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GM (Envt.) Envt. Deptt.
SL No. 1108
Date 11/6/13
Koyla Bhawan B.C.C.L.

No. J-11015/307/2010-IA.II (M)
Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
CGO Complex,
New Delhi-110510.

To

Dated: 21st May, 2013

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

Sub. : - Cluster IX group of six mines (combined preproduction capacity of 6.548 MTPA with a peak capacity of 8.512 MTPA in a total combine ML area of 1942.12 ha) of M/S Bharat Coking Coal Limited located in Jharia Coal Field (EC based on TOR granted on 23. 12.2010) -Environment Clearance –reg.

Sir,

This has reference to the letter no. 430ll/40/2010-CPAM dated 05th October, 2010 of Ministry of Coal along with your application for Terms of Reference (TOR) and this Ministry's grant of TOR on 23.12.2010. Reference is also invited to the letters no. BCCL/GM (Env.)/ /F-EMP-Cluster-IX/20l2/490 dated 16.06.2012, 28/29.12.2012 and 31.01.2013 on the above-mentioned subject.

2. The Ministry of Environment & Forests has considered the application. It is noted that the proposal is for **Cluster IX group of six mines (combined preproduction capacity of 6.548 MTPA with a peak capacity of 8.512 MTPA in a total combine ML area of 1942.12 ha) of M/S Bharat Coking Coal Limited located in Jharia Coal Field**, dist. Dhanbad, Jharkhand. The proponent has informed that:

i. There are 6 underground mines (5 operating and 1 UG mine closed for operation only) and 2 OCP mines. The operating underground mines are Lodna UG, North Tisra(UG), Joyrampur (UG), Barari UG, Jealgora (UG), one Jeenagora Underground mine(closed for operation, mine not closed) and two opencast mines are Jeenagora OCP & proposed north Tisra/South Tisra expansion of OCP (NT/ST OCP). The cluster IX is in East-Central part of Jharia Coalfield Nearest Railway station is Bhaga Railway station which is located at 4 Km from Lodna area. Cluster IX mines of BCCL is located in the eastern part of Jharia Coal Field. The Cluster is bounded in the east by metamorphics, in the west by cluster cluster VII mines of BCCL and TISCO mines, in the north by Cluster VIII mines of BCCL and in the south by Cluster X mines of BCCL and metamorphics.
ii. As per the cluster approach, the production capacity of cluster IX is 6.548 MTPA (Normative) and 8.512 MTPA (Peak) in total lease area of 1942.12 ha.
iii. This proposal does not involve change in technology or change in product mix in the mines.
iv. This cluster is severely affected by mine fires and unstable areas. 2.245 sq km of habitated surface area is affected by mine fires and instability consisting of 98 unstable sites as per the approved Jharia Action Plan. In order to deal with the severe problem of fires and unstable sites, it is proposed to amalgamate/ merge some of the

existing mines into one big OCP named NT/ST Expansion OCP. This proposed OCP, consisting of 755.15 ha. is for excavating out the mine fire and there by liquidating the fire in the cluster-IX. It will be formed by merging the following existing mines. 232.0 ha of North Tisra underground mine, 9.0 Ha. of Joyrampur underground mine, 258.0 Ha. Of Jeenagora OCP and 256.15 Ha. of NT/ST OCP.

v. It is proposed to acquire additional 676 ha. of land for temporary external dumping for this amalgamated NT/ST Expansion OCP outside the existing lease area of the cluster in the non-coal bearing area over barren land. However this external dumping is of temporary nature till some space is obtained in the quarry area, subsequently there shall not be any external dump at the end of the mine life.

vi. The area has undulating topography with south easterly slope. The general elevation is 163 m in the south-western part to 202 m in the north eastern part.

vii. Damodar River is located just to the south. The run-off from the area during monsoon drains into Damodar River through Chatkari (Kashi) Jore. It is originated in the north of cluster and flows towards south. Tisra jore and Sulungajore, both are seasonal nalas and tributaries of Chatkari jore. Catchment area of Chatkari Jore and Tisra jore is 65 sq. km and 13.26 sq. KM respectively.

viii. The details of the cluster are as follows:

EXISTING SCENARIO OF MINES IN CLUSTER-IX						
Sl. No.	Name of the Mine	Status	Normative Produc. Capacity (MTY)	Peak Produc. Capacity (MTY)	Lease Hold Area (Ha.)	Life (Years)
1	Lodna Under ground	In operation	0.115	0.150	391.64	30
2	North Tisra Under ground	In operation	0.150	0.195	246.24	5
3	Bagdigi Under ground	In operation	0.110	0.143	61.00	30
4	Joyrampur Under ground	In operation	0.153	0.199	98.04	30
5	Bararee Under ground	In operation	0.170	0.221	475.00	30
6	Jealgora Under ground	Closed for production	nil	nil	138.00	-
7	Jeenagora OCP	In operation	0.700	0.910	276.05	05
8	NT/ST OCP	In operation	1.65	2.145	256.15	5
	TOTAL		3.048	3.963	1942.12	

PROPOSED SCENARIO OF MINES IN CLUSTER-IX (FROM 2016)						
Sl. No.	Name of the Mine	Status	Normative Produc. Capacity (MTY)	Peak Produc.Capacity (MTY)	Lease Hold Area (Ha.)	Life (Years)
1	Lodna	In operation	0.115	0.150	391.64	30

	Under ground					
2	Bagdigi Under ground	In operation	0.110	0.143	61.0	30
3	Joyrampur Under ground	In operation	0.153	0.199	89.04	30
4	Bararee Under ground	In operation	0.170	0.221	475.0	30
5.	Jealgora Under ground (Closed for operation, Mine not closed)		nil	nil	138.00 Will be closed after fire dealing	-
6.	NT/ST Expansion OCP	Proposed	6.0	7.8	755.15	30
	TOTAL		6.548	8.512	1942.12	

The major project parameters of the mines of Cluster-IX are given below:

Name of Mines	Lodna (UG)	North Tisra (UG)	NT/ST (OCP)	Bagdigi (UG)	Joyrampur (UG)	Jeenagora (OC)	Bararee (UG)	NT/ST (Exp) OCP (Proposed)
Lease Area (Ha)	391.64	246.24	256.15	61.00	98.04	276.05	475.00	1431.00
Life (in years)	30	5	5	30	30	5	30	30
Method of Mining	Bord & Pillar	Bord & Pillar	Shovel Dumper Combination	Bord & Pillar	Bord & Pillar	Shovel Dumper Combination	Bord & Pillar	Shovel Dumper Combination
Production in 1993-94 (MTPA)	0.34	0.103	1.651	0.178	0.186	0.349	0.387	-
Production in 2011-12(MTPA)	0.055	0.094	0.872	0.016	0.093	1.057	0.085	-
Proposed peak Production (MTPA)	0.15	0.195	2.145	0.143	0.199	0.91	0.221	7.8
Cost Of Production Of Coal For 2011-12 (Rs/Tonne)	15270.22	5618.58	2103.17	33377.75	6686.18	39602.15	6547.19	788.36 (2011)
Selling Price Of Coal For 2011-12 (Rs/Tonne	2964.14	2693.78	2187.60	3413.25	2092.96	3485.48	2599.97	1045.15 (2011)

)								
Manpower	1007	760	1344	618	785	451	815	1708
Grade of Coal	W-III/W-III/W-II	D/ C	W-III, W-IV	W-III	W- III	W-I, W-II, W-IV, Gr-D	W-II	S-II to W-IV & C to G
Mineable Reserve (Mt)	34.61	51.27	43.253	28.2	33.0	3.4	7.66	150.37
Seams to be worked	VII, VIIIA, IX/X	III/IV	IVT,IVB, III,IIT,IIB & I	VIII,VII(T),VII(B) .	IV (Top), VII, VIII & V/VI	IV Top, IV Bot, III	X(T), X(B), IX, VIII, VII(T), VII(B),	IX/X, VIIIA, VIII, VII & V/VI/VII, V/VI, IVT, IVB & L-5, III,IIT, IIB, I
Maximum Depth (m)	245	162	96	410	328	70	325	244
Name of Mines	Lodna (UG)	North Tisra (UG)	NT/ST (OCP)	Bagdigi (UG)	Joyrampur (UG)	Jeenagora (OC)	Bararee (UG)	NT/ST (Exp) OCP (Proposed)
Lease Area (Ha)	391.64	246.24	256.15	61.00	98.04	276.05	475.00	1431.00
Life (in years)	30	5	5	30	30	5	30	30
Method of Mining	Bord & Pillar	Bord & Pillar	Shovel Dumper Combination	Bord & Pillar	Bord & Pillar	Shovel Dumper Combination	Bord & Pillar	Shovel Dumper Combination
Production in 1993-94 (MTPA)	0.34	0.103	1.651	0.178	0.186	0.349	0.387	-
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Manpower	1007	760	1344	618	785	451	815	1708
Grade of Coal	W-III/W-III/W-II	D/ C	W-III, W-IV	W-III	W- III	W-I, W-II, W-IV, Gr-D	W-II	S-II to W-IV & C to G
Mineable Reserve (Mt)	34.61	51.27	43.253	28.2	33.0	3.4	7.66	150.37
Seams to be worked	VII, VIIIA, IX/X	III/IV	IVT,IVB, III,IIT,IIB & I	VIII,VII(T),VII(B) .	IV (Top), VII, VIII & V/VI	IV Top, IV Bot, III	X(T), X(B), IX, VIII, VII(T), VII(B),	IX/X, VIIIA, VIII, VII & V/VI/VII, V/VI, IVT, IVB & L-5, III,IIT, IIB, I
Maximum Depth (m)	245	162	96	410	328	70	325	244

Land use details of Cluster - IX

Sl.No.	Type of land use		Present mining land use (in Ha)	Post-mining land use (in Ha)
1	Running Quarry	Backfilled	47.11	0.00
		Not Backfilled	35.00	0.00
2	Abandoned Quarry	Backfilled	102.68	0.00
		Not Backfilled	119.38	32.11
3	External OB dump		104.34	0.00
4	Service building/ Mine Infrastructure		29.87	0.00
5	Coal dump		6.62	0.00
6	Road and rail		95.27	95.27
7	Homestead Land		232.58	232.58
8	Agricultural Land		45.63	45.63
9	Forest Land		0	0.00
10	Plantation		88.82	1026.66
11	Water Body		29.67	118.59
12	Barren Land		1005.15	391.28
	Total		1942.12	1942.12

The details of post-mining land use of Cluster-IX is given below:

Details of Rehabilitation in Cluster- IX		
S.N.	Parameter	Details

1.	Total Voids		12.371 Mm3
2.	Total OB available		11.57 Mm3
3.	Total Unstable Sites		98 no..
4.	Total Affected Areas		2245600 m2
5.	Habitated area affected by fire		1584160 m2
6.	Habitated sites affected by fire		56 nos
7.	Habitated area affected by subsidence		352800 m2
8.	Habitated sites affected by subsidence		20 nos
9	Habitated area affected by fire & subsidence		308640 m2
10	Habitated Sites affected by fire & subsidence		22 nos
11	No. of Houses to be rehabilitated		12246 no. as per JAP
12	Land for Resettlement	BCCL	83.184Ha
		Non BCCL	143.948 Ha
13	Total Cost of resettlement		Rs.126092.027lakhs
14	Cost of fire dealing		Rs. 795.4 crores

Sl No	Major Env. Issues	Mitigation measures & Benefits
1	Voids (154.38 Ha.)	65.46 Ha. Backfilling and 88.92 Ha. Water body
2	Ex. OB Dumps(104.34 Ha.)	Use for backfilling
3	Fire/Unstable area (224.56 ha. in 98 sites)	Dig out fire/sealing and stabilise at cost of Rs.795.4 Crores
4	R & R of 12246 affected families as per the approved Master Plan	Rehabilitation & Resettlement of the affected families at a cost of Rs.126092.027 lakhs
5	Loss of coal (10% locked in barriers)	Recover 15.04 MT of coal from barriers
6	Reclamation/Mine closure	Additional plantation in 937.84 Ha. Rs. 10830.45 lakhs (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 lakhs/Ha. in case of OCP mines)
7	CSR	Rs 142.55 Lakhs per year@ Rs 5/T of coal

GROUPING OF FIRES INTO PROJECTS IN CLUSTER IX		
FIRE PROJECTS		FIRE
SL. No.	CODE NAME OF FIRE PROJECTS	ORIGINAL FIRE NAME
1	JCF-F/LODNA/RAIL/I/1	NS Lodna XIII, XIIA ,XIV seam

	Excavation of rail road bed and backfill with structural fill (length 3.5 km) at Lodna Bagdigi & Bararee Collieries along with diversion of chatkarijore.	Baniahir XV, XIV, XIVA seam
		Bhaga XV seam.
		Bagdigi XIV,XIVA, XV seam
		Bararee XV,XIV,XIVA seam
		Bhulan Bararee XIII, XIV seam
		Bhulan Bararee XV seam
2	JCF -F / LODNA/NT, ST, JEENAGORA, JOYRAMPUR/I/8(SURFACE SEALING) Surface sealing for dealing with fire at North Tisra, South Tisra, Jeenagora & Joyrampur Collieries.	South Tisra VII, VIII, IX, X seam North Tisra VII, VIII, IX seam Jeenagora IX,X, XI, XII seam Joyrampur XI, XII,XIIA seam
3	JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING) Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.	Bagdigi XIV,XIVA, XV seam
		Bararee XV,XIV,XIVA seam
		Bhulan Bararee XIII, XIV seam
		Bhulan Bararee XV seam.
4	JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING) Surface sealing for dealing with fire at Lodna Colliery.	NS Lodna XIII, XIIA ,XIV seam
		Baniahir XV, XIV, XIVA seam
		Bhaga XV seam.

YEARWISE BACKFILLING PROGRAMME (IN M.CUM.) OF CLUSTER IX

YEAR	NT/ST OCP)	Jeenagora OCP	Proposed North Tisra/South Tisra Expansion OCP	TOTAL
2012-13	3.13	2.52	---	5.65
2013-14	3.36	3.62	---	6.98
2014-15	3.47	3.62	---	7.09
2015-16	3.69	3.62	---	7.31
2016-17	This mine will be dovetailed in Proposed North Tisra/South Tisra Expansion OCP		6.12	6.12
2017 -18	-	-	9.42	9.42
This will continue for 23 years				216.66
2042-43	-	-	3.84	3.84
TOTAL	13.65	13.38	236.04	263.07

FIRE PROJECTS AS PER MASTER PLAN					
SL No.	**Name of the of Fire projects**	**Colliery**	**Seams on fire**	**UG or Surface fire**	**Technology of fire control**
1	**JCF-F/LODNA/RAIL/I/1**				
	Excavation of rail road bed and backfill with structural fill (length 3.5 km) at Lodna Bagdigi & Bararee Collieries along with diversion of chatkarijore.	Lodna	XVA,XV,XIVA XIV,XIIIB,XIIIA,XIII,XI/XII	Surface fire	Excavation and Back filling
		Bagdigi	XVA,XV,XIVA XIV,XIIIB,XIIIA,XIII,XI/XII	Surface & U/G	
		Bararee	XVA,XV,XIVA XIV,XIIIB,XIIIA,XIII,XI/XII	Surface & U/G	
2	**JCF -F / LODNA/NT, ST, JEENAGORA, JOYRAMPUR/I/8(SURFACE SEALING)**				
	Surface sealing for dealing with fire at North Tisra, South Tisra, Jeenagora & Joyrampur Collieries.	Bararee	XV, XIVA, XIV, XVI	Surface & U/G	Surface sealing with incombustible material and cohesive soil
		N.Tisra	X, IX, VIII & VII	Surface & U/G	
		S.Tisra	X, IX, VIII & VII	Surface & U/G	
3	**JCF-F / LODNA / BAGDIGI, BARAREE, B. BARAREE/I/11(SURFACE SEALING)**				
	Surface sealing for dealing with fire at Bagdigi, Bararee & Bhulan Bararee Collieries.	Bagdigi	XV,XIVA,XIV	Surface & U/G	Surface sealing with incombustible material & cohesive soil.
		Bararee	XV,XIVA,XIV, XVI	Surface & U/G	
4	**JCF-F / LODNA / LODNA / I /12 (SURFACE SEALING)**				
	Surface sealing for dealing with fire at Lodna Colliery.	Lodna	XVA,XV,XIVA XIV,XIIIB,XIIIA	Surface fire	Surface sealing with incombustible material & cohesive soil.

ix. 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. There would be no external OB dumps. OB from 2 OCP mines would be backfilled. At the end of the mining there would be no void and the entire mined out area re-vegetated. A minimum safety distance of 60m would be maintained between opencast and underground operations.

x. A total area of 937.84 ha would be reclaimed and afforested. Eco-restoration of BCCL mine areas is to be implemented in two phases over a period of 10 years, of which, Phase-I is from 2011-16 and Phase-II from 2016-2021.

xi. Ground water level is in the range from 4.72 – 7.49 m bgl during pre-monsoon and 3.21-5.28 m bgl during post-monsoon in the core zone/buffer zone. Total water discharge from the mines in the cluster is 12980 cum/day. Total water requirement is 9714 m3/day of which 3427 m3/day is for mining operations, 6287 m3/day is for domestic use and 203 m3/day is for green belt development.

xii. The area of the existing natural water body is 29.67 ha area. But in the post- mining stage additional 118.59 ha of water body with 15-20mt depth will be created from the OCP voids for community use/Pisciculture.

xiii. Three number of temporary external OB dump has been proposed, 2 dumps for the storage of the top soil and one for the storage of initial OB(rock). The proposed North Tisra/South Tisra (Expansion) Project has a total life of 30 years. The cluster will generate 478.42 Mm3

of OB of which 215.35 Mm3 will be stored in the proposed external OB dump and 263.07 Mm3 will be backfill concurrent with the mining operation. 215.35 Mm3 of OB in the external OB dump will be backfilled during post mining period. The backfilled OB will be physically and biologically reclaimed.

xiv. The Coal produced by the mines in the cluster will be transported to the existing railway siding namely siding no. 6, 9, 12, 13, 14, & 15 located within the cluster. Presently 0.01 MTY of coal from NT/ST/OCP, 0.035 MTY coal from Bararee UG mine and 0.055 MTY of coal from Lodna UG mine are transported to the local consumers by road for distances varying from 2 to 5 km. One railway siding has been proposed to transport the entire coal from the proposed NT/ST (Expansion) OCP.

xv. As per the approved Master Plan, there are 98 unstable sites affecting 12246 families and provisions for R&R for the affected families has been made in the Master plan at a total cost of Rs.126092.027 lakhs in an area of 227.132 ha in Belgaria mouza, Amagarha mouza and Shabagarha mouza in the northeast of the cluster outside the coal bearing area. Mining would be undertaken in fire affected areas and measures adopted for dealing with fire as per approved Jharia Action Plan.

xvi. The Public Hearing for Cluster-IX was held on 12.03.2012 at Jealgora, Dhanbad.

xvii. Forest Clearance is not involved.Funds allocated for EMP is Rs 2.50/Tof coal in case of UG mine and Rs 5.50/Tof coal in case of OC mine. A provision of Rs 5/Tof coal has been made for CSR.

xviii. Capital costs of EMP measures would be Rs 868.00 lakhs.

xix. Company has adopted "Corporate Environmental Policy" which has been approved by its Board of Directors on 21.04.2012. The Board approved the Updated Cost of the PR with a capital investment of Rs. 299.16 Crores and forwarded the same to CIL for further consideration and approval. Total additional Capital cost required for the existing mines is Rs.268.01 crs.

xx. It is planned to take up an additional 937.84 ha under plantation with 2344700 nos of plants. The Action Plan has also been prepared for Ecological Restoration OB dumps and voids. It was informed that the BCCL has formulated its Corporate Environment Policy.

xxi. all most all the collieries/ mines of BCCL are taken over from the erstwhile private owners. So the mines do not have structured mining plans. The mining operations are being continued as amalgamated collieries in Cluster-IX. NT/ST Expansion OCP, Project report has been prepared by CMPDI and has also been approved by BCCL Board. The draft mine closure plans for all the collieries of the Cluster-IX have also been prepared by CMPDI and shall be submitted to MOEF on finalization and approval by the MOC.

xxii. Fire control measures are being done by BCCL in this Cluster eg. Excavation of fire material and filling with cohesive soil, filling of opencast high wall, shafts, inclines and other subsided areas, Isolation by trenching and backfilling with soil, Construction of grout barrier and isolation against rail, road and jores, Surface sealing and blanketing, Blind flushing with sand / fly ash / grout mixture, Cooling by water curtain / infiltration pond, Cooling, quenching and removal, Seam sealing, tunnel plug and underground stopping.

xxiii. BCCL had already requested NRSA, Hyderabad for conducting Thermal Imaging Survey for monitoring of underground fires. Most of the fires in Jharia Coalfield are confined up to the combined seam ranging a depth of about 100 meters. A large project namely NT-ST Expansion OCP has been formulated mainly for digging out

fire in Cluster-IX upto the lowest depth. This will ensure the total control of fire in Cluster-IX and spreading of fire to surrounding areas.

3. The entire Jharia Action Plan, which consists of all fire dousing projects /plans had been surveyed by DGMS, which has been designated as the monitoring and scrutinizing agency by Hon'ble Supreme Court of India under the WP (PIL) 387/1997 i.e. Haradhan Roy Vs UOI.

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 Clarence 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 61st meeting held on 19-20 November, 2012 and 69th meeting held on 25th March, 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 IX is 6.548 MTPA (Normative) and 8.512 MTPA (Peak) in total lease area of 1942.12 ha. 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 shall not exceed beyond that for which environmental clearance has been granted for the mine of cluster IX as below:

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6.	NT/ST Expansion OCP	Proposed	6.0	7.8	755.15	30
	TOTAL		**6.548**	**8.512**	1942.12	

ii. Action should be taken to segregate and isolate the fire areas eg. trench cutting for isolation of fire. Area-wise Action taken report for extinguishing the fire should be provided.

iii. 'Mission Mode Programme' for extinguishing fire is required wherein scientists and other experts be involved. Any international agency may also be contacted for their expertise in extinguishing the fire in such big area.

iv. The recommendations of Indira Gandhi Centre of Atomic Research, Kalpakam should be followed dealing with fire in coal mine in Jharia coalfield.

v. Transportation Plan should be submitted to the MoEF.

vi. The finalized Mine Closure Plan of Cluster –IX should be submitted to MoEF. The void should be in 30 ha area with 30mt depth.

vii. The road transpiration of coal during phase–I should be by mechanically covered trucks. The road used for coal transportation should be developed with avenue plantation on both sides.

viii. 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.

ix. The 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 form.

x. A study should be initiated to analyse extent of reduction in pollution load every year by reducing road transport.

xi. The expertise available internationally should be utilised for control of fire in Jharia Coalfields and for their reclamation and to further minimise time for fire and subsidence control.

xii. The abandoned pits and voids should be backfilled with OB and reclaimed with plantation and or may be used for pisciculture.

xiii. BCCL may consider setting up a separate management structure for implementing environment policy and socio-economic issues and the capacity building required in this regard.

xiv. The locations of monitoring stations in the Jharia Coalfields should be finalised in consultation with the Jharkhand State Pollution Control Board.

xv. The smoke/dust emission vary from source to source (fuelwood, coal, flyash from TPPs, silica from natural dust, etc) and a Source Apportionment Study should be got carried out for the entire Jharia Coalfields.

xvi. Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (PM_{10} 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.

xvii. 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.

xviii. Measures to prevent ingress of air (Ventilation) in such areas, to prevent restart fresh/spread fires in other areas including in mines of cluster VIII shall be undertaken.

xix. Underground mining should be taken up after completion of reclamation of Opencast mine area after 15 years.

xx. 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.

xxi. The rejects of washeries in Cluster –VII should be send to FBC based plant.

xxii. There shall be no external OB dumps. 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.

xxiii. 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-VII shall be drawn up and implemented.

xxiv. 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 biologically reclaimed with plantation and or may be used for pisciculture

xxv. 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.

xxvi. 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.

xxvii. Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 937.84 ha area would be reclaimed. The total additional area under plantation would be 367.95 ha (189.95 ha abandoned quarry area, 178 ha active quarry area, 104.34 OB dump outside quarry area, 36.49 ha service building /mine infrastructure area /coal dump etc, 165.88 ha green belt around OCP, 263.22 ha barren area), by planting 2344700 plants at a total cost Rs 10830.45 lakhs.

xxviii. The road should be provided with avenue plantation on both side as trees act as sink of carbon and other pollutant.

xxix. 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 VII shall be implemented.

xxx. 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 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.

xxxi. 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.

xxxii. 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 dome 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.

xxxiii. 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.

xxxiv. 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

xxxv. 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.

xxxvi. 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.

xxxvii. High root density tree species shall be selected and planted over areas likely to be affected by subsidence.

xxxviii. 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.

xl. No depillaring operation shall be carried out below the township/colony.

xli. The Transportation Plan for conveyor-cum–rail for Cluster-VIII 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-VII should be dovetailed with Jharia Action Plan. The road transpiration of coal during phase–I should be by mechanically covered trucks.

xlii. A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.

xliii. R&R of 12246 nos of PAF's involved. They should be rehabilitated at cost of shifting to safe areas at the cost of Rs 126092.027 Lakhs as per the approved Jharia Action Plan.

xliv. A detailed CSR Action Plan shall be prepared for Cluster IX croup of mines. Specific activities shall be identified for CSR the budget of Rs. 142.55 Lakhs per year@ Rs 5/T of coal as recurring expenditure. The 391.28 ha of area within Cluster IX 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. In addition to afforesting 1942.12 ha of are at the post-mining stage, the waste land /barren land within Cluster IX ML shall be rehabilitated/reclaimed as forest/agricultural land under CSR Plan in consultation with 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.

xlv. For monitoring land use pattern and for post mining land use, a time series of landuse 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.

xlvi. 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.

xlvii. 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 companyfor implementing environment policy and socio-economic issues and the capacity building required in this regard. .

xlviii. Implementation of final mine closure plan for Cluster VIII, subject to obtaining prior approval of the DGMS in regard to mine safety issues

xlix. 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 PM_{10}, $PM_{2.5}$, SO_2 and NOx 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 (PM_{10}, $PM_{2.5}$, SO_2 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 PM_{10}, $PM_{2.5}$, SO_2 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.

21 May 2013

(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, Chandrashekarpur, 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

21 May 2013

(Dr. Manoranjan Hota)
Director