

No. J-11015/380/2010-IA.II (M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
CGO Complex, Lodi Road,
New Delhi-110003.

To

Dated: 6th February, 2013

General Manager (E&F)
M/s Bharat Coking Coal Ltd.,
Koyala Bhawan,
Dhanbad-826005
Jharkhand

Sub: Cluster X (6 mines of 1.762 MTPA of normative and peak production of 2.289 MTPA in a combined ML area of 2057.95 ha) and Sudamdih Coal Washery (Within the lease hold of Sudamdih Shaft Mine) of 1,6 MTPA of normative and 2,08 MTPA peak production for a area of 18 ha of M/s Bharat Coking Coal Ltd., located in Jharia Coalfields, Dist. Dhanbad, Jharkhand (EC based on TOR granted on 09.02.2011) -Environment Clearance –reg.

Sir,

This is with reference to letter no.43011/41/2010-CPAM dated 04.11.2010 along with the application for Terms of Reference (TOR) and this Ministry's letter Dated 09.02.2011 granting the TOR. Reference is also invited to the letter No. BCCL/GM (Env.)/EMP (X)-12/460 dated 01 June, 2012 and 25.12.2012 for environmental clearance on the above-mentioned subject.

2. The Ministry of Environment & Forests has considered the application. The proponent has informed that:

- i. The proposal is for grant of Environmental Clearance for Cluster X, a group of 6 mines (five operating mines namely, Bhowrah North Colliery (mixed), Bhowrah South Colliery (mixed), Patherdih Colliery (mixed), Sudamdih Incline (UG), Sudamdih Shaft mine (UG) and Amlabad colliery (UG) and a washery within the ML of Sudamdih Shaft mine. Of the above mines, 3 mines are mixed mines namely Bhowrah North Colliery (mixed), Bhowrah South Colliery (mixed), Patherdih Colliery (mixed) are in operation, 2 mines are UG mines namely Sudamdih Incline (UG) and Sudamdih Shaft mine (UG) are in operation. One mine namely Amlabad colliery (UG) is closed for production.
- ii. This proposal does not involve increase in lease hold area, change in technology or change in product mix in the mines. The area has undulating topography.
- iii. The mines in the cluster have a combined ML area of 2057.47 ha and production capacity of **1.762 MTPA** (normative) and **2.289 MTPA** (peak) as given below

Sl. No	Name of Mines		Production Capacity (MTY)		Lease Hold Area (Ha)	Life (Years)	Status
			Normative	Peak			
	Bhowrah	UG Section	0.11	0.143	208.83	>30	In Operation

1	North	OC Section	0.42	0.546		4	In Operation
2	Bhowrah South	UG Section	0.29	0.377	571.58	>30	In Operation
		3 Pit OC Section	0.235	0.305		4.5	In Operation
		Chandan OC Section	0.158	0.205		2.5	In Operation
3	Patherdih	UG Section	0.054	0.07	244.34	>30	In Operation
		Chandan OC Section	0.22	0.286		4	In Operation
4	Sudamdih Incline (UG)		0.09	0.117	254.27	>30	In Operation
5	Sudamdih Shaft (UG)		0.185	0.24	391.5	>30	In Operation
6	Amlabad UG Mine				386.95		Closed for Production
	Total		1.762	2.289	2057.47		
	Sudamdih Coal Washery (Within the lease hold of Sudamdih Shaft Mine)		1,6	2,08	18	18	In Operation

iv. Cluster-X group of mines of BCCL is a group of six mines consisting of opencast and underground mines of the Bharat Coking Coal Limited in the Dhanbad District of Jharkhand State. The cluster is flanked in the east and in the north by TISCO mines and in the west and south by metamorphic. The cluster is drained by River Damodar flowing easterly along the southern part of the cluster.

v. **The major project parameters of the mines of Cluster-X are given below:**

TECHNICAL PARAMETERS OF CLUSTER X MINES									
Name of Mines	Bhowrah North		Bhowrah South			Patherdih		Sudamdih Incline	Sudamdih Shaft (UG)
	UG Section	OC Section	UG Section	3 pit OC Section	COCP Section	UG Section	OC Section		
Lease Area (Ha)	208.83		571.58			244.34		254.27	391.5
Life (in years)	30	4	30	2	2.5	30	4	30	30

Max. depth	260	100	350	110	90	270	100	160	400
Method of Mining	Bord & Pillar	Shovel Dumper Combination	Bord & Pillar	Shovel Dumper Combination	Shovel Dumper Combination	Bord & Pillar	Shovel Dumper Combination	Bord & Pillar	JANC KOWICE
Proposed peak Production (MTPA)	0.143	0.546	0.377	0.305	0.205	0.070	0.286	0.117	0.240
Production in 2011-12 (MTPA)	0.048	0.155	0.051	0.185	0	0.015	0.132	0.039	0.021
Cost Price (Rs/T)	11239	521.10	14083.85	455.97	-	16854.81	4433.86	13757.71	35993.24
Selling Price (Rs./T)	3578.83	5134.52	2013.44	5020.54	-	1907.71	1326.04	1909.44	3598.96
Manpower	900	145	1074	142	300	462	338	936	1151
Grade of Coal	W- II, W- IV	ST-II	St-1 to W- IV	St-II & W-II	NL W- IV	W- IV	W- III, W- IV	W-IV	W-I & W-IV
Mineable Reserve (Mt)	13.3	1.6	48.47	0.485	0.44	2.52	0.9	3.944	6.748
Seams to be worked	VIII, VII, VI, V, IVT, IVB	XIV, XV & XIVA	XVII, VII, VI, V, IV T/IV B, III	XIV, XIII, XI/XII, IX/X	IV Top, IV Bot, III, II, I T, IB	VI	III, II, I T/I M, IB	VIII, VII, VI, IV	XI/XII, VIIIA, Local, VIII, VII

- vi. The fire in the cluster will be dealt in accordance with the approved Master Plan. Isothermal mapping using thermal imaging by NRSA. Measures would be taken to prevent ingress of air (ventilation) in ug fire areas such areas, which may re-start fresh fires. Opencast mining is proposed before start of underground mining. There would be no external OB dumps. Total of 27.01 Mcum of OB will be generated from the 4 OC patches would be backfilled. At the end of the mining there would be no void. The backfilled area will be technically & biologically reclaimed.

- vii. The details of post-mining land use of Cluster-X are given below:

S.No	Type Land Use	Present Mining Land Use(In Ha)	Post- Mining Land Use(In
1.	Running quarry		
	Backfilled	35.12	0.00
	Not Backfilled	66.70	0.00
2.	Abandoned quarry		0.00
	Backfilled	46.15	0.00
	Not Backfilled	69.00	0.00
3.	External OB dump	53.80	0.00
4.	Service building/mne infrastructure	17.27	0.00
5.	Coal dump	15.63	0.00
6.	Road & rail	87.35	87.34
7.	Homestead land	103.31	103.01
8.	Agriculture land	35.81	35.81
9.	Forest land	0.00	0.00
10.	Plantation/reclamation	57.03	755.41
11.	Water body	243.97	286.54
12.	Barren land	1226.35	789.36
	Total	2057.47	2057.47

- viii. For Coal Transportation, in phase-I(10+5 years),it is proposed to continue the existing Road-Rail transport network 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 the backfilled dug out fire areas and unstable areas is required. Thus the period of 15 years make the Phase-I.
- ix. 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. Later, in Phase –II, (after 15 years) the 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, minimizing the existing road transport system in about 5 mines with about 0.87 MTY that would continue after 15 years. Coal dispatch shall be done via RLS and suitably designed off-take points shall be provided. In cluster X, The proposed Coal transportation 0.947 MTPA peak production of coal from the mines at that time of operation (0.143MTPA of Bhowrah North UG , 0.3771 MTPA Bhowrah South (UG), 0.07 MTPA of Patherdih (UG), 0.117 MTPA from Sudamdih Incline (UG),0.24 MTPA Sudamdih Shaft (UG)) of Cluster- X after 15 years in Phase -II would be mainly transported by Conveyor to railway siding. Presently the transportation of coal is upto railway siding by road.
- x. The 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. The site specific subsidence parameters, e.g. subsidence factor, angle of draw, non-effective width of the panels are not available for the mine.
- xi. The Patherdih Colliery, Bhowrah XIII, XIV Seam, Amlabad XIV Seam in cluster X fire affected. BCCL has engaged National Remote Sensing Agency (NRSA), Hyderabad for conducting Thermal Infra Red imaging of the fire areas and monitoring of temperatures and fire spots in

2006. NRSA had used ASTER Satellite Imagery for ascertaining the fire areas for the whole Jharia Coalfield and have prepared isothermal contour map of the Jharia Coalfield which is procured shortly.

- xii. It was informed that OB dump fires would be dealt with by cooling, quenching and removal, excavation of fire material and filling with cohesive soil and surface sealing. In addition to this, BCCL also identified about 45 ha. of mined out lands for ecological restoration to be done for next monsoon and the whole work shall be done through local villagers.
- xiii. It is planned to take up an additional 854.72 ha area and 2136800 nos of plants to be planted. Action Plan has also been prepared for Ecological Restoration OB dumps and Voids.
- xiv. BCCL has formulated its Corporate Environment Policy. BCCL is formulating a detailed Corporate Social Responsibility (CSR) Action Plan through Tata Institute of Social Sciences (TISS), Mumbai which will consist of need-based base-line survey, CSR Action Plan, CSR Auditing and monitoring mechanism etc. This job is expected to be completed by 2012. The normative capacity of the Cluster X is 1.762 MT. 5% of the retained earnings of the previous year subject to minimum of Rs. 5 per tonne of coal production of the previous year will be provided for Corporate Social Responsibility (CSR). An amount to the tune of Rs. 87.71 lakhs will be used for the CSR works per year for Cluster X. This expenditure will be done under the activities mentioned in the scope of CSR above. The cost of EMP (Capital) would be Rs 860.50 Lakh and Recurring cost Rs 45.45 Lakh.
- xv. Total 29.01 Million m³ of OB will be generated from four opencast patches in three mixed mines (Bhowrah North, Bhowrah South & Patherdih) during their whole life. The entire OB produced will be dumped internally over the de-coaled area and backfilled. 40.7 ha of water body will be created with 15-20 m depth which shall be put to use for the local community/pisciculture.
- xvi. Details of Rehabilitation in Cluster-X is as follows:

Details of Rehabilitation in Cluster-X		
S.N.	Parameter	Details
1.	Total Voids	20.511 Mm ³
2.	Total External OB	16.85 Mm ³
3.	Total Unstable Sites	25 no
4.	Total Affected Area	697600 m ²
5.	No. of Houses to be rehabilitated	1670 no. as per JAP
6.	Land for Resettlement	8.50 ha (BCCL land) 23.10 ha (Non-BCCL land)
7.	Total cost of fire dealing	700.00 lakhs
8.	Total resettlement Cost	Rs 7087.75 lakhs

Environmental issues-Mitigation & benefits	
Major Env. issues	Mitigation measures & Benefits
Voids (135.7 Ha.)	95.0 Ha. Backfilling and 40.7 Ha. Water body
Ex. OB Dumps(53.8 Ha.)	Use for backfilling. No external dumps will be there.

Fire/Unstable area (25 sites with 0.7 sqkm consisting of 1670 families)	Dig out fire at cost of Rs. 700.0 lakhs and rehabilitate affected families at cost of Rs. 7087.75 lakhs
Loss of coal (10% locked in barriers)	Recover 7.5 MT of coal from barriers
Reclamation/Mine closure	Plantation in 755.41 Ha. Rs.3876.15lakhs for Mine Closure (Fund allocation for mine closure as per MoC guideline and adopted by BCCL @ Rs.1 lakh/Ha. in case of U/G mines and Rs.6 laks/Ha. in case of OCP mines)
CSR	Rs.87.71 lakhs per year (Fund allocation for CSR as per CIL guideline and adopted by BCCL @ Rs. 5/Tonne of Coal produced

- xvii. Damodar River is the master drainage of the area. Total water discharge of the mines of the cluster is 9140 cum/day The peak water requirement of cluster-X would be 6770 m³/day (2512 m³/day for mining operations and 4258 m³/day for domestic). It was informed that 40.7 ha of the void will be backfilled upto a depth of 15-20m for creation of water body and the remaining void will be backfilled upto the ground level. Water level in the cluster is in the range of 0.85-10.82 (pre-monsoon) and 0.10 m bgl – 7.32 m bgl (post-monsoon) in core area . The existing natural water body is in 243.97 ha area. In the post mining stage an additional 40.7 ha of water body will be created with 15-20 mt and would be used for community /Pisciculture. At the end mining there will be no void.
- xviii. The Public Hearing for Cluster-X was held on 17.03.2012
- xix. The EMP Capital cost Rs 860.50 Lakhs. Mine closure cost would be Rs. 3876.15 Lakh. Additional Capital Cost for the mines in the cluster is 1490.82 Lakhs.
- xx. All the mines of the clusters are pre-nationalization mines, therefore, there is no existing mining plan. Company has adopted “Corporate Environmental Policy” which has been approved by its Board of Directors on 21.04.2012.
- xxi. **Sudamdih Coal Washery :** The Coal Washery at Sudamdih, Dhanbad, Jharkhand with production capacity of 1.6 Mty (nominative) & 2.08 (peak) in an area of 18 Ha within the lease hold of Sudamdih Shaft mine(UG) which is located in south-eastern part of Jharia Coalfield in Dhanbad District of Jharkhand, adjacent to the Damodar River. It is at a distance of 2 Km from Sudamdih Railway Station. In its East side Chasnalla Washery of IISCO is situated, in the South is River Damodar, in the West Sudamdih Incline mine is located. The Washery is connected with Dhanbad-Jharia-Chas State Highway about 3 km away. The raw coal input of the washery in 2011-12 was 0.5114 MT with grade W-III, W-IV. The Clean/ Washed Coal was 0.2025 MT with 39.60 %yield (19.7% ash), Middlings & Slurry Coal 0.3039 MT with 59.42 % yield (37.49% ash) and Rejects was 0.0050 MT(75.26% ash). It is zero discharge washery. Coal from mines of cluster-X and IX of (+) 300 mm sizes are used in the washery. Coal then passes through Rotary Breaker where raw rejects (nearly 1.0%) are separated and remaining coal having sizes of (-) 125mm goes to stock piles by series of conveyor belts. Secondary crushing is done in the size of (-) 37mm by Hammer Crushers. Crushed coal is sent to distributing conveyor which distributes coal on eight no. of declining screens. The over flow of desliming screen having size (-) 37mm to + 0.5mm (coarse coal) is beneficiated in heavy media cyclones and the underflow coal of

screen having size (-) 0.5mm (fine coal) is beneficiated by froth floatation, disc filters and high frequency screens. Effluent, if any, is settled in settling ponds. Settled coal is marketed after grading through external reputed agencies and the water is re-circulated back to the plant. The overflow and underflow of cyclones are rinsed with water on rinsing screens and sent to clean coal and middling coal silos. There are three nos. of clean coal silos having capacity of 2000T each and one no. of middling silo having capacity of 2700T. Loading in railway wagons is done through silos for dispatch to consumers. Major coal consumers are SAIL/ RINLI/ ISCO in respect of Washed Coal and DVC/ NTPC/ /DSP/ BSP/ RSP etc. in respect of Middlings. Water required for the washery is about 0.1 MGD. For dispatch of clean coal and middling well maintained Railway siding with electronic weighbridge is existing at Sudamdih Washery. Loading of washed coal and & middlings takes place through chutes & conveyors from Silos. The Rejects produced will be disposed off to the selected party for utilization in FBC based power generation. Tendering is already under process. The life of washery is 18 years.

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. 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". In the light of interim orders of the Jharkhand High Court, the State Pollution Control Board is seeking legal opinion for initiating legal action against the collieries of BCCL in the Court of Law in terms of the OM of the MoEF. The State Government has been asked to expedite taking legal opinion and taking action under intimation to the MoEF.

5. The proposal was considered in the Expert Appraisal Committee (EAC) (Thermal & Coal Mining) and recommended in its 55th meeting held on 27-28 August, 2012 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 XIV (2 mines (One Underground & One proposed Patch of OC Section Mine) of a peak production of 0.526 MTPA in a combined ML area of 1577.22 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 terms and conditions in addition to the general conditions as mentioned below:

A. Specific Conditions:

- (i) The maximum production from the opencast and underground section in the cluster shall not exceed beyond that for which environmental clearance has been granted for the cluster X as below:

Sl No	Name of Mines		Production Capacity (MTY)		Lease Hold Area (Ha)	Life (Years)	Status
			Normative	Peak			
1	Bhowrah North	UG Section	0.11	0.143	208.83	>30	In Operation
		OC Section	0.42	0.546		4	In Operation
2	Bhowrah South	UG Section	0.29	0.377	571.58	>30	In Operation
		3 Pit OC Section	0.235	0.305		4.5	In Operation
		Chandan OC Section	0.158	0.205		2.5	In Operation
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		Chandan OC Section	0.22	0.286		4	In Operation
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5	Sudamdih Shaft (UG)		0.185	0.24	391.5	>30	In Operation
6	Amlabad UG Mine				386.95		Closed for Production
	Total		1.762	2.289	2057.47		
	Sudamdih Coal Washery (Within the lease hold of Sudamdih Shaft Mine)		1,6	2,08	18	18	In Operation

- (ii) All the void /water bodies should be backfilled upto ground level and no OB dump at the end of mining.

- (iii) Extensive plantation should be provided on either side of Damodar River;
- (iv) Details of impact of mining on Damodar River should be assessed and provided;
- (v) Impact of mining on ground water of the area (Impact Zone) should be provided;
- (vi) A Garland drain should be provided and the drain water should not be discharged in to Damodar River;
- (vii) Excess water from mine after treatment should be supplied to the villagers;
- (viii) Rejects of washery along with dry carbon slurry should be utilized in power plant and other recognized vendors;
- (ix) There should be no discharge from the Washery (slurry) in to the Damodar River. The entire washery water should be recycled;
- (x) Damodar River should be protected by plantation on both sides;
- (xi) A herbal garden with medicinal plants be developed;
- (xii) A time schedule for filling of existing and abandoned quarries be done;
- (xiii) Of the total water body area of 286.54 ha in the post-mining land use , consist of 243.97 ha of natural water bodies like Damodar river and no. of water ponds. Only 42.57 ha of mine voids were proposed to be converted to artificial water bodies for catering to domestic use of local villagers. Keeping in view the Damodar river in the vicinity, there should be no additional water bodies be created from mine.
- (xiv) The measure identified in the environmental plan for cluster X groups of mine and the conditions given in this environmental clearance letter shall be dovetailed to the implementation of the Jharia Action Plan.
- (xv) As there is no fire in Cluster X but the measure should be adopted by proponent to control spread of neighbouring fire to this Cluster X. 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 XIV shall be undertaken.
- (xvi) Underground mining should be taken up after completion of reclamation of Opencast mine area after 2 years.
- (xvii) No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/ check such fire including in old OB dump
- (xviii) A part of cluster X is under River Damodar. It was clarified that although the mine is underground, there is no coal underneath River Damodar, which would be mined. The Committee desired that the data of bore wells near River Damodar require to be monitored for permeability and seepage of waster of River Damodar.
- (xix) The rejects of washeries in Cluster –X should be send to FBC based plant.
- (xx) There shall be no external OB dumps. OB produce from the whole cluster will be 29.01 Mm³. OB from One Patch OCP mine shall be backfilled. At the end of the mining there shall be no void and the entire mined out area shall be re-vegetated. Areas where opencast mining was carried out and completed shall be reclaimed immediately thereafter.

- (xxi) A detailed calendar plan of production with plan for OB dumping and backfilling (for OC mines) and reclamation and final mine closure plan for each mine of cluster- X shall be drawn up and implemented.
- (xxii) The void in 5 ha area shall be converted into a water reservoir of a maximum depth of 15-20 m in post mining stage 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 biologically reclaimed with plantation and or may be used for pisciculture
- (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. The small water bodies in OC shall be protected to the extent feasible and the embankment proposed along water body shall be strengthened with stone pitching.
- (xxiv) Active OB dumps near water bodies and rivers should be rehandled for backfilling abandoned mine voids. However, those which have been biologically reclaimed need not be disturbed.
- (xxv) Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 47.63 ha area would be reclaimed by planting native species in consultation with the local DFO/Agriculture Department/institution with the relevant discipline. The density of the trees shall be around 2500 plants per ha.
- (xxvi) The road should be provided with avenue plantation on both side as trees act as sink of carbon and other pollutant.
- (xxvii) Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a critically polluted area and relevant for Cluster -XIV shall be implemented.
- (xxviii) The locations of monitoring stations in the Jharia Coalfields should be finalized 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 PM_{2.5}) 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.
- (xxix) No groundwater shall be used for the mining activities. Additional water required, if any, shall be met from mine water or by recycling/reuse of the water from the existing activities and from rainwater harvesting measures. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry to dewatering of mine.
- (xxx) 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 piezometers. 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.

- (xxxix) 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.
- (xxxix) ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to confirm to prescribed standards in case discharge into the natural water course.
- (xxxix) 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.
- (xxxix) 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.
- (xxxix) High root density tree species shall be selected and planted over areas likely to be affected by subsidence.
- (xxxix) Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.
- (xxxix) Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.
- (xxxix) No depillaring operation shall be carried out below the township/colony.
- (xxxix) The Transportation Plan for conveyor-cum-rail for Cluster- X should be dovetailed with Jharia Action Plan. Road transportation of coal during Phase-I should be by mechanically covered trucks, which should be introduced at the earliest. The Plan for conveyor-cum-rail for Cluster-XIV should be dovetailed with Jharia Action Plan. The road transpiration of coal during phase-I should be by mechanically covered trucks.
- (xli) A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.
- (xli) R&R of 1670 nos of PAF's involved. They should be rehabilitated at cost of Rs 7087.75 Lakhs as per the approved Jharia Action Plan.
- (xlii) Details of transportation, CSR, R&R and implementation of environmental action plan for each of the 17 clusters should be brought out in a booklet for and submitted to Ministry.
- (xliii) A detailed CSR Action Plan shall be prepared for Cluster X group of mines. Specific activities shall be identified for CSR of Rs 20.25/annum @ of Rs 5/ton of coal production. as recurring expenditure. The 47.63 ha of area within Cluster XIV ML existing as waste land and not being acquired shall be put to productive use under CSR and developed with fruit bearing and other

useful species for the local communities. 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.

- (xliv) 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.
- (xlv) 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.
- (xlvi) 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 for implementing environment policy and socio-economic issues and the capacity building required in this regard.
- (xlvii) Implementation of final mine closure plan for Cluster X, subject to obtaining prior approval of the DGMS in regard to mine safety issues
- (xlviii) 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/ZilaParishad, 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, PM_{2.5}, 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 company'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 Ministry or any other Competent Authority may stipulate any further condition(s) for environmental protection.
 7. 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.
 8. 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.
 9. 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. The 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. Chairman, Jharkhand State Pollution Control Board, T.A. Division Building (Ground Floor), H.E.C., Dhurwa, Ranchi – 834004.
5. Chairman, 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

(Dr. Manoranjan Hota)
Director