भारत कोकिंग कोल लिमिटेड
एक मिनिरत्न कम्पनी
(कोल इंडिया लिमिटेड का एक अंग)
महाप्रबंधक का कार्यालय, पूर्वी झरिया क्षेत्र
पो.ओ. - भोरा, जिला - धनबाद (झारखण्ड)
पिन - ८२८३०२. दूरभाष - ०३२६-२३२००७७,
ईमेल- cgmej@bccl.gov.in
पंजीकृत कार्यालय: कोयला भवन, कोयला नगर, धनबाद-८२६००५, (झारखण्ड)
CIN: U10101JH1972GOI000918
दूरभाष: ०३२६-२३२००७७/फैक्स: ०३२६-२२३००५०, ईमेल- cos@bccl.gov.in

Bharat Coking Coal Limited
A MINI RATNA Co.
(A Subsidiary of Coal India Ltd)
Office of the General Manager, Eastern Jharia Area
P.O. Bhowra, Dist: Dhanbad (Jharkhand),PIN- 828302
Tel.:0326-2320077, Email-cgmej@bccl.gov.in
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Ref. No.: BCCL/EJ/AM (Env.)/2016/240 Date: 21/11/2016

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30.11.16

To,
The Director
Ministry of Environment, Forests and Climate Change
Regional office (ECZ)
Bungalow No. A-2, Shyamali Colony
Ranchi – 834002
Jharkhand

Sub.: Six monthly compliance report of the conditions of Environmental Clearance granted to Cluster X group of mines of BCCL for the period from April 2016 to Sept., 2016.
(Ref.: EC Order No.- J-11015/380/2010-IA.II(M) dated 06.02.2013.)

Dear Sir,

Kindly find the enclosed here with the six monthly compliance report of the conditions of Environmental Clearance for the period from April 2016 to Sept., 2016 in respect of Cluster X group of mines of BCCL.

Thanking You.

Encl.: Six monthly compliance report with annexure

Yours faithfully
29/11/16
General Manager
Eastern Jharia Area, BCCL
Cluster X

24/11/16
Area Manager (Env.) EJ Area

Project Officer Bhowra (N), EJ Area

Project Officer Bhowra (S), EJ Area

25/11/16
Project Officer ASP, EJ Area

Project Officer Amlabad, EJ Area

28/11/16
Addl. GM EJ Area

CC to:
1. Director, 1A Monitoring Cell, Paryavaran Bhawan, CGO Complex, New delhi-110003.
2. Dy. GM / HOD (Env.), BCCL, Koyla Bhawan, Dhanbad
3. AGM, E.J. Area, Bhowra, BCCL
4. Area Manager (Env.), E.J. Area
5. Master File

O/C

ENVIRONMENTAL CLEAGRANCE COMPLIANCE OF CLUSTER-X

(GRANTED VIDE J-11015/380/2010-IA.II (M) Dated 06.02.2013)

(From April 2016 to September 2016)

No.	A. Specific Conditions by MOEF:	Compliance
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:	Complied (100%). The production from the cluster is within the limit for which environmental clearance has been granted.
II.	All the void /water bodies should be backfilled up to Ground level and no OB dump at the end of mining.	It shall be complied. Action is being taken as specified in EMP.
III.	Extensive plantation should be provided on either side of Damodar River.	Action has been taken for the eco-restoration work as per the Road Map prepared by Forest Research Institute (FRI), Dehradun. Annexure I – Details of Plantation in EJ Area (Cluster X)
IV.	Details of impact of mining on Damodar River should be assessed and provided;	Study on Damodar River will be taken up by CMPDI.
V.	Impact of mining on ground water of the area (Impact Zone) should be provided;	Study will be taken up by CMPDI.
VI.	A Garland drain should be provided and the drain water should not be discharged in to Damodar River;	It will be provided within 5 years.
VII.	Excess water from mine after treatment should be supplied to the villagers;	An action plan for the utilization and treatment of surplus mine water has been prepared. In this regard 26 mines have been identified for implementation of the Phase-I of the action Plan.
VIII.	Rejects of washery along with dry carbon slurry should be utilized in power plant and other recognized vendors;	Being complied.
IX.	There should be no discharge from the Washery (Slurry) in to the Damodar River. The entire washery water should be recycled;	All the washeries of BCCL are designed on Closed Circuit System to ensure no discharge from the washery premises.
X.	Damodar River should be protected by plantation on both sides;	Action has been taken for the eco-restoration work as per the Road Map prepared by Forest Research Institute (FRI), Dehradun. Annexure I – Details of Plantation in EJ Area (Cluster X)
XI.	A herbal garden with medicinal plants be developed;	Kamini Kalyan Herbal Garden with 3.32 Ha. area has been taken up for 2016-17. Medicinal/ herbal plants have been planted as per FRI / BCCL Env. Dept. HQ guidelines.
XII.	A time schedule for filling of existing and abandoned quarries be done.	It is being complied. Yearly plantation is being done for development of green belts as per EMP.

	Of the total water bodies 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 are created from mine.	It shall be complied.
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	Master plan is dovetailed with environmental clearance conditions.
XV.	As there is no fire in cluster X but the measure should be adopted by proponent to control the spread of neighboring fire to the cluster X. The proponent shall prepare time series maps of the Jharia Coalfields through NRSA to monitor and prevent fire problems in the Jharia Coalfield 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.	Work has been awarded to NRSC (earlier NRSA) to monitor and prevent fire problems in the Jharia Coalfield and NRSC has submitted their final report. Fire affected area has been reduced from 9.00 Km^2 to 2.18 Km^2. For further dealing of fire and subsidence action has been taken and working as per the strategic plan of digging out of fiery coal followed by reclamation. A Global EOI was floated to control fire in Jharia Coalfield. None of the bidder qualified. CIMFR, Dhanbad has been requested to take up the study. NRSA has also been contacted to prepare time-series map for monitoring of fire. NRSA will soon start the work. Measure to prevent ingress of air (ventilation) is being taken as specified in EMP and as per Jharia Master Plan. Further fire patches are under operation to dig out the fiery coal and combustible materials to save the coal from burning and to stop further spread of the fire. Once the fiery coal is dug-out/excavated there will be no more chance of re-starting of fresh/ spreading of fire into other areas.
XVI.	Underground mining should be taken up after completion of reclamation of Opencast mine area after 2 years.	It is being complied. Mining is being done as per the guidelines and approval/permission of Directorate General of Mines Safety (DGMS).
XVII.	No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/check such fire including in old OB dump.	It is being complied. There is no fire in Cluster X. However action is being taken to control, mine fires including old OB dump areas as specified in Jharia Master Plan and the mining is being done as per the guidelines and

		permissions of Directorate General of Mines Safety (DGMS).
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.	CMPDI RI-II has been requested to conduct study of permeability and seepage of water of River Damodar.
XIX.	The rejects of washeries in Cluster –X should be send to FBC based plant.	It shall be complied.
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.	Action is being taken as specified in EMP. At the end of the mining, there shall not be voids and area will be re-vegetated and reclaimed with the proper eco-restoration techniques suggested by the experts available in BCCL and in external agencies i.e. FRI Dehradun, CEMDE Delhi
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.	Calendar plan has been prepared. Mine closure plan as per the guidelines of Ministry of Coal have been prepared by Central Mine Planning and Design Institute (CMPDI) and it is being implemented. Annexure II – Calendar Year plan for coal production and OB removal for year 2015.
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 recognized 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	It shall be complied. A part of the void will be converted into the water body as specified in EMP. Detailed plan of COCP Bhowra O/C to be prepared for Pisciculture and boat, plantation, sitting arrangement etc. will be provided around the periphery of the reservoir and which will be developed as water recreational park.
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.	It is being followed. Action for construction of embankment has been taken as specified in EMP
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.	No OB is being dumped near water bodies. The OB dumps created earlier already stabilized & further action has been taken for their eco-restoration work as per Road Map prepared by FRI.

		Dehradun.
V.	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.	It is being complied. Yearly plantation is being done for development of green belts as per EMP. Eco-restoration sites of 14.44 Ha. has been already taken up and 5.20 Ha. has been started in 2016-17. In addition to this, 3.32 Ha. of area will be developed as Herbal garden center. All the Ecological restoration work in the BCCL is under the supervision of FRI Dehradun.
XXVI.	The road should be provided with avenue plantation on both side as trees act as sink of carbon and other pollutant.	Due to absence of permanent roads in the coalfield, avenue plantation couldn't be done but trees were planted near permanent structures to minimize the pollution.
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.	Dhanbad Action Plan has been prepared in consultation with Jharkhand Pollution Control Board for entire BCCL. It is being implemented comprehensively for all the mines of BCCL. Some of the salient actions of this cluster are as under: 1. Construction of pucca road. 2. Construction of water reservoir for mine water utilization 3. Plantation.
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, fly ash 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.	The locations of monitoring stations has been finalized in consultation with JSPCB. The monitoring work of ambient environment quality was being carried out by Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which is having CSIR laboratory recognized under the EP Rules and presently the work has been taken over by CMPDIL. A tender was floated twice for award of work of source apportionment study and mineralogical composition study. However, the work was not awarded as no bidder qualified the requisite criteria. A proposal for award of work to Government agencies, institutions that have earlier carried out the work has been prepared. The work will soon be awarded after competent authority's approval.
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	It is being complied and mine water is being used for the industrial purpose. Further Mine water is also utilized for the community and irrigation purposes.

	harvesting measures. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry to dewatering of mine.	Following action has been taken by the company: • Installation of Pressure filters for utilization of mine water
XX.	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.	Regular monitoring of Ground water quality is being carried out by CMPDIL. The report of the same is included in Environmental Monitoring Report & attached as Annexure III – Environmental Monitoring Report for cluster X. Establishment of new piezometers is under process. In this regard, CMPDIL has submitted a report titled "Location and design of Piezometers for Cluster of Mines of BCCL" and the design locations have been finalized by CMPDIL.
XXXI.	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.	Mine discharge water is being allowed to settle down in the mine sumps before disposal into storage reservoirs. The monitoring of water quality parameters is being done by CMPDIL and parameters are well within the prescribed limit provided by CPCB.
XXXII.	ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to confirm to prescribe standards in case discharge into the natural water course.	Construction of ETP/ Oil grease Trap is being taken-up.
XXXIII.	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.	At present only development districts are operational at UG mines in Cluster X and no depillaring district is taken up. However regular monitoring of subsidence will be undertaken on operating depillaring districts.
XXXIV.	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.	Sufficient coal pillars have been left around air shafts as per the statutes and DGMS guidelines.
XXXV.	High root density tree species shall be selected and planted over areas likely to be affected by subsidence.	Identification of high root density Plant and its plantation in subsidence prone area will be taken-up at the time of depillaring operations.
XXXVI.	Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled	It shall be complied, where ever applicable.

	up or drained out by cutting drains.	
	Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.	It is being followed. Sufficient barriers are left for saving the surface installation and infra structures as per the statute and DGMS guidelines.
XVIII.	No depillaring operation shall be carried out below the township/colony.	It is being followed.
XXIX.	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.	Action has been taken for formulating the adequate transportation plan for conveyor cum rail system of dispatch. CMPDIL, RI-II has been requested to conduct study and prepare the plan in this regarding. By that time transportation is being done by covering vehicle with tarpaulin cover. Conversion of existing truck in to mechanically covered trucks in a phased manner has been taken up.
XL.	A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.	CMPDI is carrying out the study 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.	Implementation of master plan has already been started through Jharkhand Rehabilitation and Development Authority (JRDA), Dhanbad and 547 families (Non-BCCL) has been rehabilitated at well-established Jharia Vihar Township located at Belgoria.
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.	E J Area, Bhowra is going to prepare a separate booklet comprising of transportation, CSR, R&R and implementation of environmental action plan. A letter no. 21 dated 30-4-2016 in this regard has already been sent to personnel concern for providing the necessary input. Above report for cluster X is under process and will be completed soon.
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.	It being complied. BCCL is implementing CSR Activities. CSR action plan of BCCL for 2016-17 including CSR budget and expenditure during 2015-16 is enclosed as Annexure IV (A). A separate CSR committee has been formed at Area level of Bhowra for cluster-X, who will look after the works being executed under CSR. Annexure IV (B) – CSR / MMV activities in E.J. Area attached.

	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.	Presently a time series map of vegetation cover in the Jharia Coal Field is being carried out through CMPDI, Ranchi using satellite imagery for every 3 years the last map of the year 2010-11 has been uploaded on the official website of company. Further CMPDI has been requested to prepare "Time series of land use maps based on satellite imagery of the core zone and buffer zone in the scale 1:5000.
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.	Mine closure plan as per the guidelines of Ministry of Coal has been prepared by CMPDI and it is being complied.
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 socioeconomic issues and the capacity building required in this regard.	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives (15 nos.) which includes Environment, Mining, Excavation, Civil executives and technicians (3 nos.) has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, one Executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental acts/ laws including environment protection measures. The activities are monitored on regular basis at

		Area and at Head quarter levels. GM (Environment) at head quarter level, co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
XLVII.	Implementation of final mine closure plan for Cluster X, subject to obtaining prior approval of the DGMS in regard to mine safety issues	Final Mine Closure Plan has been prepared for each Mine in this cluster. Before implementation of final mine closure plan, prior permission from DGMS has been taken 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.	A well-defined Corporate Environment Policy has already been laid down and approved by the Board of Directors. This is also posted on BCCL website. Complied. A hierarchical system of the company to deal with environmental issues from corporate level to mine level already exists. Being complied.
B.	**General Conditions by MOEF:**	
I.	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	Being complied.
II.	No change in the calendar plan of production for quantum of mineral coal shall be made	Being followed. Production is being done well within production capacity of this cluster as per EC.
III.	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM2.5, SO2 and NOx monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and	The optimum location of monitoring stations in Jharia Coal Field finalized in consultation with the Jharkhand State Pollution Control Board. Ambient air quality is being regularly monitored by

	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.	CMPDIL. Annexure III – Environmental Monitoring Report for cluster X.
IV.	Data on ambient air quality (PM10, PM 2.5, SO2 and NOx) 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 recognized under the EPA rules, 1986 shall be furnished as part of compliance report.	It shall be complied. Annexure III – Environmental Monitoring Report for cluster X.
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.	It is being Complied in mines and also the Noise levels are below the Ambient Noise Standard (Day time 75 dB & Night Time (70 dB for Industrial Area).
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.	The optimum location of monitoring stations in Jharia Coal Field finalized in consultation with the Jharkhand State Pollution Control Board. Mine water & ground water quality is being regularly monitored by CMPDIL. Physico-Chemical characteristics of effluents are well within the prescribed limit.
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.	Being Complied.
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 recognized under EPA Rules, 1986.	Monitoring of Environmental quality parameters have been regularly done by CIMFR (A CSIR Laboratory) with proper analysis equipment and presently the monitoring work is being carried out by CMPDIL
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.	It is being complied. A separate full-fledged Human Resource Development Department is conducting regular training programme on these issues. Apart from this, Vocational Training Centers exists in all the areas of BCCL, which provides periodical training on the safety and occupational health issue to each of the workers working in the mines.
X.	Occupational health surveillance programme of the	Initial Medical Examination (IME) and

	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.	Periodical Medical Examination (PME) of all the personnel are carried out as per the Statutes and Director General of Mines Safety (DGMS) guideline. Annexure V – List of IME and PME of cluster X (EJ Area) for 2015-16.
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.	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives (15 nos.) which includes Environment, Mining, Excavation, Civil executives and technicians (3 nos.) has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, one Executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental Acts/Laws including environment protection measures .The activities are monitored on regular basis at Area and at Headquarters levels. GM (Environment) at head quarter level, co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
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.	It is being complied.
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	It has been complied. Advertisement in local newspaper has also been done.

	the ministry of Environment & Forests at http://envfor.nic.in.	
	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.	Complied.
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.	Complied.
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 NOx (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.	Complied.
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 Offices of CPCB and the SPCB.	Being complied.
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.	Project authority is ready to extend its full cooperation for any kind of visit and inspection conducted by Regional Office in connection with EC Conditions Compliance.
XIX.	The Environmental statement for each financial year ending 31 March in Form –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.	Environmental Statement (Form-V) has been regularly submitted for each financial year to Jharkhand State Pollution Control Board. Annexure VI – Environmental statement (Form-V) of projects/collieries of E.J. Area for 2015-16 attached.

	Other Conditions by MOEF:	
	The Ministry or any other Competent Authority may stipulate any further condition(s) for environmental protection.	Agree.
ii.	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.	Agree.
iii.	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.	It is being complied.
iv.	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.	Agree.

24/11/16

Area Manager (Env.)
EJ Area

Project Officer
Bhowra (North),
EJ Area

Project Officer
Bhowra (South),
EJ Area

25/11/16

Project Officer
ASP,
EJ Area

28/11/16

Project Officer
Amlabad,
EJ Area

28.11.16

Addl. General Manager
EJ Area, BCCL
Cluster X

29/11/16

General Manager
EJ Area, BCCL
Cluster X

ANNEXURE - I

Details of Plantation in E.J. Area including Ecological Restoration Sites

Name of Area	Name of Project	Location of Plantation	No. of Plantation	Area under plantation (Ha)	Area under Ecological Restoration (Ha)
Eastern Jharia (EJ) Area	Bhowra South Colliery (U/G and OCP)	35 Incline Mine	50	0.5	-
		37/38 Incline Mine	25	0.5	-
		3 Pit OCP Mine	30	0.75	-
		3 Pit OB dump Eco Restoration site	12189	-	4.78
		Mohalbani Eco Restoration site	10874	-	3.95
	Bhowra (North) U/G Mines	Korhiyapati / BLA OB Eco Restoration Site (Proposed for 2016-17)	Nil	-	5.20
	Amalgamated Sudamdih-patherdih (ASP) Colliery	Vrindavan / COCP Patherdih Eco Restoration Site	2340	-	5.71
		Kamini Kalyan Kendra Herbal Garden (revival plan proposed for 2016-17)	278	-	3.32
	Amalabad Colliery	-	-	-	-
	Gabion Plantation (through DFO)	Patherdih Colony Ambona BIT Sindri	2500	-	-

063688
ANNEXURE-II

Bharat coking coal limited

A MINI RATNA Co.

(A Subsidiary of Coal India Ltd)

Office of the General Manager, Eastern Jharia Area,
P.O. Bhowra, Dist. Dhanbad (Jharkhand),PIN- 828302
Tel. 0326-2320077, Email-cgmej@bccl.gov.in
Regd Off. Koyla Bhawan, Koyla Nagar, Dhanbad-826005,
CIN. U10101JH1972GOI000918,
Tel. 0326-2230190/FAX. 0326-2230060, Email – cos@bccl.gov.in

Ref. No: BCCL/EJ/AM (Env.)/2015-16/ 361

Date 15/02/2016

Sh Mahesh Kumar
Sr. Scientific Officer
SPCB Regional Office
Dhanbad, Jharkhand

Sub: Coal Production detail of different units of Eastern Jharia Area (Cluster X), BCCL from January 2015 to December 2015 along with six monthly compliance report of conditions of Environment Clearance granted to cluster X group of mines of BCCL for the period from July 2015 to Nov 2015

Dear Sir

Please find the attached herewith coal production detail of different units namely Bhowra (N) U/G Mines, Amalgamated Sudamdih Patherdih Colliery and Bhowra (S) colliery of Eastern Jharia Area (Cluster X) of BCCL from January 2015 to December 2015 for calendar year 2015 and six monthly compliance report of conditions of Environment Clearance granted to cluster X group of mines of BCCL for the period from July 2015 to Nov 2015.

This is for your kind information

Thanking You

Encl: As above

Area Manager (Env.)
EJ Area

CC to:

1. GM, EJ Area
2. AGM, EJ Area
3. PO – Bhowra S & N, ASP
4. Office Copy – Env., EJA

Bharat coking coal limited

(A Subsidiary of Coal India Ltd)

Office of the Project Officer, Bhowra (N), Eastern Jharia Area,

P.O. Bhowra, Dist: Dhanbad (Jharkhand).PIN- 828302

Email-pobhowranorth@bccl.gov.in

Rego Off: KoylaBhawan, Koyla Nagar, Dhanbad-826005,

CIN: U10101JH1972GOI000918.

Tel 0326 2230190/FAX 0326 2230050, Email : cos@bccl.gov.in

[illegible] Bh(N) [illegible] Mines 2016/ 50 Dated 14.01.2016 / 22

[illegible] Kumar

[illegible] Scientific Officer,

[illegible] Regional Office,

[illegible]

Sub - **Coal Production of Bhowra (N) U/G. Mines for the Year 2015**

[illegible]

Coal Production report for the calendar Year 2015 in respect of Bhowra (N) U/G Mines [illegible] Under Ground and Open Cast Mines are as under :-

[illegible]	Coal Production from U/G Mines	Coal Production from OCP	OB Production from OCP	OB Handling
[illegible] 15	2669	10978	71550	OB is dumped
[illegible]	2526	6612	78370	In OB dump
[illegible] 15	2586	8412	30250	And used
[illegible]	2641	4116	19960	For
[illegible]	2607	1524	32138	Backfilling
[illegible]	2545	504	52640	
[illegible]	2663	168	49380	
[illegible]	2165	10751	66340	
[illegible]	2146	10368	41500	
[illegible]	2166	948	0	
[illegible]	2086	0	0	
[illegible]	2389	0	0	
[illegible]	29189	54381	442128	

Project Officer,

Bhowra (N) U/G Mines,

E.J Area, Bhowra

Chaudhary
22/1/16

0342117

production and O.B. removal report for the calendar year 2015 in respect of Amalgamated Sudamdih Dhemdih Colliery, E.J.Area are as under :-

Month	Coal Production (Te.)				O.B. Removal (M^3)			O.B Disposal
	III Seam Incline U/G	X-Patch OCP	COCP	Total	X-Patch OCP	COCP	Total	
01 Jan 15	2622	-	5852	8474	-	10608	10608	Backfilling
02 Feb 15	2700	-	5810	8510	-	10152	10152	Backfilling
03 March 15	2755	-	6286	9041	-	12776	12776	Backfilling
04 April 15	2674	-	6426	9100	-	12252	12252	Backfilling
05 May 15	2516	-	6552	9068	-	11256	11256	Backfilling
06 June 15	2747	-	6384	9131	-	10548	10548	Backfilling
07 July 15	2726	-	5222	7948	-	11328	11328	Backfilling
08 Aug 15	2387	-	5936	8323	20600	9348	29948	Backfilling
09 Sept 15	0623	4884	5894	11401	154820	9516	164336	Backfilling
10 Oct 15	-	14700	4452	19152	188300	13248	201548	Backfilling
11 Nov 15	-	20652	3766	24418	189890	10152	200042	Backfilling
12 Dec 15	-	26508	3178	29686	224270	8244	232514	Backfilling
G.Total	21750	66744	65758	154252	777880	129428	907308	-

23.01.2016
Statistic Clerk
Amal.S-P.Colliery

23/1/16
Project Officer
Amal.S-P.Colliery
E.J.Area,Bhowra

भारत कोकिंग कोल लिमिटेड

(A SUBSIDIARY OF COAL INDIA LIMITED)
OFFICE OF THE PROJECT OFFICER
BHOWRA SOUTH COLLIERY
P.O. Bhowra, Dist: Dhanbad (Jharkhand), 828302

Ref. No. BH(S)/28: 307

Date – 27/01/16

Manoj Kumar
Scientific officer,
SPCB Regional Officer,
Dhanbad

Sub:- Coal Production of Bhowra (S) colliery for the Year 2015

Sir,

Coal Production report for the calendar Year 2015 in respect of Bhowra (S) colliery, from Under Ground and Open Cast Mines are as Under.

Month	Coal Production from U/G Mines	Coal production from OCP	OB Production from OCP	OB Handling
January 15	2321	NIL	NIL	OB is dumped
Feb 15	2354	NIL	NIL	In Ob dump
March 15	2391	NIL	30200	And used
April 15	2299	16856	384300	For backfilling
May 15	2008	24794	559500	
Jun 15	1821	25606	719000	
July 15	1905	31010	505000	
Aug 15	1968	28830	462620	
Sept 15	1964	26124	542500	
Oct 15	1979	26810	584874	
Nov 15	1879	28378	572000	
Dec 15	1955	25312	499200	

Project Officer
Bhowra (S) colliery, B.J Area, Bhowra

ANNEXURE-III

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8/8/16

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FOR COMPANY USE ONLY RESTRICTED
The information given in this report is not to be communicated either directly or indirectly to the press or to any person not holding an official position in the CIL / GOVERNMENT.

ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED, CLUSTER – X

(FOR THE Q.E. MARCH, 2016)

E. C. no. J-11015/380/2010-IA.II (M) dated 06.02.2013.

June, 2016

CMPDI

ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

Sep. Dec. } 2015

CLUSTER - X

(FOR THE Q.E. March, 2016)

CONTENTS

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ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED CLUSTER – X

(FOR THE Q.E. MARCH, 2016)

E. C. no. J-11015/380/2010-IA.II (M) dated 06.02.2013.

June, 2016

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

EXECUTIVE SUMMARY

1.0 Introduction

The purpose of environmental monitoring is to assess the quality of various attributes that affects the fauna and flora. In accordance with the quality of these attributes appropriate strategy is to be developed to control the pollution level within the permissible limits. The three major attributes are air, water and noise level.

Bharat Coking Coal Limited (BCCL), a Subsidiary company of Coal India Limited is operating Underground and Opencast Mines in Jharia Coalfield (JCF) is a part of Gondwana Coalfields located in Dhanbad district of Jharkhand, the JCF is bounded by $23^0 37'$ N to $23^0 52'$ N latitudes and $86^0 09'$ E to $86^0 30'$ E longitude occupying an area of 450 Sq.km. BCCL has awarded Environmental monitoring work of Jharia Coalfield (JCF) to Central Mine Planning & Design Institute Limited (CMPDIL). The environmental monitoring has been carried out as per the conditions laid down by the MoEFCC while granting environmental clearance of project, consent letter issued by the respective SPCB, and other statutory requirements.

2.0 Sampling location and rationale

2.1 Ambient air sampling locations

The ambient air quality monitoring stations were selected to represent core, buffer zone area. The rationale has been based on the guidelines stipulated by MoEFCC, consent letter of SPCB, as well as other statutory requirements.

2.2 Water sampling stations

The Water sampling stations were selected for mine sump water, drinking water supply, well/ Hand pump water also surface water samples.

2.3 Noise level monitoring locations

Noise levels vary depending on the various activities in mining areas. The monitoring of noise level in different locations will be helpful to take appropriate mitigating measures. The noise levels were recorded in mining area, washray and in residential area.

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM_{10}), Fine Particulate Matter ($PM_{2.5}$), Sulphur Di-oxide (SO_2) and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler ($PM_{2.5}$ sampler) were used for sampling of PM_{10}, SO_2, & NO_x and Fine Dust Sampler ($PM_{2.5}$ sampler) were used for sampling of $PM_{2.5}$ at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI, RI-I, Asansol.

3.2 Water quality

Water samples were collected as per standard practice. The effluent samples we collected and analysed for four parameters on fortnightly basis. Effluent samples we also analysed for 27 parameters on half-yearly basis. The drinking and Surface wate samples were collected and analysed for 25 and 17 parameters repectively, on quarterly basis. Thereafter the samples were preserved and analysed at the Environmental Laboratory at CMPDI (HQ), Ranchi.

3.3 Noise level monitoring

Noise level measurements in form of 'LEQ' were taken using Integrated Data Logging Sound Level Meter. Noise levels were measured in Decibels, 'A' weighted average, i.e. dB(A).

4.0 Results and interpretations

4.1 Air quality

It has been seen from the analysis results that the 24 hours average concentration parameters like PM_{10}, $PM_{2.5}$, SO_2 and NO_x are mostly within the permissible limits in all sampling locations as per MoEFCC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines and National Ambient Air Quality Standard -2009. Sometimes the concentration of PM_{10} & $PM_{2.5}$ exceeds the limits due to heavy public traffic, poor road condition, coke oven plants, burning of coal by surrounding habitants, brick making, municipal waste dumps and industries like Steel Plant, thermal Plants including their fly ash etc.

4.2 Water quality

The test results indicate that the major parameters compared with MoEFCC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines, IS.10500/2012 (Drinking water) and IS: 2296 (Surface water), are with in permissible limits.

4.3 Noise Level

During the noise level survey it has been observed that the noise level in the sampling locations is within the permissible limits prescribed as per MoEFCC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines for Industrial Area and Noise pollution (Regulation and Control) Rules, 2000.

CHAPTER - I

INTRODUCTION

1.0 Any industry and development activities including coal mining is bound to affect environmental attributes. There are positive as well as negative impacts of such operations. For controlling the adverse impacts a regular monitoring is essential. The environmental monitoring is being done as per the guide-lines stipulated by Ministry of Environment, Forest and Climate Change (MoEFCC), Govt. of India.

The very purpose of environmental monitoring is to assess the quality of various attributes which affects the environment. As per quality of these attributes appropriate strategy is to be developed to control the pollution level within the permissible limits. The three major attributes are air, water and noise level.

Bharat Coking Coal Limited (BCCL), a subsidiary company of Coal India Limited (CIL) is operating UG Mines and Opencast Mines in Jharia Coalfield (JCF). The Jharia Coalfield (JCF) having an area of 450 Sq.KM.

Bharat Coking Coal has awarded Environmental Monitoring work of all Projects, Cluster wise, to Central Mine Planning & Design Institute Limited (CMPDIL). The environmental monitoring has been carried out as per conditions laid down by MoEFCC while granting environmental clearance to different projects. CMPDI has trained manpower and well equipped laboratory to carry out monitoring, analysis and R&D work in the field of environment.

1.1 The Cluster-X is in the Eastern part of the Jharia coalfield. It includes a group of 6 Mines (viz. Amlabad UG, Bhowra north, Bhowra South, Patherdih, Sudamdih Incline & Sudamdih Shaft. The Cluster – X is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – X are operating since pre nationalization period (prior to 1972-73). It is connected by both Railway and Road. The drainage of the area is governed by Damodar River.

1.2 The Cluster-X is designed to produce 1.762 MTPA (normative) and 2.289 MTPA (peak) capacity of coal.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEFCC) for a rated capacity 1.762 MTPA (normative) and 2.289 MTPA (peak) capacity of coal production vide letter no. J-11015/380/2010-IA.II (M) dated 06th February, 2013.

Ministry of Environment, Forest and Climate Change while granting environmental clearance has given one of the General conditions that " Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for PM_{10}, $PM_{2.5}$, SO_2, NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board." And other conditions regarding water / effluent and noise level monitoring.

In compliance of these conditions the Environmental Monitoring has been ca
& report prepared for submission to MoEFCC & SPCB and other statutory auth

CHAPTER-II

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

(as per G.S.R. 742 (E) dt. 25th December,2000)

2.1.1 Ambient Air Quality Sampling Locations

I. CORE ZONE Monitoring Location

i) Bhowrah North (A14): Industrial Area

The location of the sampling station is 23°40.977' N 086°23.963'E. The sampler was placed at Ground level of Project Office. The station was selected to represent the impact of mining activities of Eastern Jharia area, Coal washery, poor roads condition, heavy public traffic, burning of coal by the surrounding habitants.

ii) Sudamdih Washery (A15): Industrial Area

The location of the sampling station is 23° 39'32" N 86° 26'13" E. The sampler was placed at table level of Coal lab near washery. The station was selected to represent the impact of mining activities of Eastern Jharia area, Washery, poor roads condition.

II. BUFFER ZONE Monitoring Location

i) Jeenagora (A13): Industrial Area

The location of the sampling station is 23° 42. 536' N & 86° 24. 664' E. The sampler was placed at Ground level of Safety Office.

2.2 Methodology of sampling and analysis

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM_{10}), Particulate Matter ($PM_{2.5}$), Sulphur di-oxide (SO_2) and Nitrogen oxides (NO_X). Respirable Dust Samplers (RDS) & fine particulates for $PM_{2.5}$ sampler were used for sampling PM_{10} & $PM_{2.5}$ respectively at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI, RI-I, Asansol.

2.3 Results & Interpretations

The results of Ambient Air Quality are presented in tabular form along with Bar chart for each monitoring station. The interpretations of different parameters are given below:

2.3.1 Ambient air quality

Particulate Matter PM_{10}

In **core zone** under **Industrial area** varies from 68 to 108 μ/m^3
In **buffer zone** in **Industrial area** varies from 78 to 108 μ/m^3

Particulate Matter $PM_{2.5}$

In **core zone** under **Industrial area** varies from 33 to 55 μ/m^3
In **buffer zone** in **Industrial area** varies from 36 to 53 μ/m^3

Sulphur Dioxide:

In **core zone** under **Industrial area** varies from 10 to 12 μ/m^3
In **buffer zone** in **Industrial area** varies from 10 to 12 μ/m^3

Oxides of Nitrogen:

In **core zone** under **Industrial area** varies from 18 to 28 μ/m^3
In **buffer zone** in **Industrial area** varies from 18 to 24 μ/m^3

AMBIENT AIR QUALITY DATA

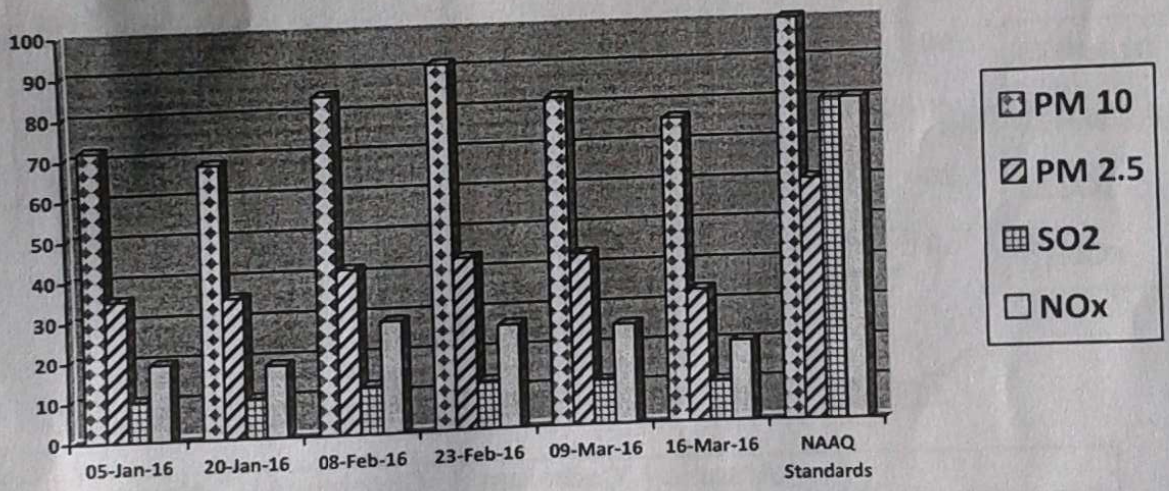
Name of the Company: **Bharat Coking Coal limited** Year : **2015-16.**
Name of the Cluster : **Cluster – X** Q.E.: **March 2016**

Station Code/Name: **(a) A14 Bhowrah North** **Category: Industrial.**
(b) A15 Sudamdih Washery

ZONE: Core

(a). Station Code/Name: A14- Bhowrah North Category: Industrial[1].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	05 - Jan -16	72	35	<10.0	19
2	20 - Jan - 16	68	35	<10.0	18
3	08 - Feb -16	84	41	12	28
4	23 - Feb - 16	91	43	12	26
5	09 - Mar - 16	82	43	11	25
6	16 - Mar - 16	76	33	<10.0	20
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

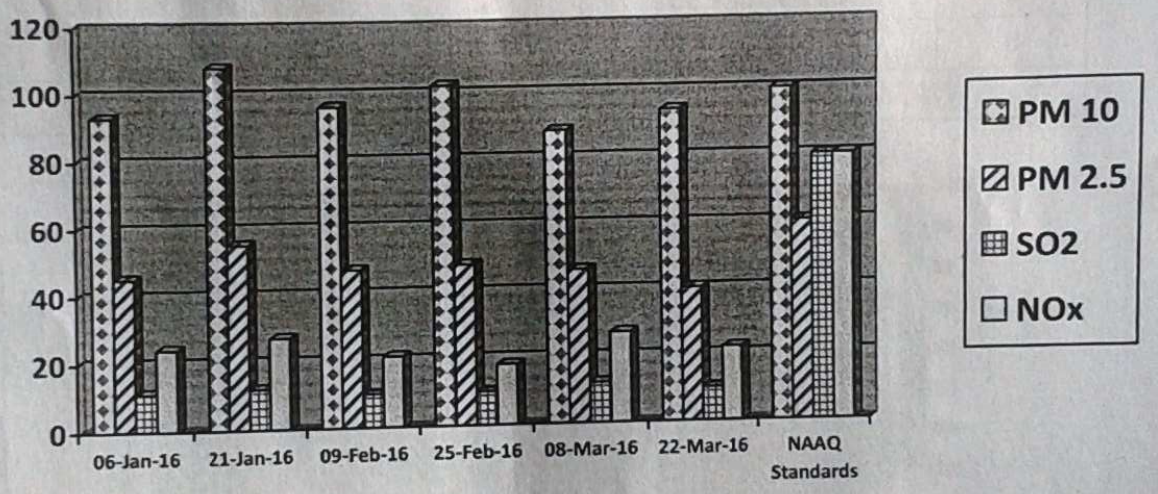
Note:

- *All values are expressed in microgram per cubic meter.*

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... Dated 28.05.2016. Job No. 110310

(b). Station Code/Name: A15- Sudamduh Washery Category: Industrial[2].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	06 - Jan -16	93	45	11	24
2	21 - Jan - 16	108	55	12	27
3	09 - Feb -16	96	47	<10.0	21
4	25 - Feb - 16	102	48	<10.0	18
5	08 - Mar - 16	88	46	12	27
6	22 - Mar - 16	94	40	<10.0	22
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

Note:

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*

[2] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

AMBIENT AIR QUALITY DATA

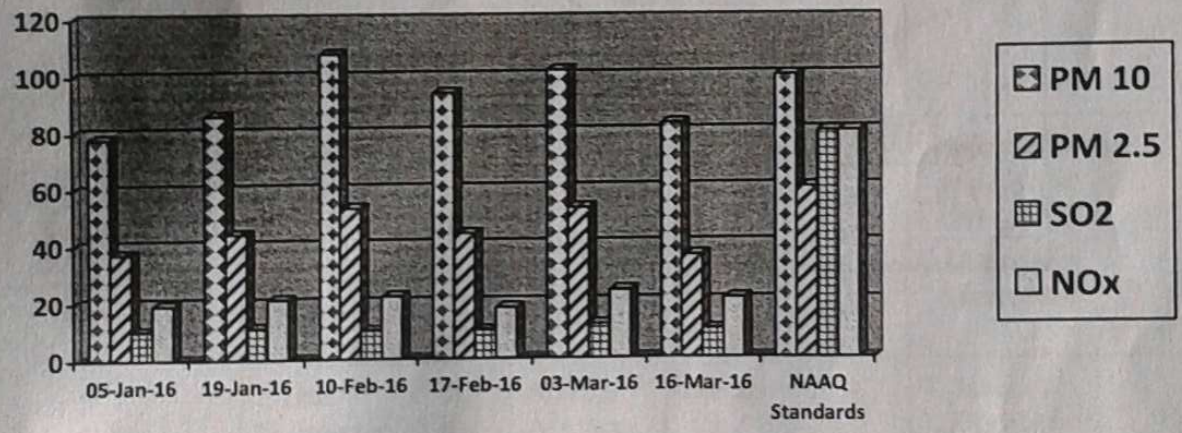
Name of the Company: **Bharat Coking Coal limited** Year : **2015-16.**
Name of the Cluster : **Cluster – X** Q.E.: **March 2016**

Station Code/Name: (a) A13 Jeenagora **Category: Industrial.**

ZONE: BUFFER

(a). Station Code/Name: A13 – Jeenagora, Category: Industrial[3].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	05 - Jan -16	78	37	<10.0	19
2	19 - Jan - 16	86	44	11	21
3	10 - Feb -16	108	53	<10.0	22
4	17 - Feb - 16	94	44	<10.0	18
5	03 - Mar - 16	102	53	12	24
6	16 - Mar - 16	83	36	<10.0	21
	NAAQ Standards	100	60	80	80



Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

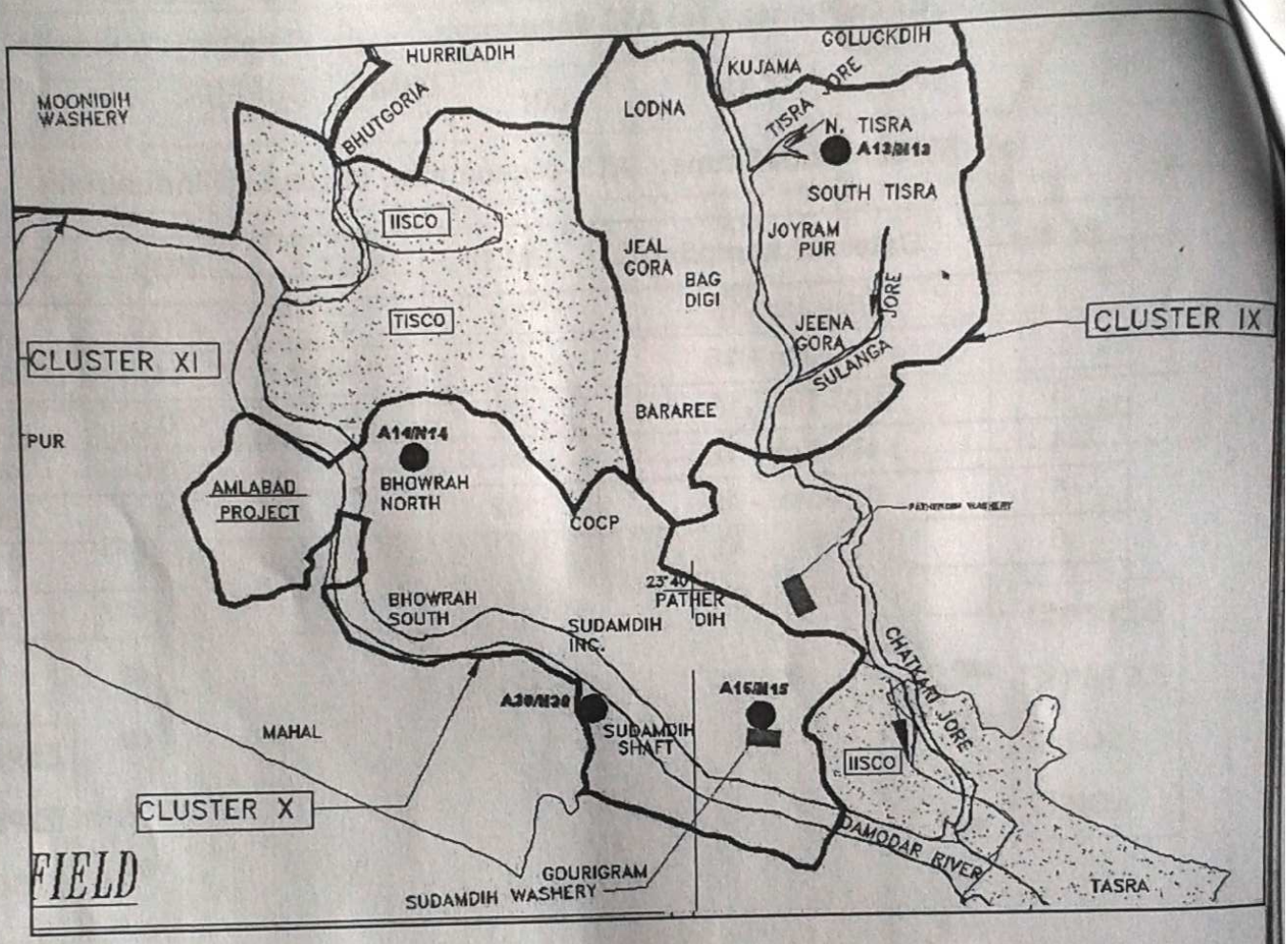
Note:

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*

---

[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... Dated 28.05.2016. Job No. 110310

Ambient Air Monitoring Stations in Cluster- X in Core & Bu Zones



Ambient Air Quality Standards for Jharia Coal Field
As per the Environment (Protection) Amendment Rules, 2000 notified vide notification G.S.R. 742(E), dated 25.9.2000.

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
III Coal mines located in the coal fields of • Jharia • Raniganj • Bokaro	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	500 µg/m^3 700 µg/m^3	- High Volume Sampling (Average flow rate not less than 1.1 m^3/minute)
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average * 24 hours **	250 µg/m^3 300 µg/m^3	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1.Improved west and Gaeke method 2.Ultraviolet fluorescene
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemilumine-scence

Note:

* Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause 2.

** 24 hourly / 8 hourly values shall be met 92% of the time in a year. However, 8% of the time it may exceed but not on two consecutive days.

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention a Control of Pollution) Act, 1981 (Act No. 14 of 1981), and in supersession of the notificati No(s).S.O.384(E), dated 11th April 1994 and S.O.935(E), dated 14th October 1998, the Centra Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect

Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO_2), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO_2), µg/m³	Annual * 24 Hours **	40 80	30 80	-Jacob &Hochheiser modified ($NaOH$-$NaAsO_2$) Method -Gas Phase Chemiluminescence
Particulate Matter (Size less than 10µm) or PM_{10}, µg/m³	Annual * 24 Hours **	60 100	60 100	-Gravimetric -TEOM -Beta attenuation
Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$, µg/m³	Annual * 24 Hours **	40 60	40 60	-Gravimetric -TEOM -Beta attenuation
Ozone (O_3) , µg/m³	8 Hours * 1 Hour **	100 180	100 180	-UV Photometric -Chemiluminescence -Chemical Method
Lead (Pb) , µg/m³	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper -ED-XRF using Teflon filter
Carbon Monoxide (CO), mg/m³	8 Hours ** 1 Hour **	02 04	02 04	-Non dispersive Infrared (NDIR) Spectroscopy
Ammonia (NH_3), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C_6H_6), µg/m³	Annual *	05	05	-Gas Chromatography (GC) based continuous analyzer -Adsorption and desorption followed by GC analysis
Benzo(a)Pyrene (BaP) Particulate phase only, ng/m³	Annual *	01	01	-Solvent extraction followed byHPLC/GC analysis
Arsenic (As), ng/m³	Annual *	06	06	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper
Nickel (Ni), ng/m³	Annual *	20	20	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper

* Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

NOTE: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigations.

CHAPTER – III

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. - II**)

i) **Mine Discharge of Bhowrah North (MW10)**
A sampling point is fixed to assess the effluent quality of Mine discharge. This location is selected to monitor effluent discharge in to Kashi jore.

ii) Drinking Water quality at **Bhowrah North (DW10)**

iii) Surface Water quality at **U/S of Damodar River (SW21)**

iv) Surface Water quality at **D/S of Damodar River (SW22)**

3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. The effluent samples were collected and analysed for four parameters on fortnightly basis. Effluent samples were also analysed for 27 parameters on half-yearly basis. The drinking and Surface water samples were collected and analysed for 25 and 17 parameters respectively, on quarterly basis. Thereafter the samples were preserved and analysed at the Environmental Laboratory at CMPDI (HQ), Ranchi.

3.3 Results & Interpretations

The results are given in tabular form along with the applicable standards. Results are compared with Schedule - VI, effluent prescribed by MoEF&CC. Results show that most of the parmeters are within the permissible limits.

WATER QUALITY DATA
(EFFLUENT WATER-FOUR PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - X** Month: **January, 2016.**

Name of the Stations & Code : **1. MW10- Mine Discharge of Bhowrah North**

First Fortnight

Sl. No.	Parameters	MW10 (Mine Discharge)	As per MOEF General Standards for schedule VI
		05.01.2016	
1	Total Suspended Solids	32	*100 (Max)*
2	pH	8.00	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	28	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW10 (Mine Discharge)	As per MOEF General Standards for schedule VI
		20.01.2016	
1	Total Suspended Solids	40	*100 (Max)*
2	pH	7.75	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

All values are expressed in mg/lit unless specified.

18/5/16

Analysed By

Dy.Technical Manager
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

WATER QUALITY DATA
(EFFLUENT WATER-FOUR PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - X** Month: **February, 2016.**

Name of the Stations & Code : **1. MW10- Mine Discharge of Bhowrah North**

First Fortnight

Sl. No.	Parameters	MW10 (Mine Discharge) 09.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	42	*100 (Max)*
2	pH	7.90	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW10 (Mine Discharge) 24.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	7.66	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

All values are expressed in mg/lit unless specified.

18/5/16

Analysed By

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WATER QUALITY DATA

(EFFLUENT WATER-FOUR PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - X** Month: **March, 2016.**

Name of the Stations & Code : **1. MW10- Mine Discharge of Bhowrah North**

First Fortnight

Sl. No.	Parameters	MW10 (Mine Discharge) 08.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	38	*100 (Max)*
2	pH	8.04	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	24	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW10 (Mine Discharge) 16.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	36	*100 (Max)*
2	pH	8.37	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

All values are expressed in mg/lit unless specified.

18/5/16

Analysed By

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WATER QUALITY
(EFFLUENT WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - X** Period: **H. E. March, 2016.**

Area : **Bhowrah South** **Project: Bhowrah South** **Cluster X**

Stations: **Date of Sampling:** 16/03/2016

1. Mine Water Discharge Bhowrah North MW-10

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		MW-10	2	3			
1	Ammonical Nitrogen, mg/l, Max	0.67			0.02	50.0	IS 3025/34:1988, R : 2009, Nessler's
2	Arsenic (as As), mg/l, *Max*	<0.002			0.002	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
3	B.O.D (3 days 27°C), mg/l, Max	<2.00			2.00	30.0	IS 3025 /44:1993,R:2003 3 day incubation at 27°C
4	COD, mg/l, Max	32			4.00	250.0	APHA, 22nd Edition, Closed Reflux, Titrimetric
5	Colour	colourless			Qualitative	Qualitative	Physical/Qualitative
6	Copper (as Cu), mg/l, *Max*	<0.03			0.03	3.0	IS 3025/42: 1992 R : 2009, AAS-Flame
7	Dissolved Phosphate, mg/l, Max	<0.30			0.30	5.0	APHA, 22nd Edition Molybdovanadate
8	Fluoride (as F) mg/l, *Max*	0.84			0.02	2.0	APHA, 22nd Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.01			0.01	5.0	IS:3025/34:1988, Nesseler's
10	Hexavalent Chromium, mg/l, Max	<0.01			0.01	0.1	APHA, 22nd Edition, Diphenylcarbohydrazide
11	Iron (as Fe), mg/l, *Max*	<0.06			0.06	3.0	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
12	Lead (as Pb), mg/l, *Max*	<0.005			0.005	0.1	APHA, 22nd Edition, AAS-GTA
13	Manganese(as Mn), mg/l, Max	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, *Max*	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, *Max*	0.5			0.50	10.0	APHA, 22nd Edition, UV-Spectrphotometric
16	Oil & Grease, mg/l, Max	<2.00			2.00	10.0	IS 3025/39:1991, R : 2003, Partition Gravimetric
17	Odour	Agreeable			Agreeable	Qualitative	Is-3015/5:1983/R:2012/Qualitative
18	pH value	8.37			2.5	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
19	Phenolic compounds (as C_6H_5OH),mg/l, *Max*	<0.02			0.002	1.0	APHA, 22nd Edition 4-Amino Antipyrine
20	Selenium (as Se), mg/l, *Max*	<0.002			0.002	0.05	APHA, 22nd Edition, AAS-GTA
21	Sulphide (as SO_3), mg/l, Max	<0.005			0.005	2.0	APHA, 22nd Edition Methylene Blue
22	Temperature (°C)	36.4			Shall not exceed 5° C above the receiving temp.		IS-3025/09:1984, Thermometeric
23	Total Chromium (as Cr), mg/l, *Max*	<0.04			0.04	2.0	IS-3025/52:2003, AAS-Flame
24	Total Kjeldahl Nitrogen, mg/l, Max	1.4			1.00	100.0	IS:3025/34:1988, Nesseler's
25	Total Residual Chlorine, mg/l, Max	0.03			0.02	1.0	APHA, 22nd Edition, DPD
26	Total Suspended Solids, mg/l, Max	36			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
27	Zinc (as Zn), mg/l, *Max*	<0.01			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

18/5/16

Analysed By

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WATER QUALITY
(SURFACE WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - X** Period: **Q. E. March, 2016.**

Area : **Bhowrah South** **Project: Bhowrah South** **Cluster X**

Stations: 1. Upstream in Damodar river SW-21 **Date of Sampling:** 09/03/2016
2. Downstream in Damodar river SW-22 09/03/2016

Sl. No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		SW-21	SW-22	3	4		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002			0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.6	2.8			2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	colourless	colourless			Qualitative	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	32	42			2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03			0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	5.8	5.1			0.10	IS 3025/381989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	1.01	1.08			0.02	APHA, 22nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01			0.01	APHA, 22nd Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.06	<0.06			0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005			0.005	APHA, 22nd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	2.22	3.54			0.50	APHA, 22nd Edition, UV-Spectrphotometric
12	pH value	8.18	8.57			2.5	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.002	<0.002			0.002	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002			0.002	APHA, 22nd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	75	90			2.00	APHA, 22nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	186	224			25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	<0.01	0.01			0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

18/5/16

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(Authorized Signatory)

Analysed By

WATER QUALITY
(DRINKING WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - X** Period: **Q. E. March, 2016.**

Area : **Bhowrah North** **Project: Bhowrah South** **Cluster X**

Stations: **Date of Sampling:** 09/03/2016

1. Drinking Water from Bhowrah South DW-10

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		DW-10	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	2			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	102			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	96			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.35			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.05			0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22nd Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	0.028			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	10			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.86			2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22nd Edition,4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22nd Edition, AAS-GTA
16	Sulphate (as SO_4) mg/l, Max	118			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity (c_ac_{03}),, mg/l, Max	304			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	788			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_ac_{03}), mg/l, Max	484			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	2			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.058			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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Analysed By

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WATER QUALITY

(GROUND WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster - X** Period: **Q. E. March, 2016.**

Area : **Bhowrah North** **Project: Bhowrah South** **Cluster X**

Stations: 1. Ground Water from Patherdih Rly Colony GW-10 **Date of Sampling:** 29/02/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-10	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	3			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	120			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	106			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.82			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.03			0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22nd Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	6			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.71			0.20	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22nd Edition,4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22nd Edition, AAS-GTA
16	Sulphate (as SO_4) mg/l, Max	178			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity (c_ac_{03}),, mg/l, Max	172			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	910			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_ac_{03}), mg/l, Max	600			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	3			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.020			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

18/5/16

Analysed By

Dy.Technical Manager
Env. Lab, CMPDI(HQ)
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CHAPTER - IV

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites and their rationale

i) **Bhowrah North (N14)**
To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

ii) **Sudamdih Wahery (N15)**
To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

iii) **Jeenagora (N13)**
To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

4.2 Methodology of sampling and analysis

Noise level measurements in form of 'LEQ' were taken using Integrated Data Logging Sound Level Meter (NL-52 OF RION CO. Ltd. Make) during day time. Noise levels were measured for about one hour time in day time. Noise levels were measured in Decibels, 'A' weighted average, i.e. dB (A).

4.3 Results & Interpretations

Ambient noise levels were recorded during day and night time and the observed values were compared with standards prescribed by MoEFCC.

The results of Noise levels recorded during day and night time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of LEQ are presented.

The observed values at all the monitoring locations are found to be within permissible limits.

NOISE LEVEL DATA

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster -X** Month: **January, 2016.**

Name of the Stations & Code :

1. **Bhowrah North (N14)**
2. **Sudamdih Washery (N15)**
3. **Jeenagora (N13)**[1]

(a) First Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Bhowrah North (N14)	Industrial area	05.01.2016	63.4	75
2	Sudamdih Washery (N15)	Industrial area	06.01.2016	61.4	75
3	Jeenagora (N13)	Industrial area	05.01.2016	61.8	75

(b) Second Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Bhowrah North (N14)	Industrial area	20.01.2016	56.8	75
2	Sudamdih Washery (N15)	Industrial area	21.01.2016	64.8	75
3	Jeenagora (N13)	Industrial area	19.01.2016	62.6	75

***Permissible limits of Noise Level as per MOEF Gazette Notification No. GSR 742(E) dt. 25.09.2000 Standards for Coal Mines and Noise Pollution (Regulation and Control) Rules, 2000.**

*** Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.**

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

NOISE LEVEL DATA

Name of the Company: **Bharat Coking Coal Limited** Year : **2015-16.**

Name of the Cluster: **Cluster -X** Month: **February, 2016.**

Name of the Stations & Code :

1. **Bhowrah North (N14)**
2. **Sudamdih Washery (N15)**
3. **Jeenagora (N13)**[2]

a. First Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Bhowrah North (N14)	Industrial area	08.02.2016	62.9	75
2	Sudamdih Washery (N15)	Industrial area	09.02.2016	59.7	75
3	Jeenagora (N13)	Industrial area	10.02.2016	63.4	75

b. Second Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Bhowrah North (N14)	Industrial area	23.02.2016	58.3	75
2	Sudamdih Washery (N15)	Industrial area	25.02.2016	63.2	75
3	Jeenagora (N13)	Industrial area	17.02.2016	60.2	75

***Permissible limits of Noise Level as per MOEF Gazette Notification No. GSR 742(E) dt. 25.09.2000 Standards for Coal Mines and Noise Pollution (Regulation and Control) Rules, 2000.**

*** Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.**

[2] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

NOISE LEVEL DATA

Name of the Company: **Bharat Coking Coal Limited**

Year : **2015-16.**

Name of the Cluster: **Cluster -X**

Month: **March, 2016.**

Name of the Stations & Code :

1. **Bhowrah North (N14)**
2. **Sudamdih Washery (N15)**
3. **Jeenagora (N13)**[3]

a. First Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Bhowrah North (N14)	Industrial area	09.03.2016	62.6	75
2	Sudamdih Washery (N15)	Industrial area	08.03.2016	58.7	75
3	Jeenagora (N13)	Industrial area	03.03.2016	58.7	75

b. Second Fortnight data

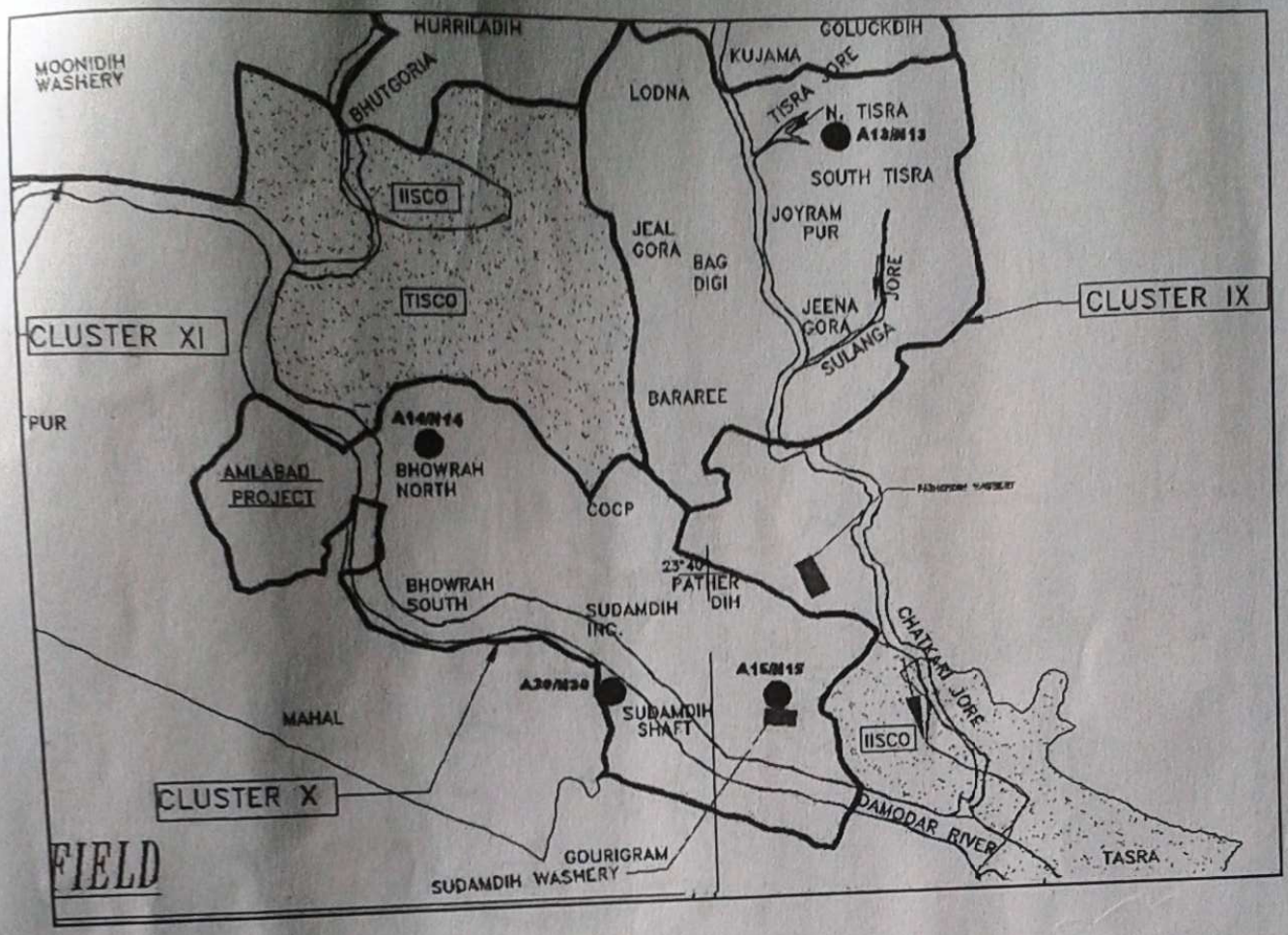
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Bhowrah North (N14)	Industrial area	16.03.2016	58.7	75
2	Sudamdih Washery (N15)	Industrial area	22.03.2016	60.5	75
3	Jeenagora (N13)	Industrial area	16.03.2016	61.3	75

Permissible limits of Noise Level as per MOEF Gazette Notification No. GSR 742(E) dt. 25.09.2000 Standards for Coal Mines and Noise Pollution (Regulation and Control) Rules, 2000.

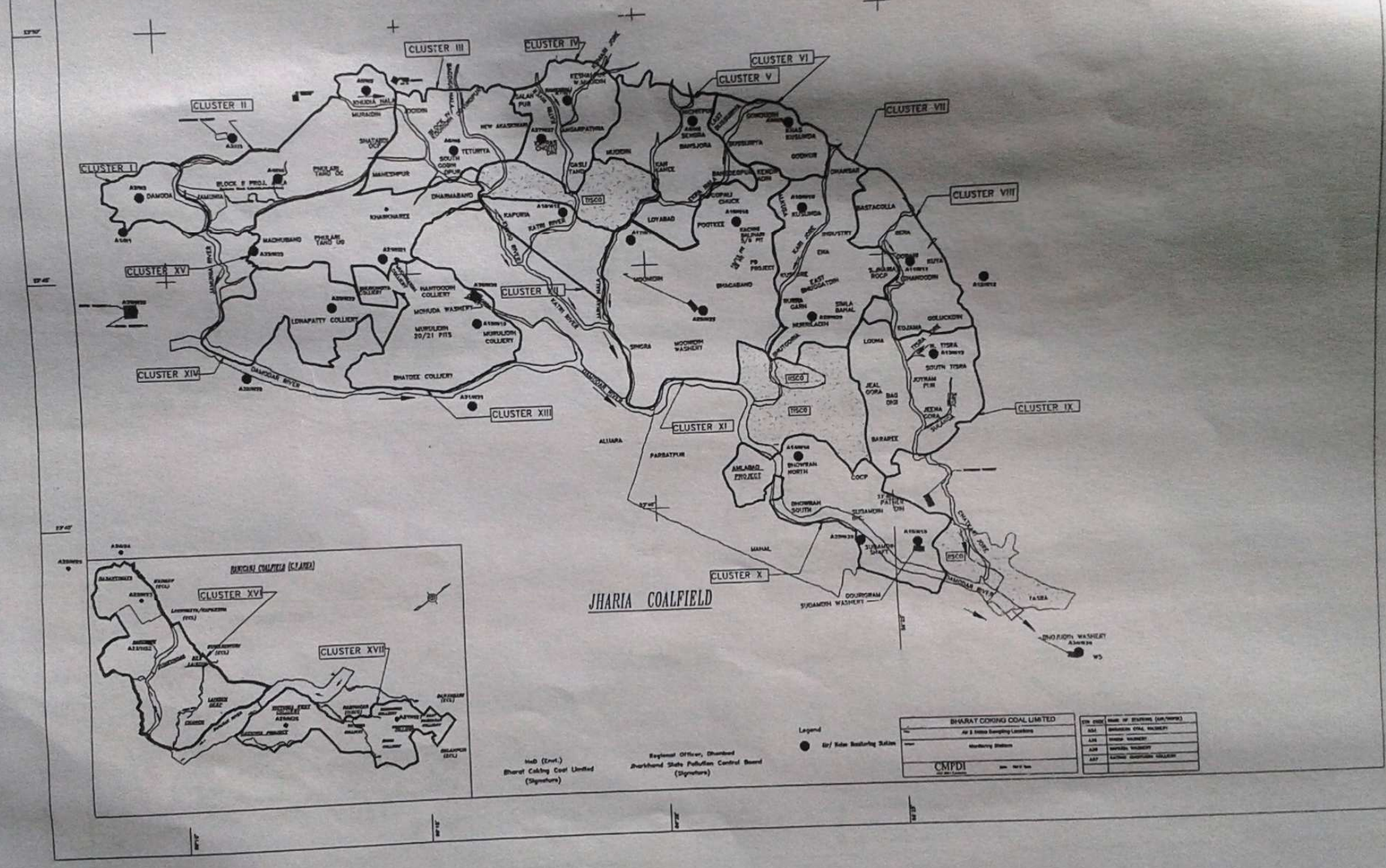
*** Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.**

[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... .....Dated 28.05.2016. Job No. 110310

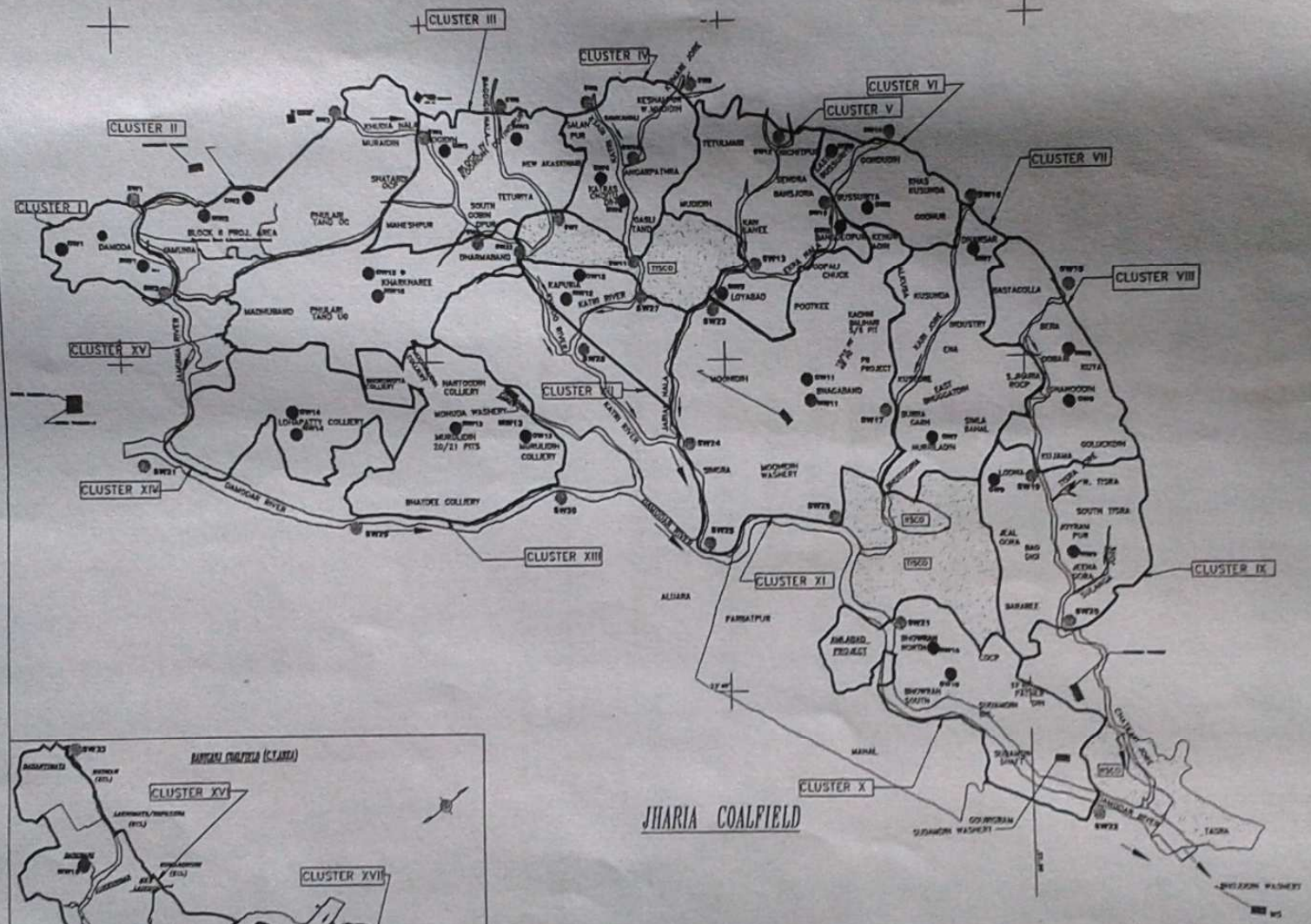
Noise Level Monitoring Location of Cluster X



Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

Cluster	Surface Water (SW), (SW)	Name of mine water Area	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamuria	MW1	Jamuria Area	GW1	Chuharia Village
II	SW3, SW4	Chuda Kata	MW2	Block II OCP	GW2	Sonamuri Village
III	SW5, SW6, SW8, SW7	Chuda Kata, Sagling Kata	MW3	Governor Colliery	GW3	Jogidih Village
IV	SW9, SW10, SW11, SW12	Ram Kanali Jamuria Area	MW4	Chitaudih	GW4	Kankanee Village
V	SW13, SW14, SW15	Jamuria Area, Ena Area	MW5	Mudidih	GW5	Mohuliyar
VI	SW16, SW17	Ena Area	MW6	East Sijua OCP	GW6	Kusunda
VII	SW18, SW19	Kal Jore	MW7	Jharkee OCP	GW7	Parbatdih
VIII	SW20, SW21	Kusunda Area	MW8	Sijua OCP	GW8	Chasnala
IX	SW22, SW23	Kusunda Area	MW9	Kusunda OCP	GW9	Lohra
X	SW24, SW25	Kusunda Area	MW10	Kusunda OCP	GW10	Sijua
XI	SW26, SW27, SW28, SW29	Kusunda Area, Bhowrah Area	MW11	Bhowrah OCP	GW11	Kusunda
XII	SW30, SW31	Kusunda Area	MW12	Kusunda OCP	GW12	Kusunda
XIII	SW32, SW33	Lohapatti Area	MW13	Lohapatti Colliery	GW13	Mudidih
XIV	SW34, SW35	Lohapatti Area	MW14	Lohapatti Colliery	GW14	Lohapatti
XV	SW36, SW37	Kharkharee Area	MW15	Kharkharee Colliery	GW15	Kharkharee
XVI	SW38, SW39	Kharkharee Area	MW16	Kharkharee Colliery	GW16	Kharkharee
XVII	SW40, SW41	Kharkharee Area	MW17	Kharkharee Colliery	GW17	Chasnala

Legend

- Sampling Locations of Surface Water (Upstream/ Downstream)
- Sampling Locations of Mine Water
- Sampling Locations of Ground/ Drinking Water

Incl. (Envt.)
Bharat Coking Coal Limited
(Signature)

Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)

BHARAT COKING COAL LIMITED

WATER SAMPLING LOCATIONS

MONITORING STATIONS

CMPDI

ANNEXURE – IV (A)

BHARAT COKING COAL LIMITED

Proposed Activities FY 2016-17

Sl. No.	Heads of CSR work	Proposed Expenditure (In Rs. Lakhs)
1	Jyoti Pariyojana- Removal of cataract and intra Occular Lens Implant	10
2	Mamta Pariyojana- Family Planning Camps through tubectomy/vasectomy & immunization of children	9.6
3	Handloom weaving training projects under Skill Development- 3 projects at Mukunda, Alakdiha, Gareria villages	60
4	Construction of toilet in SSLNT Mahila Mahavidyalaya, Dhanbad	22
5	Construction & maintenance of toilets constructed under Swachh Vidyalaya Abhiyan in 8 districts of Jharkhand	1300
6	Construction of Community Centre under SAGY	18
7	Construction of 7 km. PCC road & deepening/renovation of 6 ponds	365
8	Providing Infrastructure support to RBB Uchh Vidyalaya, Rajganj, Dhanbad	100
Total		**1884.60**

BHARAT COKING COAL LIMITED			
CSR BUDGET AND EXPENDITURE			
Year	CSR Budget (Rs in lakh)	Projects/ Activities	Expenditure incurred (In Rs. Lakhs)
2013-14	3050	Drinking Water/ Water Supply	278
		Education	20
		Infrastructure Development	351.15
		Skill Development	82
		Medical/Healthcare	49
		Others (Uttrakhand Chief Minister Relief fund)	2000
		Total of 2013-14	**2780.15**
2014-15	3080	Drinking Water/ Water Supply & Sanitation	4.69
		Education	2.87
		Infrastructure Development	244.9
		Skill Development	55.73
		Medical/Healthcare	32.55
		Forestry & Environment	73.43
		Others	18.29
		PMNRF	1000
		Total of 2014-15	**1432.46**
2015-16	3300	Drinking Water/ Water Supply & Sanitation	3.33
		Swachh Vidyalaya Abhiyan	5868.51
		Education	17.01
		Infrastructure Development	161.75
		Skill Development	0.12
		Medical/Healthcare	33.06
		Forestry & Environment	2.94
		Conservation of Natural resources	63.76
		Others	13.23
		Transfer of CSR Expenditure spent by BCCL CSR Budget allotted by CIL (CIL the Holding Company has also incurred CSR expenditure to the tune of Rs.10.97 crore through BCCL, which has been borne and accounted for the books of CIL)	-1096.58
		Total of 2015-16	**5067.13**

ANNEXURE-IV(B)

C.S.R PERFORMANCE REPORT MONTHWISE
April 2015 to December 2016
BHowrah REGIONAL HOSPITAL E.J. AREA.

MOBILE MEDICAL VAN

Date: 29.04.2016

SL NO.	MONTH	NO.OF.CAMP	NO OF.BENEFICIARIES	TOTAL EXPENDITURE
1.	April 15	26	1122	₹ 39,171.33
2.	May	25	937	₹ 35,270.12
3.	June	25	941	₹ 32,950.08
4.	July	27	1028	₹ 38,685.08
5.	August	25	1003	₹ 31,288.24
6.	September	26	634	₹ 17,211.73
7.	October	24	443	₹ 7,963.19
8.	November	24	517	₹ 7870.23
9.	December	27	387	₹ 5,517.76
10.	January 16			
11.	February			
12.	March			
	Total	229	7012	₹ 2,15,927.76

Dy.C.M.O. I/C
Sudamdih R/ Hospital
E.J.Area.

NAME OF VILLAGES COVERED UNDER CSR/MMV PROGRAMME

	AREA	VILLAGES
1		Bhowrah 19 No. Basti
2		Raghabad Basti
3		Supker Basti
4		Manjhi Basti
5		Mohubani Basti.
6		Sheobabudih
7		Bhowrah 7No Basti
8		Bhowrah 4 No Basti.
9		Bhowrah Jahaj Tand
10		Thana Basti
11		Manpur Basti
12		Amlabad Basti
13		New Riverside Basti
14		Gourkhutti Basti.
15		Sawardih Basti
16		Hattala Basti

Dy.C.M.O. I/C
Sudamdih P/Hospital

FAMILY PLANNING CAMP

E.J.AREA

1. Sudamdih R/ Hospital date - 0 3.02.2016. Beneficiaries- 33
2. Bhowrah R/ Hospital date - 16.02.2016 Beneficiaries –40

Dy C.M.O

Sudamdih R /Hospital

ANNEXURE - V

LIST OF INITIAL MEDICAL EXAMINATION & PERIODICAL MEDICAL EXAMINATION FOR 2015-16

PME & VTC

	Target Annual	Target Monthly	Target	Actual	Excess/ short fall
			From April 15 to March16	Up to March16	
PME (2015-16)	1165	93	1165	1115	-50
VTC (2015-16)	1400	233	1400	1400	Nil

Contractual Workers : Training		IME	
2014-15	15	2014-2015	15
2015-16 Till March 2	78	2015-2016 Till Feb 2015	74

Special Class: 49+31

Computer Skill: 20

ANNEXURE-VI

भारत कोकिंग कोल लिमिटेड
(कोल इंडिया लिमिटेड का एक अंग)
BHARAT COKING COAL LIMITED
A Mini Ratna Company)
(A Subsidiary of Coal India Limited)
Office of the Project Officer, ASP Colliery (Smd. Inc.)

A.S-P Colliery
P.O.- Sudamdih
Dist.–Dhanbad
Jharkhand 828126

Ref No– EJA/ASP/SMD/16/ 45

Dated: 13/1/16

To,
The Member Secretory,
Jharkhand State Pollution Control Board,
TA. Division Building,
HEC, Dhurwa,
RANCHI - 834004

Sub. :- **Submission of Environmental Statement (From V) for the year 2014 15.**

Dear Sir,

Please find herewith the Environmental Statement duly filled in for the financial year 2014 – 15 in respect of Amal. S – P. Colliery(Patherdih Colliery, Sudamdih Incline Mine & COCP Patherdih).

Please acknowledge receipt.

Encl. - As Above

Yours faithfully

13/1/16

Project Officer
Amal. S – P. Colliery

1. J.S.P.C.B., R/Officer, Dhanbad.
2. Area Manager (Env.)E.J. Area.
3. Safety Officer, A.S – P. Colliery

13/1/16 Kishor 11.1.16.

"FORM – V"

(See rule 14)

Environmental statement for the financial year ending the 31st March 2015

PART –A

I. Name and address of the owner /Occupier of the industry operation Or process. : SRI A. SARKAR, D.T., Koyla Bhawan, Koyla Nagar, B.C.C.L., Dhanbad.

II. Industry category primary - (STC Code) Secondary – (STC Code). : Coal Mining Industry

III. Production capacity. : 0.473 MTY (Smd. Incline + Patherdih group of mines) E.C. Order Ref. No. J – 11015/380/2010 – 1A: IIM dated 06.02.2013.

IV. Year of establishment. : Colliery operating since pre – nationalization and vested in B.C.C.L. through Coal Mines nationalization Act.' 1972 – 73

V. Date of last environmental Statement submitted. : Dt. 30.09.2014. (Ref. No. – 1636/SMD/INC/F/51/14)

PART –B

Water and Raw Material Consumption.

Water Consumption	
1. Process (Dust Suppression)	80m^3/day. (Four Tankers of 20 KL daily except in rainy season)
2. Cooling	Nil
3. Domestic	700 m^3/day

Name of products	Process water consumption per unit of product point	
	During the previous Financial year (2013 – 14)	During the current Financial year (2014 – 15)
N/A	N/A	N/A

2. Raw Material consumption.

Name of Material	Name of Products	Consumption of Raw materials per unit of product output	
		During the previous Financial year (2013 – 14)	During the current Financial year (2014 – 15)
Diesel	Coal	0.65Litre./Ton	0.65Litre./Ton
Explosive	Coal	0.43 Kg./Ton	0.40 Kg./Ton
Timber & Sleeper	Coal	0.10 Nos./Ton	0.20 Nos./Ton

Industry may use codes if disclosing details of raw material would violate contractual obligations otherwise all industries have to name the materials used.

PART – C

Pollution discharged to environment/unit of output (Parameter as specified in the consent issued)

Pollution	Quantity of pollutants Discharged (mass/day)	Concentrations of Pollutants in discharges (mass/volume)	Percentage of variation from prescribed stack with reason.
a) Water	300m^3/Day	PH – 7.7 Total Suspended Solid - 25mg/litre Chloride – 49.9 mg/litre Temperature – 30.2^{0}C	Within the limit Within the limit Within the limit Within the limit
b) Air	4 X10^6m^3/day	SPM – 126.7 µg/m^3 So_2 – 31.5 µg/m^3 No_x – 35.7 µg/m^3 RPM – 156 µg/m^3 TSPM – 284.7 µg/m^3	N/A Within the limit Within the limit Within the limit Within the limit

PART – D

Hazardous Waste (As specified under Hazardous Wastes / Management and Handling rules 1989)

Hazardous wastes	Total Quantity (in kg.)	
	During the previous Financial year (2013 – 14)	During the current Financial year (2014 – 15)
a) From process	Quantity of burnt oil – 3075 Litre Cotton Waste – 92 Kg. Oil Soaked Filters – 30 Nos.	Quantity of burnt oil – 200 Litre Cotton Waste – 23 Kg. Oil Soaked Filters – 20 Nos.
b) From pollution control facilities	N/A	N/A

PART – E

Solid Wastes	Total Quantity (in kg.)	
	During the previous Financial year (2013 – 14)	During the current Financial year (2014 – 15)
A) From process	Quantity of overburden generated :- 261808 m^3	Quantity of overburden generated - 77424 m^3
B) From pollution control facilities	Oil & Grease Trap's bottom sludge:- N/A	Oil & Grease Trap's bottom sludge – N/A
1. Quantity recycled or reutilized within the unit. 2. Solid 3. Disposal	Quantity of O/B used for back filling – 261808 m^3 Quantity of burnt oil for lubrication in u/g transportation system /Haulage system – 350 ltr.	Quantity of O/B used for back filling – 77424 m^3 Quantity of burnt oil for lubrication in u/g transportation system /Haulage system -560 ltr.

PART – F

Please specify the characterizations (in terms of composition of quantum) of hazardous as well as solid Wastes and indicate disposal practice adopted for both these categories of wastes.

(i) Type of Rock :- Sedimentary.
(ii) Type of soil :- There is no soil, All soil has been removed earlier.
(iii) Chemical properties of soil :- N/A
(iv) Disposal process for solid waste (Back filling practice) :- By dumper for backfilling of the excavated area.

PART – G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production.

(i) No. of plants planted :- 12964 Nos.
(ii) Cost of plants :- Rs. 1,94,460/-
(iii) Plantation cost incurred :- Rs. 1,66,290.52
(iv) Backfilling cost :- Rs. 24,93,070.82

PART – H

Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution.

(i) There are two water tankers of (a) 20 KL. Capacity . Which sprinkle 04 trips water daily (except rainy season).
(b) 12 KL. Capacity which sprinkle 02 trips water daily (except rainy season).

(ii) Fencing of ecological restoration site is being done.
(iii) There is no pressure filters.
(iv) Black Toping of Roads has not been done.
(v) Avenue plantation / Gabion plantation :- Nil.

PART – I

Any other particulars for improving the quality of the environment.
Carbon sequestration studies done at HQ. Level, Source appointment study and reduction in pollution load by reducing road transport study being done at H.Q. level.

BHARAT COKING COAL LIMITED
(A Subsidiary of Coal India Limited)
Office of the Project Officer
Bhowra (North) U/G.Mines
P.O(. - Bhowra, Dist. - Dhanbad (Jharkhand), Pin. - 828302

Ref. No. BH(N) /U.G.Mines/2015/ 523 Dated. 25/09/2015
27

To,
The Member Secretary,
Jharkhand State Pollution Control Board.
T.A. Division Building (Ground Floor)
H.E.C. Dhurwa,
RANCHI.-834004

Sub:- Submission of Environmental Statement in Form V.

Dear Sir,

Environmental statement in Form V is being submitted to you for the financial year 2014-2015 in respect of Bhowra (N) U.G. Mines.

Encl:- As above.

Yours Faithfully,

Project Officer / Manager
Bhowra (N) U.G.Mines.

Distribution:-
1. The Regional Officer, J.S.P.C.B. Office,H.I.G. Dhanbad.
2. Th General Manager, (Env), B.CCL, Koyla Bhawan, Dhanbad.
3. The Area Manager, (E&V) E.J. Area.
4. Office file.

05 copies

FORM V

(See rule 14)

ENVIRONMENTAL STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31ST MARCH....2015

Sri A. Sarkar, DT(P&P)
Bharat Coking Coal Ltd.
Koyala Bhawan
Koyala Nagar
Dhanbad.
Primary (Jharkhand)

PART A

(i) Name and address of the owner/occupier of the industry operation or process.

(ii) Industry category Primary—(STC Code) Secondary—(STC Code)

(iii) Production capacity-Units—Coal-145000T (Target for 2015-2016)

(iv) Year of establishment — 1971

(v) Date of the last environmental statement submitted. 26/9/2014

PART B

Water and Raw Material Consumption

(1) Water consumption m^3/d

Process

Cooling

Domestic

} 75 M^3/day Approx.

Name of products	Process water consumption per unit of product output	
	During the previous financial year	During the current financial year
	(1)	(2)
(1) Coal	0.11 M^3/T	0.11 M^3/T
(2)		
(3)		

(2) Raw material consumption

*Name of raw materials	Name of products	Consumption of raw material per unit	
		During the previous financial year	During the current financial year
H.S. Disel	Coal	3.25 L/T	1.57 Kg/Kg
Explosive			

*Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART C

Pollution discharged to environment/unit of output.

(Parameter as specified in the consent issued)

(1) Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
(a) Water	Sampling is done by CIMFR, Dhanbad. (Report is awaited)		
(b) Air			

PART D

Hazardous Wastes

(as specified under Hazardous Wastes (Management and Handling) Rules, 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year	During the current financial year
(a) From process	Used lubricant/oil (Burnt oil) is reused for tub wheel	
(b) From pollution control facilities	/pulley lubrication in U/G Mine.	

PART E

Solid Wastes

	Total Quantity	
	During the previous financial year	During the current financial year
(a) From process (OB)	1157500 M^3 OB	7,50,000 M^3 OB which will be reused for Back filling of OCP for reclamation.
(b) From pollution control facility	NIL	
(c) (1) Quantity recycled or re-utilised within the unit		
(2) Sold		
(3) Disposal		

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F

Specify the characterization (in term of composite and quantum) of Hazardous as well as solid wastes and disposal practice adopted for both these categories of wastes.

For Underground/Collieries - Not applicable as neither Hazardous Wastes nor solid wastes are generated.

PART -G

Impact of the pollution abatement measure taken on conservation of natural resource and on production.

Various pollution abatement measure are practiced by which the impacts on the environment has become positive. Due cares is taken to conserve the natural resources and protect the environment and all its component. The following pollution abatement measure are undertaken:-

1. Water Sprinkling is done in road , sidings , coal transportation points CHP crushers to control dust. The water sprinkling greatly reduces fugitive dust emission thereby reducing the air pollution levels. Water sprinklers are provided on tipplers and in coal stock.
2. Road maintenance:
   Maintenance of all roads within the unit lease hold area is being done to control dust. This also helps in reducing the vehicle exhausts.
3. Tree plantation :
   Tree plantation is done as a apart of biological reclamation. Plantation help in reducing noise, dust and soil erosion (check).
4. Noise abatement in done by proper maintenance of the vehicle, drills and other machines. Workers are provided with ear muffs. Tree planted near the work place which help in dampening the extra notice.
5. **Soil erosion control** – various soil erosion control measure like tree plantation. Construction of diversion channels, Check dame, settling ponds/ditchen contour terrecting storm water discharge drain etc is done.
6. **Machine maintenance** – Proper and timely maintenance of the machine/ vehicles operating in the unit are done which help in reduction of vehicle exhausts and noise pollution.
7. **Vehicles exhaust control** – Exhaust monitoring in some vehicle exhaust are controlled by proper and timely maintenance of the vehicles.
8. **Ambient Air/Water and noise monitoring** – Monitoring for ambient air, water quality and noise levels are periodically done.
9. **Community Awareness** Welfare officers are there in the unit to propagate awareness regarding environment protection measures like tree plantation for soil erosion control, domestic exhaust control etc among colony/ villages residents and also nearby natives and tribats. Tree plantation and cultural programmes (June 5th) postres/ bannrers are displayed and tree plantation is done to create awareness.
10. **Occupational Health/Safety Measure** – Occupational Health and safety measure are taken care stipulated by DGMS in case of dust, fire, light, noise etc. Dust mask and Ear plugs/muffs are provided in critical zones.
11. **Improved sanitation and drainage and water treatment** – Improved sanitation and drainage is being practiced in all houses of the colony. Residents are advised to dispose minimum amount of wastes and river water is treated and supplied to the residents for drinking purpose.
12. All families are shifted/ being shifted to new and safe location/ sides as per the companies policy. The rehabilitation sites are provided with infrastructural facilities like water, electricity, roads parks, and dispensary.
13. **Environment impact Assessment (EIA) and preparation of environment impact statement (EIS)** EIS is being done at corporate levels. This helps in indentifying the environment impact and thereby adopting necessary mitigation measures. The EIA is also extended for a distance of 10 KM (Buffer zone) beyond the actual project/ unjts area for the project which requires clearance of MOEF.

Project officer
Bhowra (North) U/G Mines
परियोजना पदाधिकारी
भोरा (उत्तर) कोलियरी