

No. J-11015/100/2011-IA.II(M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
CGO Complex,
New Delhi-110 003
Dated: 16 December, 2013

To
The General Manager (E&F)
M/s Bharat Coking Coal Ltd.,
Koyala Bhawan, Dhanbad,
Jharkhand

Sub. : 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 - Environment Clearance – reg.

Sir,

This is with reference to letter no.43011/12/2011-CPAM dated 05.04.2011 along with the application for Terms of Reference (TOR) and this Ministry's letter dated 27.06.2011 granting TOR. Reference is also invited to the letter no. CIL/DLI/EMP-TOR/2013/21 dated 06.02.2013 and subsequent letters no. dated 16.05.2013; 24.05.2013; 08.06.2013; 20.06.2013; 02.07.2013 for environmental clearance on the above-mentioned subject.

2. The Ministry of Environment & Forests has considered the application. It is noted that the proposal is for grant of Environmental Clearance for **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.** Cluster XV mines 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,. The proponent informed that:

- i. It is neither new nor expansion Project. Cluster consisting of mines taken over by BCCL from private mine owners after nationalization through Coal Mines Nationalization Act, 1972-73. It is a cluster of four underground mines namely; Kharkharee Colliery, Dharmaband Colliery, Madhuband Colliery, Phularitand Colliery for which Ministry issued the TOR vide letter no J-11015/100/2011-IA.II (M) on 27th June, 2011.

Sl. No.	Name of Mines	Production Capacity (MTY)		Lease Hold Area (Ha)
		Normative	Peak	
1	Kharkharee Colliery	0.092	0.12	584.00
2	Madhuband Colliery	0.113	0.147	393.77
3	Phularitand Colliery	0.120	0.156	340.88
4	Dharmaband Colliery (Closed for production)	0	0	377.90
	Total	0.325	0.423	1696.55

ii. **Details of Land usage**

Sl. No.	Type of land use	Present mining land use (in Ha)	Post-mining land use (in Ha)
1	Service building/ Mine Infrastructure	17.36	0.00
2	Coal dump	3.8	0.00
3	Road and rail	101.67	101.67
4	Homestead Land	102.13	52.69
5	Agricultural Land	352.38	352.38
6	Forest Land	0.00	0.00
7	Plantation	12.80	634.08
8	Water Body	45.37	45.37
9	Barren Land	1061.04	510.36
	Total	1696.55	1696.55

iii. The total geological reserve is 504 MT. The mineable reserve is 382 MT. The percentage of extraction 75%.

Name of the mines	i	ii	iii	iv	v	vi	vii
	Seam	Thickness of seams to be worked	Grade of Coal	Stripping ratio	Category of Gaseousness	Average gradient	Maximum thickness of seams (m)
Karkharee Colliery	XVI	4.16	W-II	Not Applicable	Degree-I	1 in 5	4.16
	XV	4.41					4.41
Madhuband Colliery	XVID/DE	0.15-2.98	W-IV, ST-I, ST-II	Not Applicable	Degree-I	1 in 5.5	2.98
	XVIC	0.60-4.15					4.15
	XVIB	0.15-2.37					2.37
	XVIA/AB	0.36-6.13					6.13
	XVI	0.18-4.63					4.63
	XV	1.73-5.41					5.41
Phularitand Colliery	IX/X/VIIIC	9.00	W-III	Not Applicable	Degree-I	1 in 7.5	9.00
	VIIIB	2.31					2.31
	VIIIA	2.30					2.30
	VIII	4.0					4.0
	III						3.35
	I						2.99

iv. **Technical parameters :**

Name of Mines	Madhuband Colliery (UG)	Phularitand Colliery (UG)	Kharkharee Colliery (UG)	Dharmaband Colliery (UG) (Closed For Production)
Lease Area (Ha)	393.77	340.88	584	377.90
Life (in years)	>30	>30	>30	-
Method of Mining	B&P Manual, dev depillaring With Stowing	B&P Dev/Dep. with SDL, Dep. with caving	B&P Dev with SDL	-
Production in 1993-94 (MT)	0.107	0.078	0.080	-
Production in 2011-12 (MT)	Nil	0.035	0.063	-
Proposed peak Production (MTPA)	0.147	0.156	0.12	-

Manpower	1337	1050	652	-
Ventilation	PV-160X2	PV-160	PV-200	-
Seams to be worked	XVID/DE, XVIC, XVIB, XVIA/AB, XVI, XV	IX/X & VIIIC, VIIIB, VIIIA, VIII ,III,I	XVI, XV	-
Seam Gradient	1 in 2.5 to 4	1 in 7.5	1 in 5	-
Grade of Coal	ST-I, ST-II, W-IV	W-III	W-II, W-I	-
Mineable Reserve (Mt)	20.29	17.07	22.54	111.05
Linkages	Madhuband Coal washery	Madhuband Coal washery	Madhuband Coal washery	-
Maxm. Depth (m)	410	350	480	300
Cost of Production (Rs/te)	3092	3465	5171	-
Selling Price-(Rs./ Te)	4080	1920	2569	-

v. Details of actual coal production vis-à-vis sanctioned capacity since the inception of mine:

Year	EC sanctioned capacity (MTPA)	Actual coal production (MTPA)			Excess production beyond the EC sanctioned capacity
	Not Applicable	Karkharee Colliery	Madhuband Colliery	Phularitand Colliery	Not Applicable
1993-94		80000	107406	78000	
2007-08		57745	29681	27171	
2008-09		58010	26270	28464	
2009-10		54271	16392	33425	
2010-11		49330	34	45353	
2011-12		63200	Temp susp. prod	35039	
Normative production(MTY)		0.092	0.113	0.120	
Peak Production(MTY)		0.12	0.147	0.156	

- vi. Damodar River flows at a distance of 3.2 km to the south. The run-off from the area during monsoon drains into Jamunia River and Khudia Nala through a numbers of streams flowing towards south-west. Besides these streams, there are number of small ponds in the area. The unconfined aquifer, average 28 m thick lying above the top most working seam contributes the mine inflow. The semi-confined aquifers, with max. saturated thickness of 300 m, lying above the bottommost working seam will also contribute the mine inflow.
- vii. Pre-monsoon water levels vary from 4.96 to 19.08 m below ground level and Post-monsoon Water Levels vary from 2.10 to 15.88 m below ground level. The total water requirement 4147 m³/day of which for industry requirement 1487 m³/day and Domestic water requirement 2660 m³/day. The treated mine discharge water will be gainfully utilised for industrial (dust suppression, green belt development etc) and domestic purposes. Excess mine water, after treatment will be discharged into local nala with check dam for artificial recharge to the groundwater system.
- viii. The method of mining would be manual Bord and Pillar, depillaring with stowing
- ix. 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 is 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.

- x. 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.
- xi. Considering extraction by caving, the subsidence is not high.
- xii. Subsidence is expected during depillaring with caving method which will be adopted after the development phase.
- xiii. 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.
- xiv. 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.
- xv. 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.
- xvi. 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.
- xvii. 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
- xviii. The work of environmental monitoring by CIMFR, Dhanbad, has been approved by BCCL Board which will include water quality monitoring.
- xix. 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.
- xx. 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. Physico-chemical characteristics for the surface water has been carried out and the results are within the prescribed limit.
- xxi. 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.

- xxii. 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.
- xxiii. 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.
- xxiv. There will be no opencast mining in Cluster –XV, so no overburden will be generated and no problem of siltation in Damodar River arises.
- xxv. R&R is involved. The no of PAFs are 1537. The Master plan for dealing with subsidence and rehabilitation within the leasehold area of BCCL has already been approved by Govt. of Jharkhand & Govt. of India. Out of 595 unstable sites identified in the Master plan, 18 sites are with an area of 49.44 Ha consisting of 1537 no. of houses/families are affected. The affected families will be rehabilitated in adjacent non-coal bearing area at a cost of Rs. 14002.80 lakhs.
- xxvi. **Subsidence:** Subsidence prediction study has been done for the panels as proposed to be depillared in mine projection plans for different seams and considering the geo-mining parameters as provided by Colliery Authority.
- xxvii. **Cost:** Total cost of the project is Rs. 43.3 Crore. The CSR cost is Rs.21 lakhs per year. Project proponent will follow the latest CIL's Policy and will spend 5% of the retained earnings of the previous year subject to a minimum of Rs. 5/- per tonne of coal production. The R&R cost is Rs. 140.03 Crore and the environment management cost is Rs. 1.84 crore. Annual social audit should be got done through a reputed institute and uploaded on the company's website.
- xxviii. Total afforestation plan shall be implemented covering an area of 621.28 Ha (additional) at the end of mining which will include; Green belt over an area of 229.12 ha; Density of tree plantation 2500/ha of plants.
- xxix. **Wildlife issues:** There are no national parks, wildlife sanctuary, biosphere reserves within 10 km buffer zone.
- xxx. **Forestry issues:** There is no forest area involved.
- xxxi. **Approvals:** Applied for Ground water clearance on 16.2.2013 to CGWB. The Mine closure approval is under process.
- xxxii. There are no external & internal OB Dumps and no voids.
- xxxiii. The seasonal data for ambient air quality has been documented for one season (Feb 2012 to April 2012) and results at all stations are within prescribed limits.
- xxxiv. **Transportation:** Coal produced will be transported to existing Madhuband Washery by road.
- xxxv. The Life of Mine is 30 years.
- xxxvi. **Violation/ Court Case:** State Govt./ Jharkhand State Pollution Control Board had issued closure orders for all the mines of BCCL in Aug., 2011 and March 2012 stating that BCCL is operating all its mines without the Env. Clearance. BCCL had approached and filed Writ Petition in the Hon'ble High Court of Jharkhand, Ranchi for legal relief against the closure of mines by JSPCB with the following facts that BCCL had already initiated the process of Environmental Clearance in 2008 onwards and was approved the cluster concept in 2009. BCCL is completing all its EMP process well within the validity periods of two years stipulated in the Terms of Reference (TOR). Further, all the mines of BCCL are infected by coal fires and a PIL case is being dealt in this regard in the Hon'ble Supreme Court of India. By closing the mines, the fires will not stop and shall aggravate and cause more devastation and pollution. The court had taken cognizance of the facts and appreciating the sincere efforts of BCCL in obtaining the Environmental Clearance

had granted “Status Quo” to be observed and admitted the case i.e. No. WP(C) 4944/2011.

xxxvii. **Public hearing:** The public hearing was held on 01.11.2012 at Dhanbad. The issues raised were regarding pond, water & electricity, medical facility, road construction, plantation, basic amenities, water sprinkling on road, etc.

3. It was further stated that the Jharia Action Plan, which consists of all fire dousing projects/plans had been surveyed by DGMS and DGMS is also the monitoring and scrutinizing agency constituted by the Hon’ble Supreme Court of India under the WP(PIL) 387/1997 i.e. Haradhan Roy Vs UOI. It was clarified that any new scheme of fire dousing would need the approval of DGMS.

4. This is a violation case. As per the Office Memorandum dated 12.12.2012, issued by the Ministry of Environment and Forests, with regard to the consideration of proposals for ToR/Environment clearance/CRZ clearance involving violation of the Environment (Protection) Act, 1986/EIA notification, 2006/CRZ notification, 2011, the Environmental Clearance will be granted after the written commitment in the form of a formal resolution by the Board of Directors submitted to the MoEF to ensure that violations will not be repeated and the State Government concerned initiates credible action on the violation by invoking powers under Section 19 of the Environment (Protection) Act, 1986 for taking legal action under section 15 of the Act for the period for which the violation has taken place and evidence provided to the MoEF of the action taken. In this case, the Board’s resolution has been received vide its letter no. BCCL/HOD/(Env.)/F-EMP/13/709 dated 20.06.2013. As regards credible action, Jharkhand State Pollution Control Board has issued directions of closure of collieries of M/S Bharat Coking Coal Limited under section 31A & 33A of Air (Prevention and Control of Pollution) Act, 1981 & Water (Prevention and Control of Pollution) Act, 1974 respectively for operating without obtaining environmental clearance. M/S BCCL has filed a Writ Petition (No. 4944/11) challenging the Board’s directions of closure. The Jharkhand High Court has passed interim order on 25.08.2011 that “Till then, status quo, as on today, shall be maintained by the parties” and passed order on 18.01.2012 that “Until further orders, the interim order dated 25.08.2011 shall continue”.

Jharkhand State Pollution Control Board, vide its letter no. JSPCB/D-1894 dated 15.07.2013 has further informed that it has filed IA no. 505/13 in Hon’ble High Court, Ranchi to allow the Board to take legal action against collieries of BCCL for violation of terms of section 19 of the Environment (Protection) Act, 1986 in the light of Ministry of Environment and Forests, Govt. of India, New Delhi circular dated 16.11.2010 and also in view of the direction of the Ministry of Environment and Forests, Govt. of India, New Delhi as per the Environmental Clearance order. The Hon’ble High Court passed an order on 10.04.2013 and disposed of the IA mentioning “the petitioner is required to ensure all steps to obtain Environmental Clearance at the earliest and preferably within a period of three months. If the Environmental Clearance of the remaining clusters are not obtained within the next three months by the petitioner the respondent Board would be at liberty to bring it to the notice of this court for proper modification of the interim order”. Being aggrieved by the said order the State Board has filed an LPA petition in the Hon’ble High Court.

5. The proposal was considered in the 71st Expert Appraisal Committee (EAC) (Thermal & Coal Mining) meeting held during 8th - 9th April, 2013 and recommended in 75th Expert Appraisal Committee (EAC) (Thermal & Coal Mining) meeting held on 3rd - 4th June, 2013 for granting Environmental Clearance. The Ministry of Environment & Forests has examined the application in accordance with the EIA Notification 2006 and under the provisions thereof, hereby accords

environmental clearance for the above-mentioned 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 under the provisions of the Environmental Impact Assessment Notification, 2006 and amendments thereto and Circulars issued thereon and subject to the compliance of the following specific conditions, in addition to the specific and general conditions:

A: Specific Conditions:

- i. The maximum production in the cluster shall not exceed beyond that for which environmental clearance has been granted for the cluster XV as per given below:

Sl. No.	Name of Mines	Production Capacity (MTY)		Lease Hold Area (Ha)
		Normative	Peak	
1	Kharkharee Colliery	0.092	0.12	584.00
2	Madhuband Colliery	0.113	0.147	393.77
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4	Dharmaband Colliery (Closed for production)	0	0	377.90
	Total	0.325	0.423	1696.55

- ii. The proponent shall prepare a contingency plan for subsidence.
- iii. 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.
- iv. The channels adjoining the ML area leading to Jamunia river should not be disturbed and be regularly desilted.
- v. 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.
- vi. The coal from the mines will be transported by mechanically covered trucks within two months.
- vii. In underground mining, there is presence of organic gases. These gases are volatile in nature. Due to transmission of air, fire takes place. The routine mining engineering will not serve the purpose. Therefore, proper studies be carried out to understand underground seams and how these fire areas could be sealed from further spreading.
- viii. Cumulative impact of fire and gases for all the clusters of coal mines in Jharia Coal Field be carried out.
- ix. 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. 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.
- x. 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.
- xi. The nullah adjacent to the river should not be disturbed.
- xii. The open cast quarries of the abandoned mines should be backfilled to the ground level and restored with native species.
- xiii. All coal from smaller UG mines should be transported by high capacity and mechanically covered trucks/ tippers.
- xiv. Green belts shall be developed on both sides of the roads.

- xv. Action plan for quenching of fires and rehabilitation alongwith the details of master plan be submitted to the MoEF for monitoring purpose.
- xvi. Presently coal to Munidih washery from other mines of the cluster is taking place through NH. An alternate route for coal transportation may be explored.
- xvii. For understanding the composition of emissions from coal mine fires, BCCL may initiate action as proposed in the visit report of the EAC to Dhanbad.
- xviii. The approved mining plan be submitted to the MoEF.
- xix. The measure to identify in the Environmental Plan for Cluster- XV groups of mine and the conditions given in this environmental clearance letter shall be dovetailed to the implementation of the Jharia Action Plan.
- xx. The proponent shall prepare time -series maps of the Jharia Coalfields through NRSA to monitor and prevent fire problems in the Jharia Coalfields by Isothermal mapping /imaging and monitoring temperatures of the coal seams (whether they are close to spontaneous ignition temperatures) and based on which, areas with potential fire problems shall be identified. Measures to prevent ingress of air (Ventilation) in such areas, to prevent restart fresh/spread fires in other areas including in mines of cluster II shall be undertaken. Expertise available internationally could also be utilised for control of fire in Jharia Coalfields and for their reclamation and to further minimize time for fire and subsidence control. Isothermal mapping using thermal imaging has been got done by NRSA. Measures would be taken to prevent ingress of air (ventilation) in such areas, which may re-start fresh fires.
- xxi. The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilised with plantation so as to withstand the peak water flow and prevent mine inundation.
- xxii. No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/check such fire including in old OB dump areas where the fire could start due to presence of coal/shale with sufficient carbon content.
- xxiii. Mining shall be carried out as per statuette from the streams/nalas flowing within the lease and maintaining a safe distance from the Nalas flowing along the lease boundary. A safety barrier of a minimum 60m width shall be maintained along the nalas/water bodies.
- xxiv. Total afforestation plan shall be implemented covering an area of 621.28 Ha (additional) at the end of mining which will include; Green belt over an area of 229.12 ha; Density of tree plantation 2500/ha of plants.
- xxv. Details of transportation, CSR, R&R and implementation of environmental action plan for the clusters-XV should be brought out in a booklet form within a year and regularly updated.
- xxvi. Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a critically polluted are and relevant for Cluster XV shall be implemented.
- xxvii. The locations of monitoring stations in the Jharia Coalfields should be finalised in consultation with the Jharkhand State Pollution Control Board. The Committee stated that smoke/dust emission vary from source to source (fuel wood, coal, flyash from TPPs, silica from natural dust, etc.) and a Source Apportionment Study should be got carried out for the entire Jharia Coalfields. Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (PM10 and PM2.5) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.
- xxviii. The proponent will continue the existing Road-Rail transport network system in view of the implementation of the Master Plan (for 10 years) and another 5 years gestation period after the completion of Master Plan for consolidation of the backfilled dug out fire areas and unstable areas is required. 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 (phase-I) with the existing road-rail transport system. In

- phase-II, 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. Transportation of coal shall be by Rail and Conveyor belt, minimizing the existing road transport system in all the mines of the cluster and shall continue after 15 years. Loading of coal by pay loaders shall be discontinued. Adequate number of suitably designed off-take points shall be provided.
- xxix. 1537 nos of PAFs should be rehabilitated at cost of Rs 140.03 crores as per the approved Jharia Action Plan.
 - xxx. Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads, and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.
 - xxxi. Coal Extraction shall also be optimised in areas where agricultural production is continuing. Some pillars shall be left below the agricultural land. No depillaring & coal extraction should be carried out below habitation, H.T. Lines & beneath road, water bodies
 - xxxii. Subsidence shall be monitored closely and if subsidence is found exceeding the permitted limits, then the landowners shall be adequately compensated with mutual agreement with the landowners.
 - xxxiii. 3-tier plantation should be developed 2 km stretch of road from the mine using native species.
 - xxxiv. Water sprinkling system shall be provided to check fugitive emissions from loading operations, conveyor system, haulage roads, transfer points, etc. Major approach roads shall be black topped and properly maintained.
 - xxxv. A progressive afforestation plan shall be prepared and implemented over the mine lease area acquired and shall include areas under green belt development, areas along roads, infrastructure, along ML boundary and township etc, by planting native species in consultation with the local DFO/Agriculture Department.
 - xxxvi. Acid Water Treatment Plant, volume of water to be treated and disposal of brine should be provided.
 - xxxvii. Mine discharge water outside the ML shall be monitored, particularly for TDS and treated to conform to prescribed levels before discharge into the natural environment.
 - xxxviii. The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource, in case water table shows a declining trend. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.
 - xxxix. Besides carrying out regular periodic health check up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check up for occupational diseases and hearing impairment, if any, through an agency such as NIOH, Ahmadabad within a period of one year and the results reported to this Ministry and to DGMS.
 - xl. The mining in the existing mines would be phased out after expiry of the current mining lease and after reclamation of mined over area. The operating mines may be analysed and monitored for compliance of conditions, having bearing with movement of wild life until such time they are closed/phased out
 - xli. Sufficient coal pillars shall be left unextracted around the air shaft (within the subsidence influence area) to protect from any damage from subsidence, if any.
 - xlii. High root density tree species shall be selected and planted over areas likely to be affected by subsidence.
 - xliii. Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.

- xliv. Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.
- xlvi. The CSR Action Plan shall consist of need-based CSR Action Plan, CSR Auditing and monitoring mechanism etc. The proponent will spend 5 % of the retained earning of the previous year subject to a minimum of Rs. 5/- per tonne of coal production which should be adjusted as per the annual inflation. The progress made thereon shall be uploaded on the company annually on the company website. Monitoring of the impacts of activities under CSR shall be carried out periodically.
- xlvi. Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the Public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website every year. The company must give priority to capacity building both within the company and to the local youth, who are motivated to carry out the work in future. The gap/space available between the entire mine area should be suitably planted with native species. Plantation should also be made in vacant area and along the road side so as to reduce dust pollution.
- xlvi. Central recreation park with herbal garden should be developed for use of all inhabitants
- xlvi. The mine water should be treated properly before supply to the villager
- xlvi. Mine discharge water shall be treated to meet standards prescribed standards before discharge into natural water courses/agriculture. The quality of the water discharged shall be monitored at the outlet points and proper records maintained thereof and uploaded regularly on the company website.
 - i. The void shall be converted into a water reservoir of a maximum depth of 15-20 m and shall be gently sloped and the upper benches of the reservoir shall be stabilised with plantation and the periphery of the reservoir fenced. The abandoned pits and voids should be backfilled with OB and reclaimed with plantation and or may be used for pisciculture.
 - ii. Regular monitoring of groundwater level and quality of the study area shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality including Arsenic and Fluoride during the month of May. Data thus collected shall be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board/SPCB quarterly within one month of monitoring. Rainwater harvesting measures shall be undertaken in case monitoring of water table indicates a declining trend.
 - iii. ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to conform to prescribed standards in case discharge into the natural water course.
 - iii. For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MoEF and its Regional office at Bhubaneswar.
 - iv. A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration. the mining plan and post-mining plan, closure plan should be prepared and submitted to the Ministry;
 - iv. A separate management structure for implementing environment policy and socio-economic issues and the capacity building required in this regard.

lvi. Corporate Environment Responsibility:

- a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.
- b) The Environment Policy shall 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 shall be furnished.
- d) To have proper checks and balances, the company shall 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.

B. General Conditions:

- i. No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.
- ii. No change in the calendar plan of production for quantum of mineral coal shall be made.
- iii. Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM₁₀, PM_{2.5}, SO₂ and NO_x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr ,etc carried out at least once in six months.
- iv. Data on ambient air quality (PM₁₀, PM_{2.5}, SO₂ and NO_x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EPA rules, 1986 shall be furnished as part of compliance report.
- v. Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
- vi. Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.
- vii. Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.
- viii. Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986.
- ix. Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.
- x. Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.

- xi. A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.
 - xii. The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.
 - xiii. The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at <http://envfor.nic.in>.
 - xiv. A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.
 - xv. A copy of the environmental clearance letter shall be shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Sector and Collector's Office/Tehsildar's Office for 30 days.
 - xvi. The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM10, PM2.5, SO₂ and NO_x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.
 - xvii. The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office s of CPCB and the SPCB.
 - xviii. The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.
 - xix. The Environmental statement for each financial year ending 31 March in For –V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules,1986,as amended subsequently, shall also be uploaded on the compan's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF by e-mail.
6. The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report so also during their presentation to the EAC.
 7. The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project.The Ministry or any other competent authority may stipulate any further condition for environmental protection.
 8. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.
 9. The above conditions will be enforced *inter-alia*, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act,

1991 along with their amendments and Rules. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.

10. The Environmental Clearance is subject to the outcome of the Writ Petition filed by M/S Bharat Coking Coal Limited (BCCL) in response to the closure orders issued by the Jharkhand State Pollution Control Board which is pending in the Jharkhand High Court.

(Dr. Manoranjan Hota)
Director

Copy to:

1. Secretary, Ministry of Coal, Shastri Bhawan, New Delhi.
2. Secretary, Department of Environment & Forests, Government of Jharkhand, Secretariat, Ranchi.
3. Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, A-31, Chandrashekarapur, Bhubaneswar – 751023.
4. Member Secretary, Jharkhand State Pollution Control Board, T.A. Division Building (Ground Floor), H.E.C., Dhurwa, Ranchi – 834004.
5. Member Secretary, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi -110032.
6. Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. District Collector, dist. Dhanbad Government of Jharkhand.
8. Monitoring File 9. Guard File 10. Record File. 11. Notice Board

(Dr. Manoranjan Hota)
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