BHARAT COKING COAL LIMITED
(A Mini Ratna Company)
(A Subsidiary of Coal India Limited – A Maharatna Company)
Regd.Off: Koyla Bhawan, Koyla Nagar, Dhanbad-826005
CIN: U10101JH1972GOI000918
OFFICE OF THE GENERAL MANAGER
SIJUA AREA

Ref.No.-GM/SA/SPA/F-41/2018/ 374 Dt.-30.05.2018

To,
The Director(s)
Ministry of Environment, Forest & Climate Change, Govt. of India
Regional Office, Eastern-Central Zone (ECZ)
Bunglaw No. A-2, Shyamali Colony
Ranchi-834002

Subject- Half yearly compliance report of the Environmental Clearance Conditions for the period from 1st October, 2017 to 31st March, 2018 in respect of cluster V group of mines of Bharat Coking Coal Limited, Dhanbad

EC Order No. - J-11015/01/2011-IA.II (M) Dated 11.02.2013

Dear Sir,

Please find enclosed herewith the half yearly compliance report of Environmental Clearance Conditions for the period from 1st Oct, 2017 to 31st March, 2018 in respect of cluster V group of mines i.e. Sijua Area of Bharat Coking Coal Limited, Dhanbad both in hard copy and in soft copy.

Hope you will find the same in order

General Manager
Sijua Area

Cc:
1. Director, 1 A Monitoring Cell, Paryavaran Bhawan, CGO Complex, New Delhi-110003
2. Scientist & Incharge, Zonal Office, Central Pollution Control Board, 5th Floor 502, House & Conclave, 1582, Rajdanga Main Road, Kolkata-700107
3. Member Secretary, Jharkhand State Pollution Control Board, TA Division Building, H.E.C.,Dhurwa, Ranchi-834004
4. Regional Officer, Jharkhand State Pollution Control Board, H.I.G.-1, Sardar Patel Nagar, Hirapur Dhanbad - 826001
5. Dy. General Manager (Env.), Koyla Bhawan
6. All Project Officers- Nichitpur, Tetulmari, Kanakanee, Mudidih, Sendra Bansjora, Bansdeopur
7. Asst. Manager (Env.), Sijua Area
8. File

HALF YEARLY COMPLIANCE REPORT

OF

CLUSTER V

BHARAT COKING COAL LIMITED

FOR

THE ENVIRONMENTAL CLEARANCE

GRANTED VIDE EC Order No. J-11015/01/2011-IA.II (M) Dated 11.02.2013

Period: OCT, 2017- MAR, 2018

S. No.	Specific Condition	Compliance Status
1	The maximum production shall not exceed beyond that for which the environmental clearance has been granted for the mine of cluster V.	The production of coal from the cluster has been within the limit over the years. **Annexure1-Production figure of Cluster V from 2013-14 to 2017-18**
2	The road transportation of coal during phase–I should be by mechanically covered trucks. The road used for coal transportation should be developed with avenue plantation on both sides.	Presently, road transportation is being done by covering vehicle with tarpaulin. It has been included in the Transportation agreement with the transporting agency. 1320 Nos. of Gabion plantation has been done alongside road on both sides from Shakti Chowk to Mohlidih. Avenue Plantation is also present at Tetulmari Colliery. Due to dynamic features of mining operations and presence of coal-bearing area with underlying coal seams, avenue plantation along all the transportation routes is difficult. However, more avenue plantation will be carried out in a progressive manner whenever the land becomes available for plantation. **Plate 1- Avenue Plantation in Cluster V**
3	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.	Training and awareness regarding ecological restoration and sustainable development activities **(Computer Skills, Stitching Skills, Handloom, Jharcraft, etc.)** are being imparted within the company and in the nearby population. Within Company, Training programs are being conducted at VTC, Sendra and HRD, BCCL regularly. **Plate 2-Capacity Building activities in Cluster V**
4	The details of Transportation, CSR, R&R, and Implementation of environmental action plan for each of the 17 clusters should be brought out in a booklet form.	Complied. **Annexure 2- Transportation Booklet** **Annexure 3- CSR Booklet** **Annexure 4- R&R Booklet** Environmental Management Plan has been prepared for Cluster V.

5	*A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.*	The study to analyze extent of reduction in pollution load every year by reducing road transport is being conducted by CMPDIL. **Annexure 5- Report of study on reduction in pollution load by reducing road transport for cluster V**
6	*The expertise available internationally should be utilized for control of fire in Jharia Coalfields and for their reclamation and to further minimize time for fire and subsidence control.*	*Presently Master Plan approved by Govt. of India is under implementation for this purpose. A Global EOI was floated for award of work to international experts for control of fire. However, no eligible bidder qualified. CIMFR has been requested to initiate a study to identify the extent of fire and suggest effective mitigation measures.*
7	*The abandoned pits and voids should be backfilled with OB and reclaimed with plantation and or may be used for pisciculture.*	*The abandoned pits and voids are being backfilled with OB.* *Some of the abandoned pits are used as water reservoir by the surrounding community.*
8	*BCCL may consider setting up a separate management structure for implementing environment policy and socio-economic issues and the capacity building required in this regard.*	*BCCL has established a separate management structure for implementing environment policy and socio-economic issues and the capacity building from the headquarters up to the area and project level. The management structure is being further strengthened.* **Annexure6-*Environmental Management Structure at BCCL & the list of the personnel involved in environmental management in cluster V***
9	*The locations of monitoring stations in the Jharia Coalfields should be finalized in consultation with the Jharkhand State Pollution Control Board.*	*The locations of monitoring stations in cluster V have been finalized in consultation with the Jharkhand State Pollution Control Board.* ***Annexure 7- Plan and Letter ratified by the Regional Officer, Jharkhand State Pollution Control Board***
10	*The smoke/dust emissions vary from source to source (fuel wood, coal, fly ash from TPPs, silica from natural dust, etc) and a Source Apportionment Study should be carried out for the entire Jharia Coalfield.*	*As per the MoU "Sustainable Coal Mining in Coal India Limited" entered between CIL and NEERI, NEERI Nagpur was approached for conducting Source Apportionment Study for the compliance of EC conditions. Work order has been awarded.*

11	*Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (PM10 and PM 2.5) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.*	*Being compiled from the BCCL Headquarters Level for the entire Jharia Coalfields*
12	*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.*	*Work has been awarded to NRSA.* ***Annexure8-Copy of the letter regarding work-order given to NRSC***
13	*Measures to prevent ingress of air (Ventilation) in such areas, to prevent restart fresh/spread fires in other areas including in mines of cluster V shall be undertaken.*	*Action is being taken as specified in EC and as per Jharia Master Plan. Further fire patches are under operation to dig out the firy coal to save the coal from burning and to stop further spread of the fire.*
14	*Permanent /regular ambient air monitoring is required for CO, CO2, Methane and its homologues. Monitoring station, mobile monitoring, should be established at suitable location as the temp in the mine is high, in the presence of CH4, the coal may catch fire. Presence of Aromatic compounds should be investigated as most of the aromatic compounds are carcinogenic.*	*The samples of CO, CO2, CH4 and its homologues are collected and tested by the Mines Rescue Station/ISM regularly.* ***Annexure 9- Report of the analysis at Tetulmari Colliery***
15	*Local institution/university should be contacted for such type of study. Exact measurement for the presence of above gases and their potential danger/harmful effect on human should be assessed. ISM Dhanbad and any local university could be contacted for monitoring.*	*Local institutions such as IIT (ISM) are engaged for such type of studies.* ***Annexure 9- Report of the analysis at Tetulmari Colliery***
16	*The road transportation should be of bigger/high capacity trucks. The road should be strengthened to carry the load of high capacity trucks. Railway siding with silo loading will be completed by December, 2015 as informed by the proponents.*	*The road transportation is being done by high capacity trucks. The road is strengthened* to carry the load of high capacity trucks. *The process of installing Silo loading system is in process.* ***Annexure 10- Copy of the work Order of Installation of Silo Loading***
17	*Master Plan for dealing with fire for next 12 year which is under implementation, Details of same from August 2011 till date year-wise should be provided. An Action Plan which is in progress should*	*Govt. of India approved Master Plan and status of action taken is uploaded on the official website of BCCL - www.bcclweb.in.*

	be submitted to the Ministry.	
18	Underground mining should be taken up after completion of reclamation of Opencast mine area after 15 years.	It shall be complied.
19	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.	Action is being taken to control mine fires including in 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). Fire patches are under operation to dig out the firy coal to save the coal from burning and to stop further spread of the fire.
20	The rejects of washeries in Cluster –V should be sent to FBC based plant.	Coal washery does not exist in cluster V at present.
21	There shall be no external OB dumps. At the end of the mining there shall be no void and the entire mined out area shall be re-vegetated. Areas where opencast mining was carried out and completed shall be reclaimed immediately thereafter.	At the end of the mining, there shall be no void and no external OB Dump and the area will be reclaimed and re-vegetated with the proper eco-restoration techniques suggested by the experts available in BCCL and in external agencies i.e. FRI Dehradun, CEMDE Delhi, etc. Contemporaneous backfilling and reclamation of opencast mined out areas are being progressively done.
22	There shall be no water body left at the end of mining.	It shall be complied.
23	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-V shall be drawn up and implemented.	Mining plans consisting of detailed calendar plan of production with plan for OB dumping and backfilling (for OC mines) and reclamation for two collieries, Sendra Bansjora and Kankanee, have been prepared and approved by BCCL Board. For the rest of the mines, mining plans are under draft by CMPDIL and will be soon prepared and approved. Feasibility reports of all the mines have been prepared. Progressive Mine closure plans as per the guidelines of Ministry of Coal have been prepared by Central Mine Planning and Design Institute (CMPDI) for six collieries and it is being implemented. For Bansdeopur colliery, Progressive Mine Closure plan will be drafted soon.
24	The void shall be converted into a water reservoir of	Compliance will be done at the time 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 biologically reclaimed with plantation and or may be used for pisciculture.	*final closure of mining activities.* *Mines in the cluster V are at present active and concurrent backfilling and reclamation is being done.* *The abandoned pits and voids are being backfilled with OB.* *Some of the abandoned pits are used as water reservoir by the surrounding community.*
25	*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.*	*Streams/Nalas, which are seasonal, flowing within the lease, are being protected to the extent feasible. Embankment proposed is and will be strengthened with stone pitching. These are maintained to keep the desired flow in the monsoon.* *OB dumps are being stabilized biologically so that the erosion of the loose materials can be minimized and the transportation of eroded material in the streams/nalas can be avoided.*
26	*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.*	*Active OB dumps near nala will be rehandled for backfilling in the mine voids.* *Two OB dumps of 8 ha and 2.3 Ha areas at Tetulmari and One OB dump of 2.8 Ha area at Nichitpur have been biologically stabilized and will not be disturbed.* ***Plate 3- Biologically Stabilized OB Dumps at Tetulmari*** ***Plate 4- OB Dump biologically reclaimed at Nichitpur***
27	*Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 1957.08 ha area would be reclaimed. The total additional area under plantation would be 939.17 ha (green belt of 76 ha, Ext. OB dump 73.07 ha, backfilled area 300.35 ha, other undisturbed area 489.77 ha) by planting 1878380 plants in 939.19 ha at a total cost Rs 7202.46 lakhs.*	*Plantation is being carried out in available spaces for creation of thick green belt.* **Annexure 11- Satellite based survey report of Land reclamation and restoration of the year 2017** ***Plate 5- Plantation at Undisturbed area at Loyabad*** ***Plate 6- Plantation on external OB dump at Tetulmari*** ***Plate 7-Plantation near mine working boundary at Sendra Bansjora and Nichitpur***
28	*The road should be provided with avenue plantation*	*1320 Gabion plantation has been done*

	on both sides as trees act as sink of carbon and other pollutant.	*alongside road on both sides from Shakti Chowk to Mohlidih.* *Avenue Plantation is also present at Tetulmari Colliery.* *Due to dynamic features of mining operations and presence of coal-bearing area with underlying coal seams, avenue plantation along all the transportation routes is difficult. However more avenue plantation will be carried out in a progressive manner when the land becomes available for plantation*
29	*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 V shall be implemented.*	*Cluster V is implementing the guidelines of Dhanbad Action Plan.* *Dhanbad has come out of the list of the Critically Polluted Areas.* ***Plate 8- Water Sprinkling on mine roads***
30	*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 have been finalized in consultation with the Jharkhand State Pollution Control Board.* *As per the MoU "Sustainable Coal Mining in Coal India Limited" entered between CIL and NEERI, NEERI Nagpur was approached for conducting Source Apportionment Study BCCL for compliance of EC conditions. The work order has been awarded.*
31	*No groundwater shall be used for the mining activities. Additional water required, if any, shall be met from mine water or by recycling/reuse of the water from the existing activities and from rainwater harvesting measures. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.*	*Groundwater is not being used for mining activities.* *Mine water is being used for industrial purposes (sprinkling on road, firefighting etc.) and for watering of plants.* *Water is also supplied to nearby villages for domestic uses.*
32	*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*	*Being Complied.*

	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.	**Annexure 12-Groundwater Monitoring station map** **Annexure13-Groundwater Monitoring Report of Cluster V for 2017-18**
33	Mine discharge water shall be treated to meet 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 water discharge parameters are in compliance with the prescribed standards. The quality is monitored regularly and records maintained thereof. It is also uploaded on the company website. **Annexure 14- Analysis report of Mine water discharge by CMPDIL at the monitoring point fixed in consultation with JSPCB**
34	ETP shall also be provided for workshop and CHP, if any. Effluents shall be treated to confirm to prescribed standards in case discharge into the natural water course.	Oil & Grease Trap has been Constructed at Nichitpur Workshop to treat workshop effluents. Another conventional type Oil & Grease trap is in process of installation at Tetulmari Workshop.
35	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 V and no depillaring district is taken up. However regular monitoring of subsidence will be undertaken on commencement of depillaring districts. Cracks developed due to the underground fire are filled with soil/suitable material.
36	Sufficient coal pillars shall be left un-extracted 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 statuettes and DGMS guidelines.
37	High root density tree species shall be selected and planted over areas likely to be affected by subsidence.	Plantation of high root density tree species in subsidence prone area will be taken-up at the time of depillaring operations.
38	Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.	It shall be complied.
39	Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.	Sufficient barriers are left for saving the surface installation and infra structures as per the statute and DGMS guidelines.

40	No depillaring operation shall be carried out below the township/colony.	It is being complied.
41	The Transportation Plan for conveyor cum–rail for Cluster-V 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 V should be dovetailed with Jharia Action Plan. The road transportation of coal during phase–I should be by mechanically covered trucks.	Compliance in progress. Master Plan has been dovetailed with Environment Clearance Conditions. The system is to be installed in the 2nd phase i.e. after completion of Master Plan (10 years). By that time transportation is being done by covering vehicle with tarpaulin cover. Work for preparation of Transportation plan for conveyor- cum-rail has been awarded to CMPDIL.
42	A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.	The study to analyze extent of reduction in pollution load every year by reducing road transport is being Conducted by CMPDIL.
43	R&R of 5835 nos of PAFs involved. They should be rehabilitated at cost of shifting to safe areas at the cost of Rs 104024.9 Lakhs as per the approved Jharia Action Plan.	Compliance is in progress. Master Plan for rehabilitation is under implementation.
44	A detailed CSR Action Plan shall be prepared for Cluster V group of mines. Specific activities shall be identified for CSR the budget of Rs. 242.7 Lakhs per year@ Rs 5/T of coal as recurring expenditure. The 265.25 ha of area within Cluster V ML existing as waste land and not being acquired shall be put to productive use under CSR and developed with fruit bearing and other useful species for the local communities. In addition to afforesting 250.57 ha of are at the postmining stage, the waste land /barren land within Cluster V ML shall be rehabilitated/reclaimed as forest/agricultural land under CSR Plan in consultation with local communities. Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the Public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website A detailed CSR Action Plan shall be prepared for Cluster V group of mines. Specific activities shall be identified for CSR the budget of Rs. 242.7 Lakhs per year@ Rs 5/T of coal as recurring expenditure. The 265.25 ha of area within Cluster V ML existing as waste land and not being acquired shall be put to productive use under CSR and developed with fruit bearing and other useful species for the local communities. In addition to	Being Complied

	afforesting 250.57 ha of are at the postmining stage, the waste land /barren land within Cluster V ML shall be rehabilitated/reclaimed as forest/agricultural land under CSR Plan in consultation with local communities. Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the Public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website	
45	*Mine Closure Plan of Cluster –V is in draft stage, the same should be submitted to ministry*	*Mine closure plans for six collieries of cluster V have been prepared and approved by the company board. Mine closure plan for the remaining colliery-Bansdeopur will be drafted soon.*
46	*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: 50000) 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.*	*Land use pattern monitoring based on satellite data is being done by CMPDIL.* ***Annexure 15- Land use pattern monitoring Report of JCF for the year 2016***
47	*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.*	*Final Mine Closure Plan will be prepared 5 years before final closure of mines. The mines of cluster V have not reached the end stage yet.* *A roadmap for ecological restoration has been prepared by FRI.* ***Annexure16- Ecological Restoration Roadmap***
48	*A separate environmental management cell with suitable qualified personnel shall be setup under the control of a Senior Executive, who will report directly to the Head of the company for implementing environment policy and socio-economic issues and the capacity building required in this regard.*	*A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives has been established at the Headquarters. At the area level, one Executive in each area has been nominated as Nodal Officer (Environment).* *Management Trainees/Asst.Managers(Environment) have also been deputed at area level The activities are monitored on regular basis at Area and at*

		Headquarters levels.DGM (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. Further capacity building at both corporate and operating level is being done through regular training programmes conducted within company and at the leading centres and institutes of the country.
49	Implementation of final mine closure plan for Cluster V, subject to obtaining prior approval of the DGMS in regard to mine safety issues	It will be Complied at the time of final closure of mines.
50	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 Corporate Environment Policy has been formulated and also uploaded on the website **Annexure17- Corporate Environment Policy**
B	**General Conditions by MOEF:**	
1	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests	It is being complied
2	No change in the calendar plan of production for quantum of mineral coal shall be made.	It is being complied
3	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 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.	Complied.
4	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	Complied. Monitoring is being done by CMPDIL for Ambient air quality (PM10, PM 2.5, SO2

	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.	and NOx) and heavy metals such as Hg, As, Ni, Cd, Cr. **Annexure18:-Environment Monitoring Report**
5	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.	Complied. Personnel operating near HEMMs, drilling machines are equipped with Personal Protective Equipment.
6	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.	Complied. Mine water is being reused in mine for industrial purposes (sprinkling, fire control etc.) and also for domestic usage. Oil and grease trap has been installed at the workshop.
7	Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.	It is being Complied
8	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	It is being Complied
9	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.	Complied
10	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.	Complied
11	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 has been established at the Headquarters. At the area level, one Executive in each area has been nominated as Nodal Officer

		(Environment). Management Trainees/Asst. Managers (Environment) have also been deputed at area level. The activities are monitored on regular basis at Area and at Headquarters levels. DGM (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.
12	*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.*	*Complied.*
13	*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.*
14	*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.*
15	*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.*
16	*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*	*Complied.*

	company's website.	
17	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.	Compliance Report is being submitted regularly on time both in hard copy and in soft copy.
18	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.	Complied
19	The Environmental statement for each financial year ending 31 March in For –V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules,1986,as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF by E-mail	Complied regularly on time
C	**Other Conditions by MOEF:**	
1	The Ministry or any other Competent Authority may stipulate any further condition(s) for environmental protection.	Complied. Following additional measures as informed by MoEF and JSPCB from time to time
2	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	Agreed by PA
3	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.	Agreed by PA
4	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.	Agreed by PA

ANNEXURE-1

COAL PRODUCTION FIGURE OF CLUSTER V

S.N.	FINANCIAL YEAR	COAL PRODUCTION(In tones)
1	2013-14	2687844
2	2014-15	2696315
3	2015-16	2791806
4	2016-17	2963515
5	2017-18	2631688

ANNEXURE-2

TRANSPORT BOOKLET OF CLUSTER V

SIJUA AREA

CLUSTER V

2017-18

COAL TRANSPORTATION:

Coal produced in the mines of cluster V is dispatched in two modes-

1. ***Road Transport***
2. ***Rail Transport through Railway Sidings***

1. ***Road Transport:***

   - *Coal from coal dumps is transported to washeries/consumers through road transportation.*
   - *Coal is also transported up to railway sidings via Road route for loading in rakes for rail transportation.*
   -

2. ***Rail Transport:***
   - *Coal is transported to power, fertilizer and other consumers from KDS Railway Siding.*

Annexure 3- CSR Booklet

CSR BOOKLET

SIJUA AREA

CLUSTER V

2017-18

BHARAT COKING COAL LIMITED (BCCL)

Bharat Coking Coal Limited (BCCL) is a Public Sector Undertaking engaged in mining of coal and allied activities. It occupies an important place in as much as it produces bulk of the coking coal mined in the country. BCCL meets almost 50% of the total prime coking coal requirement of the integrated steel sector. BCCL was incorporated in January, 1972 to operate coking coal mines (214 Nos operating in the Jharia & Raniganj Coalfields, taken over by the Govt. of India on 16th Oct, 1971 to ensure planned development of the scarce coking coal resources in the country.

MAJOR CSR ACTIVITIES OF BCCL

Bharat Coking Coal Limited (BCCL) is committed to good corporate citizenship and makes constant efforts to build and nurture long lasting relationships with members of the society in general and its peripheral communities in particular.

The following activities have been carried out under the Corporation's CSR Programme.

***Drinking Water Facilities**: Provided deep bore wells, tube wells, pumps/motors, open wells, in the peripheral villages of BCCL. Water supply through pipeline, through water tanker is also provided to the villages.*

***Education:** BCCL adopts a multi-pronged approach to promote quality education in backward areas. The measures taken by BCCL comprise Construction, Extension, and Renovation of school buildings etc are done to promote quality education in the nearby villages. BCCL is Extending financial aid for educational facilities to Private Committee Managed schools. Measures are taken to promote women literacy and career development.*

***Health Care**: BCCL Conducts medical/health camps for dwellers of peripheral villages for rendering free medical consultancy. CSR Clinics, wellness clinics, artificial limbs centres are organised for the benefit of the needy section of the society. Mobile medical vans are deployed as special arrangement for medical services.*

***AIDS awareness** camps are organized as special drive to develop awareness and to render free consultancy.*

"Ek Jagaran Jeevan Shaili"- A Life style Management Programme is being organised for de-addiction from ill habits of life style such as consuming tobacco, alcohol etc.

Occupational health awareness programmes are organised.

***Other Welfare Activities**: This includes Construction / renovation of Community Halls, construction / repair of roads, construction of Health-sub centres, construction of drain, construction of Chhat Ghat in the ponds, Construction of Boundary wall, providing Choupal for community gatherings, Installation of road side Water Kiosks during summer etc.*

During winter, Blankets are distributed among poor section of the society.

***Sports & Cultural**: Various activities are organised to propagate sports and cultures. Sports/games items and instruments are also provided. To promote sports, children parks have been constructed.*

Village adoption: Lahbera, a SC/ST village in Dhanbad has been adopted for its all-round development and a number of development activities have been carried out.

SCOPE

As per **Schedule VII of New Companies Act 2013** the following should be the Scope of Activities under Corporate Social Activities:

i) Eradicating hunger, poverty and malnutrition, promoting healthcare including preventive health care and sanitation and making available safe drinking water.
ii) Promoting education, including special education and employment enhancing vocation skills especially among children, women, elderly, and differently abled and livelihood enhancement projects;
iii) Promoting gender equality, empowering women, setting up homes and hostels for women and orphans, setting up old age homes, day care centres and such other facilities for senior citizens and measures for reducing inequalities faced by socially and economically backward groups;
iv) Ensuring environmental sustainability, ecological balance, protection of Flora and Fauna, animal welfare, agro-forestry, conservation of natural resources and maintaining quality of soil, air and water;
v) Protection of national heritage, art and culture including restoration of buildings and sites of historical importance and works of art; setting up public libraries, promotion and development of traditional arts and handicrafts;
vi) Measures for the benefit of armed forces veterans, war widows and their dependents
vii) Training to promote rural sports, nationally recognized sports, Paralympics sports and Olympic sports;
viii) Contribution to the Prime Minister's National Relief Fund or any other fund set up by the Central Government for socio-economic development and relief and welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities and women;

ix) Contributions or funds provided to technology incubators located within academic institutions which are approved by the Central Government;
x) Rural development projects

SOURCE OF FUND

The fund for the CSR should be allocated based on 2% of the average net profit of the Company for the three immediate preceding financial years or Rs. 2.00 per tonne of Coal Production of previous year whichever is higher.

ACTION PLAN FOR CORPORATE SOCIAL RESPONSIBILITY

As per the EC Granted to Cluster V:

"A detailed CSR Action Plan shall be prepared for Cluster V group of mines. Specific activities shall be identified for CSR the budget of Rs. 242.7 Lakhs per year@ Rs 5/T of coal as recurring expenditure. The 265.25 ha of area within Cluster V ML existing as waste land and not being acquired shall be put to productive use under CSR and developed with fruit bearing and other useful species for the local communities. In addition to afforesting 250.57 ha of area at the post-mining stage, the waste land /barren land within Cluster V ML shall be rehabilitated/ reclaimed as forest/agricultural land under CSR Plan in consultation with local communities. Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the Public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website every year. The company must give priority to capacity building both within the company and to the local youth, who are motivated to carry out the work in future. CSR should be Rs 4.6 Lakh for cluster-V for year 2012-13 and thereafter. Social Audit should be carried out for CSR for its actual implementation."

The EMP (Environment Management Plan) contained the following:

S.N	***HEAD OF WORKS***	***CSR expenditure to be done per year in Rs. lakhs***				
		2011-12	***2012-13***	***2013-14***	***2014-15***	***2015-16***

1	Education facilities including grant of schools, providing education kits, running of schools etc.	40.00	45.00	35.00	40.00	40.00
2	Water Supply and rain water harvesting works, wells, ponds, hand pumps and tube wells	30.00	35.00	45.00	30.00	30.00
3	Health Care and vaccination, awareness camp, mobile medical camp, Immunization, medicine etc.	20.00	20.00	10.00	20.00	20.00
4	Environment Protection i.e. plantation etc.	8.25	8.25	18.25	8.25	8.25
5	Social Empowerment Like Community centre, Literacy drive, shopping complex.	10.00	10.00	10.00	10.00	10.00
6	Infrastructure Development like road, bridge, repairing of school, drains, electric line etc.	20.00	10.00	10.00	20.00	20.00

7	Sports Culture like village stadium village stadium, grant to village sports body, organizing sports meet	3.00	3.00	3.00	3.00	3.00
8	Grant to NGO for community development	5.00	6.30	6.30	5.00	5.00

STATUS

Healthcare: Annual CSR (Healthcare) Activities for the year 2017-18

BHARAT COKING COAL LIMITED

CSR CAMP AT REGIONAL HOSPITAL LOYABAD / DISPENSARIES OF SIJUA AREA

Year -2017 & up to till date 2018

SL no.	Date	Name of Camp	Benficiries
1	01.01.2017	Eye camp	101/40
2	24.01.2017	Ligation camp	18
3	20.02.2017	Lipid profile camp RHL	15
4	23.02.2017	Lipid profile camp RHL	28
5	20.03.2017	Lipid profile camp RHL	15
6	20.04.2017	Lipid profile camp RHL	23
7	20.05.2017	Blood sugar camp RHL	23
8	20.06.2017	Blood sugar camp RHL	3
9	03.07.2017	Diabetic camp RHL	6
10	11.07.2017	Lipid profile camp RHL	10
11	26.07.2017	Lipid profile camp RHL	7
12	17.9.2017	Health checkup at Nichitpur Town	208
13	16.10.2017	Lipid profile camp RHL	8
14	20.10.2017	Lipid profile camp RHL	3
15	03.11.2017	Diabetic camp RHL	6
16	24.11.2017	Thyoid camp RHL	8
17	12.12.2017	Sugar & Uric acid camp RHL	36
18	17.01.2018	Diabetic Camp	34
19	20.02.2018	Hyper tension & Dibetic camp	43
20	28.02.2018	Lipid profile camp	21
21	21.04.2018	Chield Health Check up camp	215
22	13.04.2018	Diabetic Camp	15
23	22.05.2018	Refraction i.e. Gen. Eye camp	65
		Total	810

2018

29/5/18

Dy. CMO/AMO
RHL, Sijua Area-V.

Dy. CMO/AMO
R. H. L.
Sijua Area

Education: Annual CSR Activities for the year 2016-17

EDUCATION

School Grants (2016-17)

	FINANCIAL ASSISTANCE TO PCM SHOOLS FOR THE PERIOD April to September 2016 (FY 2016-17)							
1	SIIUA		Rate of financial asst.& No. of teachers					
Sl.No.	Name & Location of Private Committee Managed Schools	No.of eligible Teachers for getting fin.assistance	Under Graduate Rs.5000/- PM/PT	Graduate Rs.5500/- PM/PT	Graduate with BT Rs.6500/- PM/PT	Graduate with B.Ed Rs.7000/- PM/PT	Total Amount of Fin.assist. for 2016-17	Amt.of 1st & 2nd Qr April-Sep 2016 of FY 2016-17
1	2	3	4	5	6	7	8	9
1	Adarsh Harijan Shishu Pathshala,Sendra-10	2	1	1	0	0	126000	63000
2	S.S.S. Gyan Kunj, Loyabad.	6	4	2	0	0	372000	186000
3	Saraswati Bal Vidya Mandir,Nichitpur.	2	2	0	0	0	120000	60000
4	Pandey Madhya Vidyalaya, Kankanee	5	2	3	0	0	318000	159000
5	Shishu Vidya Mandir,Tetulmari	5	4	1	0	0	306000	153000
6	Sarvodaya Shishu Mandir, Sendra Bansjora	4	4	0	0	0	240000	120000
7	Saraswati Sewa Sadan Vidyalaya. Kankanee,	3	0	3	0	0	198000	99000
8	Primary Janta School, Sendra No5	1	1	0	0	0	60000	30000
9	Laxmi Devi Vidya Mandir,Loyabad	4	2	2	0	0	252000	126000

	SIJUA Page -2-							
10	Panda Kanali Madhya Vidyalaya,Loyabad Coke Plant	2	2	0	0	0	120000	60000
11	Bangla Primary School, Loyabad	3	3	0	0	0	180000	90000
12	Urdu Primary School,Kankanee	1	1	0	0	0	60000	30000
13	Shishu Shiksha Niketan Loyabad,	3	3	0	0	0	180000	90000
14	Gandhi Smarak Primary School	4	4	0	0	0	240000	120000
15	Sarswati Vidya Mandir, Tetulmari	3	3	0	0	0	180000	90000
16	Janta janardan Bal Vidya Mandir,Tetulmari	3	2	1	0	0	186000	93000
17	Indira Gandhi Smarak Vidya Mandir,Tetulmari	3	3	0	0	0	180000	90000
TOTAL	17	54	41	13	0	0	3318000	1659000

Other CSR activities in Sijua Area (Cluster V) in previous Years:

2013-2014:

1. Revalidation: RE for construction of one library hall for Nehru Mahavidyalaya,Tetulmari
2. Construction of two classrooms for Nehru Balika Uchha Vidyalay, Tetulmari
3. Financial assistance for providing computer at Ambedkar School, Loyabad
4. Repair & Maintenance- Balika Uchaa Vidyalay Mudidih, Sijua Area

2014-2015:

1. One day Sustainable Development Awareness programme at Sijua area

2015-2016:

1. Construction of toilets in various schools in Paschimi Singhbhum including subsequent maintenance of 5 years under **Swachh Vidyalaya Abhiyan** by BCCL under CSR

2. Construction of two classrooms of Saraswathi Shishu Vidya Mandir, Tetulmari

Annexure 4- R&R Booklet

REHABILITATION & RESETTLEMENT BOOKLET

SIJUA AREA

CLUSTER V

2017-18

REHABILITATION AND RESETTLEMENT PLAN

The cluster of mines will be dovetailed with the approved Jharia Action Plan for dealing with fire, subsidence and rehabilitation of people. Master Plan for dealing with fire, subsidence and rehabilitation within the leasehold area of BCCL has already been approved by Government of Jharkhand & Government of India.

As per EC granted to Cluster V, R&R of 5835 nos. of PAFs are involved. They should be rehabilitated to safe areas at the cost of Rs 104024.9 Lakhs as per the approved Jharia Action Plan.

Requirement of land at Resettlement site:

A) **For BCCL houses**

The BCCL houses will be resettled in satellite townships with equivalent type of houses in triple storey building. The weighted average plinth area of the houses proposed to be rehabilitated has been estimated at 48.09 sq m /house. Considering the amenities, infrastructure, internal roads etc. to be provided in the township, requirement of land for BCCL houses has been estimated at 34.30 Ha. (@ 160 m^2 /House)

B) **For Non BCCL Houses**

(i) Private (Authorized)

Head of every family will be provided a plot of land measuring 100 sq.m. Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for private authorized houses has been estimated at 82.94 Ha. (@ 270 m^2/house)

(ii) Private Houses (Encroachers)

Encroachers will be provided with a house constructed on about 27 sq.m land in triple storied building in the resettlement site. However provision of 11 sq. m of land has been considered for construction of another room in future. Considering the amenities, infrastructure, internal roads etc to be provided in the township, requirement of land for encroachers has been estimated at 22.74 Ha. (@ 130 m^2/house).

CURRENT STATUS:

BCCL employees from cluster V are being shifted to Karmik Nagar and East Bassuriya colonies which have been provided with the basic amenities. For, non-BCCL persons, survey of houses for shifting is being done in association with JRDA under Jharia Action Plan

Annexure 5

Report of study on reduction in pollution load by reducing road transport for cluster V

STRICTLY RESTRICTED
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.

Study to Analyze the Extent of Reduction of Pollution Load Every Year by reducing Coal Transportation by Road

CLUSTER V GROUP OF MINES

(Tetulmari(UG&OC), Mudidih(UG&OC), Nichitpur OC, Sendra Bansjora(UG&OC) , Basdeopur(UG&OC) , Loyabad , Kankanee(UG&OC)

Normative Production	: 4.854 MTPA
Peak Production	: 6.311 MTPA
Lease Hold Area	: 1957.08 Ha

Bharat Coking Coal Limited

(October, 2017)

Prepared by

Environment Division

Central Mine Planning & Design Institute Limited

CMPDI (HQ)

Gondwana Place

Kanke Road, Ranchi-834008

CONTENTS

Chapter – I

Introduction

1.1 Genesis:

MOEF provided Environmental Clearance to the various mines of the Cluster J-11015/01/2011-IA.II (M) dated 11 Feb 13

As per the Environmental Clearance Conditions given by the Ministry of Environment & Forest "A study should be initiated to analyse extent of reduction in pollution load every year by reducing road transport of coal". Therefore the present study has been carried out to quantify the pollution load due to coal transportation.

1.2 Methodology:

In order to find out the pollution load due to coal transportation a Questionnaire was developed by the Environment Division of CMPDI Headquarter and Regional Institute –II, Dhanbad. The Questionnaire was circulated to the various mines of BCCL for collection of the requisite inputs for this study. The quantification of pollution load for PM-10 has been carried out on the basis of the field visit, data provided by BCCL officials and interaction with them.

1.3 General Information about the Cluster:

1.3.1 Brief Description:

Cluster V (7 mines of 4.854 MTPA (Normative) and 6.311 MTPA (Peak) production of MTPA in a combined ML area of 1957.08 ha consists of Tetulmari(UG&OC), Mudidih(UG&OC), Nichitpur OC, Sendra Bansjora(UG&OC) , Basdeopur(UG&OC) , Loyabad , Kankanee(UG&OC) . These mines are taken over by BCCL from private mine owners after nationalization through Coal Mines Nationalization Act, 1972-73. BCCL is the proponent of the cluster and it is under the administrative control of Coal India Limited.

1.3.2 Nature and Size of the Cluster:

Cluster-V group of mines of BCCL is a group of seven mines consisting of one opencast mine, one underground mine with proposed OCP in the same leasehold, four mixed operating mines and one closed mine in the Jharia Coalfield of the Bharat Coking Coal Limited in the Dhanbad District of Jharkhand State.

The details of the mines showing normative/ peak productions, lease hold areas and life are given in Table no. 1.1.

Table 1.1: Details of the Mines of Cluster –V

Sl No	Name of Mine	Production Capacity (MTY)		Lease Hold Area (Ha)
		Normative	Peak	
	Tetulmari(UG&OC)	0.795	1.033	317.00
	Mudidih(UG&OC)	1.553	2.019	378.05
	Nichitpur OC	0.600	0.780	249.63
	Sendra Bansjora(UG&OC)	0.750	0.975	258.12
	Basdeopur(UG&OC)	0.678	0.879	104.72
	Loyabad	0.000	0.000	499.56
	Kankanee(UG&OC)	0.480	0.624	150.00
		4.854	6.311	1957.08

1.3.3 Impact of Fire Control on Ambient Air Quality:

Due to unscientific mining prior to nationalization there are unstable sites identified in the BCCL. Out of 595 unstable sites identified in the Master Plan, 77 sites with an area of 138.34 ha consisting of 5835 nos. of houses/families are affected. The affected families will be rehabilitated in adjacent non coal bearing area at a cost of Rs. 104024.9 lakhs.

1.3.4 Impact of Resettlement on Ambient Air Quality:

As per Jharia Action Plan (JAP) household will be shifted for implementation of master plan. The reduction in number of households within the leasehold area of Cluster will lead to reduction in generation of air pollutants due to reduction in movement of man & materials apart from decrease in consumption of coal as a

domestic fuel. As per Jharia Action Plan (JAP) household will be shifted as per for implementation.

1.4 Meteorological Data

A meteorological data generated during 1st January 16 to 31st March 2016 has been presented in this report .The micro meteorological set up was established at the roof of BCCL Dugda Guest house and parameters like temperature, relative humidity, wind speed and directions, cloud cover and rainfall were recorded. The data were collected on hourly basis during the entire study period.

Generally, moderate winds prevailed throughout the study period. The wind velocity ranged between ≤ 0.5 m/s to 13.2 m/s. The seasonal average wind speed was observed to be 0.69 m/s. Wind-roses were made by using latest WRPLOT View of Lakes Environmental Software.

The analysis of wind pattern during the season showed that the predominant wind directions were from North-West & West followed by North-East having frequencies 15.71%, 11.45% & 4.67% respectively.The receptors located in the Downwind directions i.e. SE and East from the dust generating sources are likely to be affected. The dispersion of air borne dust during calm period (45% of time) will be very poor and buildup of pollutant concentration during this period will occur.

The maximum temperature recorded was 39.3^{0}C and the minimum was 6.2^{0}C. The daily average relative humidity values were in the range of 32.2 to 65.0%. The sky was mostly clear during the study period. The average atmospheric pressure value has been found to be around 732.3 mm Hg. Total 94.5mm rainfall was recorded during the study period. The average rainfall during the season was found to be 1.04 mm.

Table 1.2: SEASONAL WIND DISTRIBUTION

Period: 01st JAN.'2016 – 31stMAR.'2016

Wind Direction	Wind Velocity (m/s) & Duration (%)				
	< 0.5	0.6 -1.5	1.6 -3.5	>3.5	Total
N		1.61	0.78	0.00	2.38
NNE		0.83	0.37	0.00	1.19
NE		3.17	1.47	0.05	4.67
ENE		0.41	0.14	0.00	0.55
E		1.10	0.69	0.00	1.79
ESE		0.50	0.37	0.00	0.87
SE		1.28	0.41	0.05	1.74
SSE		0.64	0.18	0.00	0.82
S		0.41	0.09	0.00	0.50
SSW		0.28	0.05	0.00	0.32
SW		2.29	0.60	0.00	2.88
WSW		1.06	0.41	0.00	1.47
W		8.99	2.48	0.00	11.45
WNW		1.24	1.01	0.00	2.24
NW		11.47	4.22	0.05	15.71
NNW		2.11	0.73	0.00	2.84
CALM	48.40	-	-	-	48.40
Total	48.40	37.32	13.97	0.15	100

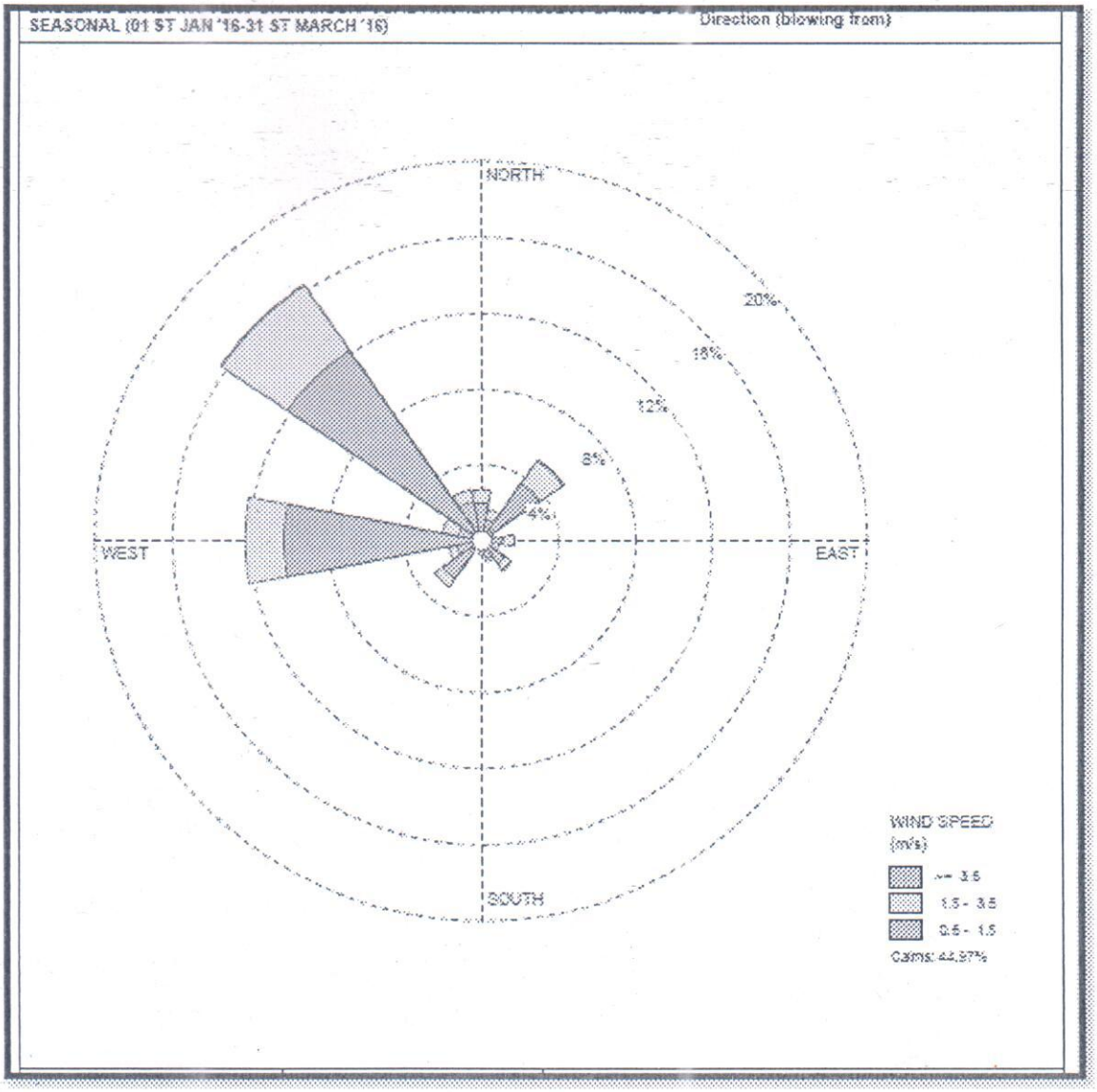


Figure No.-1.1 Wind Rose diagram for the period 1St Jan to 31St March 2016

Chapter – II

Fugitive Dust Generation Due To Movement of Coal

2.1 Introduction

The coal produced moves to the consumers via Road & Rail. Coal from the mine face is brought to the surface dumps and bulk of it goes to the nearby railway sidings for further movement to the consumer- end through rail. The journey from the mine face to the railway siding is covered by road. A portion of the coal produced by the mine directly goes to the consumers via road. Transportation of coal by rail is an environmentally better option than the road transportation. Road Transportation results in generation of fugitive dust from road surface apart from other pollutants released due to consumption of Diesel.

The fugitive dust generated due to coal transportation through road depend upon the following factors:

1. Speed and Weight of the moving vehicles.
2. Silt Content of the Road Dust (Particles less than 200 mesh size is considered as silt)
3. Silt loading of the road dust (Kg/m^2).
4. Moisture Content of the dust lying on the road surface.
5. Ambient Temperature, Humidity & wind velocity.

The dust generation will be lower if the quantity of dust (silt loading) lying on the road surface is minimum and the moisture content of the loose material lying on the road surface is high.

2.2 Movement of Coal

Distance travelled by coal and subsequent release of fugitive dust during its journey towards the consumer end has been described and dust load has been worked out for the year 2013-14, 2014-15 and 2015-16.

2.2.1 Dust generated per day (Kg/Day)

Table: 2.1 Dust Generation (Kg/day)

Name of the Mine	Year	Location	Distance from Face to Siding (Km)	Coal Transferred (Te)	Daily Coal Production (Te/Day)	Capacity of the Dumper	Vehicle Kilometer Travelled	Emission Rate for PM 10 (kg/VKT)	Pollution Load * Dust Generated Per Day (Kg/day)	Dust generated Kg/per tonne
Tetulmari(UG&OC)	13-14	Bansjora Railway Siding	1.80	1260031	3818.00	20.00	687.24	0.53	364.237	
		Total for 13-14			**3818.00**				**364.237**	0.10
	14-15	Bansjora Railway Siding	1.80	1218852	3693.00	20.00	664.74	0.53	352.312	
		Total for 14-15			**3693.00**				**352.312**	0.10
	15-16	Bansjora Railway Siding	1.80	731352	2216.00	20.00	398.88	0.53	211.406	
		Total for 15-16			**2216.00**				**211.406**	0.10
Mudidih Colliery	13-14	Bansjora Railway Siding	2.50	506882	1536.00	20.00	384.00	0.53	203.520	
		Total for 13-14			**1536.00**				**203.520**	0.13
	14-15	Bansjora Railway Siding	2.50	451164	1367.00	20.00	341.75	0.53	181.128	
		Total for 14-15			**1367.00**				**181.128**	0.13

Name of the Mine	Year	Location	Distance from Face to Siding (Km)	Coal Transferred (Te)	Daily Coal Production (Te/Day)	Capacity of the Dumper	Vehicle Kilometer Travelled	Emission Rate for PM 10 (kg/VKT)	Pollution Load * Dust Generated Per Day (Kg/day)	Dust generated Kg/per tonne
	15-16	Bansjora Railway Siding	2.50	48517	147.00	20.00	36.75	0.53	19.478	
		Total for 15-16			**147.00**				**19.478**	0.13
Nichitpur Colliery	13-14	Bansjora Railway Siding	2.80	363228	1101.00	20.00	308.28	0.53	163.388	
		Total for 13-14			**1101.00**				**163.388**	0.15
	14-15	Bansjora Railway Siding	2.80	286570	868.00	20.00	243.04	0.53	128.811	
		Total for 14-15			**868.00**				**128.811**	0.15
	15-16	Bansjora Railway Siding	2.80	618578	1874.00	20.00	524.72	0.53	278.102	
		Total for 15-16			**1874.00**				**278.102**	0.15
Sendra Bansjora(UG&OC)	13-14	Bansjora Railway Siding	0.20	557703	1690.00	20.00	33.80	0.53	17.914	
		Total for 13-14			1690.00				**17.914**	0.01
	14-15	Bansjora Railway Siding	0.20	638280	1934.00	20.00	38.68	0.53	20.500	
		Total for 14-15			**1934.00**				**20.500**	0.01
	15-16	Bansjora Railway Siding	0.20	831701	2520.00	20.00	50.40	0.53	26.712	
		Total for 15-16			**2520.00**				**26.712**	0.01
Ka nk	13-14	Jogta Railway Siding	0.20	0	0.00	20.00	0.00	0.53	0.000	

Name of the Mine	Year	Location	Distance from Face to Siding (Km)	Coal Transferred (Te)	Daily Coal Production (Te/Day)	Capacity of the Dumper	Vehicle Kilometer Travelled	Emission Rate for PM 10 (kg/VKT)	Pollution Load * Dust Generated Per Day (Kg/day)	Dust generated Kg/per tonne
		Total for 13-14			**0.00**				**0.000**	0.00
	14-15	Jogta Railway Siding	0.20	83425	253.00	20.00	5.06	0.53	2.682	
		Total for 14-15			**253.00**				**2.682**	0.01
	15-16	Jogta Railway Siding	0.20	561658	1702.00	20.00	34.04	0.53	18.041	
		Total for 15-16			**1702.00**				**18.041**	0.01

* In terms of PM 10 expressed as kg/day, ** Average distance has been considered, *** Capacities of Dumpers used in transportation of coal from face to siding taken as 30Te, to Washery 20Te, and Outside Transport 15 Te. ..## Emission rate for PM_{10} has been taken from the S&T work (funded by MoC) carried out by CMPDI during 2002-2007.

2.3 Optimum Coal Transportation scheme in the Present Scenario:

Phase – I (for 10 + 05 Years)

As suggested by the Environmental Appraisal Committee, it is proposed to continue the existing Road–Rail transport network system in view of the implementation of the Jharia Action Plan(JAP) for 10 years and another 05 years gestation period after the completion of the JAP for consolidation of the backfilled dug out fire areas and unstable areas is required. Thus the period of 15 years, make the Phase – I. All mitigation measures like covered trucks, green belting on either side of the road, enhanced water sprinkling, proper maintenance of roads, removal of spilled materials etc shall be adopted for 15 years with the existing road – rails transport system.

2.4 Conceptual Plan of Proposed Integrated Coal Transportation Network forthe Cluster:

Phase – II (after 15 Years):

As suggested by the EAC Members, BCCL shall implement conveyor –cum-rail transport to avoid movement of trucks within the cluster for coal transportation in Phase –II. Loading of coal by pay–loaders shall be discontinued.

During 2015-16, the combined daily coal production of the Cluster was 8459.00 tones resulting in 3362 kg of daily fugitive dust generation. The dust (PM-10) generation rate at present is 0.40 kg/te.

As a result of replacement of existing road transportation of coal by Conveyor to railway siding will result in reduction of fugitive dust generation to the extent of 760189 kg/day for daily coal production of 1912424 tonnes (6.311 MTY) during Phase –II.

Table 2.2: Proposed Infrastructure for Coal Transportation (phase – II)

Cluster	Mines in Operation in Phase - II	Production Capacity (MTY)	Proposed Transport Infrastructure in Phase – II
V	Cluster -V	6.311	**Coal transport by Conveyor to Railway Siding**
	Total	6.311= 1912424 tonnes /Day	

2.5 Conclusion:

On the basis of the study undertaken to assess the impact of coal transportation on pollution load, the followings may be concluded:

Phase – I :(2013-14 to 2028 -29):

1. During Phase – I, business as usual (BAU) scenario will prevail and the existing road cum rail transport network system will be used for coal dispatch to the consumers. During 2015-16, the combined daily coal production of the Cluster was 8459.00 tones resulting in 3362 kg of daily fugitive dust generation. The dust (PM-10) generation rate at present is 0.40 kg/te.
2. The generation of fugitive dust due to transportation of coal by road can be further reduced by enforcing covering of loaded trucks, periodical removal of loose materials lying on the road surface and black topping of coal transportation roads.
3. Avenue plantation, effective wetting of the road surface and proper maintenance of roads will further result in mitigation of the impact of road generated dust on ambient air quality.
4. Better road condition, by the use of Mechanical Sweeper or vacuum cleaner dust generation may be minimized.

Phase – II :(From 2029-30 Onwards):

1. As a result of replacement of existing road transportation of coal by Conveyor to railway siding will result in reduction of fugitive dust generation to the extent of 760189 kg/day for daily coal production of 1912424 tonnes (6.311 MTY) during Phase –II.
2. During Phase –II, dust load will further reduce due to quenching of mine fire and domestic coal consumption after resettlement of general population dwelling within the command area of cluster, as a result of implementation of Jharia Action Plan. It will result in significant improvement in ambient air quality.

3. **Coal Production Vs. Dust Generation due to Road Transportation is presented below:**

Table2.3: Coal Production Vs. Dust Generation due to Road Transportation

Year	Coal Production (Te/day)	Dust Generation(Kg/Day)
2015-16 (By Road transportation)	8459.00	3362
2029-30 (Considering peak production and all the coal transported through Road)	1912424	760189
2029-30(By Conveyor Transportation)	1912424	0

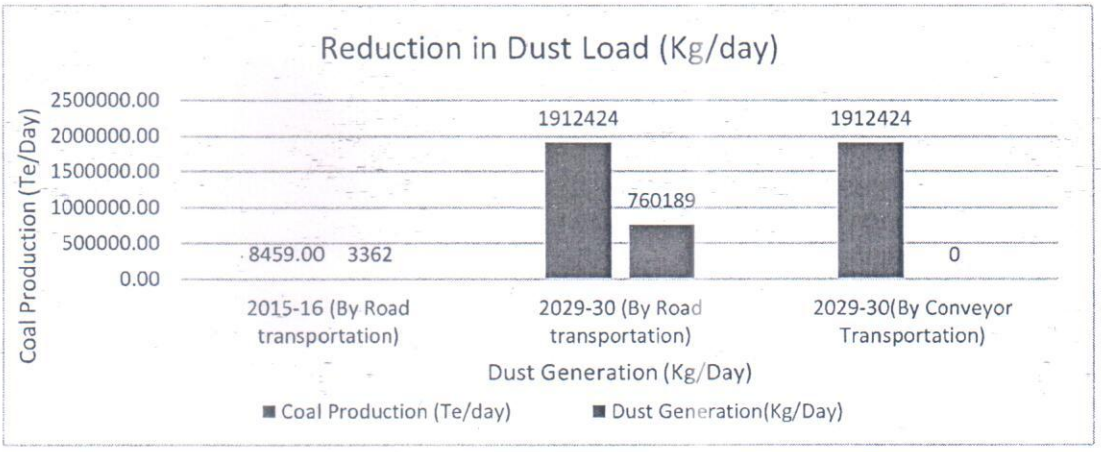
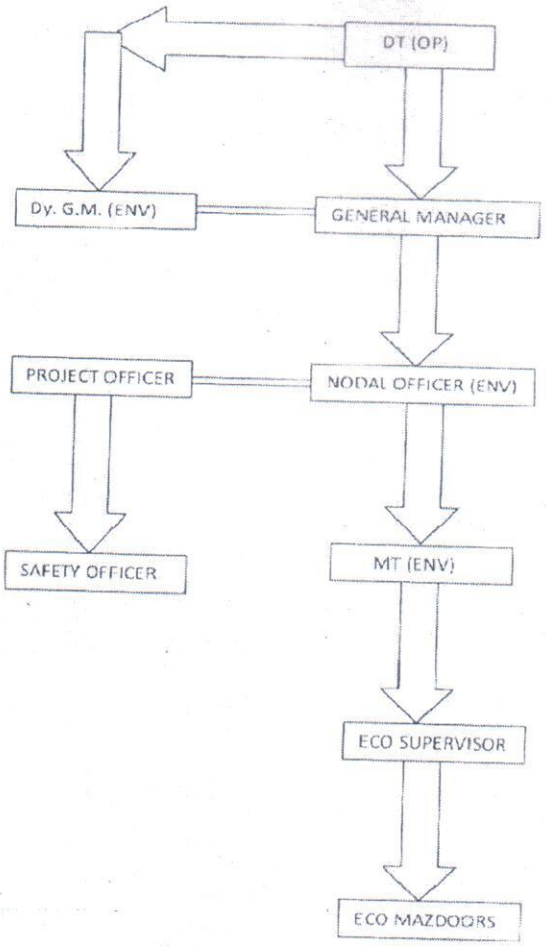


Figure 2.1: Presentation of reduction in dust generation due to replacement of Road transportation by Conveyor system.

Annexure-6

ENVIRONMENTAL MANAGEMENT STRUCTURE OF CLUSTER V (SIJUA AREA)

ENVIRONMENTAL MANAGEMENT STRUCTURE OF SIJUA AREA



Annexure-7: *Plan and Letter ratified by the Regional Officer, Jharkhand State Pollution Control Board*

(7)

Ph: 0326-2204933

झारखण्ड राज्य प्रदूषण नियंत्रण पर्षद्
Jharkhand State Pollution Control Board
HIG-1, Housing Colony, Dhanbad-826001

Letter No. 2650 Dated 6/7/13

From,

Regional Officer,
Dhanbad

To,

HOD (Envt.),
M/s. B.C.C.L.,
Koyla Bhawan, Koyla Nagar,
Dhanbad.

Sub: **Fixing up monitoring station/Sampling location of Air, Water & Noise.**

Sir,

With reference to you letter no. GM(Env.)/F-JSPCB/2013/783, dt. 06.07.2013 We have approved Air, Water & Noise monitoring Station/Sampling location after verification and return a copy of the map.

Encl-A/a.

Your's faithfully,

6/7/13

(Dinesh Prasad Singh)
Regional Officer.

Memo..... Dhanbad, dated.....

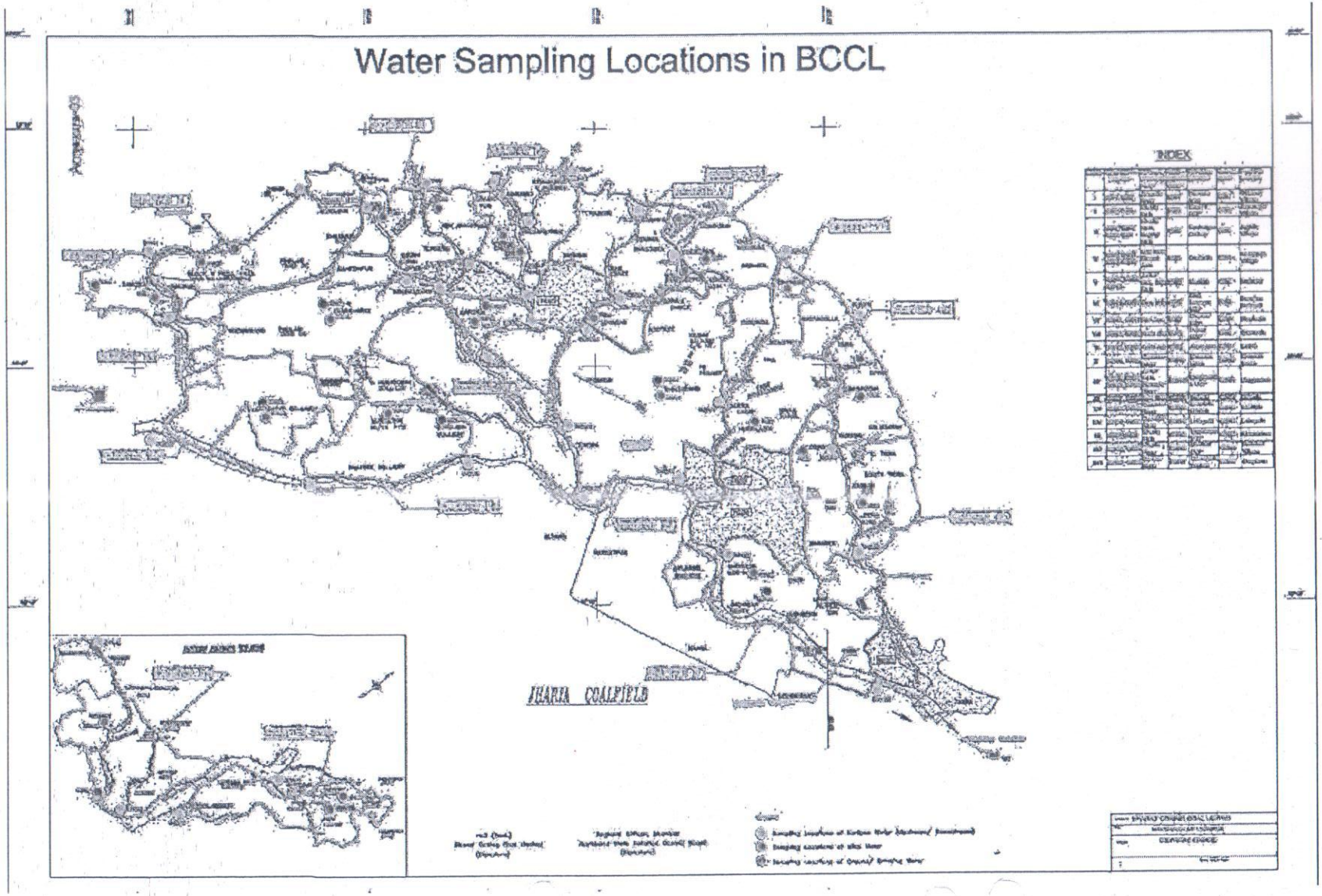
Copy to: The Member Secretary, Jharkhand State Pollution Control Board for information & enclose a copy of the map for necessary action.

Encl-A/a.

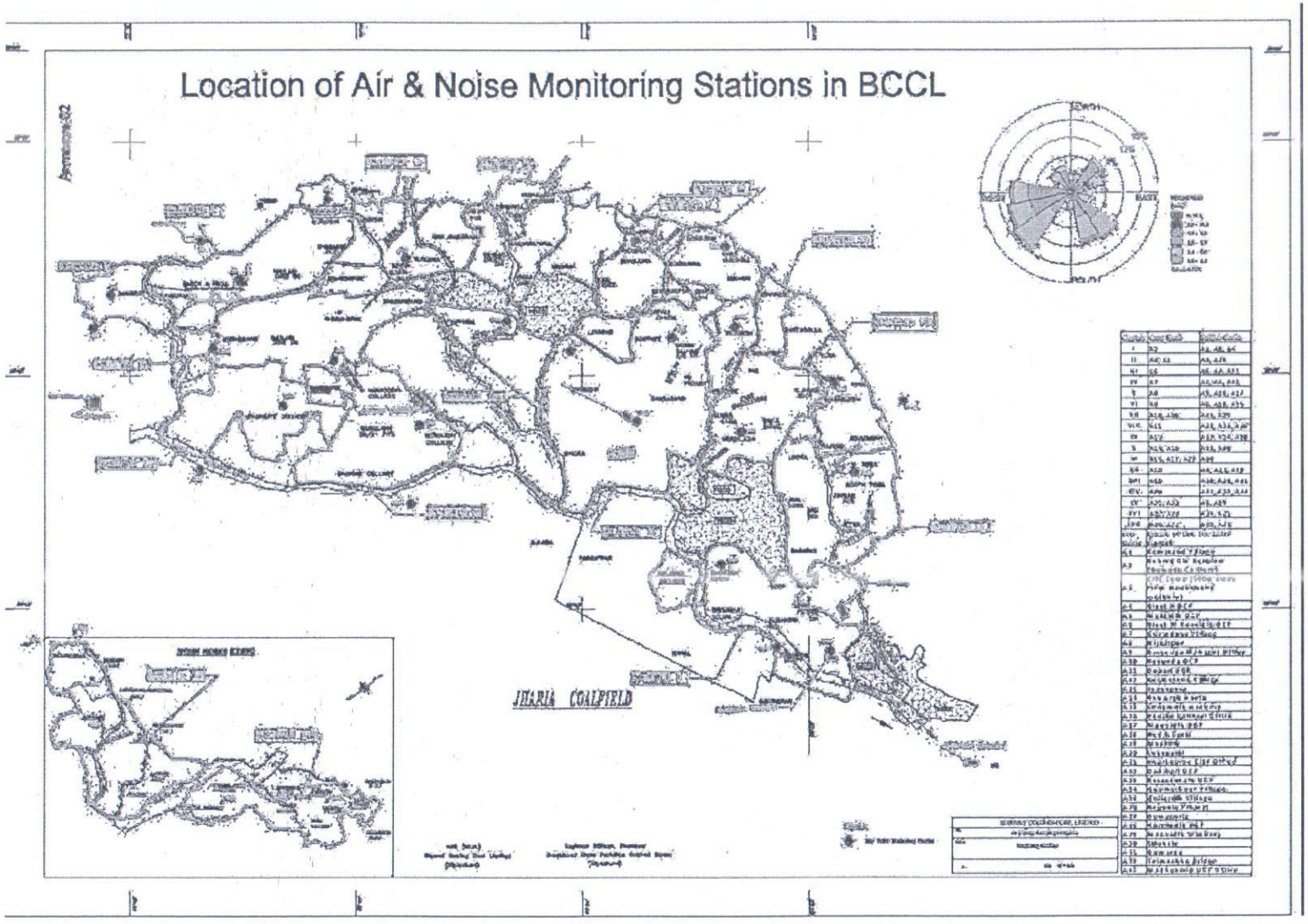
(Dinesh Pd. Singh)
Regional Officer.

Printed by Sandip

Water Sampling Locations in BCCL



Location of Air & Noise Monitoring Stations in BCCL



Annexure-8

Copy of the letter regarding work-order given to NRSC

भारत कोकिंग कोल लिमिटेड
एक मिनीरत्न कंपनी
(कोल इंडिया लिमिटेड का एक अंग)
पंजीकृत कार्यालय कोयला भवन ,कोयला नगर ,
(धनबाद)झारखंड826005(
CIN:U10101JH1972GOI000918
Tele: 0326 2230174 FAX: 0326 2230176
ईमेल :cgmsafety@bcel.gov.in

Bharat Coking Coal Limited
A Miniratna Company
(A subsidiary of Coal India Ltd)
Office of GM I/C(S&R)
Koyla Bhawan, Koyla Nagar,
Dhanbad, Jharkhand-826005
CIN:U10101JH1972GOI000918
Tele: 0326 2230174 FAX: 0326 2230176 Email: cgmsafety@bcel.gov.in

पत्र संख्या भाकोकोलि/उप महाप्रबंधक(एस&आर)I/C/सचिका-MP/17 323 दिनांक- 07.04.2017

To,
Dr. Vinod Kumar,
Group Head, Geosciences group
National Remote Sensing Center
India Space Research Organization
Dept of Space, Govt of India,
Balanagar, Hyderabad - 500037

Sub:- Work –Order for " Delineation of Surface Coal Fire and associated Land Subsidence in Jharia Coalfield, Jharkhand using satellite based remote – sensing techniques"

Dear Sir,

Consequent upon competent approval of proposal on aforesaid subject and subsequent signing o MOU between BCCL and NRSC, the aforesaid work is awarded to NRSC for Rs.18,10500/- (Eighteen lac ten thousand five hundred) only, against 100% payment in advance subject to terms and conditions listed in MOU. As per agreed payment terms and Demand Note No. 07/2016-17.

You are therefore requested to initiate all necessary activities for commencing the subject work as early as possible.

Thanking you,

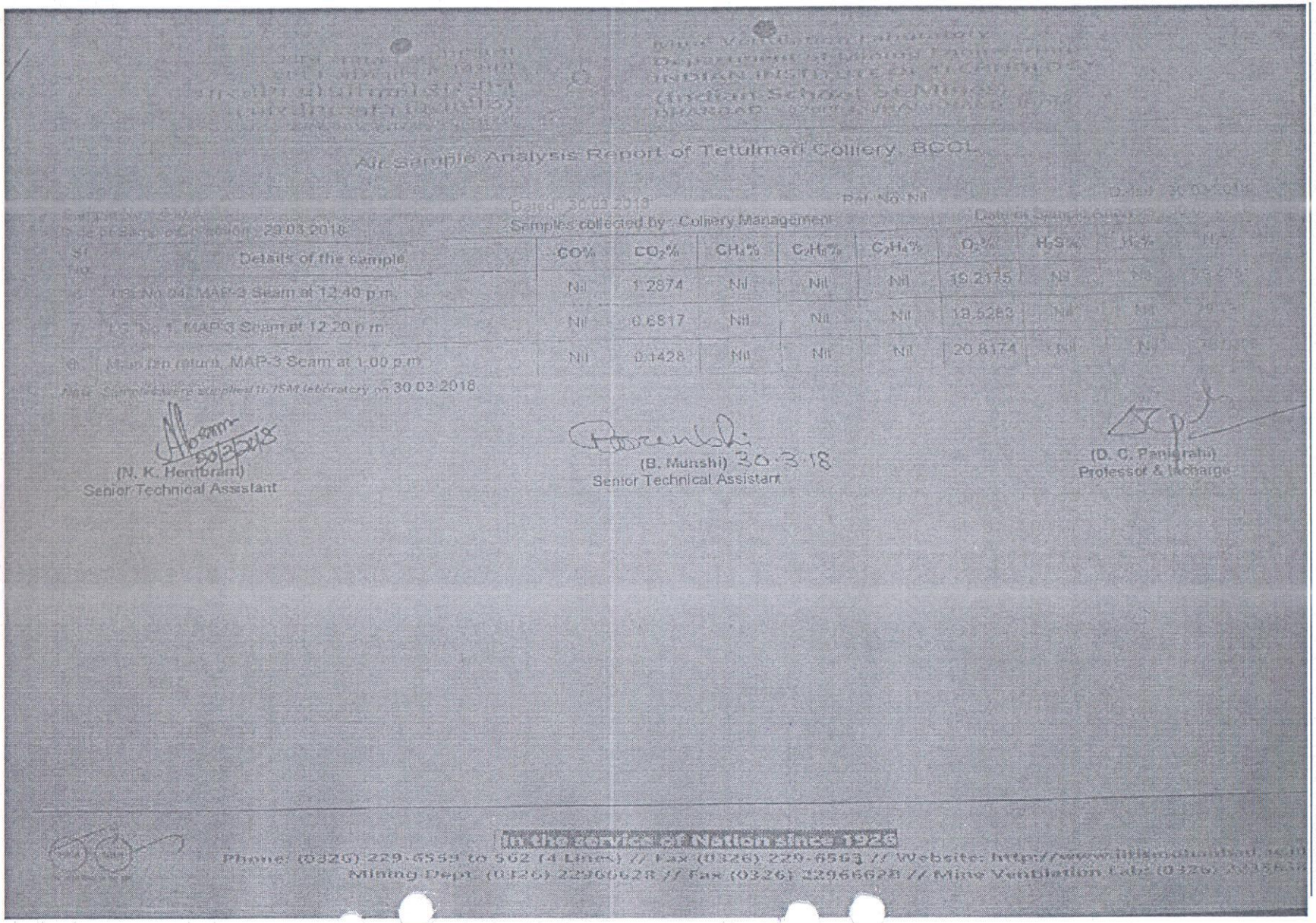
Yours faithfully,

7/4/17

General Manager I/C (S & R)

Cc to :
1. Director (T) P&P, BCCL- for kind information.
2. TS to CMD, BCCL – for kind information.
3. Sri Mithilesh Kumar, Sr.Mgr.(M),Safety Deptt., KoylaBhawan

Annexure 9- Report of the analysis at Tetulmari Colliery



Air Sample Analysis Report of Tetulmari Colliery, BCCL

Dated: 30.03.2018 Ref. No: Nil

Samples collected by : Colliery Management

Date of Sample Collection : 29.03.2018

Sl No.	Details of the sample	CO%	CO_2%	CH_4%	C_2H_6%	C_2H_4%	O_2%	H_2S%	N_2%	H%
1	DS No 04, MAP-3 Seam at 12.40 p.m.	Nil	1.2874	Nil	Nil	Nil	19.2175	Nil	Nil	
2	DS No. 1, MAP-3 Seam at 12.20 p.m.	Nil	0.6817	Nil	Nil	Nil	19.5283	Nil	Nil	
3	Main Dip return, MAP-3 Seam at 1.00 p.m.	Nil	0.1428	Nil	Nil	Nil	20.8174	Nil	Nil	

Air Samples were supplied to ISM laboratory on 30.03.2018

(N. K. Hembram)
Senior Technical Assistant

(B. Munshi) 30.3.18
Senior Technical Assistant

(D. C. Panigrahi)
Professor & Incharge

In the service of Nation since 1926

Phone: (0326) 229-6559 to 562 (4 Lines) // Fax (0326) 229-6563 // Website: http://www.ismdhanbad.ac.in
Mining Dept. (0326) 22966628 // Fax (0326) 22966628 // Mine Ventilation Lab: (0326) 2296562

Annexure 10- Copy of the work Order of Installation of Silo Loading

C2

भा.को.को.लि.

भारत कोकिंग कोल लिमिटेड
एक मिनी रत्न कंपनी, कोल इण्डिया की अनुषंगी
पंजीकृत कार्यालय कोयला भवन, कोयला नगर,
धनबाद -826005
CIN : U10101JH1972GOI000918
संविदा प्रबन्धन प्रकोष्ठ
फोन/फैक्स-0326-2230206
e-mail : gmcmc@bccl.gov.in

पत्रांक – भा.को.को.लि./स. प्र. प्र./ एल.ओ.ए./ सी. एच. पी. / तेतुलमारी/2015/710-29 दिनांक-12.06.2015

SPEED-POST / FAX
Fax No: 0651-2401533
e-mail: vijaykumar1@hecltd.com
smustafi@hecltd.com

सेवा में,
M/S Heavy Engineering Corporation Ltd.
Project Division, Plant Plaza Road, Dhurwa,
Ranchi, Jharkhand - 834004.

विषय- Letter of Acceptance for the work of "Planning, Design, Engineering, Construction, Fabrication, Supply, Erection, Trial-run, Commissioning and Testing of Coal Handling Plant with silo loading arrangement (5 Mtpa) consisting of all Civil, Structural, Electrical and Mechanical Works and all other accessories and facilities required to make it complete in all respects on turnkey basis at Tetulamri, Sijua Area, BCCL".

प्रसंग-

(i) NIT No. BCCL/GM(CMC)/CHP/TETULMARI/2014/2266 Date: 28.05.2014

(ii) Corrigendum No. BCCL/GM(CMC)/CHP/TETULMARI/2014/2505 Date: 07.07.2014

महाशय,

With reference to above, Competent Authority has approved award of work for the work of "Planning, Design, Engineering, Construction, Fabrication, Supply, Erection, Trial-run, Commissioning and Testing of Coal Handling Plant with silo loading arrangement (5 Mtpa) consisting of all Civil, Structural, Electrical and Mechanical Works and all other accessories and facilities required to make it complete in all respects on turnkey basis at Tetulamri, Sijua Area, BCCL" in your favour with financial involvement of Rs. 18408.76/- lakhs (Eighteen thousand four hundred eight point seventy six lakhs) inclusive of all duties, Taxes, other levies and Service Tax as per terms & conditions of NIT / Tender Document.

The period of completion of work will be 36 (thirty six) months.

You are advised to furnish Performance Security/Security Deposit to the Office of General Manager, Sijua Area, BCCL, in the form as detailed in clause 3.0 under heading "CONTRACT PERFORMANCE GURANTEE / SECURITY DEPOSITE" of "General Terms and Conditions of Contract" (Sub-Section 4.1) of Tender Document (Volume-I) within 28 (twenty eight) days from the date of receipt of this letter of

Vijay Kumar 19/06/15

acceptance to enable General Manager, Sijua Area, BCCL, to issue formal work order to you and sign the contract.

This LOA is given to you in duplicate. You are advised to submit your consent by returning second copy of the letter of acceptance duly signed by you as a token of acceptance of the award of work within 7(seven) days from the date of receipt of this letter.

Failure to comply with the requirement as above shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security.

धन्यवाद ।

भवदीय

GM (CMC)
Bharat Coking Coal Limited

Distribution:

1. Sri Naresh Chaturvedi, IAS (Retd.), Address :- CL-14, Sector-II, Salt Lake, Kolkata- 700091
2. CVO / D(T) OP /D(T) P&P /D(F) /D(P), BCCL.
3. CGM (Co-ordn.) / GM(F) I/C /GM (P&P) / GM(MM) /GM(E&M)I/C/ GM (Civil)/ GM (System), BCCL/ RD,CMPDI, RI-II.
4. Company Secretary, BCCL.
5. Sr. ES to CMD for kind information of CMD.
6. General Manager, Sijua Area, BCCL:- Copy of Resolution Memo 313.3U of BCCL Board, all documents, i.e. complete original tender files, Bid documents submitted by the bidders, TCR , Approved estimate etc are to be collected from CMC deptt. for issuance of work order and execution of agreement after signing of Integrity Pact along with compliance of other formalities from your end.

   M/S Heavy Engineering Corporation Ltd. have submitted EMD in form of B.G No: 0962014BG0000157 Date: 08.08.2014 for Rs 50,00,000/- (Fifty lakhs) issued by State Bank of India, SME Branch, Mecon Campus, Doranda, Ranchi-834002. Please note that the validity of the BG submitted by the Agency as Earnest Money will expire on 06.09.2015. It is requested to kindly intimate the undersigned immediately in case Performance Security/Security Deposit is not submitted by the contractor within 28 days of receipt of LOA as per clause 3.0 under heading "CONTRACT PERFORMANCE GURANTEE / SECURITY DEPOSITE" of "General Terms and Conditions of Contract" (Sub-section 4.1) of Tender Document (Volume-I).
7. GM (Mining), Production / FPD, CIL, Coal Bhawan, Premise No. – 04 MAR, Plot No. – AF-III, Action Area – 1A, Newtown, Rajarhat, Kolkata - 700156.
8. Sri R K Choubey, Sr. DEO, CMC Deptt. – For uploading this LOA in BCCL Website.

GM (CMC)
Bharat Coking Coal Limited

15/06/15

Annexure 11

Satellite based survey report of Land reclamation and restoration of the year 2017

Land Restoration / Reclamation Monitoring of 4 Clusters of Opencast Mines of Bharat Coking Coal Limited producing less than 5 m.cu.m. (Coal + OB) based on Satellite Data for the Year 2017

Submitted to:

Bharat Coking Coal Limited

cmpdi
A Mini Ratna Company

TABLE-1

Cluster wise Land Reclamation Status in Clusters of Bharat Coking Coal Ltd based on satellite data of the year 2017

(Area in Hectare)

SL No.	Project	Total Leasehold Area	Technical Reclamation	Plantation			Area under Active Mining	Total Excavated Area	Total Area under Plantation (% Green Cover Generated in Leasehold)	Total Area under Reclamation
				Biological Reclamation	Other Plantations					
			Area under Backfilling	Plantation on Excavated / Backfilled Area	Plantation on External Over Burden Dumps	Social Forestry, Avanue Plantation Etc.				
1	2	3	4	5	6	7	8	9 (=4+5+8)	10 (=5+6+7)	11(=4+5)
			2017	2017	2017	2017	2017	2017	2017	2017
1	Cluster III	1552.53	55.87	3.89	21.11	128.07	101.5	161.26	153.07	59.76
			34.65%	2.41%			62.94%		9.86%	37.06%
2	Cluster V	1724.52	162.09	7.19	23.85	105.29	112.24	281.52	136.33	169.28
			57.58%	2.55%			39.87%		7.91%	60.13%
3	Cluster VIII	1331.95	161.86	13.72	21.97	24.70	111.06	286.64	60.39	175.58
			56.47%	4.79%			38.75%		4.53%	61.25%
4	Cluster IX	1967.22	77.53	6.80	41.79	168.58	181.85	266.18	217.17	84.33
			29.13%	2.55%			68.32%		11.04%	31.68%
	TOTAL	**6576.22**	**457.35**	**31.60**	**108.72**	**426.64**	**506.65**	**995.60**	**566.96**	**488.95**
			45.94%	**3.17%**			**50.89%**		**8.62%**	**49.11%**

(% is calculated with respected to Excavated Area as applicable)

Note: In reference of the above Table, different parameters are classified as follows:

1. *Area under Biological Reclamation includes Areas under Plantation done on Backfilled Area Only.*
2. *Area under Technical Reclamation includes Area under Barren Backfilling only*
3. *Area under Active Mining Includes Coal Quarry, Advance Quarry Site, Quarry filled with water etc., if any.*
4. *Social Forestry and Plantation on External OB Dumps are not included in Biological Reclamation and are put under separate categories as shown in the Table above..*
5. *(%) calculated in the above Table is in respect to Total Excavated Area except for ""Total Area under Plantation"" where % is in terms of "Leasehold Area".*

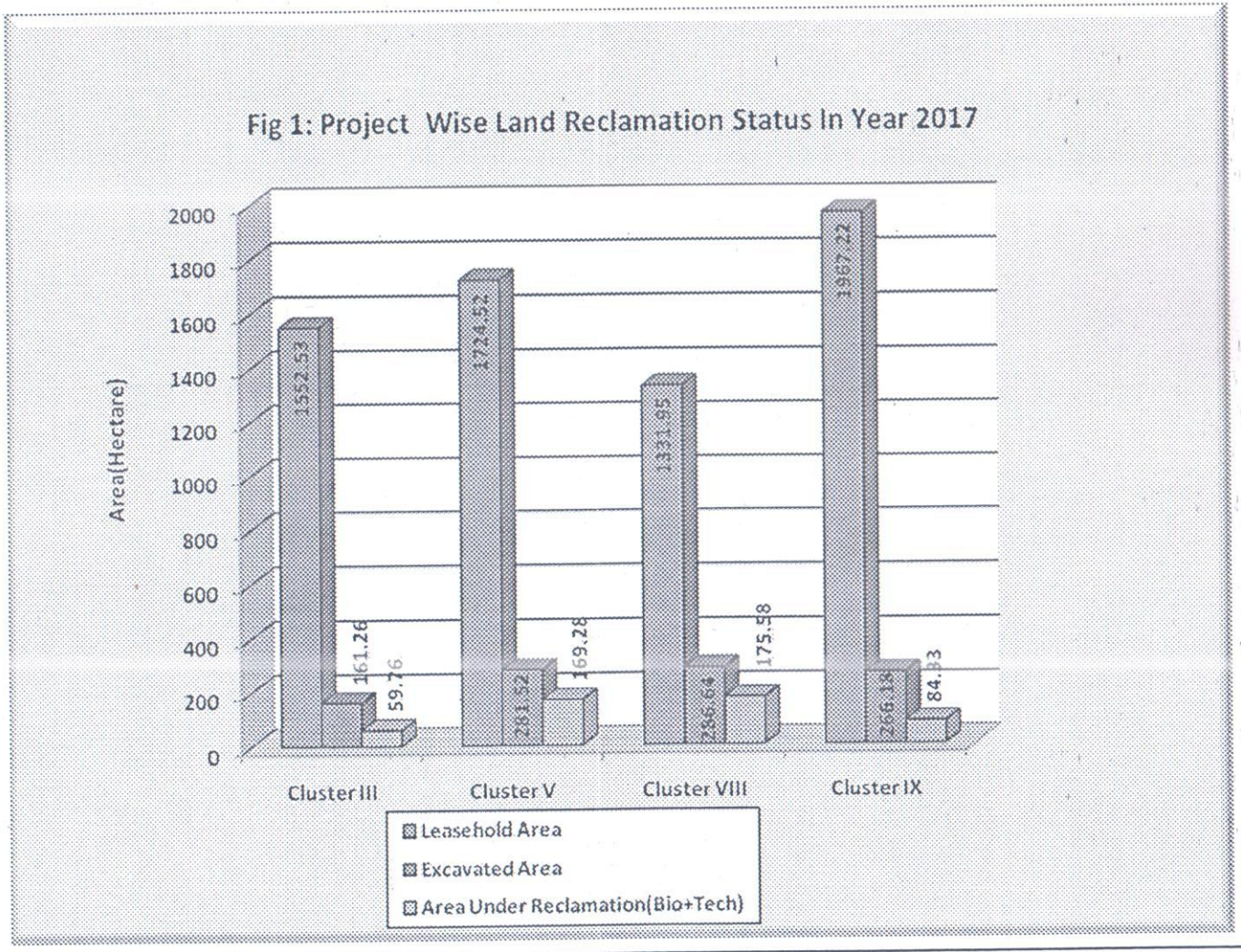


Fig 1: Project Wise Land Reclamation Status In Year 2017
Area(Hectare)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1552.53
161.26
59.76
1724.52
281.52
169.28
1331.95
236.64
175.58
1967.22
266.14
84.33
Cluster III
Cluster V
Cluster VIII
Cluster IX
Leasehold Area
Excavated Area
Area Under Reclamation(Bio+Tech)

Table 2

STATUS OF LAND USE/COVER IN CLUSTERS (<5 m cu .m) OF BHARAT COKING COAL LIMITED BASED ON SATELLITE DATA OF THE YEAR 2017

(Area In Hectare)

		Cluster III		Cluster V		Cluster VIII		Cluster IX		TOTAL	
		Area	%	Area	%	Area	%	Area	%	Area	%
FORESTS	Dense Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Open Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Forest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SCRUBS	Scrubs	300.05	19.33	344.78	19.99	143.21	10.75	339.86	17.28	1127.90	17.15
PLANTATION	Social Forestry	128.07	8.25	105.29	6.10	24.70	1.85	168.58	8.57	426.64	6.49
	Plantation on OB Dump	21.11	1.36	23.85	1.38	21.97	1.65	41.79	2.12	108.72	1.65
	Plantation on Backfill (Biological Reclamation)	3.89	0.25	7.19	0.42	13.72	1.03	6.80	0.35	31.60	0.48
	Total Plantation	153.07	9.86	136.33	7.90	60.39	4.53	217.17	11.04	566.96	8.62
	Total Vegetation	**453.12**	**29.19**	**481.11**	**27.89**	**203.60**	**15.28**	**557.03**	**28.32**	**1694.86**	**25.77**
	Coal Dump	7.64	0.49	2.55	0.15	7.71	0.58	9.67	0.49	27.57	0.42
ACTIVE MINING	Coal Quarry	93.24	6.00	102.79	5.96	108.02	8.11	178.55	9.08	482.60	7.34
	Advance Quarry Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Quarry Filled With Water	8.26	0.53	9.45	0.55	3.04	0.23	3.30	0.17	24.05	0.37
	Total Area under *Active Mining*	**101.50**	**6.53**	**112.24**	**6.51**	**111.06**	**8.34**	**181.85**	**9.25**	**506.65**	**7.70**
	Barren OB Dump	126.20	8.13	151.20	8.77	149.30	11.21	172.19	8.75	598.89	9.11
RECLAIME	Area Under Backfilling (Technical Reclamation)	55.87	3.60	162.09	9.40	161.86	12.15	77.53	3.94	457.35	6.95
	Total Area under *Technical Reclamation*	**55.87**	**3.60**	**162.09**	**9.40**	**161.86**	**12.15**	**77.53**	**3.94**	**457.35**	**6.95**
	Total Area under Mine Operation	**291.21**	**18.75**	**428.08**	**24.83**	**429.93**	**32.28**	**441.24**	**22.43**	**1590.46**	**24.19**
WATERBODIES	Waste Lands	461.92	29.75	517.23	29.99	443.58	33.30	614.64	31.24	2037.37	30.98
	Fly Ash Pond / Sand Body	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Wasteland	**461.92**	**29.75**	**517.23**	**29.99**	**443.58**	**33.30**	**614.64**	**31.24**	**2037.37**	**30.98**
	Reservoir, nallah, ponds	17.48	1.13	10.21	0.59	13.15	0.99	20.59	1.05	61.43	0.93
	Total Waterbodies	**17.48**	**1.13**	**10.21**	**0.59**	**13.15**	**0.99**	**20.59**	**1.05**	**61.43**	**0.93**
AGRICULTURE	Crop Lands	17.05	1.10	8.41	0.49	18.05	1.35	0.00	0.00	43.51	0.66
	Fallow Lands	110.04	7.09	37.74	2.19	58.02	4.36	44.49	2.26	250.29	3.81
	Total Agriculture	**127.09**	**8.19**	**46.15**	**2.68**	**76.07**	**5.71**	**44.49**	**2.26**	**293.80**	**4.47**
SETTLEMENTS	Urban Settlement	164.97	10.62	217.50	12.61	97.19	7.30	232.31	11.81	711.97	10.83
	Rural Settlement	30.69	1.98	13.78	0.80	57.00	4.28	47.79	2.43	149.26	2.27
	Industrial Settlement	6.05	0.39	10.46	0.61	11.43	0.86	9.13	0.46	37.07	0.56
	Total Settlement	**201.71**	**12.99**	**241.74**	**14.02**	**165.62**	**12.44**	**289.23**	**14.70**	**898.30**	**13.66**
	Grand Total	**1552.53**	**100.00**	**1724.52**	**100.00**	**1331.95**	**100.00**	**1967.22**	**100.00**	**6576.22**	**100.00**

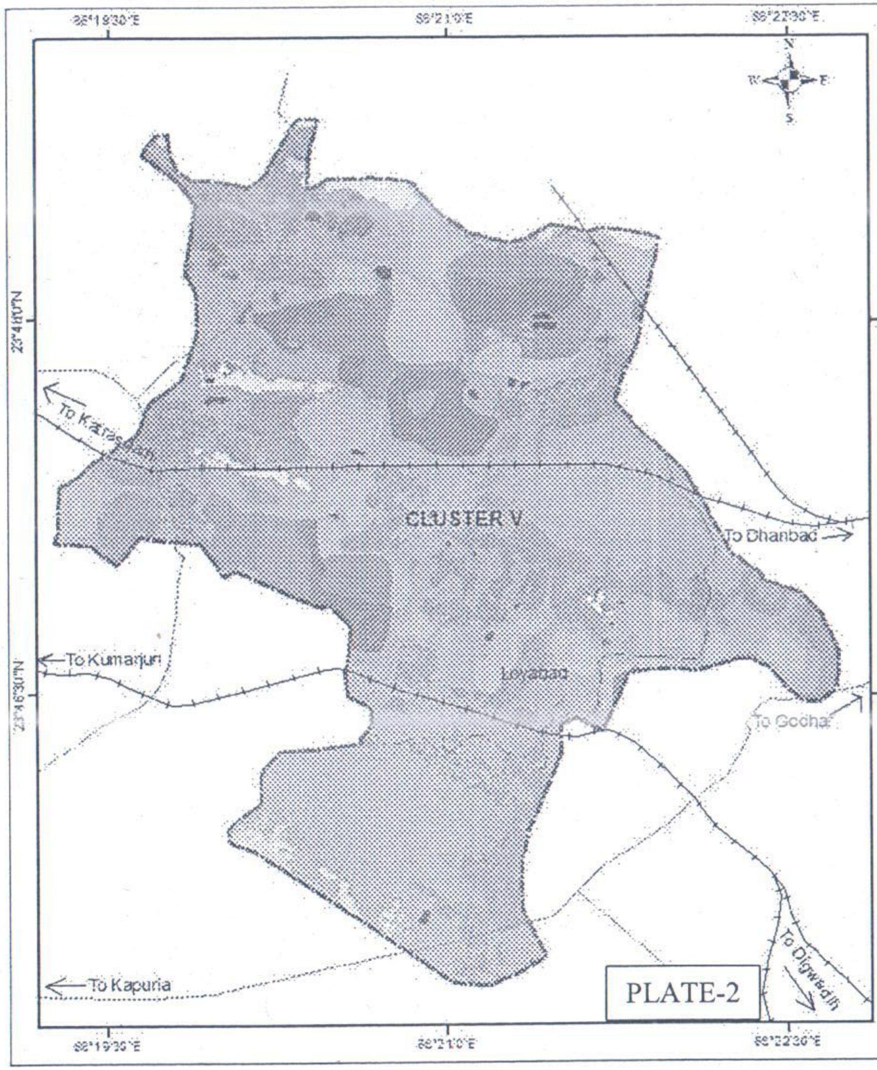


PLATE-2

Area Statistics of Cluster V				
Class		Color	Area	
Level I	Level II		Hect	% of Total
Scrubs	Scrubs (A)		344.78	19.99
Plantations	Social Forestry		105.29	6.10
	Plantation on OB Dump		23.85	1.38
	Plantation on Backfill		7.19	0.42
	Total Plantation (B)		136.33	7.90
	Total Vegetation (A+B)		481.11	27.89
Agricultural Land	Crop Land		8.41	0.49
	Fallow Land		37.74	2.19
	Total Agricultural Land		46.15	2.68
Mining Area	Coal Quarry		102.79	5.96
	Coal Dump		2.55	0.15
	Barren OB Dump		151.20	8.77
	Area Under Backfilling		162.09	9.40
	Water Filled Quarry		9.45	0.55
	Total Mining Area		428.08	24.83
Waste Lands	Waste Land		517.23	29.99
	Industrial		10.46	0.61
Settlement	Rural		13.78	0.80
	Urban		217.50	12.61
	Total Settlements		241.74	14.02
Water Bodies	Rivers, Lakes, Nalas etc.		10.21	0.59
All Total			1724.52	100.00

Legend

- Road
- Railway Line
- Cluster V Boundary

Customer: BHARAT COKING COAL LIMITED

Title: Land Reclamation Monitoring of Clusters

Subject: Land Reclamation Status of Cluster V based on Satellite Data (IRS-R2/LISS-IV) of the year 2017

cmpdi

Scale: 450 225 0 450 Meters

Drg No HQ REM 4A4 17 01

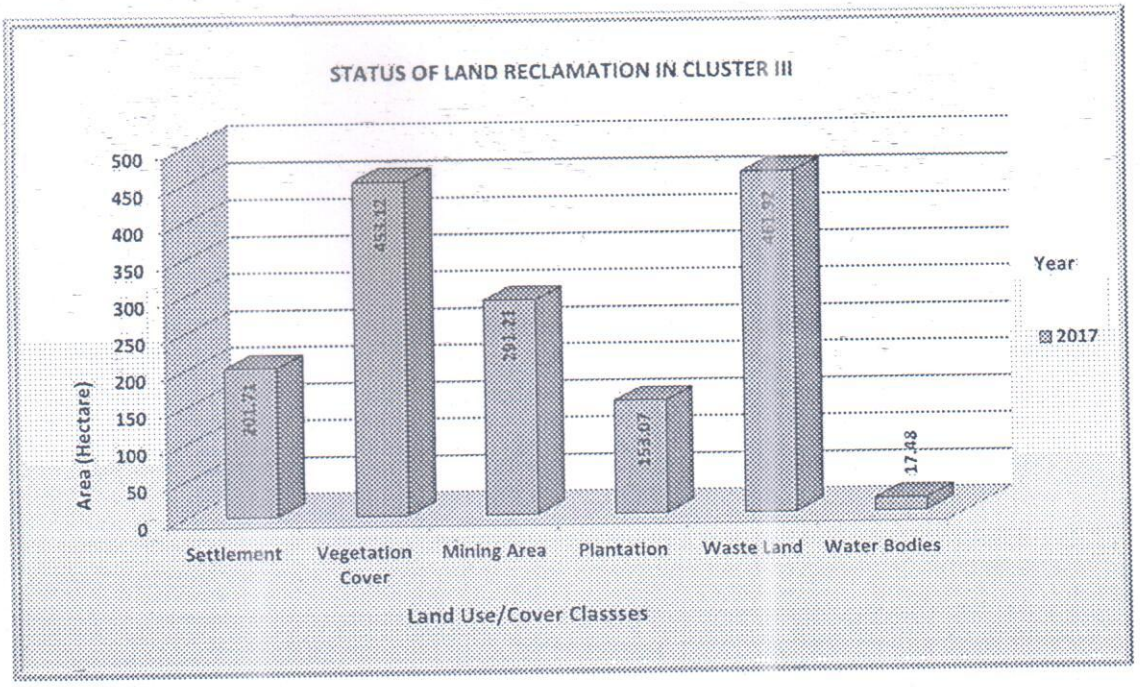


FIGURE - 3

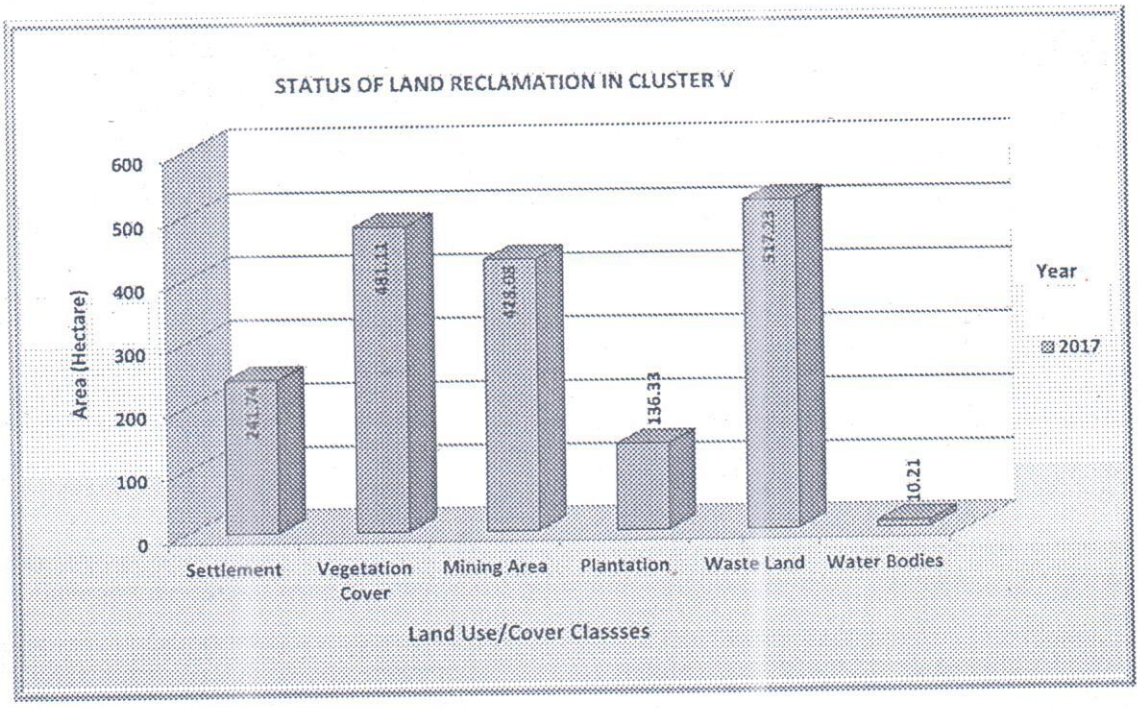
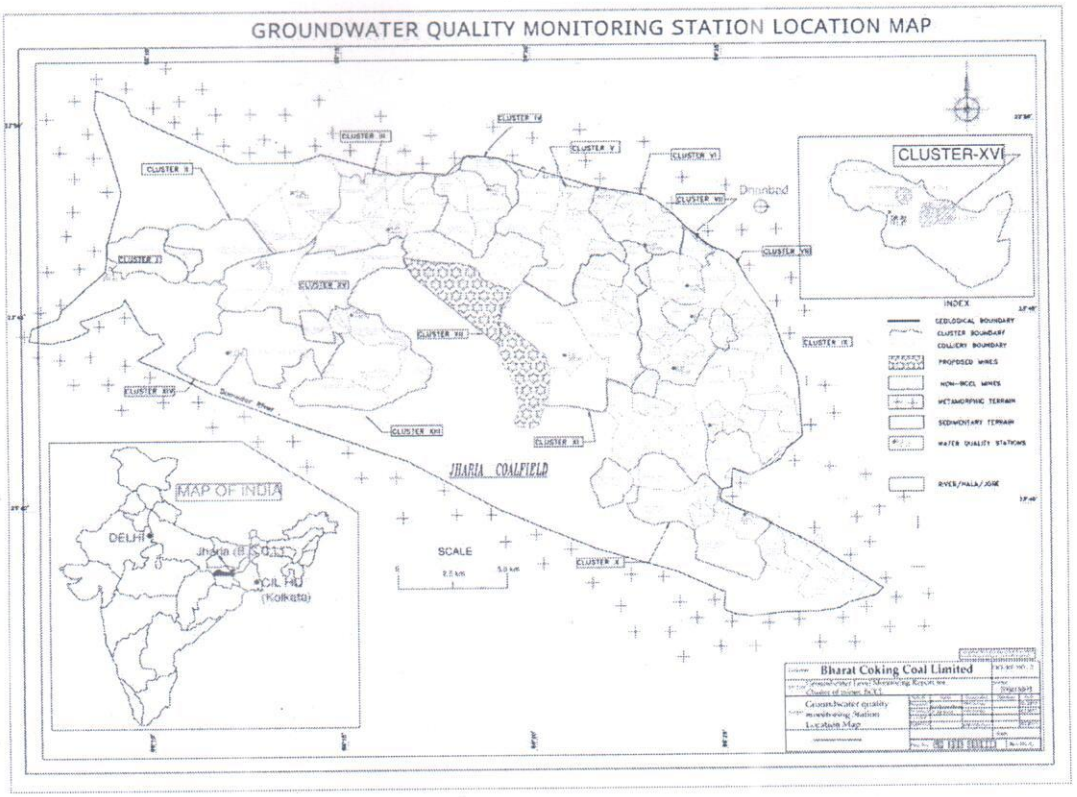


FIGURE - 4

Photo 1: Ecological Restoration Site (Tetulmari Colliery)

Photo 2: Eco-Restoration Site (Rajapur OCP)

Annexure-12 :Groundwater Monitoring station map



Annexure-13

Groundwater Monitoring Report of Cluster V for 2017-18

GROUNDWATER LEVEL & QUALITY REPORT

FOR CLUSTER OF MINES, BCCL

(Assessment year - 2017)

[CLUSTER – I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XIII, XIV, XV & XVI of Mines, BCCL]

JHARIA COALFIELD AND RANIGANJ COALFIELD (PART)

For

(BHARAT COKING COAL LIMITED)

(A Subsidiary of Coal India Limited)

KOYLA BHAWAN (DHANBAD)

MARCH – 2018

Prepared by

Hydrogeology Department

Exploration Division

CMPDI (HQ), Ranchi

3.3 E Monitoring of Ground Water Levels of Cluster-V

Cluster-V consists of twelve mines namely; Tetulmari OC & UG mine, Mudidih OC & UG mine, Nichitpur OC, Sendra Bansjora OC & UG, Bansdeopur OCP (proposed) & UG, Kankanee OC & UG and closed Loyabad UG under the administrative control of Sijua Area of BCCL. This Cluster of mines is located in northern part of Jharia Coalfield in Dhanbad district of Jharkhand.

The present leasehold area of Cluster-V is 1957.08 Ha. The area has a general undulating topography, with an overall gentle south westerly slope. The RL varies from 210 m to 170 m AMSL. Jarian Nala, Nagri Jore, Ekra Jore and its tributaries are controlling the drainage pattern of the area. The area comes under the watershed of Jarian Nala and Ekra Jore.

4 hydrograph stations (**A-3, A-16, A-27 and D-23**) are located in the core zone of the mine area. Water level monitoring in these monitoring stations has been done in the months of February, April, August & November'2017 and the Ground water level data is enclosed in the table below:

Sl No.	Well No.	Location	Water level (bgl in meters)			
			Feb'17	Apr'17	Aug'17	Nov'17
1	A-3	Sijua	0.27	0.67	0.57	0.77
2	A-16	Ekra	2.45	3.65	1.50	2.20
3	A-27	Tetulmari	1.95	2.90	0.85	1.25
4	D-23	Jogta	2.40	2.80	2.20	2.98
Average WL (bgl)			***1.77***	***2.51***	***1.28***	***1.80***

Ground Water Level (in bgl) varies from 0.27 to 2.45 m during February, 0.67 to 3.65 m during April, 0.57 to 2.20 m during August and 0.77 to 2.98 m during November within the Core Zone of Cluster-V area.

Annexure – I

Location of Hydrograph Stations (Dug Wells)

Well No	Latitude	Longitude	Well No	Latitude	Longitude
A-3	23°47'53.35" N	86°19'55.14" E	B-63	Abandoned due to OCP	
A-12	23°48'20.31" N	86°16'51.64" E	B-64	23°48'43.14" N	86°18'44.25" E
A-16	23°46'57.00" N	86°21'38.57" E	B-65A	23°48'53.65" N	86°18'11.82" E
A-17	23°45'09.44" N	86°22'16.35" E	B-67	23°43'30.70" N	86°14'01.45" E
A-18	23°44'37.65" N	86°22'58.90" E	D-3	23°46'46.31" N	86°24'49.30" E
A-19	23°41'12.86" N	86°23'55.27" E	D-4	23°44'29.37" N	86°24'42.88" E
A-20	23°44'56.64" N	86°19'55.35" E	D-5	23°42'20.05" N	86°24'86.06" E
A-22	23°43'06.65" N	86°14'48.53" E	D-7	23°43'12.08" N	86°27'11.89" E
A-23	23°45'06.38" N	86°15'12.69" E	D-8	23°44'06.13" N	86°27'20.72" E
A-24	23°45'20.44" N	86°13'45.12" E	D-23	23°47'20.89" N	86°20'09.96" E
A-25	23°47'06.20" N	86°15'27.79" E	D-25	23°47'03.28" N	86°23'29.56" E
A-26	23°46'49.24" N	86°18'12.12" E	D-30	23°48'36.10" N	86°21'50.07" E
A-27	23°48'42.55" N	86°20'21.80" E	D-33	23°45'34.62" N	86°23'18.50" E
A-28A	23°47'34.74" N	86°18'04.18" E	D-34	23°45'36.50" N	86°23'02.45" E
A-29	23°47'08.02" N	86°16'02.72" E	D-35	23°40'46.54" N	86°25'46.33" E
A-32	23°44'15.56" N	86°20'43.80" E	D-36	23°40'19.26" N	86°25'18.98" E
A-33	23°44'32.58" N	86°16'58.28" E	D-39	23°43'28.50" N	86°26'0.10" E
A-34	23°42'58.63" N	86°15'19.31" E	D-40A	23°43'20.18" N	86°25'45.70" E
B-1	23°48'48.06" N	86°14'16.87" E	D-41	23°42'40.00" N	86°26'17.20" E
B-14	23°48'00.81" N	86°16'25.88" E	D-43*	NA	NA
B-15	23°46'06.92" N	86°08'59.30" E	D-47	23°45'20.59" N	86°24'34.86" E
B-21A	23°45'10.50" N	86°09'36.38" E	D-49	23°44'08.96" N	86°26'32.71" E
B-23	23°44'13.05" N	86°11'46.56" E	D-51	23°44'20.86" N	86°27'11.37" E
B-24	23°44'26.80" N	86°13'09.38" E	D-55	23°43'58.37" N	86°24'07.45" E
B-25	23°44'44.98" N	86°13'57.80" E	D-74	23°41'33.66" N	86°25'06.10" E
B-32A	23°45'49.18" N	86°13'03.64" E	D-77	23°41'00.74" N	86°22'25.55" E
B-48	23°03'4'35.09" N	86°16'38.30" E	D-80	23°46'09.46" N	86°24'33.08" E
B-51	23°47'40.20" N	86°09'11.90" E	DB-22	23°43'38.81" N	86°45'09.00" E
B-53	23°45'55.25" N	86°09'35.44" E	DB-23	23°43'44.24" N	86°45'06.39" E
B-53A	-	-	DB-24	23°43'53.00" N	86°45'03.88" E
B-59	23°47'59.87" N	86°13'37.97" E	DB-25	23°44'10.75" N	86°44'35.84" E
B-60	23°48'7.87" N	86°15'37.12" E			
B-61A	23°45'59.85" N	86°11'40.80" E			
B-62A	23°45'44.15" N	86°11'27.80" E			

Annexure 14

*Analysis report of Mine*water discharge by CMPDIL at the monitoring point fixed in consultation with JSPCB

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. – II**)

i) **Mine Discharge of Mudidih (MW5)**

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

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 at the Environmental Laboratory of CMPDI RI-II, Dhanbad.

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 Cluster: **Cluster -V**		Month: **Feb, 2018**	Name of the Station: **Mine Discharge of Mudidih**	
Sl. No.	**Parameters**	**MW5** First Fortnight	**MW5** Second Fortnight	**As per MOEF General Standards for schedule VI**
		2-Feb-18	17-Feb-18	
1	Total Suspended Solids	20	24	*100 (Max)*
2	pH	7.8	7.58	*5.5 - 9.0*
3	Oil & Grease	<2.0	<2.0	*10 (Max)*
4	COD	24	16	*250 (Max)*

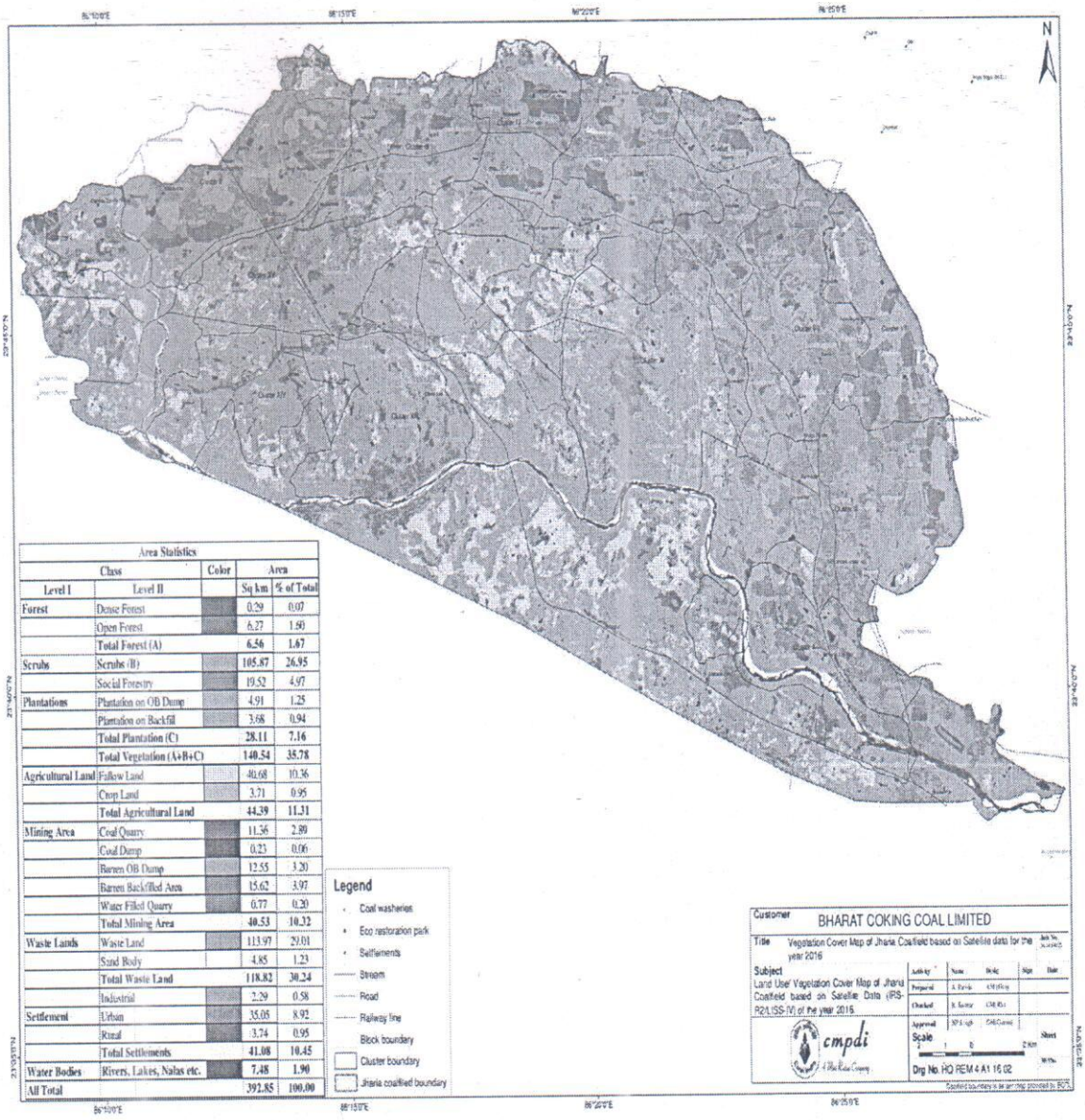
All values are expressed in mg/lit unless specified.

Analysed By
SRA/SA/SSA

Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

Annexure 15- Land use pattern monitoring Report of JCF for the year 2016



Area Statistics			
Class		Color	Area
Level I	Level II		Sq km / % of Total
Forest	Dense Forest		0.29 / 0.07
	Open Forest		6.27 / 1.60
	Total Forest (A)		**6.56 / 1.67**
Scrubs	Scrubs (B)		105.87 / 26.95
	Social Forestry		19.52 / 4.97
Plantations	Plantation on OB Dump		4.91 / 1.25
	Plantation on Backfill		3.68 / 0.94
	Total Plantation (C)		**28.11 / 7.16**
	Total Vegetation (A+B+C)		**140.54 / 35.78**
Agricultural Land	Fallow Land		40.68 / 10.36
	Crop Land		3.71 / 0.95
	Total Agricultural Land		**44.39 / 11.31**
Mining Area	Coal Quarry		11.36 / 2.89
	Coal Dump		0.23 / 0.06
	Barren OB Dump		12.55 / 3.20
	Barren Backfilled Area		15.62 / 3.97
	Water Filled Quarry		0.77 / 0.20
	Total Mining Area		**40.53 / 10.32**
Waste Lands	Waste Land		113.97 / 29.01
	Sand Body		4.85 / 1.23
	Total Waste Land		**118.82 / 30.24**
Settlement	Industrial		2.29 / 0.58
	Urban		35.05 / 8.92
	Rural		3.74 / 0.95
	Total Settlements		**41.08 / 10.45**
Water Bodies	Rivers, Lakes, Nalas etc.		7.48 / 1.90
All Total			392.85 / 100.00

Road Map for Ecorestoration of BCCL Mine Areas of Dhanbad, Jharkhand

Forest Ecology & Environment Division
Forest Research Institute
Indian Council of Forestry Research & Education
(Ministry of Environment & Forests, Govt. of India)
P.O. New Forest, Dehradun- 248006

Annexure17- Corporate Environment Policy

BHARAT COKING COAL LIMITED
(A Subsidiary of Coal India Limited – A Maharatna Company)

CORPORATE ENVIRONMENTAL POLICY

Bharat Coking Coal Limited (BCCL), a subsidiary of Coal India Limited, is a Public Sector Undertaking engaged in mining of coal and allied activities. It is the only producer of Prime Coking Coal in India. BCCL was incorporated in 1972 to operate coking coal mines operating in the Jharia and Raniganj Coalfields. Currently, the Company operates 66 coal mines and 8 Coal Washeries.

Our mission is to produce the planned quantity of coal efficiently and economically with due regard to safety, conservation and quality. BCCL affirms its commitment for environment friendly mining with right mitigation of pollution, reclamation of the degraded land, preservation of biodiversity and proper disposal of waste following the best environmental practices including judicious use of the non-renewable energy on the path of continual improvement. Towards this commitment, BCCL shall endeavor to:

- Conduct mining and associated operations in an environmentally responsible manner to comply with applicable laws and other requirements related to environmental aspects.
- Design projects with due consideration of Sustainable Development by integrating sound environmental management practices in all our activities.
- Prevent pollution of surrounding habitation by continuous monitoring and adopting suitable measures for environment protection.
- Ensure compliance of all applicable Environmental and Forest Clearance conditions and other statutory conditions issued by regulatory agencies.
- Implement the Environmental Management Plans in all our mines effectively to mitigate pollutions on air, water and noise; proper disposal of wastes and reclamation and ecological restoration of degraded land; and by also dovetailing the Jharia action/ Master Plan for dealing with Fires, Subsidence and Rehabilitation of affected people with the Environmental Management Plans under the Cluster Concept.
- Strive to conserve Bio-Diversity through Ecological restoration methods.
- Conserve natural resources through recycling of wastes on the principle of Reduce, Recycle and Reuse. Put special thrusts on efficient energy utilization as a measure to reduce carbon foot-print.
- Strive for continual improvement in our environmental performances by setting targets, measuring progress and taking corrective action.
- Create environmental awareness among the employees and the local communities through pro-active communication and training and encourage our business associates to adopt similar approach for environmental protection.

Place: Dhanbad
Date: 25.5.12

25/5

Chairman-cum-Managing Director

Chairman-cum-Mg. Director
BHARAT COKING COAL LIMITED
Koyla Bhawan, Dhanbad-826 005

Annexure 18

Environmental Monitoring Report of Cluster V

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

(FOR THE MONTH FEBRUARY, 2018)

E. C. no. J-11015/01/2010-IA.II (M) dated11.02.2013.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CONTENTS

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 MoEF&CC 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 MoEF&CC, 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.

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 rationale has been based on the guidelines stipulated by MoEF&CC, consent letter of SPCB, as well as other statutory requirements.

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-II, Dhanbad.

3.2 Water quality

Water samples were collected as per standard practice. The Mine effluent samples were collected and analysed for four parameters on fortnightly basis. Thereafter the samples were preserved and analysed at the Environmental Laboratory of CMPDI, RI- II, Dhanbad.

3.3 Noise level monitoring

Noise level measurements in form of 'L_{EQ}' 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 MoEF&CC 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 MoEF&CC Gazette Notification No. GSR 742(E) dt 25.09.2000

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 MoEF&CC 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.

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 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-V is in the Northern part of the Jharia coalfield. It includes a group of 7 Mines (viz. Nichitpur, OCP, Mudidih colliery (Mixed), Tetulmari colliery (Mixed), SendraBansjora colliery (Mixed), Kankanee colliery (Mixed), Bansdeopur colliery (Mixed) and Loyabad colliery. The Cluster – V is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – V 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 Jarian Nala and Ekra Nala.

1.2 The Cluster-V is designed to produce 4.854 MTPA (normative) and 6.311 MTPA (peak) capacity of coal. The average grade of coal W – III & W- IV.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEF&CC) for a rated capacity 4.854 MTPA (normative) and 6.311 MTPA (peak) capacity of coal production vide letter no. J-11015/01/2010-IA.II (M) dated 11th 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, other conditions regarding water / effluent and noise level monitoring in consultation with the State Pollution Control Board."

In compliance of these conditions the Environmental Monitoring has been carried out & report prepared for submission to MoEF&CC & JSPCB and other statutory authorities.

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) Nichitpur (A8): Industrial Area

The location of the sampling station is 23⁰ 48'18.59" N 86⁰21'30.93" E.The samplers were placed at a height of approx. 1.5m above ground level at Nichitpur.

II.BUFFER ZONE Monitoring Location

i) Basseriya Managers Office (A9) : Industrial area

The location of the sampling station is 23⁰ 48'11.53" N & 86⁰ 22'17.50" E. The samplers were placed at a height of approx. 1.5m above ground level at Safety Office.

ii) Pootki Ballihari Office (A16) : Industrial area

The location of the sampling station is 23°45.17.23' N 86°21.46.27'E. The samplers were placed at a height of approx. 1.5m above ground level at Project Office.

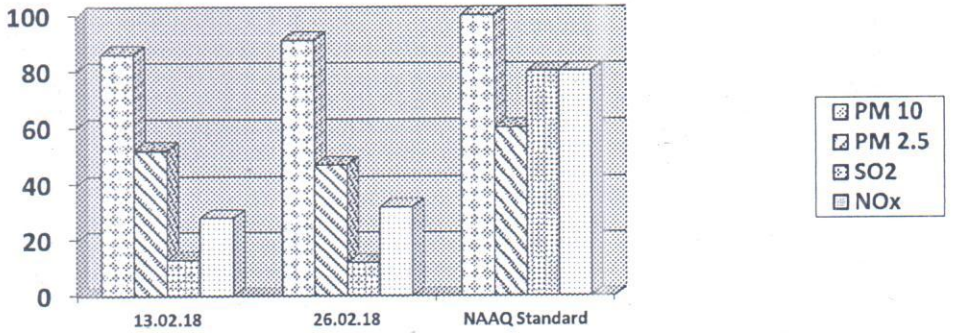
iii)Moonidih UGP(A17): Industrial Area

The location of the sampling station is 23⁰ 44'30.00" N & 86⁰ 20'56.00" E. The samplers were placed at a height of approx. 1.5m above ground level at project office.

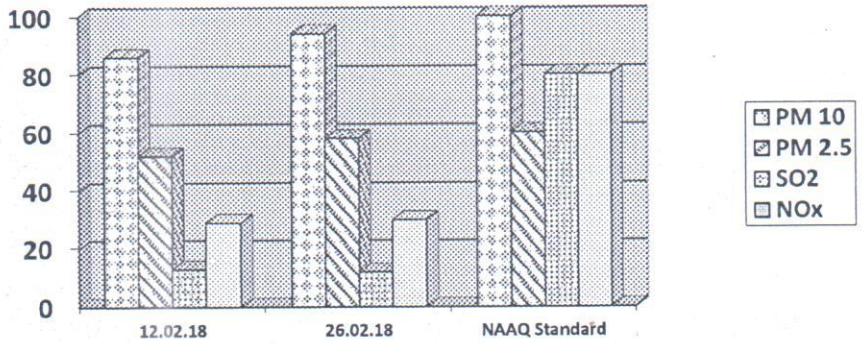
AMBIENT AIR QUALITY DATA

Cluster – V,Bharat Coking Coal limited Month: **Feb 2018** Year : **2017-18.**

Station Name: A8, Nichitpur		Zone: Core		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	13.02.18	86	52	13	28
2	26.02.18	91	47	12	32
	NAAQ Standard	100	60	80	80



Station Name: A9, Basseriya Managers office		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	12.02.18	86	52	13	29
2	26.02.18	94	58	12	30
	NAAQ Standard	100	60	80	80

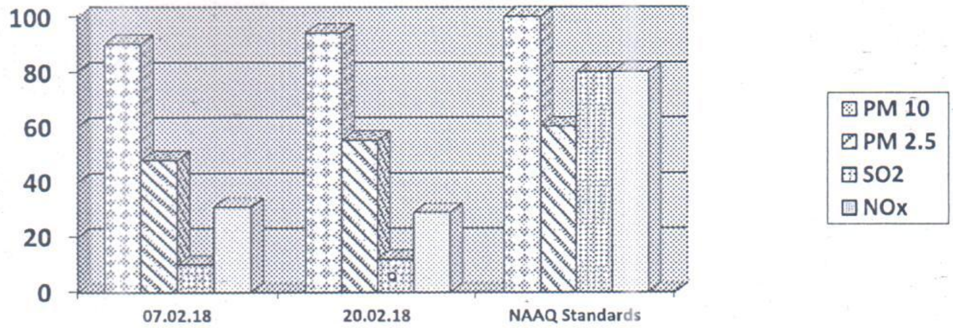


Analysed By
(SAS/ASSA)

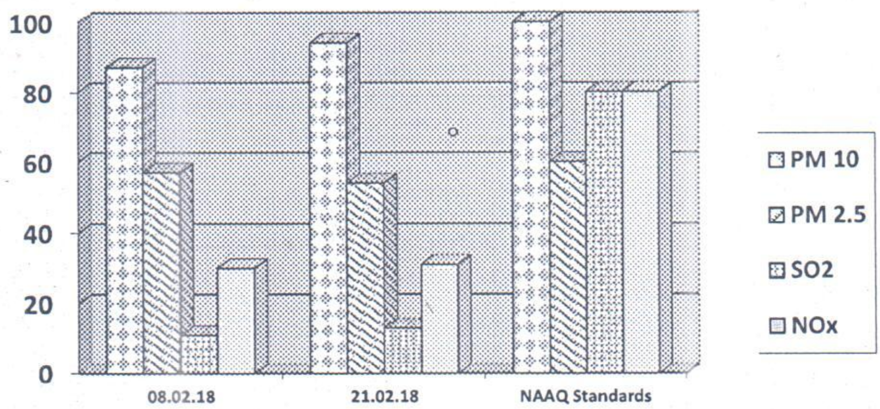
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

Station Name: A16 Pootki Balihari office		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	07.02.18	90	48	10	31
2	20.02.18	94	55	12	29
	NAAQ Standards	100	60	80	80



Station Name: A17 – Moonidih UGP		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	08.02.18	87	57	11	30
2	21.02.18	94	54	13	31
	NAAQ Standards	100	60	80	80



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

Analysed By
JSA/SA/SSA

Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. – II**)

i) **Mine Discharge of Mudidih (MW5)**

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

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 at the Environmental Laboratory of CMPDI RI-II, Dhanbad.

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 Cluster: **Cluster -V**		Month: **Feb, 2018**	Name of the Station: **Mine Discharge of Mudidih**	
Sl. No.	**Parameters**	**MW5** First Fortnight	**MW5** Second Fortnight	**As per MOEF General Standards for schedule VI**
		2-Feb-18	17-Feb-18	
1	Total Suspended Solids	20	24	*100 (Max)*
2	pH	7.8	7.58	*5.5 - 9.0*
3	Oil & Grease	<2.0	<2.0	*10 (Max)*
4	COD	24	16	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By
JSAS/SSA

Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

NOISE LEVEL QUALITY MONITORING

4.1Location of sampling sites

i) **Nichitpur (N8)**
ii) **Basseriya Manager's office(N9)**
iii) **Pootki Balihari Office(N16)**
iv) **Moonidih UGP (N17)**

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 time and the observed values were compared with standards prescribed by MoEFCC. The results of Noise levels recorded during day 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 Project: **Cluster -V**			Month: **February, 2018**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)LEQ**	***Permissible Limit of Noise level in dB(A)***
1	**Nichitpur**	**Industrial area**	13.02.18	63.5	*75*
2	**Nichitpur**	**Industrial area**	26.02.18	61.4	*75*
3	**Basseriya Managers Office**	**Industrial area**	12.02.18	64.1	*75*
4	**Basseriya Managers Office**	**Industrial area**	26.02.18	62.3	*75*
5	**Pootki Balihari Office**	**Industrial area**	07.02.18	64.1	*75*
6	**Pootki Balihari Office**	**Industrial area**	20.02.18	62.9	*75*
7	**Moonidih UGP**	**Industrial area**	08.02.18	60.2	*75*
8	**Moonidih UGP**	**Industrial area**	21.02.18	64.7	*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,**

Analysed By
JSAS/SSA

Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

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
	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.Improvedwest 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 clause2.

** 24hourly/8hourlyvaluesshallbemet92%ofthetimeinayear.However,8% of the time it may exceed but not on two consecutivedays.

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

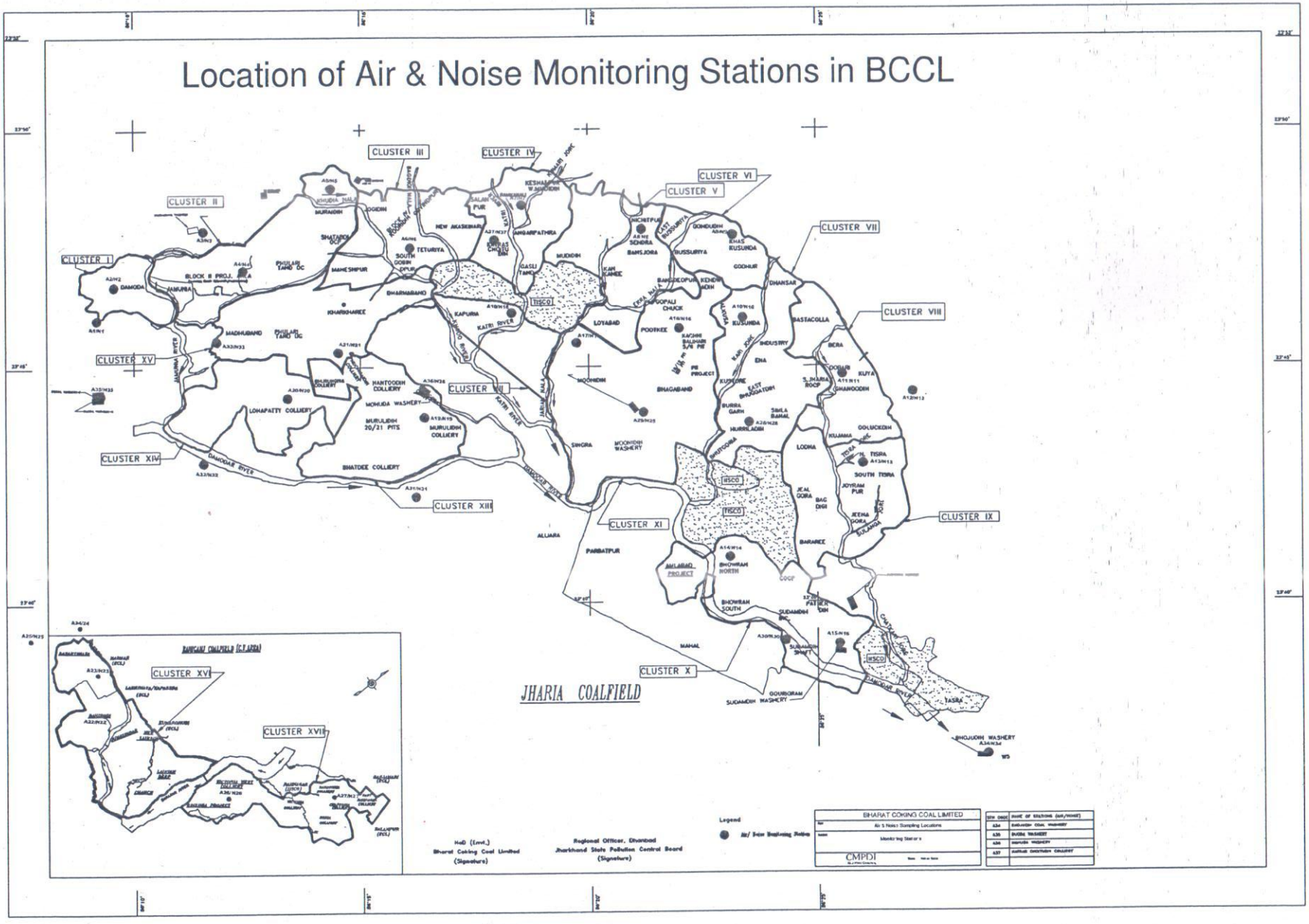
In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No. 14 of 1981), and in supersession of the notification No(s).S.O.384(E), dated 11th April 1994 and S.O.935(E), dated 14th October 1998, the Central Pollution Control 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 (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

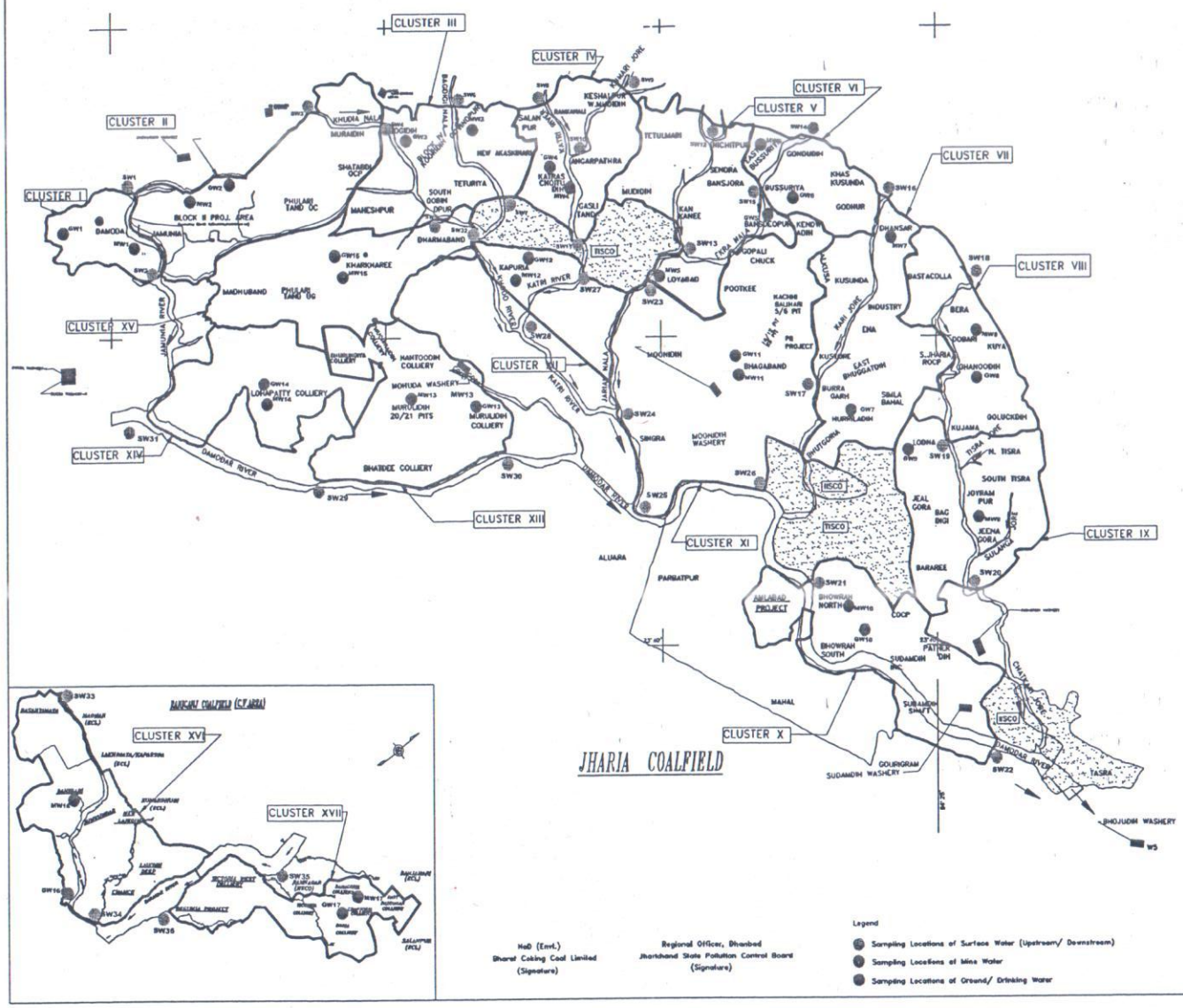
* Annual Arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 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.


Location of Air & Noise Monitoring Stations in BCCL
CLUSTER I
CLUSTER II
CLUSTER III
CLUSTER IV
CLUSTER V
CLUSTER VI
CLUSTER VII
CLUSTER VIII
CLUSTER IX
CLUSTER X
CLUSTER XI
CLUSTER XII
CLUSTER XIII
CLUSTER XIV
CLUSTER XV
CLUSTER XVI
CLUSTER XVII
JHARIA COALFIELD
BHOJUDIH WASHERY
BHARAT COKING COAL LIMITED
CMPDI

Water Sampling Locations in BCCL



INDEX

Cluster	Surface Water (SW), (WS)	Name of River/ Nala / Jore	Mine/ Effluent	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghutway Village
II	SW3, SW4	Khudia Nala	MW2	Block II OCP	GW2	Joynampur Village
III	SW4, SW5, SW6, SW7	Khudia Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogidih Village
IV	SW8, SW11, SW9, SW10	Katri River, Kumari Jore	MW4	Chasudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudidih	GW5	Nichitpur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansjora Borewell
VII	SW16, SW17	Kari Jora	MW7	Dhansar UGP	GW7	Hurriladih
VIII	SW18, SW19	Koshi Jore	MW8	Dubarl UGP	GW8	Ghanoodih
IX	SW19, SW20	Koshi Jore	MW9	Jeemagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhaguband UGP	GW11	Bhagaband
XII	SW27, SW28	Katri River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murulidih (20/21)	GW13	Murulidih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Khudia Nala	MW15	Kharkharee UGP	GW15	Kharkharee
XVI	SW33, SW34	Khudia River	MW16	Dahibari OCP	GW16	Parbatpur Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chapitoria

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

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

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

BHARAT COKING COAL LIMITED
WATER SAMPLING LOCATIONS
MONITORING STATIONS
CMPDI

PLATE -1

Avenue Plantation at Tetulmari Colliery, Cluster V

PLATE -2

Capacity Building Activities in cluster V

Plate 3

Biologically Stabilized OB Dump at Tetulmari

Plate 4

OB Dump being Biologically reclaimed at Nichitpur

Plate 5

Plantation at Undisturbed area at Loyabad

Plate 6

Plantation on external OB dump at Tetulmari

Plate 7

Plantation near mine working boundary at Sendra Bansjora

Plate 8

Plate 8- Water sprinkling on mine roads