has affirmed that during the preparation of the “Flora & Fauna, Wildlife Conservation and Management Plan for Sondiha Coal Block”, the domain experts have taken into account instances of the elephant movements in the buffer zone (10 km). The ML area is in the vicinity of elephant route. This project would mitigate the elephant menace and it will improve the habitat of the area. A sum of Rs. 5.475 crores will be spent in the implementation of the project report named by “Flora & Fauna, Wildlife Conservation and Management Plan for Sondiha Coal Block”, which has got approval of PCCF (Wild life) vide letter no. W. L./ 06, Dated 04/01/2013. The implementation of the approved conservation and management plan will have the activities which include: Erection of watch tower; Guard team with equipments like VHF equipments for communication and vehicles for smooth movement for guarding local inhabitants from wild animals; Wild life conservation measures like firefighting, provision of improved availability of fodder, water through creation of hideout water holes, plantation of shade trees, flower & fruit trees; Measures for habitat improvement, conservation and research resurrection like plantation, assisted natural regeneration, water harvesting and soil and water conservation; other activities like cattle immunization, promotion of ecotourism and eco-development also proposed; Provision for one time corpus fund for compensation for damages from wildlife also incorporated in budget; Provision of fund for Bio-diversity Board Chhattisgarh to study and documentation of bio diversity in the area and preparation of People Biodiversity Register. These activities will certainly induce the elephant to move through a path having better habitat condition. This will lead to minimum interference with local inhabitants with minimized incidence of

man animal conflicts. The proponent has affirmed that a wild life management plan has been approved by the PCCF (Wild Life) of the State Forest Department, vide its letter no. 06 dated 04.01.2013.

- v. The PCCF (Wild Life) has also further certified that the report presented by the DFO, Surguja North indicating that there is no National Park, Wildlife Sanctuary and any place of historical importance within 10km of ML Area is true and agreeable to PCCF (Wild Life).
- vi. As per condition stipulated in ToR, “Wild Life Conservation and Management Plan for Sondiha Coal Block” harnessing all related information within core zone & buffer zone (10 km radius of the project) has been prepared by subject matter expert along with a budget for conservation of flora and fauna on long term basis. Budget provision of Rs. 5.470 Cr. for conservation measures has already been approved by the Principal Chief Conservator of Forest (Wildlife), Government of Chhattisgarh.
- vii. The proponent has denied that significant forest area of 197.257 ha. is of density of 0.4 and it is an important elephant corridor which is evident from the facts that the Forest Land for which Stage-I Clearance has been granted is of the density ranging from 0.2 to 0.4, which is based on the authenticated records submitted by the State Forest Department while processing of the Stage-I approval. Also, under compensatory afforestation (CA), diverted forest land will be compensated by equal amount of land for CA along with plan for plantation during the lifetime of the mine. This will create a much better forest cover. The Elephant Task Force which published its report on August 31, 2010 named “Gajah –Securing the Future for Elephants in India” primarily recommended that the 88 elephant corridors that have been identified in the Report “Right of Passage: elephant corridors of India” (Menon et al, 2005) should be notified as state elephant corridors by respective State Government and declared as ecological sensitive area.
- viii. The PP affirmed that It is imperative that the list of 88 elephant corridors mentioned in the said report does not include any such corridor in the ML area.. However, the experts in preparation of the Wildlife Management Plan have taken into account the presence of elephants/ HEC instances in the core and buffer zone for the last 10 years and accordingly prepared the management plan for reduction of HEC and thereby conservation of Elephants. This plan has been approved by the State Forest Department.
- ix. The question of dependencies of the wild animals and tribal communities for drinking water has also been studied by experts as part of EIA/EMP as directed by the EAC in the TOR titled “Report on Study of area drainage, hydrology & Hydrogeology – Sondiha Coal Block” The expert has concluded peak flow of Moran River at the north of the mine, that no adverse impact will be on the river flow due to mining of Sondiha Coal Block. In the EIA/ EMP, the anticipated sources of water pollutions have been carefully identified. The PP mentioned that that as there will not be any discharge of effluent from the facility and colony area since recirculation and reuse of treated waste water will be followed.
- x. The quality of seepage water shall be stringently and continuously monitored prior to discharge and treatment given, if required, therefore negligible impact is envisaged on the surface as well ground water quality. The report on “Report On

Study of area drainage, hydrology & Hydrogeology – Sondiha Coal Block” which encompasses the issues with water has been approved by CGWB based on the study the mitigative measures suggest to abate water pollution have been incorporated in the EIA/EMP. Water with low pH value is also not accepted as there will be no leaching of heavy metals from the coal mine lease area due to the fact the characteristics water is not acidic. Rs. 60 lacs has been committed for creation of water hole/ water bodies and maintenance of 8 nos of water source for wild animals exclusively in the approved Flora & Fauna Plan. Extensive provision for drinking water for population in the core and buffer zone has been made in the budgetary allocation every year under approved R & R Plan. Till date 14 nos of boreholes have been drilled amounting to approximately Rs.20 Lakhs in the core zone and quality of water is potable which has been appreciated by the local people.

- xi. It is a fact that most of the population in the project area belong to Schedule Tribes and their main source of livelihood is agriculture and non-timber forest products like Tendu leaves etc.
- xii. The PP has accepted that due to the opening of coal mining project, there will be noise, air and sound pollution in the area. CMDC has taken adequate care to protect the livelihood of the project affected population and to reduce the noise, air and sound pollution.

75.2.4 The Committee after deliberation recommended the project for EC with the following conditions:

- i. The proponent has affirmed, with regard to the elephant corridor within the 10 km from the project site, that the list of 88 elephant corridors mentioned in the report “Right of Passage: Elephant Corridors of India” which has primarily identified 88 elephant corridors in India and does not include any such corridor in the project area. However, the proponent has prepared the management plan for reduction of HEC and thereby conservation of Elephants. There are instances of the elephant movements. The ML area is in the vicinity of elephant route. This project would mitigate the elephant menace and will improve the habitat of the area. A sum of Rs. 5.475 crores has been earmarked for the implementation of the project report named by “Flora & Fauna, Wildlife Conservation and Management Plan for Sondiha Coal Block”, which has got approval of PCCF (Wild life). The proponent has affirmed that a wild life management plan has been approved by the PCCF (Wild Life) of the State Forest Department; vide its letter no. 06 dated 04.01.2013. The proponent shall submit necessary certificate/document from the PCCF (Wild Life), Chhattisgarh for record.
- ii. The proponent has affirmed that the proposed project is outside the radius of 10 km of the Wild Life sanctuary/ eco-sensitive zone from the boundary of Tamor-Pingla Wild Life sanctuary. DFO, North Surguja, vide its letter no. 2936 dated 13.5.2013, has certified, inter alia, that there are no national parks, wildlife sanctuary, biosphere reserves and any place of historical importance is neither located nor proposed within the 10 km buffer zone. The PCCF (Wild Life) has also certified that the report presented by the DFO, Surguja North indicating that there is no National Park, Wildlife Sanctuary and any place of historical importance within 10km of ML Area is true. The proponent shall submit necessary document/certificate from the PCCF (Wild Life), Chhattisgarh for record.
- iii. Keeping in view the sensitivity of the area, greater thrust should be given to local people for employment after necessary training and retraining.

- iv. No diversion of the nala/river of the periphery of the ML area is permitted. Transportation will be by mechanically covered trucks from the mine to the consumers within two years from the date of operation of mine.
- v. The Committee, based on the Proponent's submission and Forest Clearance dated 4.3.2013 recommended the project for granting Environmental Clearance.
- vi. The proponent has agreed to increase the budget provision of capital cost-Tribal Welfare Plan to Rs. 3.00 crores on the basis of WPI March, 2013.
- vii. The PP shall implement all its the commitments made in the EAC and also in their submissions.

75.3: Radhikapur (West) Coal Mine Project (6 MTPA in ML area of 1047.99 ha) and Coal Washery of 6 MTPA of M/s Radhikapur (West) Coal Mining Pvt. Ltd., located in Tehsil Chendipeda, dist. Angul, Orissa - EC based on TOR dated 30.05.2011 – Further Consideration.

75.3.1 The proposal is for Opencast and underground mining of Radhikapur (West) Coal Mine Project (6 MTPA in ML area of 1047.99 ha) and Coal Washery of 6 MTPA of M/s Radhikapur (West) Coal Mining Pvt. Ltd., located in Tehsil Chendipeda, dist. Angul, Orissa - EC based on TOR dated 30.05.2011 for further consideration. The proponent made the presentation and informed that:

- i. It is the new project having joint venture of M/s Rungta Mines Ltd, M/s Ocean Ispat Pvt Limited and M/s OCL India Ltd. Ministry accorded TOR vide letter no. J-11015/30/2011-IA.II(M) dated 30.05.2011.
- ii. The land usage of the project will be that: Pre-mining: Private 738.58 Ha, Government 217.48 Ha and Gramya Jungle 91.93 Ha. Out of 738.58 Ha private land agricultural land is 213.67 Ha, non-agricultural land 504.88 ha and balance is with other classification. The Post Mining: Plantation 785.38 ha, Water body 86.65 ha, Road / building 7.00 ha, Bund 15.70 ha, Undisturbed /Indirectly affected 153.27 ha Total 1048.00 ha.
- iii. The total geological reserve is 288.44 MT. The mineable reserve is 195.08 M, extractable reserve is 166.67 MT. The per cent of extraction would be 57.78 %.
- iv. The coal grades More than 83% is G having stripping ratio of 4.19: 1 (OB:Coal). The average Gradient is 3 to 8deg. There will be total six seams with thickness ranging from 0.07 – 41.84 m .
- v. Singhara Jhor flowing eastwards forms the western and northern boundary of the block. The Singhada Jhor merges into Brahmani River at the north eastern part of the coalfield. Nuabanda nala (seasonal), which forms the part of eastern boundary of the block, flows into Singhada Jhor at the north-eastern corner of the block.
- vi. The total estimated water requirement is 1581m³/d. The level of ground water ranges from 2.45 m to 6.50 m.
- vii. The Method of mining would be mechanized opencast by shovel dumper combination requiring drilling and blasting.
- viii. There will be no external OB dump at the end of mining. There is one external OB dump covering an area of 52.66 ha having a height upto 90 m (max). With the quantity of 30.26 mm³. The final mine voids will have an area of 86.65 Ha (surface dump having volume 30.26 mm³, the external OB dump of area 52.66 ha

and height 90 m which was located southern side of the quarry will backfilled into the void area so void will reduce from 154.11 ha to 86.65 ha) and depth 30 m which is proposed to be converted into a water body. The internal OB dump will be of 650 ha and 52 m high which will be brought to ground level at the end of mining by dumping in the mine void.

- ix. The seasonal data for ambient air quality has been documented and all results at all stations are within prescribed limits.
- x. The life of mine is 49 years (O/C 25 and U/G 41).
- xi. Transportation: Transportation of coal in pit by Coal Tippers to the pit head stockpile. Surface to siding by conveyor belt, siding to loading in to Rly. wagons by SILO/ by Bunker and chute
- xii. There is no R & R involved. No of PAFs is 1664.
- xiii. Cost: Total capital cost of the project is Rs. 800 Crore. The cost of production would be Rs. 820/ Tonne. CSR Cost (Capital cost: Rs. 4.0 crores and recurring cost Rs. 3.00 crores). R&R Cost Rs. 200crore. Environmental Management Cost is Rs. 473.35 lakh. while the recurring expenditure during the stage of production is envisaged as Rs. 131.08 lakhs/ year.
- xiv. Approvals: Ground water clearance obtained on 01.03.2012. The Mine Closure plan approved vide letter No. 13016/77/2006-CA.I (part) dated 23rd June 2011 of Ministry of Coal. The Mining Plan was approved on 23rd June, 2011 from the Ministry of Coal. For board approval it is being considered by Board on 30.05.2013.
- xv. Wildlife issues: There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
- xvi. Forestry issues: Total forest area involved for mining 66.65 ha. The proposal is held up in the light of new circular issued by MoEF needing Gram Sabha for Safety Zone area. Gram Sabha has since been held and SDLC meeting is expected shortly. Extent of forest land in the project is 91.93 Ha.
- xvii. Total afforestation plan shall be implemented covering an area of 785.38 ha at the end of mining where reclaimed external OB dump is nil and Internal OB Dump 52.66 ha. Green Belt over an area of 68.45 ha. Density of tree plantation 2500 trees/ ha of plants.
- xviii. There are no court cases/ violation pending with the project proponent.
- xix. Public hearing: Public hearing was held on 30.11.2011 at Chhendipada Tehsil of Angul District. The issues raised were regarding employment, land compensation, Gochar Patta, forest, land, etc.

75.3.2 The proposal was earlier considered in the 45th EAC meeting held on 19-20 March, 2012, 50th EAC meeting held on 18-19th June, 2012 and 55th EAC meeting held on 27-28th August, 2012. In the last 55th EAC meeting the conclusion was that proponent requested for deletion of condition “an assimilation study be carried out by the project proponent”. The proponent informed that it was difficult for them to carry out such study as there are several mines in the region and making a joint effort by the proponent would be difficult. He further suggested that such assimilation study should be carried out the State Pollution Control Board or the State Govt. and requested the Committee to delete this condition from the EC. The Committee desired that this issue should be re-examined in the Ministry and the Committee may be apprised so as to discuss further.

75.3.3 The proposal was considered by the EAC. Point wise reply has been presented by the project proponent during the presentation & informed that:

- i. The reduction of the depth of final void area by dumping OB into the final void was explored and void area has been reduced. The surface dump (having volume of 30.26 mm³ (L), area 52.66 ha and height 90 m) which was located southern side of the quarry has now been proposed to be backfilled into the terminal void. Void area will reduce from 154.11 ha to 86.65 ha. The depth will reduce from 40 m (original pit bottom was 180 m bgl) to 30 m bgl
- ii. The issue of additional land, over and above the coal bearing area even within allocated coal blocks should not be permitted for dumping of OB unless it is not feasible due to high stripping ratio. The PP also explored the possibility of backfilling to the extent possible and only thereafter prepare Mining Plans for dumping OB externally in non-coal bearing areas or areas with very thin seams.
- iii. Based on exercise the area of external dump was reduced from 100 ha to 52.66 ha to accommodate the overburden produced during first four years of operation only. There would be no dumping of OB after fourth year in non-broken area. It is not possible to reduce the external dump area further beyond 52.66 ha as initial cut material is required to be stacked away till the time backfilling could be started.
- iv. The Project specific R&R plan has been prepared by M/s Development Alternatives for Wider Network (DAWN), Orissa. R&R plan has already been submitted to MoEF in final EIA/ EMP Report.
- v. A long Term Socio-Economic Development Perspective Plan of CSR Initiatives prepared.
- vi. The PP will provide two external experts from reputed institutions at the time of implementation and monitoring of CSR plan.
- vii. The estimated capital cost -CSR Initiative will spread over first three years of mining operation has been increased from Rs. 3 crores to Rs 4.0 crores.
- viii. The PP has undertaken a Social Cost Benefit analysis vis-à-vis continuing practice of agriculture in the area. The study *inter-alia* include details of the command area, cropping pattern (irrigated/non-irrigated), details of people losing land particularly agricultural land. The study was carried out by IIT Kharagpur.
- ix. The PP confirmed that regular monitoring of water quality of the Singhara Jore upstream and downstream will be carried out and Water analysis report will be submitted to MOEF/ OSPCB and displayed on company website.
- x. The PP confirmed that 50 m width green belt shall be provided after coal extraction.
- xi. The PP informed that the IDCO rail corridor is under planning. CMPDI is entrusted with Master Planning and RITES are planning for rail and siding network. Required details have been submitted to CMPDI and RITES through IDCO. Co-ordination meetings are being regularly held. The Company will utilise the siding of IDCO corridor on payment basis as also other block allottees.
- xii. The Orissa Pollution Control Board, Bhubaneswar has prepared an Action Plan in June 2010 titled “Action Plan for Abatement of Pollution in Critically Polluted Industrial Clusters (Angul-Talcher Area, Orissa)”. The report was finalised in

December 2010. Action plans were aligned to the environmental issues of the area and aims at addressing them. Sector-wise action plan has been prepared. Action plan along with stakeholders and target dates have been identified. Stakeholders have been identified as MCL and Future coal mines in Talcher area and Other Govt. agency as applicable. For Coal mines, various air/ water/ land pollution control measures have been proposed, which will be adhered to by the management of Radhikapur (West) Coal Mine.

- xiii. Regular monitoring of Singhara Jore water, up-stream and down-stream will be carried out.
- xiv. Director, MoEF conveyed the Committee that the Assimilation study will be carried out by Indian School of Mines (ISM), Dhanbad, on pro-rata cost basis. The cost for the study would be contributed by the mines situated along the Singhara Jore.

75.3.4 The Committee after a detailed deliberation has recommended the proposal with the following conditions:

- i. There will be no external OBD left at the end of the mining. These will be totally rehandled into the mine void. The internal dump will be brought to the ground level. The ultimate mine void will be less than 30 meter.
- ii. The PP has confirmed that the coal production will start only after the rail network is completed. Angul Dist, being the critically Polluted area, the Orissa State Govt. does not permit coal transport by road mode.
- iii. The maintenance of the infrastructure in the resettlement colonies shall be done by the project proponent.
- iv. The green belt along the village roads and the buffer between the villages and ML area should be initiated before the start of the mining operation.
- v. MoEF has informed that the assimilation study of the Singhara jore will be carried out by the Indian School of Mines (ISM), Dhanbad, on pro-rata cost basis. The cost for the study would be contributed by the mines situated along the Singhara Jore. While the EAC has accepted the views of the MoEF suggested that the ISM should carry out the study with multidisciplinary approach.
- vi. The proponent will submit a document for record with regard to the outcome of the Inter Ministerial Group in the Ministry of Coal vis-à-vis the status of the proposal of the proponent
- vii. The CSR cost should be Rs. 4 crores with Rs 5 per Tonnes of Coal produced which should be adjusted as per the annual inflation.

75.4: Moher & Moher- Amlohri extension captive coal mine Project for expansion from 12 MTPA (normative) and 16 MTPA (peak) to 20 MTPA (Normative) and 23MTPA (Peak), in area -15.39 Km² (Moher Block – 10.70 Km² & Moher Amlohri Extension Block – 4.69 Km²) of M/s Sasan Power Ltd., Village Moher & Amlohri, Distt. Singrauli, Madhya Pradesh – TOR.

75.4.1 The proposal is of Moher & Moher- Amlohri extension captive coal mine Project for expansion from 12 MTPA (normative) and 16 MTPA (peak) to 20 MTPA (Normative) and 23MTPA (Peak), in area -15.39 Km² (Moher Block – 10.70 Km² & Moher Amlohri Extension Block – 4.69 Km²) of M/s Sasan Power Ltd., Village Moher & Amlohri, Distt. Singrauli, Madhya Pradesh – TOR. The expansion will be 43%.

75.4.2 The proponent made the presentation and informed that:

- i. Ministry had issued the environmental clearance vide letter no, Letter no J-11015/60/2008-IA.II (M) dated 10th December, 2008 for 12 MTPA (normative) and 16MTPA (peak).
- ii. The land usage of the project will be: Pre-mining:1198 ha forest and 839 ha Non Forest; Post-mining: 1760 ha plantation, Water body -29 ha, Infra-248 ha; Core area: 1411 ha Plantation and 29 ha water body.
- iii. Geological Reserve: The total geological reserve is 575 MT. The mineable reserve is 470.43 M, extractable reserve is 470.43 MT. The per cent of extraction would be 82 %.
- iv. The coal grade is F having stripping ratio of 4.03 m³/tonne. The average gradient is 2-5⁰. There will be total two seams with thickness ranging from 19.3-26.15 m
- v. Kanchan Nallaha flows within a radius of 10 Km of the project.
- vi. The total estimated water requirement is 5000 m³/d. The level of ground water ranges from 22 to 18 m (BGL).
- vii. The Method of mining would be mechanized Open Cast Mining with Shovel-Dumper and dragline for inter parting.
- viii. There will be one external OB Dumps covering an area of 320 Ha. The height for the dumps would be 90 m. The total quantity of 1893.73 mm³. The year of back filling would be from 3rd year of mining. There is one internal dump covering an area of 1415 ha having a height upto 3 m above ground level. With the quantity of 1689.38 mm³. The final mine voids will have an area of 29 ha. and depth Less than 30 meter which is proposed to be converted into a water body.
- ix. The ambient air quality will be monitored on fortnightly basis throughout the year. The monitoring activity is being carried out continuously and all results at all stations are within prescribed limits.
- x. The life of mine is 29 years.
- xi. **Transportation:** Transportation of coal in pit will be by trucks to crusher. Surface to siding from crusher to Power Plant would be by Overland Belt and siding to loading by Conveyor (OLC).
- xii. There is no R & R involved. No. of PAFs 898.
- xiii. Project Cost: Total capital cost of the project is Rs. 2889 Crore. R & R Cost would be Rs. 160.47 crore. Environmental Management Cost is Rs. 3796.7 lakhs.
- xiv. Approvals: Ground water clearance has been obtained vide letter Lr. No. 21-4(103)/NCR/CGWA/2011-946, on 27 July, 2011. The Mine Closure plan obtained vide letter. 34011/31/2011-CPAM, on 6.9.2011. The Mining Plan has been approved, vide letter 13016/16/2008-CA-I, dated 02.03.2009.
- xv. **Wildlife issues:** There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
- xvi. **Forestry issues:** Total forest area involved for mining is 1198 ha. The Forest Clearance for total area has been obtained, vide 8-92/2008-FC on 25.5.2010.
- xvii. Total afforestation plan shall be implemented covering an area of 1760 ha at the end of mining where reclaimed external OB dump 320 and Internal OB Dump 1415ha. Green Belt over an area of 10 ha and 15 ha undisturbed.. Density of tree plantation 2500 trees/ ha of plants.
- xviii. There are no court cases/ violation pending with the project proponent.

75.4.3 The Committee recommended the project for the TOR with the following conditions:

- i. There should be no external OB dumps.
- ii. The revised ML be submitted to the MoEF for record.

75.5: Block –B Opencast Expansion Project of (4.375 MTPA to 5.50 MTPA over ML area of 1339 ha) of M/s Northern Coalfields Ltd., Dist. Singrauli, Madhya Pradesh – EC under 7(ii) of EIA Notification 2006.

75.5.1 The proposal is of Block – B Opencast Expansion Project of (4.375 MTPA to 5.50 MTPA over ML area of 1339 ha) of M/s Northern Coalfields Ltd., Dist. Singrauli, Madhya Pradesh – EC under 7(ii) of EIA Notification 2006 for 25 % expansion.

75.5.2 The proponent made the presentation and informed that:

- i. Ministry had issued the environmental clearance vide letter no, J-11015/40/2009-IA.II (M) dated 19.05.2009 for 4.375 MTPA. Now, project proponent requested for 25 % expansion as per O.M no. J-1105/30/2004- IA. II (M) dated. 19.12.2012.
- ii. The land usage of the project will be as follows:

Pre-mining:

S No.	Particulars	Land Area (Ha)
1	Forest Land	447.00
2	Agriculture Land (Tenancy Land)	463.00
3	Government Land	429.00
	Total	1339.00

Post -mining

Sl. No.	Land use	Total Land Area (Ha)	Post mining land use in ha.			
			Plantation/afforestation	Water body	Public use	Undisturbed Land
1.	Top Soil dump	Not estimated separately. Included in OB dump.				
2.	External Waste Dump (OB Dump)	429.10	429.10	-	-	-
3.	Excavation area	460.20	113.30	346.90	-	-
4.	Built up area	81.10	-	-	81.10	-
5.	Afforestation (Green Belt)	183.98	183.98	-	-	-
6.	Undisturbed area	184.62	-	-	-	184.62
	Total	1339.00	726.38	346.90	81.10	184.62

Core Area: Total excavation area will be 460.20 ha and the back filled area would be 113.30 ha with a void /water body of 346.90 ha.

- iii. The total geological reserve is 110.67 MT. The mineable reserve is 87.67 M,

extractable reserve is 87.67 MT. The per cent of extraction would be 79.21 %. The coal grades are C, D, E & F having stripping ratio of 3.31 m³/tonne. The average Gradient is 8 - 22 degrees. There will be total two seams with thickness ranging from 14.95 – 26.3 m .

- iv. There is no water river/nallha flows adjacent to the proposed mine.
- v. The total estimated water requirement is 5000 m³/d. The potable water would be 1280 m³/d from bore well & industrial water 3720 m³/d from mine sump and surface reservoir. The level of ground water ranges from 0.52 -16.14 m.
- vi. The Method of mining would be mechanized opencast by shovel dumper combination requiring drilling and blasting.
- vii. Power demand of 9.82 MW is being met by MPSEB through Morwa substation and is adequate for proposed expansion.
- viii. There are one external OB Dumps covering an area of 429.10 Ha. The height for the dumps would be 90 m. The total quantity of 242.29 mm³. The year of back filling would be 2027-28. There is two internal dump covering an area of 113.30 ha having a height upto 120 m. With the quantity of 47.85 mm³. The final mine voids will have an area of 346.90 ha. and depth 30-40 m which is proposed to be converted into a water body.
- ix. The ambient air quality monitored on fortnightly basis throughout the year. The monitoring activity is carried out since the year 2007 to till date and all results at all stations are within prescribed limits.
- x. The life of Mine is 17 years from 2012-13.
- xi. **Transportation:** Transportation of coal in pit by rear dumpers. Surface to siding at present by trucks, CHP under construction and siding to loading by at present by trucks. The CHP is under construction.
- xii. There is no R & R involved. The no of PAFs will be 569.
- xiii. Six monthly compliance reports in year 2012-13 (upto Dec 2012) submitted to MOEF regional Office. The certified compliance report from the regional Office of the MoEF is awaited.
- xiv. Project Cost: Total capital cost of the project is Rs. 535.10 Crore as. The cost of production would be Rs. 507.93/tonne (Jan-13). The R&R Cost would be Rs. 579.04 Lakhs. Environmental Management Cost is Rs. 1819.98 lakhs.
- xv. Approvals: Ground water clearance has been obtained. The Mine Closure plan obtained on 14.05.2011. The Mining Plan for 4.375 MTPA approved on 07.04.2009. The Board's Approval was accorded on 23.02.2011.
- xvi. Wildlife issues: There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
- xvii. Forestry issues: Total forest area involved for mining 447.00 ha. The forest clearance for total area has been obtained. Extent of forest land in the project is 447.00 Ha. Stage -1 FC issued vide letter F.No. 8-59/2005-FC dated 14.09.2006 for 447.00 ha which is valid for 20 years.
- xviii. Total afforestation plan shall be implemented covering an area of 726.38 ha at the end of mining where reclaimed external OB dump 429.10 and Internal OB Dump 113.30 ha. Green Belt over an area of 183.98 ha. Density of tree plantation 2500 trees/ ha of plants. Till date 2.69 lakhs plants are planted.
- xix. There are no court cases/ violation pending with the project proponent.
- xx. Public hearing: The public hearing for opencast mine having capacity 4.375 MTPA was held on 26.08.2003.

75.5.3 Keeping in view of the MOEF's circular dated 30th May, 2012, which stipulates that it is mandatory for the project proponent to submit the certified report with regard to the status of compliance of the conditions stipulated in the Environmental Clearance for the ongoing/existing operation of the project by the Regional Offices of the MoEF.

75.5.4 The Committee asked the proponent to submit the certified compliance report from the Regional Office of the MoEF for further consideration of the proposal.

75.6: Ichhapur Underground Coalmine Project (2 MTPA in an ML area of 1186.83 ha instead of 1192 ha) of M/s West Bengal Mineral Development & Trading Corp.Ltd., Tehsil Asansol., dist. Bardhman, West Bengal – Modification of TOR.

75.6.1 The proposal is for Ichhapur Underground Coalmine Project (2 MTPA in an ML area of 1186.83 ha instead of 1192 ha) of M/s West Bengal Mineral Development & Trading Corp. Ltd., Tehsil Asansol., dist. Bardhman, West Bengal for Modification of TOR.

75.6.2 The proponent has made a presentation and informed that:

- i. The proposal was considered in the EAC held during 17-18 October, 2011. The TOR was accorded on 30th November, 2011. Additional TOR was issued on dated 10th February, 2012.
- ii. the Project Proponent has requested, vide letter MDTC/PM-5/92E(ii)/93 dated 24th January, 2013, for reduction in ML area.
- iii. The TOR was accorded for 1192 Ha. However the proposed leased area has now been reduced to 1186.83 Ha due to the fact that during the compilation of different reports for the preparation of the Geological Report, It was found that some portion of Ichhapur Coal Block was overlapping with the lease hold area of ECL mines. The omission of the overlapping portion from the proposed block boundary, the area has reduced to 1186.63 ha from 1192 ha.

75.6.3 The committee took a note of the request of the proponent and recommended for the modification of the ToR.

75.7: Kulti Underground Coalmine Project (1 MTPA in an ML area of 767.16 ha instead of 776 ha) of M/s West Bengal Mineral Development & Trading Corp. Ltd., Tehsil Asansol., Bengal Mineral Development & Trading Corp. Ltd., Tehsil Asansol. dist. Bardhman, West Bengal – Modification of TOR.

75.7.1 The proposal is for Kulti Underground Coalmine Project (1 MTPA in an ML area of 767.16 ha instead of 776 ha) of M/s West Bengal Mineral Development & Trading Corp. Ltd., Tehsil Asansol., Bengal Mineral Development & Trading Corp. Ltd., Tehsil Asansol. dist. Bardhman, West Bengal for modification of TOR

75.7.2 The proponent has made a presentation and informed that:

- i. The proposal was considered in the EAC held during 17-18 October, 2011. The TOR was issued on 30th November, 2011. Additional TOR was issued on dated 10th February, 2012.
- ii. The Project Proponent has requested, vide letter MDTC/PM-5/92E(ii)/95 dated 24th January, 2013, for reduction in ML area. The proposed leased area has now been reduced from 776 ha to 767.16 ha. This is due to the fact that during submission of mining lease application for Kulti Coal Block to district mining office, Asansol, district Burdhan, Chief Mining Office pointed out that some portion of Kulti coal block is overlapping with the leasehold area of Eastern Coalfield Limited and IISCO Collieries. On omission of the overlapping portions from the proposed block boundary of Kulti Coal Block the area has reduced to 767.16 ha from 776 ha.

75.7.3 The committee took a note of the request of the proponent and recommended for the modification of the ToR.

75.8: Sitarampur Underground Coalmine Project (1 MTPA in an ML area of 834.96 ha instead of 859 ha) of M/s West Bengal Mineral Development & Trading Corp. Ltd., Tehsil Asansol, dist. Bardhaman, West Bengal – Modification of TOR.

75.8.1 The proposal is for Sitarampur Underground Coalmine Project (1 MTPA in an ML area of 834.96 ha instead of 859 ha) of M/s West Bengal Mineral Development & Trading Corp. Ltd., Tehsil Asansol, dist. Bardhaman, West Bengal for Modification of TOR.

75.8.2 The proposal was considered in the EAC held during 17-18 October, 2011. The TOR was issued on 30th November, 2011. Additional TOR was issued on dated 10th February, 2012. Now vide letter MDTC/PM-5/92E(ii)/94 dated 24th January, 2013 Project Proponent requested for reduction in ML area. The proposed leased area has now been reduced from 859 ha to 834.96 ha. This is because during submission of mining lease application for Sitarampur Coal Block to district mining office, Asansol, district Burdwan, Chief Mining Office pointed out that some portion of Sitarampur coal block is overlapping with the leasehold area of Eastern Coalfield Limited, Bharat Cooking Coal Limited and IISCO Collieries. On omission of the overlapping portions from the proposed block boundary of Sitarampur Coal Block the area has reduced to 834.96 ha from 859 ha. Due to the reduction in area, the changes that have occurred are tabulated and the changed facility location from Kulti to Sitarampur Block with the combined plan of Kulti and Sitarampur coal blocks has been submitted and plan showing common facility location in Sitarampur block has also been submitted..

75.8.3 The committee took a note of the request of the proponent and recommended for the modification of the ToR.

75.9: Cluster XV (4 UG mines with a normative production of 0.325 MTPA with a peak prod. of 0.423 MTPA in a combined ML area of 1696.55 ha) of M/s Bharat Coking Coal Ltd located in Jharia coalfields, Dist. Dhanbad, Jharkhand- EC based on TOR granted on 27.06.2011 - Further Consideration.

75.9.1 The proposal is for cluster XV of the BCCL which consists of 4 underground mines of which 3 are working underground mines viz. Kharkharee Colliery, Madhuband Colliery, Phularitand Colliery and 1 closed Dharmaband Colliery of a combined ML area of 1696.55 ha for a production capacity of 0.325 MTPA (normative) with a peak prod. of 0.423 MTPA of M/s Bharat Coking Coal Ltd located in Jharia coalfields, Dist. Dhanbad, Jharkhand.

75.9.2 The Committee considered the project in 71st EAC meeting held during 8th - 9th April, 2013. The Committee after deliberation sought the following additional information for further consideration:

- i. The Information on underground fire and its impact on the affected area be documented and presented to the Committee.
- ii. The committee noted that subsidence level, both slope and strain, is high in case of kharkharee colliery, as per report submitted. Action being taken in this regard be submitted.
- iii. In underground mining, there are presence of organic gases. These gases are volatile in nature. Due to transmission of air, fire takes place. The Committee is of the considered view that routine mining engineering will not serve the purpose. Therefore, the Committee desired that proper studies be carried out to understand underground seams and how these fire areas could be sealed from further

spreading.

- iv. The project Proponent should prepare the cumulative impact of fire and gases for all the clusters of coal mines in Jhria Coal Field.
- v. National Remote Sensing Agency (NRSA) should be contacted for thermal imaging techniques which are being utilized for assessing the extent of impact of underground of fire.
- vi. The Committee suggested that BCCL should consider for an MOU with NRSA for short and long term studies so as to obtain detailed information on Satellite imagery, thermal imagery, subsidence prediction and surface features of the mining area.
- vii. The project Proponent should monitor the water quality of the Jamunia river as per the standards prescribed by the JSPCB/CPCB to maintain the required BOD in river water.
- viii. Study be carried out on ground water availability in the confined and unconfined area in mining zone. The nullh as adjacent to the river should not be disturbed.
- ix. Physico-chemical characteristics for the surface water should be carried out and presented.
- x. A detailed note on integrated water supply vis-à-vis utilization of surplus water be submitted.
- xi. Details of drainage/water shed map of the Jamunia River be provided.
- xii. The impact of mining/mine water on river Damodar, be presented.
- xiii. Details of the transportation of coal upto the washeries and the future plan to reduce air pollution during transportation of coal be presented.

75.9.3 Project Proponent submitted the information vide letter no. BCCL/HOD(Env.)/F-EMP/13/575 dated 16.05.2013. The EAC further considered the project in EAC wherein the proponent made presentation and informed that:

- i. There is neither underground fire nor surface fire within the cluster. The nearest fire as identified in Approved Master Plan is to the North, in the Phularitand OC mine in XI/XII seam and IX/X seam quarries located in cluster-II. The eastern side of the quarries are excavated out and western side is reclaimed with plantation. At present there is no sign of fire. Further, the old workings on Phularitand OC in XI/XII seam and IX/X seam are filled with water and separated by thick barrier with Phularitand UG of cluster under consideration. With these barriers of water body and solid coal, advancement of fire towards the mines of Cluster-XV is not possible.
- ii. Unlike Phularitand where extraction is proposed by stowing, Kharkharee Colliery is proposed to be worked by Caving method. However caving will be limited to area without surface features and area to be protected will be kept outside angle of draw and will be left intact.
- iii. Considering extraction by caving, the subsidence is not high. The major portion of surface over the mining area is covered with barren land (about 76%) and remaining are fallow land and Plantation area. There is no forest land over the property. Habitations present are unstable in nature and are to be rehabilitated as per the approved Jharia Master Plan. Further all depillaring operation shall be carried out after obtaining permission from DGMS and complying all condition of DGMS approval Development with Bord & Pillar method will be carried out in XV & XVI seams in Kharkharee UG for the next 12 years during which there will be no subsidence on the surface.
- iv. Subsidence is expected during depillaring with caving method which will be adopted after the development phase. The anticipated maximum subsidence over the mining area due to extraction of XVI seam is 1.75m, which is likely to occur over the panel K-XVI-W13.

- v. The maximum possible slope and tensile strain likely to occur are 12.20 mm/m and 6.40 mm/m respectively over the same panel. The anticipated maximum subsidence likely to occur over the mining area due to extraction of XV seam is 2.29m, which will occur over the panel K-XV-W-C. The maximum possible slope and tensile strain likely to occur are 16.65 mm/m & 8.74 mm/m respectively over the same panel. After extraction of all the above seams (seams XVI and XV) the estimated maximum subsidence likely to occur over the mining area is 2.919m, which would occur over the panels K-XVI-W-3 of seam XVI seam and K-XV-W-I of XV seam. The maximum possible slope and tensile strain likely to occur are 20.34 mm/m and 10.68 mm/m respectively, which would occur over the above stated panels. The values of subsidence, slope and tensile strain likely to occur over the mining area after extraction of individual seams as well after extraction of both the seams are high, which would cause damaging impact on the surface features. The surface features such as Railway line, roads, buildings, Kharkharee village, FB Factory and nala over the property are likely to be affected by subsidence. Thus, these features will be protected from subsidence damage by leaving coal un-extracted vertically below and within 300 angle of draw from these structures or should be diverted/rehabilitated before depillaring commences below the structure.
- vi. Surface cracks likely to develop due to subsidence over the mining area will be filled up properly and regularly by clay and stone chips, dozed and compacted, and thereafter with about 0.3m high clay heap over the cracks. Such mitigation measures will be followed during extraction of each seam. A team will be formed by the mine management which will be responsible for the proper and regular filling of surface cracks developed due to subsidence. The team will also maintain records of the development and filling of surface cracks.
- vii. Adequate supply of filling materials will be arranged by mine management at the site. Subsidence may result in depressions on the surface with accumulation of water during the rains. Such accumulation of water is beneficial for vegetation in the area. These water bodies will be retained wherever possible or drained out by cutting drains depending on safety of the underground workings. Surface drains will be made outside of the subsidence influence area to prevent the surface water of adjoining area from coming into active subsidence area. Proper precaution will to be undertaken while depillaring in the panels below and near surface features, e.g. sufficient coal barrier will be left against surface feature considering the angle of draw of 30⁰ to avoid any damage to the surface structure/feature.
- viii. There is no underground fire within this cluster. However studies are proposed to be taken up for the whole coalfield for assessing the nature and amount of gases in the UG fire areas. The Coal Mines Regulation, 1957 under the Mines Act, 1952 has elaborate provisions for control of the fires due to presence of methane and other sources and the provisions are complied with.
- ix. A detailed studies is proposed to be taken up for the whole coalfield for assessing the nature and amount of gases in the UG fire areas through CMPDI or agencies identified by CMPDI eg. CIMFR, ISM etc. BCCL approached NRSC (earlier NRSA) for the purpose in May' 2012. Proposal has been received from NRSC on 15-5-2013 for: Part 1: Coal Fire mapping of Jharia Coalfield using Thermal Infra-red data Part 2: Land subsidence mapping of Jharia Coalfield using Interferometric SAR data. BCCL has approved the above proposal and the same has been communicated to NRSC on 21.05.2013. Work award has been given to the NRSA for thermal imaging techniques which are being utilized for assessing the extent of impact of underground of fire. BCCL has entered into an MOU with NRSA for short and long term studies so as to obtain detailed information on Satellite imagery, thermal imagery, subsidence prediction and surface features of the mining area.
- x. The work of environmental monitoring by CIMFR, Dhanbad, has been approved by BCCL Board which will include water quality monitoring. BCCL has already requested to Jharkhand State Pollution Control Board on 27.02.2013 & 06.04.2013 for fixing up

monitoring stations, reply awaited. The BOD of Jamunia river near Jamuniatanr is found to be 2.4mg/L and is within permissible limits.

- xi. The ground water availability of unconfined aquifer and semi-confined aquifer (Confined aquifer connected with unconfined aquifer) for the mining zone of Cluster XV group of mines were estimated.
- xii. The Water availability of mining zone is estimated on the basis of Specific Yield (as per Ground Water Estimation Committee 1997), saturated thickness of aquifer and the aquifer area.
- xiii. An area of 16.9655 sq. km covered by Gondwana formations is constituted the mining zone of Cluster-XV. In estimation of water availability of unconfined aquifer, the average saturated thickness of 24.10 m {Thickness of aquifer (28 m) – Water level 3.90 m} was considered. For semi-confined aquifer, the average saturated thickness of 300 m was considered up to a depth of mine floor as bottom most working seam where the depth range of three operating mines varying from 300 m to 480 m. All the mines in cluster XV are of underground nature and there are no opencast mines. Therefore nullah adjacent to the river will not be disturbed.
- xiv. Physico-chemical characteristics for the surface water has been carried out and the results are within the prescribed limit.
- xv. A scheme entitled 'Scheme for multi-purpose utilization of surplus mine water of Barora Area , Block-II and Govindpur Area of BCCL' was prepared with a view to harness the surplus mine water discharge and to remove the persistent problem of water scarcity in the nearby the villages as a part of fulfillment of Corporate Social Responsibility of BCCL.
- xvi. The present Mine Inflow of Cluster XV 7600 m³/d, Pre-monsoon Water Levels 9.91 m, Post –monsoon water Levels 3.91 m. Hence there will be very little impact on round water table. The anticipated max. radius of Influence from mining zone cluster-XV 600 m. The distance between Cluster XV Boudary and Damodar River is 3.20 Km. The RL of the base of Damodar River at the confluence of Khudia River and Jamunia River ranges from 160 m to 180 m. RL of water table in the mining zone is 195 m. Gradient of water table is towards Damodar River. Therefore, Damodar river will continue to receive water from ground water system and there will be no impact quantitatively.
- xvii. Mine water is neither being discharged nor will be discharged to Jamunia River and Khudia River, tributaries of Damodar River. So there will be no degradation of the quality of Damodar River due to mine water of Cluster-XV.
- xviii. There will be no opencast mining in Cluster –XV, so no overburden will be generated and no problem of siltation in Damodar River arises.
- xix. Transportation of coal: The current practice of coal transportation of coal upto the washeries is by road.

It is proposed to continue the existing transport net work system in view of the implementation of the Jharia Action Plan (for 10 years) and another 5 years gestation period after the completion of Jharia Action Plan for consolidation of unstable areas is required. Thus the period of 15 years make the Phase-I. All mitigation measures (like covered trucks, green belting on either sides of the roads, enhanced water sprinkling, strengthening and maintaining the roads etc.) shall be adopted up to 15 years with the existing road-rail transport system.

BCCL shall implement conveyor-cum-rail transport to avoid movement of trucks within the cluster for coal transportation in Phase-II which shall start after 15 years from now. It is proposed to carry all coal transport by Rail and Conveyor belt, minimising the existing road transport system in all the mines of the cluster and would continue after 15 years. Loading of coal by pay loaders shall be discontinued. Adequate number of suitably designed off-take points shall be provided.

75.9.4 The Committee after a detailed deliberation, has recommended the project for Environmental Clearance with the following conditions:

- i. The proponent shall prepare a contingency plan for subsidence.
- ii. Keeping in view the pattern of the subsidence in the area, no depillaring should be carried out until the rehabilitation of the affected families and shifting of infrastructure.
- iii. The channels adjoining the ML area leading to Jamunia river should not be disturbed and be regularly desilted.
- iv. The quality of the Jamunia river water should be continuously monitored and in order to prevent silting, a series of check dams should be constructed using boulders. This will help in recharging the ground water.
- v. The coal from the mines will be transported by mechanically covered trucks within two months.

75.10: Nimbri-Chandwatan Lignite Mining Project (0.5 MTPA in an ML area of 350 ha) of M/s Binani Cements Ltd. located in village Nimbri, Tehsil Jayal-Degana, District Nagaur, Rajasthan - EC based on TOR granted on 22.08.2007.

75.10.1 The proposal was earlier considered in 31st EAC (Thermal & Coal Mining) Meeting held on 29th -30th Aug. 2011 and the Committee recommended the project. However, Ministry raised some issues with respect to water-body. A subcommittee comprising Mr. C. R. Babu, Mr. T.K. Dhar and Dr. T. Chandini was formed to visit the site on the said matter. A Subcommittee visited the site on 02.05.2012 and submitted their report. The issues raised by the Subcommittee were also conveyed to the project proponent. The information from SAC Ahmadabad was also considered which stated that there are total 13 wetlands which belong to artificial/man made tank and ponds category in the entire region of approximately 50 Km². However, SAC has shown only one wetland less than 2.25 ha in the proponent's ML area. These water bodies are categorized as man-made tanks and ponds which are seasonal and dry up during post monsoon period. The EAC considered the responses of the proponent. The Committee noted that:

- a) An external OB dump of 55.96 ha and 60 m height with a mine void of 105 ha and 90 m depth is being left and desired that external dump be fully filled back in the void and exact position of the void and rehandling programme be submitted.
- b) Transport of lignite from mine to TPP is 300 km away is by road. Adequate precaution is required in this and to be done by mechanically covered trucks. Arrangement for rail transport needs to be looked into and informed.
- c) Mine closer report is yet to be submitted to MOC for approval

75.10.2 Further, the proposal was considered in 69th EAC meeting held on 25th March, 2013. The Committee took a note of the responses from the project proponent and after deliberations desired that a note containing the following details be prepared by MoEF and circulated to the EAC Members for its further consideration:

- i. Background of the case
- ii. Recommendation of the sub-Group.
- iii. Responses by the project proponent
- iv. Details of any other case in the vicinity of the area having the same/similar ecology recommended by the EAC, if any.

75.10.3 The Committee discussed the matter relating to EC already recommended to the project. The Committee took note of the issues mentioned in the report submitted by the sub-group and also the comparative chart showing the similarities between the Kaparion-ki-Dhani Lignite Mining Project (0.5 MTPA in an area of 525 ha within the total ML area of 867 ha) of M/s DCM Shriram Consolidated Ltd., located in Tehsil Merta City, District Nagaur, Rajasthan

which was recommended by the EAC and EC was accorded in the vicinity of the present proposal. Kaparion-ki-Dhani Lignite Mining Project is located within approx 35 km from the Nimbri site. Both the sites have similar agricultural, land, sweet and saline water, nadis, and other similar geo-morphological aspects. The Committee took the note of the resentment of the villagers for land acquisition for the Nimbri project and objection to the proposed project. Such issues did not exist in Kaparion-ki-Dhani Lignite Mining Project. The Committee discussed the matter with the PP who informed that they are in the process of discussion with the villagers with regard to land acquisition. The Committee suggested that the PP should take up the matter with the Gram Panchayat members and resolve the issue on land acquisition. The Committee will reconsider the project after the consent of the Gram Panchayat is submitted to the MoEF.

75.11: Piparwar Opencast expansion project of (Normative capacity 10 MTPA to 12.50 MTPA and Peak capacity 11.5 MTPA to 14.5 MTPA in an ML area 1120.25 ha) of M/s Central Coalfield Ltd., Dist. Chatra, Jharkhand - EC under 7(ii) of EIA Notification 2006.

75.11.1 The proposal is of Piparwar Opencast expansion project of (Normative capacity 10 MTPA to 12.50 MTPA and Peak capacity 11.5 MTPA to 14.5 MTPA in an ML area 1120.25 ha) of M/s Central Coalfield Ltd., Dist. Chatra, Jharkhand - EC under 7(ii) of EIA Notification 2006. The proponent made the presentation and informed that:

- i. Environmental clearance for Piparwar OCP was earlier granted vide letter No.J-11015/186/2007-IA.II(M dated 11.06.2007 for expansion in normative production capacity from 6.5 MTPA to 10.0 MTPA without increase in lease area. The introduction of peak capacity @ 11.5 MTPA was granted vide letter No.J-11015/240/2011- IA. II(M) dt. 28.02.2012 without increase in lease area.
- ii. The land usage of the project will be as follows:

Pre-mining:

S No.	Particulars	Land Area (Ha)
1	Agriculture	163.60
2	Forest	186.50
3	Waste Land	490.80
4	Grazing	0.00
5	Surface Water Bodies	0.00
6	Others	279.35
Total		1120.25

Post-mining:

Post Mining	
Particulars	Area (Ha)
Plantation On Backfilled Area	481.26
Decoaled void	58.74
Plantation	25.00
Industrial Area	372.90
Road	7.00
Lagoon	3.80
Nala	5.00

Settlement	45.00
Plantation	73.00
Undisturbed Area	38.55
Total Area	1120.25

Core Area:

Land-use of Core Zone During Different Stages of Mining					
Pre mining		During Mining		Present Status	
Particulars	Area (Ha)	Particulars	Area (Ha)	Particulars	Area (Ha)
Agriculture	163.60	Quarry	481.26	Agriculture	63.00
		Decoaled void	58.74		
Forest	186.50	Industrial Area	372.90	Forest/ Plantation	630.00
Waste Land	490.80	OB Dump	25.00	Waste Land	52.25
Grazing	0.00	Safety Zone & others	173.55	-	0.00
Surface Water Bodies	5.00	Surface Water Bodies	8.80	Surface Water Bodies	30.00
Others	274.35	0	0.00	Mining	249.00
-	0.00	0	0.00	Settlement & Infrastructure	96.00
	1120.25	Total	1120.25	Total	1120.25

- iii. The total geological reserve is 244 MT. The mineable reserve is 48.80 MT .
- iv. The coal grades are E & F having stripping ratio of 0.75 (Cum/Tonne). The average Gradient is 2-5 deg. There will be total two seams with thickness ranging from 2.25 -21.37 m.
- v. The run-off within the area controlled by the diverted courses of Benti and Mangardaha nallas. These two nallas are tributaries of the Damodar river and are seasonal water courses. Small streams near the southern part of the area flow directly into Damodar river. The main drainage pattern of the block is from the north to south. Garhi River, a tributary to river Damodar, flows on eastern side.
- vi. The total estimated water requirement is 1427 m³/d. The level of ground water ranges from 0.9 -7.0 m.
- vii. The Method of mining would be mechanized opencast by shovel dumper combination requiring drilling and blasting.
- viii. There will be no external OB dumps. Presently, two internal dumping over an area fo 481.26 ha. The height for the dumps would be at ground level. The total quantity of 28.33 4.20 mm³. The final mine voids will have an area of 58.74 ha. and depth 90 m which is proposed to be converted into a water body. Backfilled quarry area of 481.26 ha shall be reclaimed with plantation.
- ix. The seasonal data for ambient air quality has been documented for the summer season (March 2010 to June 2010) and all results at all stations are within prescribed limits.
- x. The life of Mine is 35 years (original PR) 13 years from 2007.
- xi. Transportation: Transportation of coal in pit by belt conveyor. Surface to siding by trucks and siding to loading by mechanised loading.
- xii. Rehabilitation of all 370 PAFs of Piparar OCP has been completed.
- xiii. Site visit by Regional office, Bhubaneswar was carried out on 15-16th May, 2013. The certificate of compliance of earlier EC from MoEF Regional Office has not

- been obtained.
- xiv. Cost : Total capital cost of the project is Rs. 1093.65 Crore. The cost of production would be Rs. 518.10 Tonne at 100% Production level and Rs. 531.38 Tonne at 85% production level. R&R Cost Rs. 16.05 crores . Environmental Management Cost is Rs. 666.44 lakh.
 - xv. Approvals: Application under preparation for ground water clearance. The Mine Closure plan 24.02.2012. The Mining Plan was approved on 09. 09. 2006 by the Ministry of Coal. The Board's Approval was accorded on 09.09.2006.
 - xvi. Wildlife issues: There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
 - xvii. Forestry issues: Total forest area involved for mining 186.50 ha. The forest clearance is under process at State Government level. Extent of forest land in the project is 186.50 Ha. For total forest land Stage-1 FC has been obtained.
 - xviii. Total afforestation plan shall be implemented covering an area of 589.26 ha at the end of mining where reclaimed external OB dump is 25 ha and Internal OB Dump 481.26 ha. Green Belt over an area of 108 ha. Density of tree plantation 2500 trees/ ha of plants.
 - xix. There are no court cases/ violation pending with the project proponent.
 - xx. Public hearing: The last public hearing was held on 19.05.2006. The issues raised were regarding employment, railway siding, water pollution, air pollution drinking water facility, control of pollution due to transportation, etc.

75.11.2 The project proponent has requested for expansion under 7(ii) of the EIA Notification, 2006. Keeping in view of the MOEF's circular dated 30th May, 2012, which stipulates that it is mandatory for the project proponent to submit the certified report with regard to the status of compliance of the conditions stipulated in the Environmental Clearance for the ongoing/existing operation of the project by the Regional Offices of the MoEF.

75.11.3 The Committee asked the proponent to submit the certified copy of the compliance report for further consideration of the proposal.

75.12: Tarmi opencast expansion project of (1.25 MTPA to 1.70 MTPA in an ML area 258.70 ha) of M/s Central Coalfield Limited, dist. Bokaro, Jharkhand - EC under 7(ii) of EIA Notification 2006.

75.12.1 The proposal is of Tarmi opencast expansion project of (1.25 MTPA to 1.70 MTPA in an ML area 258.70 ha) of M/s Central Coalfield Limited, dist. Bokaro, Jharkhand - EC under 7(ii) of EIA Notification 2006 for 25 % expansion.

75.12.2 The proponent made the presentation and informed that:

- i. Ministry had issued the environmental clearance vide letter no, J-11015/219/2007-IA.II (M) dated 20.04.2010. Now, project proponent requested for 25 % expansion as per O.M no. J-1105/30/2004- IA. II (M) dated. 19.12.2012.
- ii. The land usage of the project will be as follows:
Pre-mining:

S No.	Particulars	Land Area (Ha)
1	Agriculture	25.00
2	Forest	189.97
3	Waste Land	43.73

4	Grazing	0.00
5	Surface Water Bodies	0.00
6	Others	0.00
Total		258.70

B. Post Mining land use (in Ha.)

SN	Description	Land-use (Ha)				
		Plantation	Water Body	Public use	Undisturbed	Total
Within Lease Area						
1	External OB Dump	0.00	0.00	0.00	21.19	21.19
2	Backfilled Area & void	131.80	15.71	0.00	0.00	147.51
3	Roads	3.45	0.00	3.94	0.00	7.39
4	Infrastructure	1.99	0.00	0.00	0.00	1.99
5	Unworked Area & Safety Zone	43.09	1.32	0.00	26.21	70.62
Total		180.33	17.03	3.94	47.40	248.70
Colony Outside Lease		0.00	0.00	10.00	0.00	10.00
Grand Total		180.33	17.03	13.94	47.40	258.70

C. Core Area Land Use (in Ha)

S	Description	Land Requirement (Ha)		
		Forest Land	Non-Forest Land	Total
1	Quarry	139.25	8.26	147.51
2	External O B Dump	0.00	21.19	21.19
3	Haul Road	3.45	0.00	3.45
4	Other Roads	1.43	2.51	3.94
5	Infrastructures	0.84	1.15	1.99
6	Colony (outside core zone)	0.00	10.00	10.00
7	Safety Zone	45.00	25.62	70.62
Total Land required		189.97	68.73	258.70

iii. The mineable reserve is 11.63 M, extractable reserve is 11.63 MT. The coal

- grades are WG-III & G having stripping ratio of 2.53 (Cum/Tonne). The average Gradient is 5-10 deg. There will be total two seams with thickness ranging from 0.64-7.22 m .
- iv. Tisri Nallah flows at a distance of 0.7 km to 1.5 km on western side of mine & Damodar River flows at a distance of 1.0 km to 1.3 km towards south.
 - v. The total estimated water requirement is 1427m³/d. The level of ground water ranges from 0.9 -7.0 m.
 - vi. The Method of mining would be mechanized opencast by shovel dumper combination requiring drilling and blasting.
 - vii. External dumping on 21.19 Ha is proposed in PR ha snot been not done & 9.57 Ha old void in adjoining selected Dhori Quarry used for initial dumping. Presently only internal dumping going on. The original external dump site is undisturbed.
 - viii. The height for the dumps would be 20 m. The total quantity of 4.20 mm³. The year of back filling would be upto the end of mining operation. There is three internal dump covering an area of 147.51 ha having a height upto 20-30 m (max). with the quantity of 25.11mm³. The final mine voids will have an area of 15.71 ha. and depth 20 m which is proposed to be converted into a water body.
 - ix. The seasonal data for ambient air quality has been documented for the summer season (March 2006 to June 2006) and all results at all stations are within prescribed limits.
 - x. The life of Mine is 13 years originally for 1.0 MTPA project (balance 7 years).
 - xi. Transportation: Transportation of coal in pit by dumpers. Surface to siding by trucks and siding to loading by Railway siding.
 - xii. Rehabilitation of all 10 PAFs of Tarmi OCP has been completed.
 - xiii. Site visit by Regional office, Bhubaneswar carried out on 17.5.2013. Certificate of compliance of earlier EC from MoEF Regional Office has not been obtained.
 - xiv. Cost : Total capital cost of the project is Rs. 35.54 Crore. The cost of production would be Rs. 453.29 Tonne at 100% Production level and Rs. 490.39 Tonne at 85% production level. R&R Cost Rs. 26.25 lakhs. Environmental Management Cost is Rs. 2434.80 lakh.
 - xv. Approvals: Application under preparation for ground water clearance. The Mine Closure plan 01.10.2012. The Mining Plan was approved on 25.03.2009 by the Ministry of Coal. The Board's Approval was accorded on 25.03.2009.
 - xvi. Wildlife issues: There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
 - xvii. Forestry issues: Total forest area involved for mining 189.97 ha. The forest clearance is under process at State Government level. Extent of forest land in the project is 189.97 Ha. Total forest land for which Stage-1 FC is available 55.06 Ha. Balance forest land for which Stage-1 FC is not available 97.44 ha for which project proponent has applied for release.
 - xviii. Total afforestation plan shall be implemented covering an area of 180.33 ha at the end of mining where reclaimed external OB dump is nil and Internal OB Dump 131.80 ha. Green Belt over an area of 180.33 ha. Density of tree plantation 2500 trees/ ha of plants.
 - xix. There are no court cases/ violation pending with the project proponent.
 - xx. Public hearing: The last public hearing was held on 26.08.2008 in District Bokaro, Jharkhand. The issues raised were regarding employment, effect of blasting and dust, drinking water and electricity, control of pollution due to transportation, etc.
 - xxi. The certified compliance report to the EC condition from the MOEF, RO is awaited.

75.12.3 The project proponent has requested for expansion under 7(ii) of the EIA Notification, 2006. Keeping in view of the MOEF's circular dated 30th May, 2012, which stipulates that it is mandatory for the project proponent to submit the certified report with regard to the status of compliance of the conditions stipulated in the Environmental Clearance for the ongoing/existing operation of the project by the Regional Offices of the MoEF.

75.12.4 The proponent was asked to submit the compliance report for further consideration of the proposal.

75.13: Dhori Group of Mines of (normative capacity 8.25 MTPA and peak capacity 11 MTPA in an ML area 315.05 ha) of M/s Central Coalfield Ltd., Dist. Bokaro, Jharkhand – TOR.

75.13.1 The proposal is of Dhori Group of Mines of (normative capacity 8.25 MTPA and peak capacity 11 MTPA in an ML area 315.05 ha) of M/s Central Coalfield Ltd., Dist. Bokaro, Jharkhand – TOR.

75.13.2 The proponent made the presentation and informed that:

- i. It is an expansion proposal of 2.25 MTPA to 8.25 MTPA (Normative) and 11.00 MTPA (Peak) over an ML area of 315.05 ha. The percentage of expansion 266.67% .
- ii. The land usage of the project will be Pre-mining and Core area: The total land 315.05 ha (Forest land 294.59 ha. and Non forest land 20.46 ha.); Post-mining: Infrastructure, roads, colony etc. 20.89 ha, green belt/afforested area (reclaimed internal dump) 166.12 ha, quarry /void 70.0 ha and afforested safety zone 78.93 ha.
- iii. The mineable reserve is 58.98 M, extractable reserve is 25.78 MT (Balance as on 1.4.2012).
- iv. The coal grades are F having stripping ratio of 0.27 (Cum/Tonne). The average Gradient is 7-12 deg. There will be total ten seams with thickness ranging from 0.17 - 69.28 m .
- v. Damodar river is the main drainage of the area. The study area includes a number of seasonal nalla like Tisri nallah, Joria nallah flow through the study area of project
- vi. The total estimated water requirement is 850 m³/d. The potable water would be -- m³/d from bore well & industrial water-- m³/d from mine sump and surface reservoir. The level of ground water ranges from 0.9 -7.0 m.
- vii. The Method of mining would be mechanized opencast by shovel dumper combination requiring drilling and blasting.
- viii. There is no external OB dumps. There are seven internal dumps covering an area of 166.12 ha having a height upto ground level with the quantity of 7.0 mm³. The final mine voids will have an area of 70 ha. and depth 30-40 m in central sector and 70-80m in quarry-I which is proposed to be converted into a water body. Total Quarry area 236.12 Ha Backfilled quarry area of 166.12 ha shall be reclaimed with plantation.
- ix. The ambient air quality ambient air quality as per GSR 742(E) is being regularly monitored and submitted to JSPCB and MoEF. The results are within the prescribed limits.
- x. The balance life of mine is 4 years.
- xi. **Transportation:** Transportation of coal in pit by Dumpers. Surface to siding by trucks and WAGON loading by pay loaders at Railway siding.
- xii. No of PAFs are 18.
- xiii. Site visit by Regional office, Bhubaneswar carried out on 17.5.2013. Certificate of compliance of earlier EC from MoEF Regional Office has not been obtained.

- xiv. Cost : Total capital cost of the project is Rs. 145.81 Crore. The cost of production would be Rs. 487 - 1077 Tonne at 100% Production level. R&R Cost Rs. 24.25 lakhs. Environmental Management Cost is Rs. 779.76 lakhs.
- xv. Approvals: Application under preparation for ground water clearance. Feasibility report approved by CCL Board on 20.9.1979 and prefeasibility report (Expansion) by CCL Board on 26.4.2013. Mine closure approval is yet to be obtained.
- xvi. The Mine Closure plan was approved on 01.10.2012. The Mining Plan was approved on 25.03.2009 by the Ministry of Coal. The Board's Approval was accorded on 25.03.2009.
- xvii. Wildlife issues: There are no national Parks, wildlife sanctuary, biosphere reserves found in the 10 km buffer zone.
- xviii. Forestry issues: Total forest area involved for mining 212.233 ha. With respect to forest clearance for 143.05 ha Stage-II FC has been obtained, vide letter number 8-122/90-FC, dated. 01-07-1996, which valid upto 10 years. Now the project proponent have applied for renewal Stage-II FC for 69.183 ha has been obtained vide letter number 8-69/2004-FC, dated. 02-03-2009 which is valid upto 20 years. The extent of forest land in the project is 294.59 Ha.
- xix. Total afforestation plan shall be implemented covering an area of 166.12 ha at the end of mining where reclaimed external OB dump is nil and Internal OB Dump 166.12 ha. Density of tree plantation 2500 trees/ ha of plants.
- xx. There are no court cases/ violation pending with the project proponent.
- xxi. The Board's Resolution for not repeating the violation is awaited.

75.13.3 MOEF's circular dated 30th May, 2012, stipulates that it is mandatory for the project proponent to submit the certified report with regard to the status of compliance of the conditions stipulated in the Environmental Clearance for the ongoing/existing operation of the project by the Regional Offices of the MoEF. The certified compliance report from the regional office of the MoEF is awaited.

75.13.4 The Committee after a detailed deliberation, recommended the project for granting TOR subject to submission Board's resolution and certified compliance report from the regional office of the MoEF

The meeting ended with a vote of Thanks to the Chair.

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PARTICIPANTS IN 75th EXPERT APPRAISAL COMMITTEE (EAC) (THERMAL & COAL MINING) MEETING HELD ON 3rd - 4th JUNE, 2013 IN NEW DELHI.

LIST OF PARTICIPANTS Expert Appraisal Committee (Coal Mining)		
1.	Shri V.P. Raja	Chairman
2.	Prof. C.R. Babu	Vice Chairman
3.	Dr. T K Dhar	Member
4.	Shri J.L. Mehta	Member
5.	Prof. G. S. Roonwal	Member
6.	Dr. Shiv Attri	Member
7.	Mr M. S. Puri	Member
8.	Dr. Manoranjan Hota	Director & Member Secretary
9.	Mr. P. R. Sakhare	Deputy Director
Special Invitee :		
10.	Dr. R K Garg, Adviser, Coal India Limited	

PARTICIPANTS IN 75th EXPERT APPRAISAL COMMITTEE (EAC) (THERMAL & COAL MINING) MEETING HELD ON 3rd -4th JUNE, 2013 ON COAL SECTOR PROJECTS.

75.1 M/s Rathi Steel & Power Limited

1. Shri R.B.Mathur
2. M.K.Sharma
3. Sh. Vijay Surjan
4. Shri Y.K.Aggarwal
5. Shri M.L.Naidu
6. Mr.Udit Rathi
7. Ms Marisha Sharma

75.2 M/s Sondiha OC-cum-UG Coalmine Project

1. Sh. Prem Kumar
2. Sh.B.K.Sinha
3. Shri P.K.Phukam
4. Shri P.Kannan
5. Prof. B.K.Shrivastava
6. Shri A.H.Mazumdar
7. Ms Marisha Sharma

75.3 M/s Radhikapur (West) Coal Mine Project

1. Sh. H.S.Semi
2. Sh. Gopal Kirshna
3. Sh. K.C.Narang
4. Shri K.B.L.Srivastava
5. Sh.D.K.Jain
6. Sh.S.Pujari
7. Sh. D.K.Das
8. Sh. G.P.Sharma
9. Ms Marisha Sharma

75.4 M/s Sasan Power Limited

1. Sh. Jagat Paikara
2. Sh. R.S.Johri
3. Sh.V.K.Kachroo
4. Sh.Brijan Mishra
5. Sh.Rajiv Saxena
6. Sh.Rajnish Malhotra
7. Sh. Nachiketa Patnai K
8. Sh. Nandiar Chowdhury

75.5 M/s Northern Coalfields Ltd.

1. Sh. A.N.Bhadur
2. Sh.A.D.Mathur
3. Sh.P.Prasad
4. Sh. S.Singh
5. Sh.R.K.Meena
6. Sh.R.Sahare
7. Sh. Prateesh L.P.
8. Sh.B.K.Sharma

75.6 M/s West Bengal Mineral Development Corporation Ltd)

75.7 M/s West Bengal Mineral Development Corporation Ltd)

75.8 M/s West Bengal Mineral Development Corporation Ltd)

1. Sh. R. K.Saha
2. Sh. S.Chakrabarte
3. Sh. G.Poddar
4. Sh. A. Acharya
5. Sh. P. Pandey
6. Ms Marisha Sharma

75.9 M/s Bharat Coking Coal Limited

1. Shri V.K.Sinha
2. Dr. Raju (Env.)
3. Sh. Amarjeet Singh
4. Sh. Amrit Roy
5. Sh. Kumar Ranjeev
6. Sh. S.Panja

75.10 M/s Binani Cement

1. Sh. Alok Sood
2. Sh. Robin Bose
3. Mr. Modita Tomer
4. Mr. Jitendra Mishra

75.11 M/s Central Coalfields Ltd

75.12 M/s Central Coalfields Ltd

75.13 M/s Central Coalfields Ltd

1. Mr. T.N.Nag
2. Dr. A.Sinha
3. Sh. Pushkar
4. Sh. Alok Kumar
5. Shri S. Singh
6. Sh. J. Chakrabarty
7. Sh. S.Panja
8. Dr. Manoj Kumar

GENERIC TOR FOR COAL WASHERY

Based on the presentation made and discussions held, the Committee prescribed the following TOR:

- (i) A brief description of the plant, the technology used, the source of coal, the mode of transport of incoming unwashed coal and the outgoing washed coal. Specific pollution control and mitigative measures for the entire process.
- (ii) The EIA-EMP report should cover the impacts and management plan for the project of the capacity for EC is sought and the impacts of specific activities on the environment of the region, and the environmental quality (air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts for the rated capacity. If the washery is captive to a coal mine/TPP/Plant the cumulative impacts on the environment and usage of water should be brought out along with the EMP.
- (iii) A Study area map of the core zone and 10km area of the buffer showing major industries/mines and other polluting sources, which shall also indicate the migratory corridors of fauna, if any and the areas where endangered fauna and plants of medicinal and economic importance are found in the area. If there are any ecologically sensitive areas found within the 15km buffer zone, the shortest distance from the National Park/WL Sanctuary Tiger Reserve, etc should be shown and the comments of the Chief Wildlife Warden of the State Government should be furnished.
- (iv) Collection of one-season (non-monsoon) primary base-line data on environmental quality (air (PM₁₀, PM_{2.5}, SO_x and NO_x), noise, water (surface and groundwater), soil.
- (iv) Detailed water balance should be provided. The break-up of water requirement as per different activities in the mining operations vis-à-vis washery should be given separately. Source of water for use in mine, sanction of the competent authority in the State Govt..and examine if the unit can be zero discharge including recycling and reuse of the wastewater for other uses such as green belt, etc.
- (vi) Impact of choice of the selected use of technology and impact on air quality and waste generation (emissions and effluents).
- (vii) Impacts of mineral transportation - the entire sequence of mineral production, transportation, handling, transfer and storage of mineral and waste, if any, and their impacts on air quality should be shown in a flow chart with the specific points where fugitive emissions can arise and the specific pollution control/mitigative measures proposed to be put in place.
- (viii) Details of various facilities to be provided for the personnel involved in mineral transportation in terms of parking, rest areas, canteen, and effluents/pollution load from these activities. Examine whether existing roads are adequate to take care of the additional load of mineral [and rejects] transportation, their impacts. Details of workshop, if any, and treatment of workshop effluents.
- (ix) Impacts of CHP, if any on air and water quality. A flow chart of water use and whether the unit can be made a zero-discharge unit.
- (x) Details of green belt development.
- (xi) Including cost of EMP (capital and recurring) in the project cost.
- (xiv) Public Hearing details of the coal washery to include details of notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments made in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.

- (xv) Status of any litigations/ court cases filed/pending on the project.
- (xvi) Submission of sample test analysis of:
 - I Characteristics of coal to be washed- this includes grade of coal and other characteristics ash, S and and heavy metals including levels of Hg, As, Pb, Cr etc.
 - II Characteristics and quantum of washed coal.
 - III Characteristics and quantum of coal waste rejects.
- (xvii) Management/disposal/Use of coal waste rejects
- (xviii) Copies of MOU/Agreement with linkages (for stand-alone washery) for the capacity for which EC has been sought.
- (xxxvi) Submission of sample test analysis of:
 - Characteristics of coal to be washed- this includes grade of coal and other characteristics ash, S
- (xxxviii) Corporate Environment Responsibility:
 - a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
 - b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
 - c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
 - d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

GENERIC TOR FOR AN OPENCAST COALMINE PROJECT

- (i) An EIA-EMP Report would be prepared for **??.. MTPA** rated capacity in an ML/project area of ??ha based on the generic structure specified in Appendix III of the EIA Notification 2006.
- (ii) An EIA-EMP Report would be prepared for **??**. MTPA rated capacity cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality ?air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modelling for **???. MTPA** of coal production based on approval of project/Mining Plan for **???**MTPA. Baseline data collection can be for any season except monsoon.
- (iii) A map specifying locations of the State, District and Project location.
- (iv) A Study area map of the core zone and 10km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage of rivers/streams/nalas/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries/mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km area of the buffer zone should be given.
- (v) Land use map (1: 50,000 scale) based on a recent satellite imagery of the study area may also be provided with explanatory note of the land use. Satellite imagery per se is not required.
- (vi) Map showing the core zone delineating the agricultural land (irrigated and unirrigated, uncultivable land (as defined in the revenue records), forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
- (vii) A contour map showing the area drainage of the core zone and 2-5 km of the buffer zone (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated as a separate map.
- (viii) A detailed Site plan of the mine showing the various proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area and if any, in topography such as existing roads, drains/natural water bodies are to be left undisturbed along with any natural drainage adjoining the lease /project and modification of thereof in terms of construction of embankments/bunds, proposed diversion/re-channelling of the water courses, etc., approach roads, major haul roads, etc.
- (ix) In case of any proposed diversion of nallah/canal/river, the proposed route of diversion/modification of drainage and their realignment, construction of embankment etc. should also be shown on the map.
- (x) Similarly if the project involves diversion of any road/railway line passing through the ML/project area, the proposed route of diversion and its realignment should be shown.
- (xi) Break up of lease/project area as per different land uses and their stage of acquisition.

LANDUSE DETAILS FOR OPENCAST PROJECT

S.N.	LANDUSE	Within ML Area (ha)	Outside ML Area (ha)	TOTAL
1.	Agricultural land			
2.	Forest land			
3.	Wasteland			
4.	Grazing land			
5.	Surface water bodies			
6.	Settlements			
7.	Others (specify)			
	TOTAL			

- (xii) Break-up of lease/project area as per mining operations.
- (xiii) Impact of changes in the land use due to the start of the projects if much of the land being acquired is agricultural land/forestland/grazing land.
- (xiv) Collection of one-season (non-monsoon) primary baseline data on environmental quality - air (PM₁₀, PM_{2.5}, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil along with one-season met data coinciding with the same season for AAQ collection period.
- (xv) Map of the study area (1: 50, 000 scale) (core and buffer zone clearly delineating the location of various stations superimposed with location of habitats, other industries/mines, polluting sources. The number and location of the stations in both core zone and buffer zone should be selected on the basis of size of lease/project area, the proposed impacts in the downwind (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Values should be provided based on desirable limits.
- (xvi) Study on the existing flora and fauna in the study area (10km) carried out by an institution of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna. If the study area has endangered flora and fauna, or if the area is occasionally visited or used as a habitat by Schedule-I fauna, or if the project falls within 15 km of an ecologically sensitive area, or used as a migratory corridor then a comprehensive Conservation Plan should be prepared and submitted with EIA-EMP Report and comments from the CWLW of the State Govt. also obtained and furnished.
- (xvii) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until end of mine life should be reflected on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The progressive mine development and Conceptual Final Mine Closure Plan should also be shown in figures.
- (xviii) Details of mining methods, technology, equipment to be used, etc., rationale for selection of that technology and equipment proposed to be used vis-à-vis the potential impacts.
- (xix) Impact of mining on hydrology, modification of natural drainage, diversion and channelling of the existing rivers/water courses flowing through the ML and

adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.

- (xx) Detailed water balance should be provided. The breakup of water requirement for the various mine operations should be given separately.
- (xxi) Source of water for use in mine, sanction of the competent authority in the State Govt. and impacts vis-à-vis the competing users.
- (xxii) Impact of mining and water abstraction use in mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long term modelling studies on. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there is a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
- (xxiii) Impact of blasting, noise and vibrations.
- (xxiv) Impacts of mining on the AAQ, predictive modelling using the ISCST-3 (Revised) or latest model.
- (xxv) Impacts of mineral transportation within and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop, management plan for maintenance of HEMM, machinery, equipment. Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities.
- (xxvi) Details of waste generation (OB, topsoil) as per the approved calendar programme, and their management shown in figures as well explanatory chapter with tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use. OB dump heights and terracing should be based on slope stability studies with a max of 28° angle as the ultimate slope. Sections of dumps (ultimate) (both longitudinal and cross section) with relation to the adjacent area should be shown.
- (xxvii) Progressive Green belt and afforestation plan (both in text, figures as well as in tables prepared by MOEF) and selection of species (local) for the afforestation/plantation programme based on original survey/land use.

Table 1: Stage-wise Landuse and Reclamation Area (ha)

S.N.	Land use Category	Present (1 st Year)	5 th Year	10 th Year	20 th year	24 th Year (end of Mine life)*
1.	Backfilled Area(Reclaimed with plantation)					
2.	Excavated Area (not reclaimed)/void					
3.	External OB dump Reclaimed with plantation)					
4.	Reclaimed Top soil dump					
5.	Green Built Area					
6.	Undisturbed area (brought under plantation)					
7.	Roads (avenue plantation)					
8.	Area around buildings and Infrastructure					
	TOTAL	110*	110*	110*	110*	110*

* As a representative example

Table 2: Stage-wise Cumulative Plantation

S.N.	YEAR*	Green Belt	External Dump	Backfilled Area	Others (Undisturbed Area/etc)	TOTAL

		Area (ha)	No. of trees								
1.	1 st year										
2.	3 rd year										
3.	5 th year										
4.	10 th year										
5.	15 th year										
6.	20 th year										
7.	25 th year										
8.	30 th year										
9.	34 th year (end of mine life)										
10.	34-37 th Year (Post-mining)									85	

* As a representative example

(xxviii) Conceptual Final Mine Closure Plan, post mining land use and restoration of land/habitat to pre- mining. A Plan for the ecological restoration of the area post mining and for land use should be prepared with detailed cost provisions. Impact and management of wastes and issues of rehandling (wherever applicable) and backfilling and progressive mine closure and reclamation.

Table 3: Post-Mining Landuse Pattern of ML/Project Area (ha)

S.N.	Land use during Mining	Land Use (ha)					TOTAL
		OB	Plantation	Water Body	Public Use	Undisturbed	
1.	External Dump						
2.	Top soil Dump						
3.	Excavation						
4.	Roads						
4.	Built up area						
5.	Green Belt						
6.	Undisturbed Area						
	TOTAL		85				110

(xxix) Flow chart of water balance. Treatment of effluents from workshop, township, domestic wastewater, mine water discharge, etc. Details of STP in colony and ETP in mine. Recycling of water to the max. possible extent.

(xxx) Occupational health issues. Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine.

(xxxii) Risk Assessment and Disaster Preparedness and Management Plan.

(xxxiii) Integrating in the Env. Management Plan with measures for minimising use of natural resources - water, land, energy, etc.

(xxxiiii) Including cost of EMP (capital and recurring) in the project cost and for progressive and final mine closure plan.

- (xxxiv) Details of R&R. Detailed project specific R&R Plan with data on the existing socio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan.
- (xxxv) CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project.
- (xxxvi) Public Hearing should cover the details of notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments made by the proponent should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
- (xxxvii) In built mechanism of self-monitoring of compliance of environmental regulations.
- (xxxx) Status of any litigations/ court cases filed/pending on the project.
- (xxxxi) Submission of sample test analysis of:
Characteristics of coal - this includes grade of coal and other characteristics
ash, S and heavy metals including levels of Hg, As, Pb, Cr etc.
- (xxxxii) Copy of clearances/approvals such as Forestry clearances, Mining Plan Approval,
NOC from Flood and Irrigation Dept. (if req.), etc. wherever applicable.

(A) FORESTRY CLEARANCE

TOTAL ML/PROJECT AREA (ha)	TOTAL FORESTLAND (ha)	Date of FC	Extent of forestland	Balance area for which FC is yet to be obtained	Status of appl. for diversion of forestland
		If more than one, provide details of each FC			

GENERIC TOR FOR AN UNDERGROUND COALMINE PROJECT

- (i) An EIA-EMP Report should be prepared for a peak capacity of **????.. MTPA** over an area of **????.. ha** addressing the impacts of the underground coalmine project including the aspects of mineral transportation and issues of impacts on hydrogeology, plan for conservation of flora/fauna and afforestation/plantation programme based on the generic structure specified in Appendix III of the EIA Notification 2006.. Baseline data collection can be for any season except monsoon.
- (ii) The EIA-EMP report should also cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality ?air, water, land, biotic community, etc. through collection of baseline data and information, generation of baseline data on impacts for **??**. MTPA of coal production based on approval of project/Mining Plan.
- (iii) A Study area map of the core zone and 10km area of the buffer zone (15 km of the buffer zone in case of ecologically sensitive areas) delineating the major topographical features such as the land use, drainage, locations of habitats, major construction including railways, roads, pipelines, major industries/mines and other polluting sources, which shall also indicate the migratory corridors of fauna, if any and the areas where endangered fauna and plants of medicinal and economic importance are found in the area.
- (iv) Map showing the core zone along with 3-5 km of the buffer zone) delineating the agricultural land (irrigated and unirrigated, uncultivable land (as defined in the revenue records), forest areas (as per records) and grazing land and wasteland and water bodies.
- (v) Contour map at 3m interval along with Site plan of the mine (lease/project area with about 3-5 km of the buffer zone) showing the various surface structures such as buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within/adjacent to the ML), green belt and undisturbed area and if any existing roads, drains/natural water bodies are to be left undisturbed along with details of natural drainage adjoining the lease/project and modification of thereof in terms of construction of embankments/bunds, proposed diversion/rechannelling of the water courses, etc., highways, passing through the lease/project area.
- (vi) Original land use (agricultural land/forestland/grazing land/wasteland/water bodies) of the area. Impacts of project, if any on the landuse, in particular, agricultural land/forestland/grazing land/water bodies falling within the lease/project and acquired for mining operations. Extent of area under surface rights and under mining rights.

S.N.	ML/Project Land use	Area under Surface Rights (ha)	Area Under Mining Rights (ha)	Area under Both (ha)
1.	Agricultural land			
2.	ForestLand			
3.	Grazing Land			
4.	Settlements			
5.	Others (specify)			

Area Under Surface Rights

S.N.	Details	Area (ha)
1.	Buildings	
2.	Infrastructure	
3.	Roads	
4.	Others (specify)	
	TOTAL	

- (vii) Study on the existing flora and fauna in the study area carried out by an institution of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna. The flora and fauna details should be furnished separately for the core zone and buffer zone. The report and the list should be authenticated by the concerned institution carrying out the study and the names of the species (scientific and common names) along with the classification under the Wild Life Protection Act, 1972 should be furnished.
- (viii) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working plan/scheme until end of mine life should be reflected on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps should also be included.
- (ix) Impact of mining on hydrology, modification of natural drainage, diversion and channelling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.
- (x) Collection of one-season (non-monsoon) primary baseline data on environmental quality ? air (PM₁₀, PM_{2.5}, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, AS, etc), noise, water (surface and groundwater), soil along with one-season met data.
- (xi) Map of the study area (core and buffer zone) clearly delineating the location of various monitoring stations (air/water/soil and noise ? each shown separately) superimposed with location of habitats, wind roses, other industries/mines, polluting sources. The number and location of the stations should be selected on the basis of the proposed impacts in the downwind/downstream/groundwater regime. One station should be in the upwind/upstream/non-impact non-polluting area as a control station. Wind roses to determine air pollutant dispersion and impacts thereof shall be determined. Monitoring should be as per CPCB guidelines and standards for air, water, noise notified under Environment Protection Rules. Parameters for water testing for both ground and surface water should be as per ISI standards and CPCB classification of surface water wherever applicable.
- (xii) Impact of mining and water abstraction and mine water discharge in mine on the hydrogeology and groundwater regime within the core zone and 10km buffer zone including long-term modelling studies on the impact of mining on the groundwater regime. Details of rainwater harvesting and measures for recharge of groundwater should be reflected wherever the areas are declared dark/grey from groundwater development.
- (xiii) Study on subsidence, measures for mitigation/prevention of subsidence, modelling subsidence prediction and its use during mine operation, safety issues.
- (xiv) Detailed water balance should be provided. The break up of water requirement as per different activities in the mining operations, including use of water for sand stowing should be given separately. Source of water for use in mine, sanction of the competent authority in the State Govt. and impacts vis-à-vis the competing users should be provided.
- (xv) Impact of choice of mining method, technology, selected use of machinery - and impact on air quality, mineral transportation, coal handling & storage/stockyard, etc, Impact of blasting, noise and vibrations.
- (xvi) Impacts of mineral transportation ?within and outside the lease/project. The entire sequence of mineral production, transportation, handling, transfer and storage of mineral and waste, and their impacts on air quality should be shown in a flow chart with the specific points where fugitive emissions can arise and the specific pollution control/mitigative measures proposed to be put in place.

Examine the adequacy of roads existing in the area and if new roads are proposed, the impact of their construction and use particularly if forestland is used.

- (xvii) Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities. Examine whether existing roads are adequate to take care of the additional load of mineral and their impacts.
- (xviii) Examine the number and efficiency of mobile/static water sprinkling system along the main mineral transportation road within the mine, approach roads to the mine/stockyard/siding, and also the frequency of their use in impacting air quality.
- (xix) Impacts of CHP, if any on air and water quality. A flow chart of water use and whether the unit can be made a zero-discharge unit.
- (xx) Conceptual Final Mine Closure Plan along with the fund requirement for the detailed activities proposed there under. Impacts of change in land use for mining operations and whether the land can be restored for agricultural use post mining.

Table 1 Stage-wise Cumulative Plantation

S.N.	YEAR*	Green Belt		External Dump		Backfilled Area		Others (Undisturbed Area/etc)		TOTAL	
		Area (ha)	No. of trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees
1.	1 st year										
2.	3 rd year										
3.	5 th year										
4.	10 th year										
5.	15 th year										
6.	20 th year										
7.	25 th year										
8.	30 th year										
9.	34 th year (end of mine life)										
10.	34-37 th Year (Post-mining)									85*	2,12,500

*As a representative example

- (xxi) Occupational health issues. Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine should be furnished.

- (xxiii) Details of cost of EMP (capital and recurring) in the project cost and for final mine closure plan. The specific costs (capital and recurring) of each pollution control/mitigative measures proposed in the project until end of mine life and a statement that this is included in the project cost.
- (xxiii) Integrating in the Env. Management Plan with measures for minimising use of natural resources ?water, land, energy, raw materials/mineral, etc.
- (xxiv) R&R: Detailed project specific R&R Plan with data on the existing socio-economic status (including tribals, SC/ST) of the population in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan.
- (xxv) CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project.
- (xxvi) Public Hearing should cover the details as specified in the EIA Notification 2006, and include notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments by the proponent made should be presented in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
- (xxvii) Status of any litigations/ court cases filed/pending in any Court/Tribunal on the project should be furnished.
- (xxxvii) Submission of sample test analysis of:
- (xxxvii) Characteristics of coal - this includes grade of coal and other characteristics ? ash, and heavy metals including levels of Hg, As, Pb, Cr etc.
- (xxxviii) Copy of clearances/approvals ?such as Forestry clearances, Mining Plan Approval, NOC from Flood and Irrigation Dept. (if req.), etc.

(A) FORESTRY CLEARANCE

TOTAL ML/PROJECT AREA (ha)	TOTAL FORESTLAND (ha)	Date of FC	Extent of forestland	Balance area for which FC is yet to be obtained	Status of appl. for diversion of forestland
		If more than one, provide details of each FC			

ANNEXURE-6

GENERIC TOR FOR AN OPENCAST-CUM-UNDERGROUND COALMINE PROJECT

- (i) An EIA-EMP Report would be prepared for a combined rated capacity of???.MTPA for OC-cum-UG project which consists of ?? MTPA for OC and ??? MTPA for UG in an ML/project area of ??ha based on the generic structure specified in Appendix III of the EIA Notification 2006.
- (ii) An EIA-EMP Report would be prepared for ?? MTPA rated capacity cover the impacts and management plan for the project specific activities on the environment of the region, and the environmental quality ?air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modelling for ??? MTPA of coal production based on approval of project/Mining Plan for ??.. MTPA. Baseline data collection can be for any season except monsoon.
- (iii) A map specifying locations of the State, District and Project location.
- (iv) A Study area map of the core zone and 10km area of the buffer zone (1: 50,000 scale) clearly delineating the major topographical features such as the land use, surface drainage of rivers/streams/nalas/canals, locations of human habitations, major constructions including railways, roads, pipelines, major industries/mines and other polluting sources. In case of ecologically sensitive areas such as Biosphere Reserves/National Parks/WL Sanctuaries/ Elephant Reserves, forests (Reserved/Protected), migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance found in the 15 km area of the buffer zone should be given.
- (v) Land use map (1: 50,000 scale) based on a recent satellite imagery of the study area may also be provided with explanatory note of the land use. Satellite imagery per se is not required.
- (vi) Map showing the core zone delineating the agricultural land (irrigated and unirrigated, uncultivable land (as defined in the revenue records), forest areas (as per records), along with other physical features such as water bodies, etc should be furnished.
- (vii) A contour map showing the area drainage of the core zone and 2-5 km of the buffer zone (where the water courses of the core zone ultimately join the major rivers/streams outside the lease/project area) should also be clearly indicated as a separate map.
- (viii) A detailed Site plan of the mine showing the various proposed break-up of the land for mining operations such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area and if any, in topography such as existing roads, drains/natural water bodies are to be left undisturbed along with any natural drainage adjoining the lease /project and modification of thereof in terms of construction of embankments/bunds, proposed diversion/rechannelling of the water courses, etc., approach roads, major haul roads, etc.
- (ix) In case of any proposed diversion of nallah/canal/river, the proposed route of diversion/modification of drainage and their realignment, construction of embankment etc. should also be shown on the map.

- (x) Similarly if the project involves diversion of any road/railway line passing through the ML/project area, the proposed route of diversion and its realignment should be shown.
- (xi) Break up of lease/project area as per different land uses and their stage of acquisition.

LANDUSE DETAILS FOR OPENCAST PROJECT

S.N.	LANDUSE	Within ML Area (ha)	Outside ML Area (ha)	TOTAL (ha)
1.	Agricultural land			
2.	Forest land			
3.	Wasteland			
4.	Grazing land			
5.	Surface water bodies			
6.	Settlements			
7.	Others (specify)			
	TOTAL			

LANDUSE DETAILS FOR UNDERGROUND PROJECT

S.N.	ML/Project Land use	Area under Surface Rights (ha)	Area Under Mining Rights (ha)	Area under Both (ha)
1.	Agricultural land			
2.	ForestLand			
3.	Grazing Land			
4.	Wasteland			
5.	Water Bodies			
6.	Settlements			
7.	Others (specify)			
	TOTAL			

Area under Surface Rights

S.N.	Details	Area (ha)
1.	Buildings	
2.	Infrastructure	
3.	Roads	
4.	Others (specify)	
	TOTAL	

- (xii) Break-up of lease/project area as per mining operations.
- (xiii) Impact of changes in the land use due to the start of the projects if much of the land being acquired is agricultural land/forestland/grazing land.
- (xiv) Collection of one-season (non-monsoon) primary baseline data on environmental quality - air (PM₁₀, PM_{2.5}, SO_x, NO_x and heavy metals such as Hg, Pb, Cr, As, etc), noise, water (surface and groundwater), soil along with one-season met data.
- (xv) Map of the study area (1: 50, 000 scale) (core and buffer zone clearly delineating the location of various stations superimposed with location of habitats, other industries/mines, polluting sources. The number and location of the stations in both core zone and buffer zone should be selected on the basis of size of lease/project area, the proposed impacts in the downwind

- (air)/downstream (surface water)/groundwater regime (based on flow). One station should be in the upwind/upstream/non-impact/non-polluting area as a control station. The monitoring should be as per CPCB guidelines and parameters for water testing for both ground water and surface water as per ISI standards and CPCB classification wherever applicable. Values should be presented in comparison to desirable limits.
- (xvi) Study on the existing flora and fauna in the study area (10km) carried out by an institution of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna. If the study area has endangered flora and fauna, or if the project falls within 15 km of an ecologically sensitive area, then a comprehensive Conservation Plan should be prepared and furnished along with comments from the CWLW of the State Govt.
 - (xvii) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until end of mine life should be reflected on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps and sections should be included. The progressive mine development and final mine closure plan should also be shown in figures.
 - (xviii) Details of mining methods, technology, equipment to be used, etc., rationale for selection of that technology and equipment proposed to be used vis-à-vis the potential impacts.
 - (xix) Study on subsidence, measures for mitigation/prevention of subsidence, modelling subsidence prediction and its use during mine operation, safety issues.
 - (xx) Impact of mining on hydrology, modification of natural drainage, diversion and channelling of the existing rivers/water courses flowing through the ML and adjoining the lease/project and the impact on the existing users and impacts of mining operations thereon.
 - (xxi) Detailed water balance should be provided. The break up of water requirement for the various mine operations should be given separately.
 - (xxii) Source of water for use in mine, sanction of the competent authority in the State Govt. and impacts vis-à-vis the competing users.
 - (xxiii) Impact of mining and water abstraction use in mine on the hydrogeology and groundwater regime within the core zone and 10 km buffer zone including long? Term modelling studies on. Details of rainwater harvesting and measures for recharge of groundwater should be reflected in case there us a declining trend of groundwater availability and/or if the area falls within dark/grey zone.
 - (xxiv) Impact of blasting, noise and vibrations.
 - (xxv) Impacts of mining on the AAQ, predictive modelling using the ISCST-3 (Revised) or latest model.
 - (xxvi) Impacts of mineral transportation ?within and outside the lease/project along with flow-chart indicating the specific areas generating fugitive emissions. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop, management plan for maintenance of HEMM, machinery, equipment. Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from these activities.
 - (xxvii) Details of waste generation ? OB, topsoil ? as per the approved calendar programme, and their management shown in figures as well explanatory chapter with tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use. OB dump heights and terracing should based on slope stability studies with a max of 28° angle as the ultimate slope. Sections of dumps (ultimate) (both longitudinal and cross section) with relation to the adjacent area should be shown.

- (xxviii) Impact and management of wastes and issues of rehandling and backfilling and progressive mine closure and reclamation.
- (xxix) Flow chart of water balance. Treatment of effluents from workshop, township, domestic wastewater, mine water discharge, etc. Details of STP in colony and ETP in mine. Recycling of water to the max. possible extent.
- (xxx) Occupational health issues. Baseline data on the health of the population in the impact zone and measures for occupational health and safety of the personnel and manpower for the mine.
- (xxxi) Risk Assessment and Disaster Preparedness and Management Plan.
- (xxxii) Integrating in the Env. Management Plan with measures for minimising use of natural resources - water, land, energy, etc.
- (xxxiii) Progressive Green belt and afforestation plan (both in text, figures as well as in tables prepared by MOEF given below) and selection of species (local) for the afforestation/plantation programme based on original survey/landuse.

Table 1: Stage-wise Landuse and Reclamation Area (ha)

S.N.	Land use Category	Present (1 st Year)	5 th Year	10 th Year	20 th year	24 th Year (end of Mine life)*
1.	Backfilled Area (Reclaimed with plantation)					
2.	Excavated Area (not reclaimed)/void					
3.	External OB dump Reclaimed with plantation)					
4.	Reclaimed Top soil dump					
5.	Green Built Area					
6.	Undisturbed area (brought under plantation)					
7.	Roads (avenue plantation)					
8.	Area around buildings and Infrastructure					
	TOTAL	110	110	110	110	110

* Representative case as an example

Table 2: Stage-wise Cumulative Plantation

S.N.	YEAR*	Green Belt		External Dump		Backfilled Area		Others (Undisturbed Area/etc)		TOTAL	
		Area (ha)	No. of trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees	Area (ha)	No. of Trees
1.	1 st year										

2.	3 rd year									
3.	5 th year									
4.	10 th year									
5.	15 th year									
6.	20 th year									
7.	25 th year									
8.	30 th year									
9.	34 th year (end of mine life)									
10.	34-37 th Year (Post-mining)								85	

* Representative case as an example

- (xxxiv) Conservation Plan for the endangered/endemic flora and fauna found in the study area and for safety of animals visiting/residing in the study area and also those using the study area as a migratory corridor.
- (xxxv) Conceptual Final Mine Closure Plan, post mining land use and restoration of land/habitat to pre- mining. A Plan for the ecological restoration of the area post mining and for land use should be prepared with detailed cost provisions.

Table 3: Post-Mining Landuse Pattern of ML/Project Area (ha)

S.N.	Land use during Mining	Land Use (ha)				
		Plantation	Water Body	Public Use	Undisturbed	TOTAL
1.	External OB Dump					
2.	Top soil Dump					
3.	Excavation					
4.	Roads					
4.	Built up area					
5.	Green Belt					
6.	Undisturbed Area					
	TOTAL	85				110

- (xxxvi) Including cost of EMP (capital and recurring) in the project cost and for progressive and final mine closure plan.
- (xxxvii) Details of R&R. Detailed project specific R&R Plan with data on the existing socio-economic status of the population (including tribals, SC/ST, BPL families) found in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc and costs along with the schedule of the implementation of the R&R Plan.
- (xxxviii) CSR Plan along with details of villages and specific budgetary provisions (capital and recurring) for specific activities over the life of the project.
- (xxxix) Public Hearing should cover the details of notices issued in the newspaper, proceedings/minutes of public hearing, the points raised by the general public and commitments made by the proponent should be presented in a tabular

form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.

(xxxx) In built mechanism of self-monitoring of compliance of environmental regulations.

(xxxxi) Status of any litigations/ court cases filed/pending on the project.

(xxxxii) Submission of sample test analysis of:

Characteristics of coal - this includes grade of coal and other characteristics ?ash, S and heavy metals including levels of Hg, As, Pb, Cr etc.

(xxxxiii) Copy of clearances/approvals ? such as Forestry clearances, Mining Plan Approval,

NOC from Flood and Irrigation Dept. (if req.), etc.

(A) FORESTRY CLEARANCE

TOTAL ML/PROJECT AREA (ha)	TOTAL FORESTLAND (ha)	Date of FC	Extent of forestland In the FC	Balance area for which FC is yet to be obtained	Status of appl. for diversion of Balance forestland
		If more than one, provide details of each FC			

Copies of forestry clearance letters (all, if there are more than one)

(B) MINING PLAN APPROVAL

(B) MINING PLAN/PROJECT APPROVAL

Date of Approval of Mining Plan/Project Approval:

Copy of Letter of Approval of Mining Plan/Project Approval

(xxxxiv) Corporate Environment Responsibility:

- a) The Company must have a well laid down Environment Policy approved by the Board of Directors.
- b) The Environment Policy must prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.
- c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions must be furnished.
- d) To have proper checks and balances, the company should have a well laid down system of reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.

GENERAL CONDITIONS AND ADDITIONAL POINTS OF TOR

The following general points should be noted:

- (i) All documents should be properly indexed, page numbered.
- (ii) Period/date of data collection should be clearly indicated.
- (iii) Authenticated English translation of all material provided in Regional languages.
- (iv) After the preparation of the draft EIA-EMP Report as per the aforesaid TOR, the proponent shall get the Public Hearing conducted as prescribed in the EIA Notification 2006 and take necessary action for obtaining environmental clearance under the provisions of the EIA Notification 2006.
- (v) The letter/application for EC should quote the MOEF file No. and also attach a copy of the letter prescribing the TOR.
- (vi) The copy of the letter received from the Ministry on the TOR prescribed for the project should be attached as an annexure to the final EIA-EMP Report.
- (vii) The final EIA-EMP report submitted to the Ministry must incorporate the issues in TOR and that raised in Public Hearing. The index of the final EIA-EMP report, must indicate the specific chapter and page no. of the EIA-EMP Report where the specific TOR prescribed by Ministry and the issue raised in the P.H. have been incorporated. Mining Questionnaire (posted on MOEF website) with all sections duly filled in shall also be submitted at the time of applying for EC.
- (viii) General Instructions for the preparation and presentation before the EAC of TOR/EC projects of Coal Sector should be incorporated/ followed.
- (viii) The aforesaid TOR has a validity of two years only.

The following additional points are also to be noted:

- (i) Grant of TOR does not necessarily mean grant of EC.
- (ii) Grant of TOR/EC to the present project does not necessarily mean grant of TOR/EC to the captive/linked project.
- (iii) Grant of TOR/EC to the present project does not necessarily mean grant of approvals in other regulations such as the Forest (Conservation) Act 1980 or the Wildlife (Protection) Act, 1972.
- (iv) Grant of EC is also subject to Circulars issued under the EIA Notification 2006, which are available on the MOEF website: www.envfor.nic.in