



BHARAT COKING COAL LTD.

A Mini Ratna Company

(A Subsidiary of Coal India Ltd.)

REGD. Office: Koyla Bhawan, Koyla Nagar, Dhanbad-826005

CIN No.U10101JH1972GO1000918

OFFICE OF THE GENERAL MANAGER

BARORA AREA

Ref No.GM/AR-1/SURVEY/ /2016

Dated: -23.11.2016

**To
The Director
Ministry of Environment, Forest & CC
Regional Office(ECZ), Bungalow No.-2
Shyamali Colony
Ranchi- 834002**

Sub: Six monthly reports on implementation of Environmental measures for the period from April '16 to Sept'16 in respect of Cluster -XV group of mines.

Ref:-EC Order No. J-11015/100/2011-IA.II (M)

Dear Sir,

Kindly find enclosed herewith the Six monthly report on implementation of Environmental measures for the period from April '16 to Sept'16 in respect of Cluster -XV group of mines.

Hope you will find the same in order.

Yours faithfully,

**General Manager
Barora Area**

Encl: as above

C.C to

- 1. The Director, 1A monitoring cell
Paryavaran Bhawan CGO Complex, New Delhi-110003**
- 2. G.M(Env.) BCCL Koyla Bhawan, Dhanbad.**
- 3. Nodal incharge(Env.) Barora Area.**
- 4. Nodal incharge (Env.) Govindpur Area.**

ENVIRONMENTAL CLEARANCE COMPLIANCE OF CLUSTER-XV**(GRANTED VIDE J-11015/100/2011-IA.II (M) Dated 16.12.2013)****From April '2016 to Sept' 16****Action Plan for compliance of EC conditions**

SN	A. Specific Conditions by MOEF:	Compliance																																
i	<p>The maximum production in the cluster shall not exceed beyond that for which environmental clearance has been granted for Cluster -XV as per given below:</p> <table><tr><th rowspan="2">Sl. No</th><th rowspan="2">Name of Mines</th><th colspan="2">Production capacity (MTY)</th><th rowspan="2">Lease hold area (Ha.)</th></tr><tr><th>Normative</th><th>Peak</th></tr><tr><td>1</td><td>Kharkharee Coll.</td><td>0.092</td><td>0.12</td><td>584.00</td></tr><tr><td>2</td><td>Madhuband coll.</td><td>0.113</td><td>0.147</td><td>393.77</td></tr><tr><td>3</td><td>Phularitand coll.</td><td>0.120</td><td>0.156</td><td>340.88</td></tr><tr><td>4</td><td>Dharmabandh coll(Closed for production)</td><td>0</td><td>0</td><td>377.90</td></tr><tr><td colspan="2">Total</td><td>0.325</td><td>0.423</td><td>1696.55</td></tr></table>	Sl. No	Name of Mines	Production capacity (MTY)		Lease hold area (Ha.)	Normative	Peak	1	Kharkharee Coll.	0.092	0.12	584.00	2	Madhuband coll.	0.113	0.147	393.77	3	Phularitand coll.	0.120	0.156	340.88	4	Dharmabandh coll(Closed for production)	0	0	377.90	Total		0.325	0.423	1696.55	The production from the cluster is within the limit for which Environmental clearance has been granted.
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1	Kharkharee Coll.	0.092	0.12	584.00																														
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ii	The proponent shall prepare a contingency plan for subsidence.	It is being complied as per the guidelines of DGMS.																																
iii	Keeping in view the pattern of the subsidence in the area, no depillaring should be carried out until the rehabilitation of the affected families and shifting of infrastructure.	It shall be complied. No depillaring is being carried out at present.																																
iv	The channels adjoining the ML area leading to Jamunia river should not be disturbed and be regularly desilted.	It is being complied.																																
v	The quality of the Jamunia river water should be continuously monitored and in order to prevent silting, a series of check dams should be constructed using boulders. This will help in recharging the ground water.	It is being complied.																																
vi	The coal from the mines will be transported by mechanically covered trucks within two months.	Conversion of existing truck into mechanically covered trucks in a phased manner has been taken up. Presently, transportation is being done by covering vehicle with tarpaulin.																																
vii	In underground mining there is presence of organic gases. These gases are volatile in nature. Due to transmission of air, fire takes place. The routine mining engineering will not serve the purpose. Therefore, proper studies are carried out to understand underground seams and how these fire areas could be sealed from further spreading.	All the statutory provisions under mines act 1952 and CMR 1957 along with statutes constituted under Mines act are fully complied to prevent any occurrence of fire. Regular monitoring and inspection is done by DGMS.																																
viii	Cumulative impact of fire and gases for all the clusters of coal mines in Jharia Coal field is carried out.	It is being complied. Presently Master Plan approved by Govt. of India is under																																

		implementation for this purpose. Fire control in Jharia and its periphery is being done with the recommendation received from CIMFR. An international expression of interest had been invited by BCCL and two bidders submitted their proposals, work shall be awarded as per the recommendation of tender committee.
ix	National Remote Sensing Agency (NRSA) should be contacted for thermal imaging techniques which are being utilized for assessing the extent of impact of underground of fire. BCCL should consider for an MOU with NRSA for short and long term studies so as to obtain detailed information on Satellite imagery, thermal imagery, subsidence prediction and surface features of the mining area.	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. 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.
x	The Project proponent should monitor the water quality of the Jamunia river as per the standards prescribed by the JSPCB/CPCB to maintain the required BOD in the river water.	Work of monitoring ambient environment including water quality of the Jamunia river is being done by CMPDIL, Ranchi.
xi	The nullah as adjacent to the river should not be disturbed.	It is being complied.
xii	The open cast quarries of the abandoned mines should be backfilled to the ground level and restored with native species.	It is being complied.
xiii	All coal from the smaller U/G mines should be transported by high capacity and mechanically covered trucks/tippers.	It shall be complied. Coal transportation is being done by Tarpaulin covered trucks.
xiv	Green belts shall be developed on both sides of the roads.	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.
XV	Action plan for quenching of fires and rehabilitation along with the details of master plan be submitted to MOEF for monitoring purpose.	It is being complied. The approved master plan is uploaded on BCCL website (www.bccl.gov.in/PDFs/MPLANBCCL-2008.pdf) and regular monthly progress report is being sent to ministry.
XVI	Presently coal of Munidih washery from other mines of the cluster is taking place through NH. An alternate route for coal transportation may be explored.	Jharia Coalfield is a densely and highly populated region. Alternative route will further add pollution and rehabilitation problems. It may be explored only after the shifting of population, living in coalfield region.
XVII	For understanding the composition of emissions from coal mine fires, BCCL may initiate action as proposed in the visit report of the EAC to Dhanbad.	BCCL has initiated the process to conduct source apportionment study for entire region of JCF. A work has been awarded to CMPDIL, Ranchi.
XVIII	The approved mining plan is submitted to the	Most of the BCCL mines are taken over mines

	MOEF.	from the erstwhile private owners who were operating mines without mine plans at the time of nationalization and now are being operated as amalgamated collieries/quarries as per the guide lines of DGMS.
XIX	The measure to identify in the Environmental Plan for Cluster- XV groups of mine and the conditions given in this environmental clearance letter shall be dovetailed to the implementation of the Jharia Action Plan.	It is being complied.
XX	The proponent shall prepare time -series maps of the Jharia Coalfields through NRSA to monitor and prevent fire problems in the Jharia Coalfields by Isothermal mapping /imaging and monitoring temperatures of the coal seams (whether they are close to spontaneous ignition temperatures) and based on which, areas with potential fire problems shall be identified. Measures to prevent ingress of air (Ventilation) in such areas, to prevent restart fresh/spread fires in other areas including in mines of cluster XV shall be undertaken. Expertise available internationally could also be utilized for control of fire in Jharia Coalfields and for their reclamation and to further minimize time for fire and subsidence control. Isothermal mapping using thermal imaging has been got done by NRSA. Measures would be taken prevent ingress of air (Ventilation) in such areas, which may restart fresh fires.	<p>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.</p> <p>Fire affected area has been reduced from 9.00 KM² to 2.18 KM². 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.</p> <p>Action is being taken as specified in EC 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.</p>
XXI	The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation.	It is being complied.
XXII	No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/check such fire including in old OB dump areas where the fire could start due to presence of coal /shale with sufficient carbon content.	It is being complied. 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).
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.	It is being complied. Mining is being carried out as per the guidelines of DGMS.
XXIV	Total afforestation plan shall be implemented covering an area of 621.28 Ha. (Additional) at the end of mining which will include, Green belt over	It shall be complied. In 2013, around 2.50 Ha of land taken up for eco restoration of degraded

	an area of 229.12 Ha., density of tree plantation 2500/ Ha. Of plants.	land in Phularitand colliery.
XXV	Details of transportation, CSR,R&R and implementation of environmental action plan for the clusters XV should be brought out in a booklet from within a year and regularly updated.	It is being followed. CSR dept has been established at area level. This year BCCL has constructed over 3500 toilets under "Swacch Bharat Abhiyan".
XXVI	Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a critically polluted are and relevant for Cluster- XV shall be implemented	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: <ol style="list-style-type: none"> 1. Construction of pucca road. 2. Construction of water reservoir for mine water utilization 3. Plantation. 4. Covered transportation.
XXVII	The locations of monitoring stations in the Jharia coalfield should be finalized in consultation with Jharkhand State Pollution Control Board. 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 (PM ₁₀ and PM _{2.5}) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.	Establishment of ambient environment quality monitoring stations has been finalized with the consultation of Jharkhand State Pollution Control Board. The work of monitoring of ambient environment was done by Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which is a CSIR laboratory recognized under the EP Rules. Now the monitoring work has been taken up by CMPDIL, Ranchi. Tender for source apportionment study has been cancelled 2 times as no bidder has qualify for the same. Now Proposal is being made for the same study by any government institution.
XVIII	The proponent will continue the existing Road-Rail transport network system in view of the implementation of the Master Plan (For 10 years) and another 5 Years gestation period after the completion of Master Plan for consolidation of the backfilled dug out fire areas and unstable areas is required. All mitigation measures (like covered trucks, green belting on either sides of the roads, enhanced water sprinkling, strengthening and maintaining the roads etc.) shall be adopted up to 15 years (phase-I) with the existing Road- Rail transport system. In phase -II, BCCL shall implement conveyor-cum-rail transport to avoid movement of trucks within the cluster for coal transportation in phase-II which shall start after 15 years. Transportation of coal shall be by Rail and Conveyor belt, minimizing the existing road	At present we are exploring the technology to cover existing trucks mechanically by local technicians and no OEM is available for covered trucks in Indian market until the coal production is being done by tarpaulin covered trucks.

	transport system in all the mines of the cluster and shall continue after 15 years. Loading of coal by pay loaders shall be discontinued. Adequate number suitably designed off-take points shall be provided.	
XXIX	1537 nos. of PAFs should be rehabilitated at cost of Rs.140.03 crores as per the approved Jharia Action Plan.	It is being complied as per approved Jharia Action Plan.
XXX	Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.	It shall be complied. No depillaring is being carried out at present.
XXXI	Coal Extraction shall also be optimized in areas where agricultural production is continuing. Some pillars shall be left below the agricultural land. No depillaring & coal extraction should be carried out below habitation, H.T Lines & beneath road, water bodies.	It is being complied.
XXXII	Subsidence shall be monitored closely and if subsidence is found exceeding the permitted limits, then the land owners shall be adequately compensated with mutual agreement with the land owners.	No depillaring is being carried out at present.
XXXIII	3-tiers plantation should be developed 2KM stretch of road from the mine using native species.	It is being complied.
XXXIV	Water sprinkling system shall be provided to check fugitive emission from loading operations, conveyor system, haulage roads, transfer points, etc. Major approach roads shall be black topped and properly maintained.	It is being complied.
XXXV	A progressive afforestation plan shall be prepared and implemented over the mine lease area acquired and shall include areas under green belt development, areas along roads infrastructure, along ML boundary and township etc, by planting native species in consultation with the local DFO/Agricultural Department.	It is being complied. In 2013, around 2.50 Ha of land taken up for eco restoration of degraded land in Phularitand colliery.
XXXVI	Acid water Treatment Plant, volume of water to be treated and disposal of brine should be provided.	Shall be complied.
XXXVII	Mine discharge water outside the ML shall be monitored, particularly for TDS and treated to confirm prescribed levels before discharge into the natural environment.	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 through CMPDIL, Ranchi and parameters are well within the prescribed limit provided by CPCB.
XXXVIII	The Company shall put up artificial groundwater recharge measures for augmentation of ground water resource, incase water table shows a declining	Presently water is not being discharged outside the ML. Excess mine water is being stored at old quarries and ponds for community use. This will help to recharge the ground water.

	trend. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mines.	
XXXIX	Besides carrying out regular periodic health check up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check up for occupational disease and hearing impairment, if any, through an agency such as NIOH, Ahmedabad within a period of one year and the results reported to this Ministry and to DGMS.	NIOH has conducted health surveillance (Medical checkup) and awareness program in all area.(Report awaited).
xi	The mining in the existing mines would be phased out after expiry of the current mining lease and after reclamation of mined over area. The operating mines may be analyzed and monitored for compliance of conditions, having bearing with movement of wild life until such time they are closed/phased out.	Shall be complied.
xli	Sufficient coal pillars shall be left unextracted around the air shaft (within the subsidence influence area) to protect from any damage from subsidence, if any.	It is being complied.
xlii	High root density tree species shall be selected and planted over likely areas to be affected by subsidence.	It is being complied.
xliii	Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.	It is being complied.
xliv	Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.	It is being complied.
xlv	The CSR Action Plan shall consist of need-based CSR Action Plan, CSR Auditing and monitoring mechanism etc. The proponent will spend 5% of the retained earnings of the previous year subject to a minimum of Rs.5/- per tonne of coal production which should be adjusted as per the annual inflation. The progress made there on shall be uploaded on the company website. Monitoring of the impact of the activities under CSR shall be carried out periodically	It is being complied.
xlvi	Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the Public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website every year. The company must give priority to capacity building both within the company and to the local youth, who are motivated to carry out the work in future. The gap/space available between the entire mine area	BCCL is implementing CSR activities. A separate CSR committee has been formed at area level of Barora, who will look after the works being executed under CSR. CSR dept is established at the Headquarter level and area level for Executing the CSR Activities. All welfare/ CSR activities are also uploaded in Company web site.

	should be suitably planted with native species. Plantation should also be made in vacant area and along the road side so as to reduce dust pollution.	TISS has conducted survey to frame CSR policy for better implementation and monitoring of the CSR activities.
xIvii	Central recreation park with herbal garden should be developed for use of all inhabitants.	It shall be complied.
xIviii	The mine water should be treated properly before supply to the villager.	It is being complied.
xIix	Mine discharge water shall be treated to meet standards prescribed standards before discharge into natural water courses/agriculture. The quality of water discharge shall be monitored at the outlet and proper records maintained thereof and uploaded regularly on the company website.	A work order has been issued to CMPDIL, Ranchi. Regular monitoring of Water Quality Parameters is being carried out by CMPDIL.
I	The void shall be converted into a water reservoir of a maximum depth of 15-20 m and shall be gently sloped and the upper benches of the reservoir shall be stabilized with plantation and the periphery of the reservoir fenced. The abandoned pits and voids should be backfilled with OB and reclaimed with plantation and or may be used for pisciculture.	It shall be complied.
1i	Regular monitoring of groundwater level and quality of the study area shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality including Arsenic and Fluoride during the month of May. Data thus collected shall be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board/SPCB quarterly within one month of monitoring. Rainwater harvesting measures shall be undertaken in case monitoring of water table indicates a declining trend.	Groundwater level and quality is being regularly monitored by CMPDIL. The Location and design of Piezometers to be installed have been finalized by CMPDIL. A proposal for award of work of construction of new piezometers has been prepared and scheme has been approved by competent authority. The work will soon be tendered and will start shortly
1ii	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 will be taken-up
1iii	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.	Being complied. Presently a time series map of vegetation cover in the Jharia Coal Field is being carried out through CMPDIL, 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 CMPDIL 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.


1	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration. The mining plan and post-mining plan, closure plan should be prepared and submitted to the Ministry.	CMPDIL, Ranchi has prepared "Final Mine Closure Plan along with a Plan for Habitat Restoration and with details of Corpus Fund".
1v	A separate management structure for implementing environment policy and socio-economic 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, Survey, Electrical & mechanical, Forestry disciplines executives and technicians (4 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 quarters 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.
1vi	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	A well defined Corporate Environment Policy has already been laid down and approved by Board of Directors. This is also posted on BCCL website. Complied.

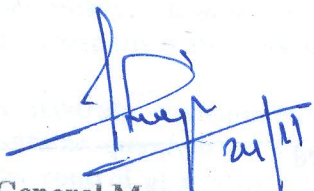
	<p>standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.</p> <p>c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished</p> <p>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.</p>	<p>A hierarchical system of the company to deal with environmental issues from corporate level already exists.</p> <p>Being complied.</p> <p>Being complied.</p>
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 complied.
iii	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM ₁₀ , PM _{2.5} , SO ₂ and NO _x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	The location of monitoring stations in Jharia Coal Field has been finalized in consultation with the Jharkhand State Pollution Control Board. Ambient air quality is regularly monitored by CMPDIL, Ranchi
iv	Data on ambient air quality (PM ₁₀ , PM _{2.5} , SO ₂ and NO _x , 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.
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	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).

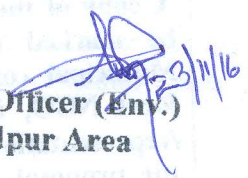
	with ear plugs/muffs.	
vi	Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.	The work of monitoring of ambient environment is being done through CMPDIL, Ranchi which is having laboratory recognized under the EP Rules.
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 done. Transporting of coal is being done covered with tarpaulins and optimally loaded.
viii	Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analyzed through a laboratory recognized under EPA Rules, 1986.	The work of monitoring of environment quality parameters has been awarded to CMPDIL, Ranchi. They have started the work in full fledge.
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 are existing 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 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.	Initial Medical Examination (IME) and Periodical Medical Examination (PME) of all the personnel is carried out as per the Statutes and Director General of Mines Safety (DGMS) guideline
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, Survey, Electrical & mechanical, Forestry disciplines executives and technicians (4 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

		<p>(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 quarters 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.</p> <p>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.</p>
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 the ministry of Environment & Forests at http://envfor.nic.in .	Complied.
xiv	A copy of the environmental clearance letter shall be marked to concern Panchayat/ZilaParishad, Municipal corporation or Urban local body and local NGO, if any, from whom any suggestion /representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.	Complied.
xv	A copy of the environmental clearance letter 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	Complied.

	pollutant such as PM ₁₀ , PM _{2.5} , SO ₂ and NO _x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	
xvii	The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office s of CPCB and the SPCB.	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 company's website along with the status of compliance of Environment condition 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.


Nodal Officer (Env.)
Barora Area


General Manager
Barora Area


Nodal Officer (Env.)
Govindpur Area

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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 – XV**

(FOR THE Q.E. JUNE, 2016)

E. C. no. J-11015/100/2011-IA.II (M) dated 16.12.2013-

September, 2016



CMPDI

ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CLUSTER - XV
(FOR THE Q.E. JUNE, 2016)

CONTENTS

SL. NO.	CHAPTER	PARTICULARS	PAGE NO.
1.		EXECUTIVE SUMMARY	1-2
2.	CHAPTER - I	INTRODUCTION	3-4
3.	CHAPTER-II	AMBIENT AIR SAMPLING & ANALYSIS	5-14
4.	CHAPTER-III	WATER SAMPLING & ANALYSIS	15-21
5.	CHAPTER-IV	NOISE SAMPLING & ANALYSIS	22-26
6.	PLATES:		
	PLATE NO. - I	SURFACE PLAN SHOWING AIR/NOISE MONITORING STATIONS	27
	PLATE NO. - II	SURFACE PLAN SHOWING WATER MONITORING LOCATIONS	28

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**ENVIRONMENTAL MONITORING REPORT
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September, 2016



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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°37' N to 23°52' N latitudes and 86°09' E to 86°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 (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂) and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM_{2.5} sampler) were used for sampling of PM₁₀, SO₂, & 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 were collected and analysed for four parameters on fortnightly 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 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 PM₁₀, PM_{2.5}, SO₂ 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 PM₁₀ & 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 within 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 (MoEF&CC), 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 MOEF&CC 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-XV is in the Western part of the Jharia coalfield. It includes a group of 4 Mines (viz. Kharkharee, Madhuband, Phularitand & Dharmaband). The Cluster – XV is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – XV 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 Khudia Nala.
- 1.2 The Cluster-XV is designed to produce 0.325 MTPA (normative) and 0.423 MTPA (peak) capacity of coal.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEF&CC) for a rated capacity 0.325 MTPA (normative) and 0.423 MTPA (peak) capacity of coal production vide letter no. J-11015/100/2011-IA.II (M) dated 16th December, 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 PM₁₀, PM_{2.5}, SO₂, NO_x 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 carried out & report prepared for submission to MOEF&CC & SPCB and other statutory authorities.

.....

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) Kharkharee CISF Office (A21): Industrial Area

The location of the sampling station is 23°48.249'N 086°14.717'E. The sampler was placed at a height of approx. 1.5m above ground level at Project Office.

ii) Madhuband UGP Office (A33): Industrial Area

The location of the sampling station is 23°45'24.48" N 086°11'59.44"E. The sampler was placed at a height of approx. 1.5m above ground level at Project Office.

II. BUFFER ZONE Monitoring Location

i) Block IV Kooridih OCP (A6): Industrial Area

The location of the sampling station is 23°47'21.717" N 086°13'37.75"E. The sampler was placed at a height of approx. 1.5m above ground level at Safety Office.

ii) Lohapatti (A20): Industrial Area

The location of the sampling station is 23°44'18.93" N & 086°13'37.75"E. The sampler was placed at a height of approx. 1.5m above ground level at Safety Office.

2.2 Methodology of sampling and analysis

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM₁₀), Particulate Matter (PM_{2.5}), Sulphur di-oxide (SO₂) and Nitrogen oxides (NO_x). Respirable Dust Samplers (RDS) & fine particulates for PM_{2.5} sampler were used for sampling PM₁₀ & 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 PM₁₀

In **core zone** under **Industrial area** varies from 68 to 88 μm^3

In **buffer zone** in **Industrial area** varies from 68 to 84 μm^3

Particulate Matter PM_{2.5}

In **core zone** under **Industrial area** varies from 31 to 42 μm^3

In **buffer zone** in **Industrial area** varies from 29 to 43 μm^3

Sulphur Dioxide:

In **core zone** under **Industrial area** varies from 10 to 12 μm^3

In **buffer zone** in **Industrial area** varies from 10 to 12 μm^3

Oxides of Nitrogen:

In **core zone** under **Industrial area** varies from 20 to 28 μm^3

In **buffer zone** in **Industrial area** varies from 20 to 28 μm^3

AMBIENT AIR QUALITY DATA

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

Year : **2015-16.**

Name of the Cluster : **Cluster – XV**

Q.E.: **June 2016**

Station Code/Name: (a) **A21 Kharkharee CISF Office**

Category:

(b) **A33 Madhuband UGP Office**

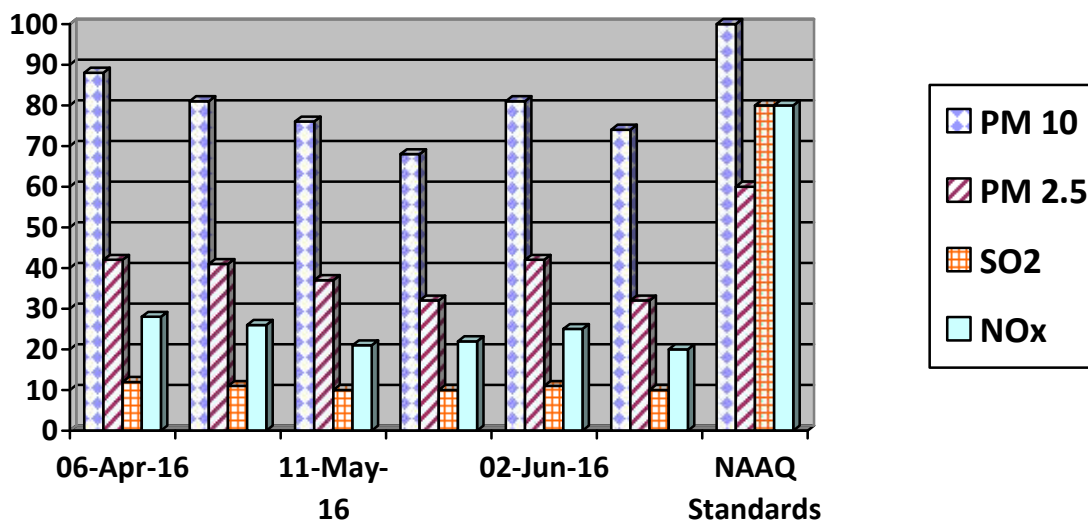
Industrial¹.

ZONE:

Core


(a). Station Code/Name: A21- Kharkharee CISF Office Category: Industrial.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO ₂	NO _x
1	06 - Apr -16	88	42	12	28
2	20 - Apr - 16	81	41	11	26
3	11 - May -16	76	37	<10.0	21
4	23 - May -16	68	32	<10.0	22
5	02 - Jun - 16	81	42	11	25
6	17 - Jun - 16	74	32	<10.0	20
NAAQ Standards		100	60	80	80



Note:

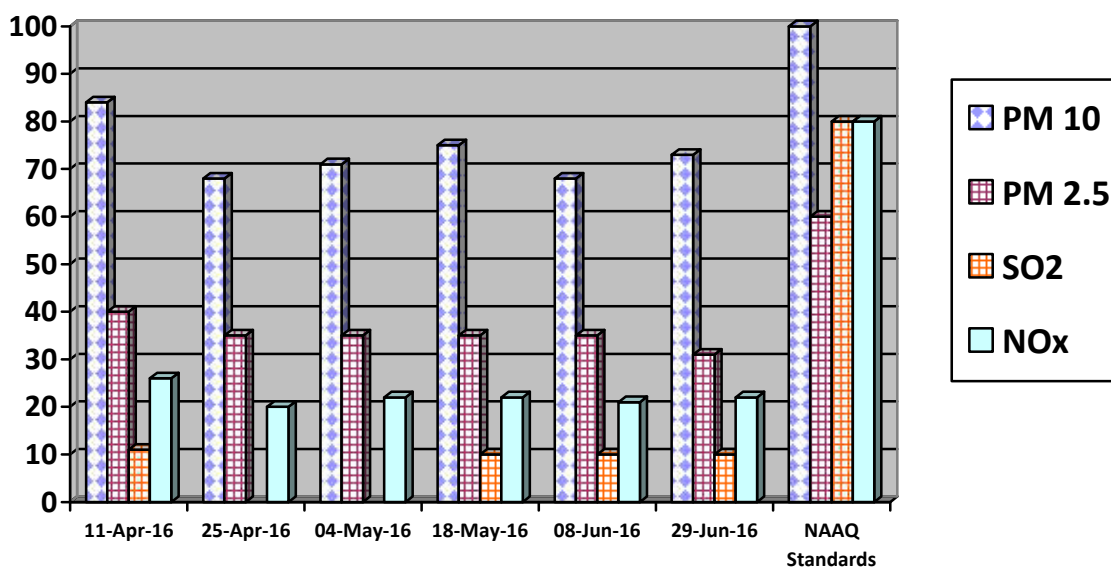
- All values are expressed in microgram per cubic meter
- 24 hour duration.

¹ Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310




(b). Station Code/Name: A33- Madhuband UGP Office Category: Industrial².

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO ₂	NO _x
1	11 - Apr -16	84	40	11	26
2	25 - Apr - 16	68	35	<10.0	20
3	04 - May -16	71	35	<10.0	22
4	18 - May -16	75	35	<10.0	22
5	08 - Jun - 16	68	35	<10.0	21
6	29 - Jun - 16	73	31	<10.0	22
NAAQ Standards		100	60	80	80



Note:

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

² Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

➤ AMBIENT AIR QUALITY DATA

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

Year : **2015-16.**

Name of the Cluster : **Cluster – XV**

Q.E.: **June 2016**

Station Code/Name: **(a) A6 Block IV Kooridih OCP**

Category:

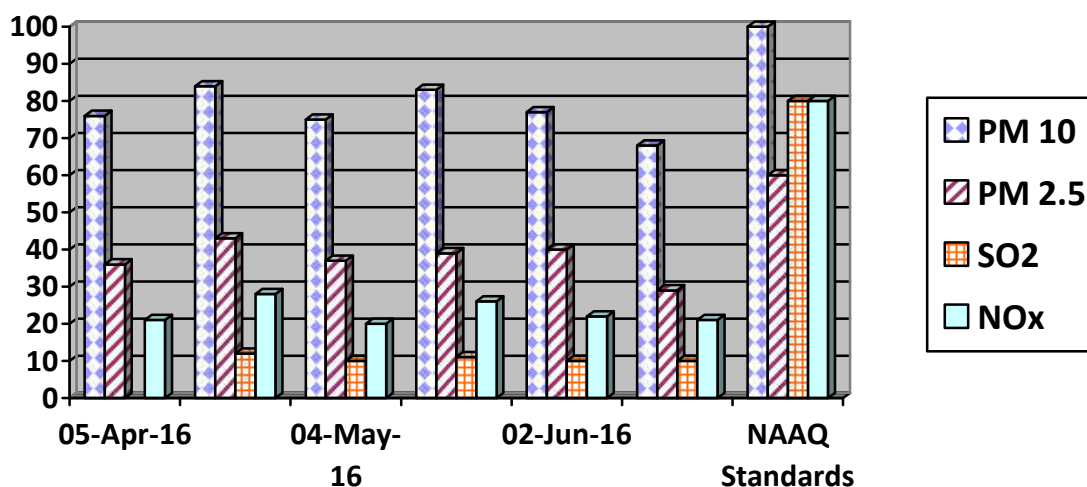
(b) A20 Lohapatti

Industrial³.

ZONE: BUFFER


(a). Station Code/Name: A6 – Block IV Kooridih OCP, Category: Industrial.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO ₂	NO _x
1	05 - Apr -16	76	36	<10.0	21
2	19 - Apr - 16	84	43	12	28
3	04 - May -16	75	37	<10.0	20
4	20 - May -16	83	39	11	26
5	02 - Jun - 16	77	40	<10.0	22
6	16 - Jun - 16	68	29	<10.0	21
	NAAQ Standards	100	60	80	80



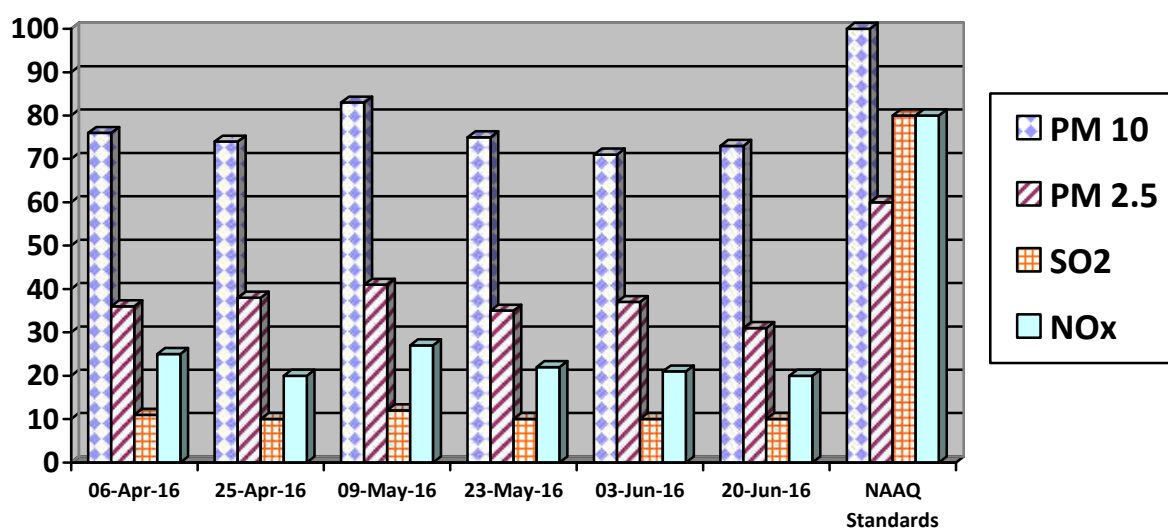
Note:

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


³ Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

(b). Station Code/Name: A20- Lohapatti, Category: Industrial⁴.

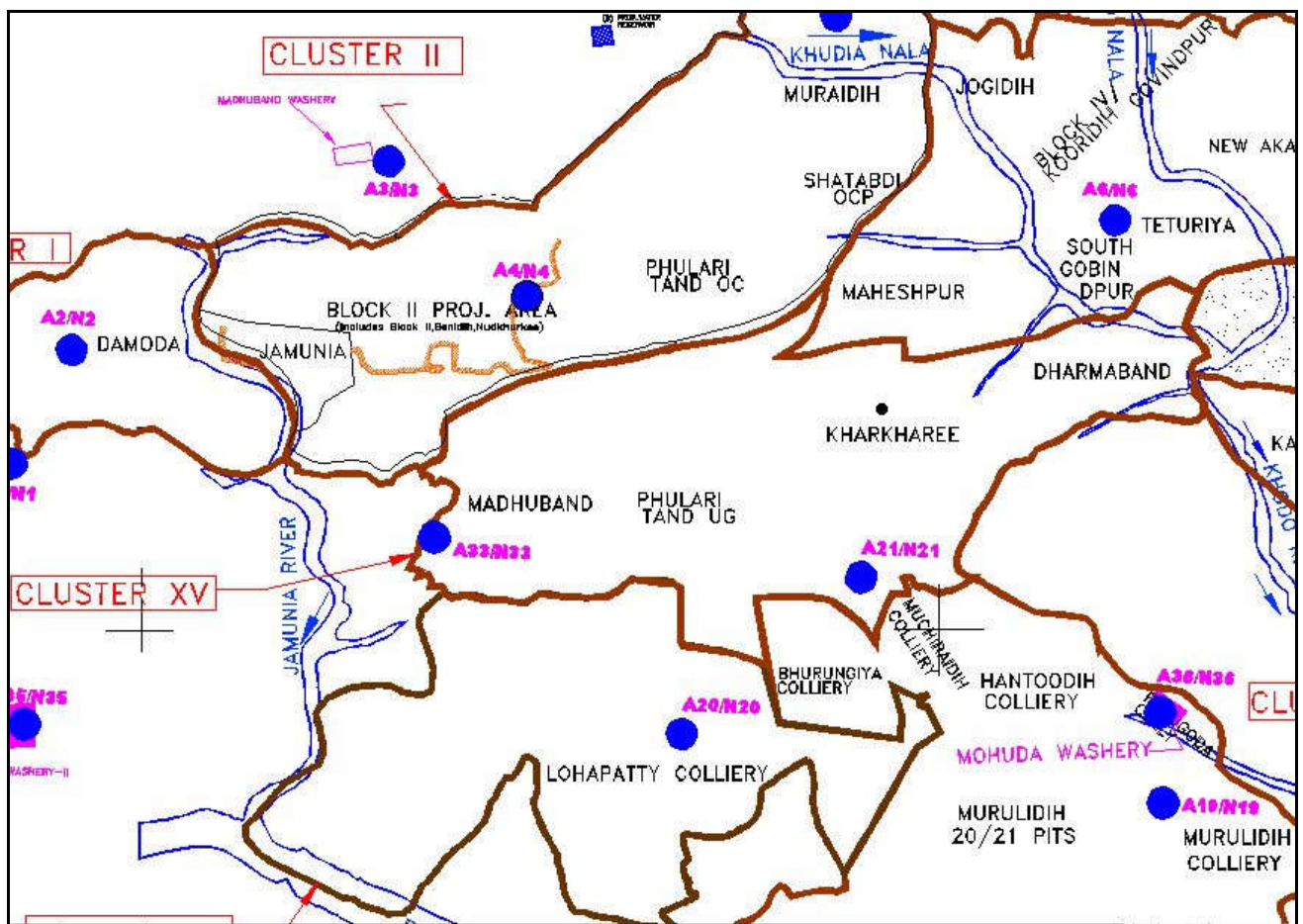
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO ₂	NO _x
1	06 - Apr -16	76	36	11	25
2	25 - Apr - 16	74	38	<10.0	20
3	09 - May -16	83	41	12	27
4	23 - May -16	75	35	<10.0	22
5	03 - Jun - 16	71	37	<10.0	21
6	20 - Jun - 16	73	31	<10.0	20
	NAAQ Standards	100	60	80	80

**Note:**

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

⁴ Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

Ambient Air Monitoring Stations in Cluster- XV in Core & Buffer 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 <ul style="list-style-type: none"> • Jharia • Raniganj • Bokaro 	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	500 $\mu\text{g}/\text{m}^3$ 700 $\mu\text{g}/\text{m}^3$	- 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 $\mu\text{g}/\text{m}^3$ 300 $\mu\text{g}/\text{m}^3$	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1.Improved west and Gaeke method 2.Ultraviolet fluorescene
	Oxide of Nitrogen as NO_2	Annual Average * 24 hours **	80 $\mu\text{g}/\text{m}^3$ 120 $\mu\text{g}/\text{m}^3$	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemiluminescence

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 and Control of Pollution) Act, 1981 (Act No. 14 of 1981), and in supersession of the notification No(s).S.O.384(E), dated 11th April 1994 and S.O.935(E), dated 14th October 1998, the Central 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 (SO₂), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogen dioxide (NO₂), 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 PM₁₀, 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 (O₃), 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 (NH₃), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C₆H₆), 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 by HPLC/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 Kharkharee UGP (MW15)**

A sampling point is fixed to assess the effluent quality of Mine discharge. This location is selected to monitor effluent discharge in to Khudia Nala.

ii) Drinking Water quality at **Kharkharee (DW15)**

iii) Surface Water quality at **U/S of Khudia Nala (SW5)**

iv) Surface Water quality at **D/S of Khudia Nala (SW32)**

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. The drinking and Surface water samples were collected and analyzed for 25 and 17 parameters respectively, on quarterly basis 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 parameters 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 Project: **Cluster - XV**

Month: **April, 2016.**

Name of the Stations & Code :

1. MW15- Mine Discharge of Kharkharee

First Fortnight

Sl. No.	Parameters	MW15 (Mine Discharge)	As per MOEF General Standards for schedule VI
		05.04.2016	
1	Total Suspended Solids	32	100 (Max)
2	pH	8.13	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	24	250 (Max)

Second Fortnight

Sl. No.	Parameters	MW15 (Mine Discharge)	As per MOEF General Standards for schedule VI
		29.04.2016	
1	Total Suspended Solids	34	100 (Max)
2	pH	8.3	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	28	250 (Max)

All values are expressed in mg/lit unless specified.

1. 27/5/16
2. 28/5/16
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 Project: **Cluster - XV**

Month: **May, 2016.**

Name of the Stations & Code :

1. MW15- Mine Discharge of Kharkharee

First Fortnight

Sl. No.	Parameters	MW15 (Mine Discharge)	As per MOEF General Standards for schedule VI
		05.05.2016	
1	Total Suspended Solids	40	100 (Max)
2	pH	8.41	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	28	250 (Max)

Second Fortnight

Sl. No.	Parameters	MW15 (Mine Discharge)	As per MOEF General Standards for schedule VI
		25.05.2016	
1	Total Suspended Solids	38	100 (Max)
2	pH	8.48	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	28	250 (Max)

All values are expressed in mg/lit unless specified.

1. 27/5/16
2. 28/5/16
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 Project: **Cluster - XV**

Month: **June, 2016.**

Name of the Stations & Code :

1. MW15- Mine Discharge of Kharkharee

First Fortnight

Sl. No.	Parameters	MW15 (Mine Discharge)	As per MOEF General Standards for schedule VI
		09.06.2016	
1	Total Suspended Solids	56	100 (Max)
2	pH	80.5	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	40	250 (Max)

Second Fortnight

Sl. No.	Parameters	MW15 (Mine Discharge)	As per MOEF General Standards for schedule VI
		18.06.2016	
1	Total Suspended Solids	52	100 (Max)
2	pH	7.52	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	36	250 (Max)

All values are expressed in mg/lit unless specified.

1. 27/5/16
2. 16/6/16
Analysed By


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

WATER QUALITY **(SURFACE WATER- ALL PARAMETERS)**

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

Coal Limited

Name of the Project: **Cluster - XV**

Period: **Q. E. June, 2016.**

Area : **Kharkharee UGP**

Project: **Cluster XV**
Kharkharee UGP

Stations:

Date of Sampling:
15/03/2016

1. Upstream in Khudia Nala SW-5
2. Downstream in Khudia Nala SW-32

07/06/2016

Sl. No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		SW-5	SW-32	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	2.8	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	74	92			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	Dissolved Oxygen, min.	6.8	5.9			0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	1.24	1.31			0.02	APHA, 22 nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01			0.01	APHA, 22 nd 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, 22 nd Edition AAS-GTA
11	Nitrate (as NO ₃), mg/l, Max	9.30	11.08			0.50	APHA, 22 nd Edition, UV-Spectrophotometric
12	pH value	8.18	8.11			2.5	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	<0.002	<0.002			0.002	APHA, 22 nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002			0.002	APHA, 22 nd Edition AAS-GTA
15	Sulphate (as SO ₄) mg/l, Max	320	340			2.00	APHA, 22 nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	824	862			25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	0.01	0.16			0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

1. 24/5/16
2. 26/5/16
Analysed By


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

All values are expressed in mg/lit unless specified

WATER QUALITY

(DRINKING WATER- ALL PARAMETERS)

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

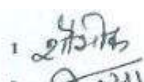
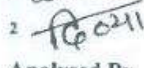
Name of the Project: **Cluster - XV** Period: **Q. E. June, 2016.**


Area : **Kharkharee UGP** Project: **Cluster XV**
Kharkharee UGP

Stations: Date of Sampling: **25/05/2016**

1. Drinking Water from Kharkharee DW-15

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		DW-15	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 nd Edition ,Carmin
2	Colour,in Hazen Units	5			1	5	APHA, 22 nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	98			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	168			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	0.60			0.02	1.0	APHA, 22 nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.09			0.02	0.2	APHA, 22 nd 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, 22 nd 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	4			0.5	45	APHA, 22 nd Edition, UV-Spectrophotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.92			2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22 nd Edition, 4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 nd Edition, AAS-GTA
16	Sulphate (as SO ₄) mg/l, Max	69			2.00	200	APHA, 22 nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22 nd Edition. Taste
18	Total Alkalinity (CaCO ₃), mg/l, Max	236			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	740			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO ₃), mg/l, Max	464			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	17			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.02			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

1. 
 2. 
 Analysed By


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

All values are expressed in mg/lit unless specified

WATER QUALITY

(GROUND WATER- ALL PARAMETERS)

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

Name of the Project: **Cluster - XV** Period: **Q. E. June, 2016.**

Area : **Kharkharee UGP** Project: **Cluster XV**
Kharkharee UGP

Stations:

1. Ground Water from Madhuband Village GW-15

Date of Sampling:
20/05/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-15	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 nd Edition ,Carmin
2	Colour,in Hazen Units	4			1	5	APHA, 22 nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	109			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	100			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	1.03			0.02	1.0	APHA, 22 nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.07			0.02	0.2	APHA, 22 nd 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, 22 nd 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	5			0.5	45	APHA, 22 nd Edition, UV-Spectrophotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.68			0.20	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C ₆ H ₅ OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22 nd Edition, 4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 nd Edition, AAS-GTA
16	Sulphate (as SO ₄) mg/l, Max	167			2.00	200	APHA, 22 nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22 nd Edition. Taste
18	Total Alkalinity (CaCO ₃), mg/l, Max	148			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	990			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO ₃), mg/l, Max	640			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	13			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.02			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

1. 27/5/16
2. 26/5/16
Analysed By

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

. All values are expressed in mg/lit unless specified

CHAPTER - IV

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites and their rationale

i) **Kharkharee CISF Office (N21)**

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) **Madhuband UGP Office (N33)**

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) **Block IV Kooridih OCP (N6)**

To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

iv) **Lohapatti (N20)**

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 MoEF&CC.

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 L_{EQ} 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 Project: **Cluster -XV**

Month: **April, 2016.**

Name of the Stations & Code :

1. **Kharkharee CISF Office(N21)**
2. **Madhuband UGP Office (N33)**
3. **Block IV Kooridih OCP (N6)**
4. **Lohapatti (N20)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	Kharkharee CISF Office (N21)	Industrial area	06.04.2016	56.7	75
2	Madhuband UGP Office (N33)	Industrial area	11.04.2016	57.6	75
3	Block IV Kooridih OCP (N6)	Industrial area	05.04.2016	61.3	75
4	Lohapatti (N20)	Industrial area	06.04.2016	60.8	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	Kharkharee CISF Office (N21)	Industrial area	20.04.2016	58.2	75
2	Madhuband UGP Office (N33)	Industrial area	25.04.2016	61.4	75
3	Block IV Kooridih OCP (N6)	Industrial area	19.04.2016	62.6	75
4	Lohapatti (N20)	Industrial area	25.04.2016	53.7	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.*

¹ Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..... Dated 19.07.2016. Job No. 110310

NOISE LEVEL DATA

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

Name of the Project: **Cluster -XV**

Month: **May, 2016.**

Name of the Stations & Code :

1. **Kharkharee CISF Office(N21)**
2. **Madhuband UGP Office (N33)**
3. **Block IV Kooridih OCP (N6)**
4. **Lohapatti (N20)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	Kharkharee CISF Office (N21)	Industrial area	11.05.2016	57.8	75
2	Madhuband UGP Office (N33)	Industrial area	04.05.2016	62.8	75
3	Block IV Kooridih OCP (N6)	Industrial area	04.05.2016	54.7	75
4	Lohapatti (N20)	Industrial area	09.05.2016	64.8	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	Kharkharee CISF Office (N21)	Industrial area	23.05.2016	56.2	75
2	Madhuband UGP Office (N33)	Industrial area	18.05.2016	58.5	75
3	Block IV Kooridih OCP (N6)	Industrial area	20.05.2016	63.4	75
4	Lohapatti (N20)	Industrial area	23.05.2016	61.8	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.

² Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

NOISE LEVEL DATA

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

Year : **2015-16.**

Name of the Project: **Cluster -XV**

Month: **June, 2016.**

Name of the Stations & Code :

1. Kharkharee CISF Office(N21)
2. Madhuband UGP Office (N33)
3. Block IV Kooridih OCP (N6)
4. Lohapatti (N20)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	Kharkharee CISF Office (N21)	Industrial area	02.06.2016	58.3	75
2	Madhuband UGP Office (N33)	Industrial area	08.06.2016	56.7	75
3	Block IV Kooridih OCP (N6)	Industrial area	02.06.2016	58.2	75
4	Lohapatti (N20)	Industrial area	03.06.2016	55.2	75

b. Second Fortnight data

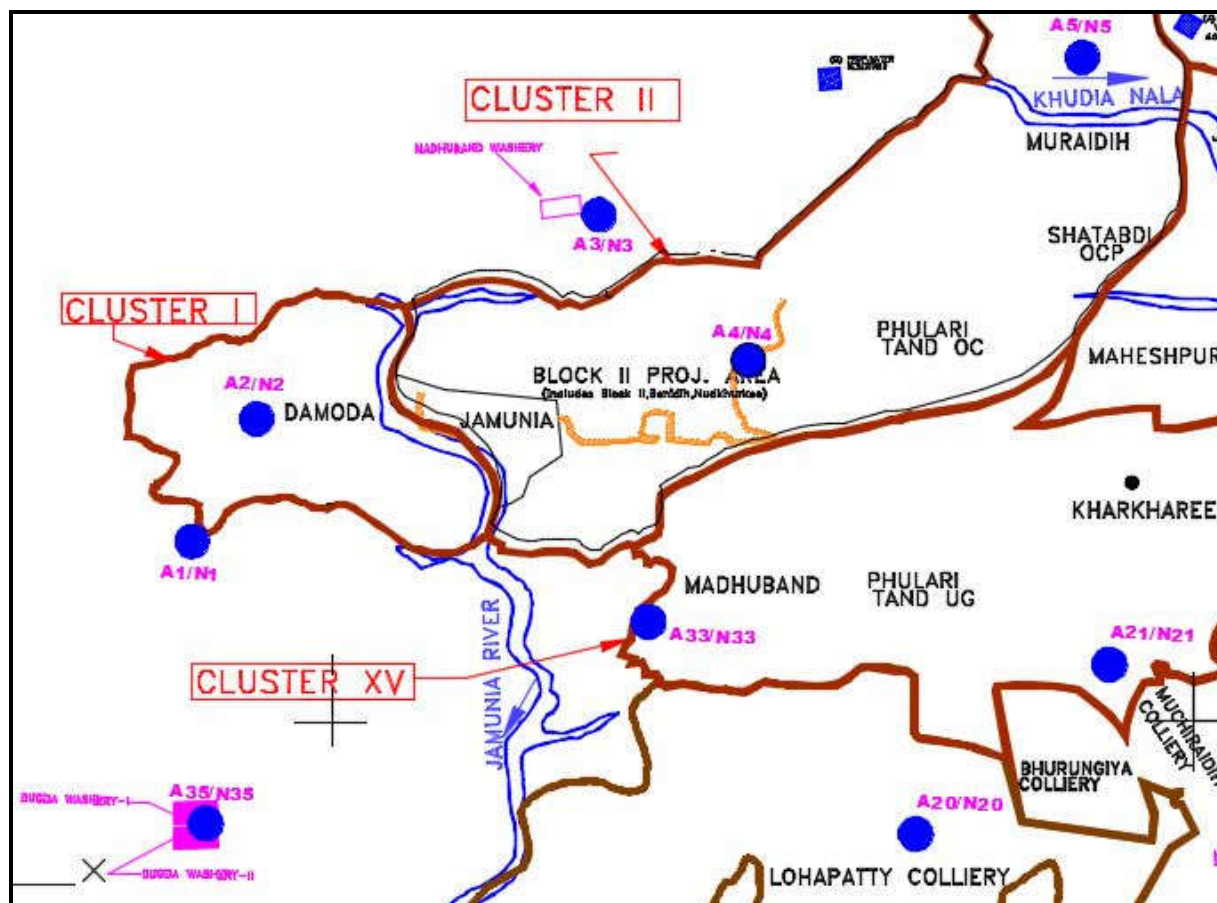
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Kharkharee CISF Office (N21)	Industrial area	17.06.2016	61.3	75
2	Madhuband UGP Office (N33)	Industrial area	29.06.2016	59.4	75
3	Block IV Kooridih OCP (N6)	Industrial area	16.06.2016	54.6	75
4	Lohapatti (N20)	Industrial area	20.06.2016	63.6	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.*

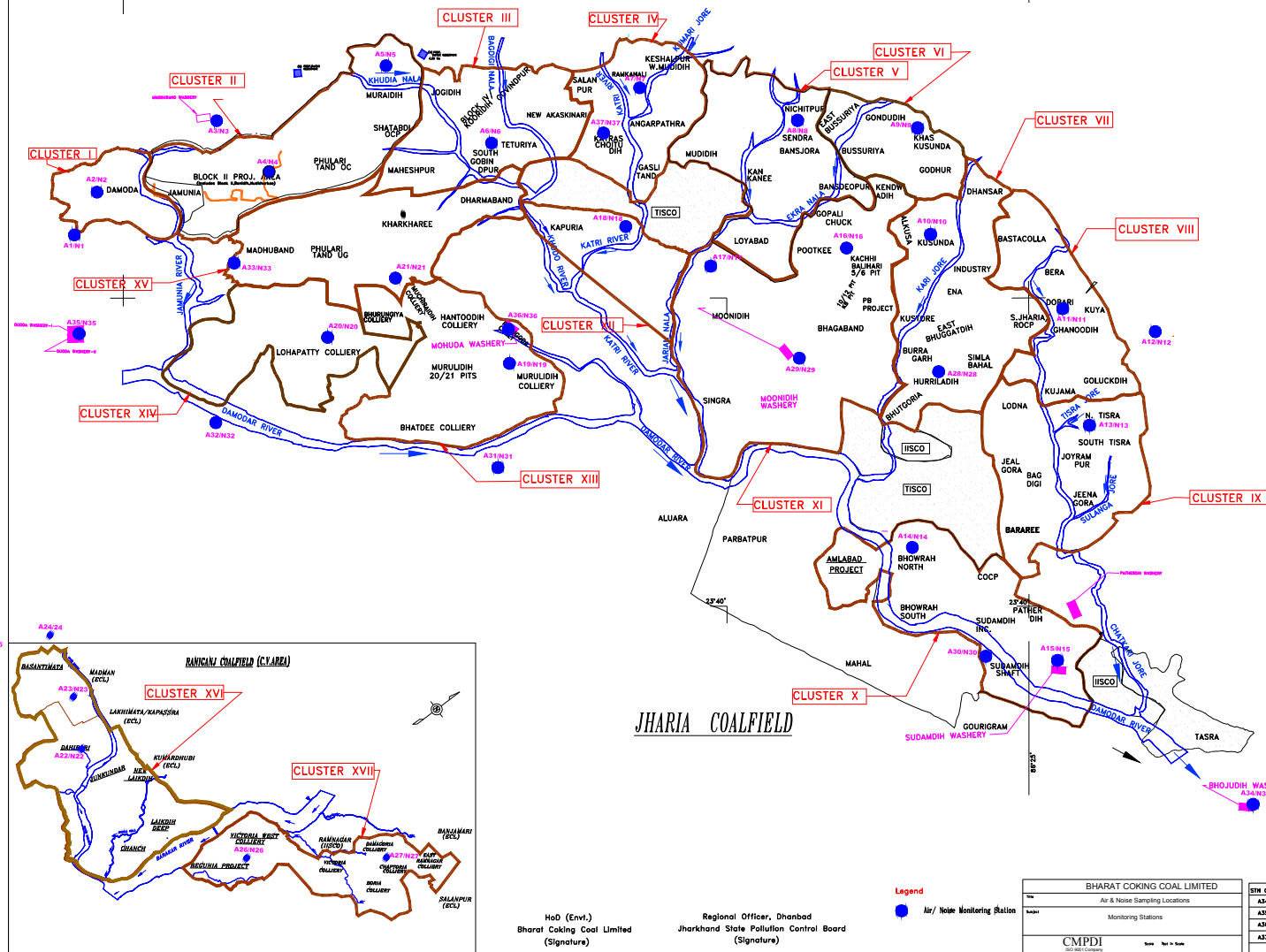
* Day Time: 6.00 AM to 10.00 PM.

³ Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

Noise Level Monitoring Location of Cluster XV



Location of Air & Noise Monitoring Stations in BCCL



CLUSTER III



Customer	BHARAT COKING COAL LIMITED
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File WATER SAMPLING LOCATIONS

Subject	MONITORING STATIONS
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CMBDI	From: Not in State
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ISO 9001 Company

ISO 9001 Company
