ENVIRONMENTAL CLEARANCE COMPLIANCE OF CLUSTER-XI (GRANTED VIDE J-11015/77/2011-IA.II (M) Dated 26.08.2013)

(Oct'2015 – March' 2016)

Sl. No.	A. Specific Conditions by MOEF:	Compliance
i.	**No mining shall be undertaken in/under the forestland until prior forestry clearance has been obtained under the provisions of FC Act 1980.**	Application for Forest clearance was applied vides ref. no. WJA/MND/GM/2011/21 dt.22.9.11 to D.F.O., Dhanbad. D.F.O. demanded jungle-jhari report for the whole lease –hold area of the unit. C.O., Dhanbad was requested to provide the report. D.C.'s & C.O.'s office provided 'Jungle- Jhari 'report for only 4 Mouzas showing unavailability /tearing off Khatiyan. Accordingly we applied for forest clearance to D.F.O. vide letter no. WJA/MND/GM/2014/4719 dt. 9.10.14 for onward submission to M.O.E.F. DFO, Dhanbad directed us to apply through On-Line. Accordingly online registration for the same was done vide Unique Proposal no. FP/JH/MIN/9699/2015. Form 'A' application for the same has been completed, toposheets uploaded and Geo-reference is being done.
ii.	**You will need to seek and obtain approval under the FC Act for diversion of the entire forest land located within the mining lease within a period of two years from 1.2.2013 i.e. date of issue of FC Division's guidelines vide. no. 11-362/2012-FC, failing which the mining lease area will be reduced to the non-forest area plus the forest area for which you have been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, you will need to get a revised mining plan approved from the Competent Authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.**	Agreed
iii.	**The maximum production in the cluster shall not exceed beyond that for which environmental clearance has been granted for the cluster XI as per given below:**	**It is being complied.** The production from the cluster is within the limit for which environmental clearance has been granted. Enclosed as **Annexure I**.
Iv.	**The open cast quarries of the abandoned mines should be backfilled to the ground level and restored with native species.**	Shall be complied. Now it is not applicable.
V.	**All coal from smaller UG mines should be transported by high capacity and mechanically covered trucks/ tippers.**	Agreed. Coal from smaller u/g mines is transported by covering trucks with Tarpaulin.

vi.	**Green belts shall be developed on both sides of the roads.**	Agreed. Almost 70 % of plantation already done. A garden with fountain has been developed near Moonidih Colliery office. Time to time plantation is done either departmental or with the help of DFO.
vii.	**Action plan for quenching of fires and rehabilitation alongwith the details of master plan be submitted to the MoEF for monitoring purpose.**	**It is being Complied.** (Plan is already submitted in respect of all mines of P.B. Area).
viii.	**Presently coal to Munidih washery from other mines of the cluster is taking place through NH.** **An alternate route for coal transportation may be explored.**	In the process of exploration
ix.	**For understand the composition of emissions from coal mine fires, BCCL may.**	Agreed
x.	**Initiate action as proposed in the visit report of the EAC to Dhanbad.**	Action as proposed in the visit report of EAC initiated to Dhanbad.
xi.	**The approved mining plan be submitted to the MoEF.**	Agreed. It is under process. Feasibility report has been submitted.
xii.	**The measure to identify in the Environmental Plan for Cluster- XI groups of mine and the conditions given in this environmental clearance letter shall be dovetailed to the implementation of the Jharia Action Plan.**	Environmental plan for Custer XI group of mines and the conditions given on the environment clearance has been dovetailed.
xiii.	**The proponent shall prepare time -series maps of the Jharia Coalfields through NRSA to monitor and prevent fire problems in the Jharia Coalfields by Isothermal mapping /imaging and monitoring temperatures of the coal seams (whether they are close to spontaneous ignition temperatures) and based on which, areas with potential fire problems shall be identified. Measures to prevent ingress of air (Ventilation) in such areas, to prevent restart fresh/spread fires in other areas including in mines of cluster II shall be undertaken. Expertise available internationally could also be utilised for control of fire in Jharia Coalfields and for their reclamation and to further minimize time for fire and subsidence control. Isothermal mapping using thermal imaging has been got done by NRSA. Measures would be taken to prevent ingress of air (ventilation) in such areas, which may re-start fresh fires.**	**It has been complied.** NRSC was engaged for preparation of time series maps to monitor and prevent fire problems of Jharia Coalfield by Isothermal mapping/imaging and monitoring temperatures of the coal seams and NRSC has submitted their final report in March'2014 in which the area of fire has been reduced from 9.00 Km^2 to 2.18 Km^2. Enclosed as **Annexure II.**.
xiv.	**The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation.**	Agreed. There is no river passing from P.B.Area.

xv.	**No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/check such fire including in old OB dump areas where the fire could start due to presence of coal/shale with sufficient carbon content.**	It is being complied
xvi.	**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.**	Agreed. Complied as per statute.
xvii.	**Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation.** **A total area of 254.67 ha shall be reclaimed and afforested.**	Agreed. Already developed in respect of Moonidih u/g mine. Green belt is being developed and 5 ha of ecological park (taken up in FY 2015-16) and 2 ha (taken up in FY 2016-17) is under construction in lease hold area of Bhagabandh colliery of cluster XI.
xviii.	**Details of transportation, CSR, R&R and implementation of environmental action plan for the clusters- XI should be brought out in a booklet form within a year and regularly updated.**	Being Implemented.
xix.	**Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a critically polluted are and relevant for Cluster XI shall be implemented.**	**It is being complied** in the name of Dhanbad Action Plan. It has been prepared in consultation with Jharkhand Pollution Control Board for entire BCCL, not on cluster basis. It is being implemented comprehensively for all the mines of BCCL. Some of the salient actions of this cluster are as under: 1. Covered Truck Transport 2. Construction of Pucca Road. 3. Construction of water reservoir for mine water utilization 4. Plantation. Etc.
xx.	**The locations of monitoring stations in the Jharia Coalfields should be finalised 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 (PM_{10} and $PM_{2.5}$) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.**	**It is being complied.** Establishment of ambient environment quality monitoring stations has been finalized with the consultation of Jharkhand State Pollution Control Board. The monitoring of ambient environment was done by Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which is a CSIR laboratory recognized under the EP Rules. Presently CMPDIL is carrying out the ambient environment monitoring work. Final report yet to be submitted by CIMFR & CMPDIL. Enclosed as **Annexure III.**
xxi.	**The proponent will continue the existing Road-Rail transport network system in view of the implementation of the Master Plan (for 10 years) and another 5 years gestation period after the completion of Master Plan for**	Action has been taken for the transportation plan for conveyor cum rail system of dispatch. CMPDIL, RI-II has been requested to conduct study and prepare the plan in this regard.

	consolidation of the backfilled dug out fire areas and unstable areas is required. All mitigation measures (like covered trucks, green belting on either sides of the roads, enhanced water sprinkling, strengthening and maintaining the roads etc.) shall be adopted up to 15 years (phase-I) with the existing road-rail transport system. In phase-II, BCCL shall implement conveyor-cum-rail transport to avoid movement of trucks within the cluster for coal transportation in Phase-II which shall start after 15 years. Transportation of coal shall be by Rail and Conveyor belt, minimizing the existing road transport system in all the mines of the cluster and shall continue after 15 years. Loading of coal by pay loaders shall be discontinued. Adequate number of suitably designed off-take points shall be provided.	No OEM/HEMM Equipment Manufacturer supplies the mechanically covered trucks for the transportation of Coal and OB in India. Possibility is being explored at local level. By that time transportation is being done by covering vehicle with tarpaulin cover. **Enclosed as Annexure IV.**
xxii.	**16944 nos of PAFs should be rehabilitated at cost of Rs 53776.60 Lakhs as per the approved Jharia Action Plan.**	Implementation of master plan has already been started through Jharia Rehabilitation and Development Authority (JRDA), Dhanbad
xxiii.	**Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads, and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.**	It is being complied and will be implemented as the case may be.
Xxiv.	**Coal Extraction shall also be optimised in areas where agricultural production is continuing. Some pillars shall be left below the agricultural land. No depillaring & coal extraction should be carried out below habitation, H.T. Lines & beneath road, water bodies.**	Agreed. Being implemented as per statute.
Xxv.	**Subsidence shall be monitored closely and if subsidence is found exceeding the permitted limits, then the landowners shall be adequately compensated with mutual agreement with the landowners.**	Agreed
xxvi.	**3-tier plantation should be developed 2 km stretch of road from the mine using native species.**	Developed in respect of Moonidih Mine .It is under progress in respect of all mines of P.B.Area.
xxvii.	**Water sprinkling system shall be provided to check fugitive emissions from loading operations, conveyor system, haulage roads, transfer points, etc. Major approach roads shall be black topped and properly maintained.**	Already provided in respect of Moonidih Mine (Approach road already blacktopped and maintained).Already provided in Moonidih washery. It is being also complied in respect of all mines of P.B.Area. Mobile water tankers are used for

		spraying water.
xxviii.	**A progressive afforestation plan shall be prepared and implemented over the mine lease area acquired and shall include areas under green belt development, areas along roads, infrastructure, along ML boundary and township etc., by planting native species in consultation with the local DFO/Agriculture Department.**	**It is being complied.** 500 Number of gabion plantation is being proposed at coal stock yard and Burragarh railway siding. Apart from that regular plantation is carried out at colliery level of PB Area. Being implemented in respect of Moonidih Colliery.
xxix.	**Acid Water Treatment Plant, volume of water to be treated and disposal of brine should be provided.**	Agreed. Presently there no acid water in Cluster-XI mines.

Xxx.	**Mine discharge water outside the ML shall be monitored, particularly for TDS and treated to conform to prescribed levels before discharge into the natural environment.**	Agreed. Being Monitored. Moonidih washery is operating under closed water circuit system.
Xxxi.	**The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource, in case water table shows a declining trend. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.**	Agreed. Mine water is being used for the industrial as well as domestic purpose. Mine water is also utilized for the community and irrigation purposes.
xxxii.	**Besides carrying out regular periodic health check up of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check up for occupational diseases and hearing impairment, if any, through an agency such as NIOH, Ahmadabad within a period of one year and the results reported to this Ministry and to DGMS.**	Being Complied. Besides regular periodic health check up of workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health check up for occupational diseases and hearing impairment through NIOH, Ahmadabad which is the premier institute, under the aegis of the ICMR under the Department of Health Research, Ministry of Health and Family Welfare, Govt. of India.. Work has been awarded to NIOH to conduct the health check up of identified manpower. The work will commence shortly.
xxxiii.	**The mining in the existing mines would be phased out after expiry of the current mining lease and after reclamation of mined over area. The operating mines may be analyzed and monitored for compliance of conditions, having bearing with movement of wild life until such time they are closed/phased out.**	Agreed
xxxiv.	**Sufficient coal pillars shall be left unextracted around the air shaft (within the subsidence influence (area) to protect from any damage from subsidence, if any.**	Already implemented in case of Moonidih Mine. Agreed in respect of all mines of P.B.Area.

xxxv.	**High root density tree species shall be selected and planted over areas likely to be affected by subsidence.**	Being Complied. Planted in respect of Moonidih Colliery.
xxxvi.	**Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.**	Agreed
xxxvii.	**Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.**	Agreed
xxxviii.	**The CSR Action Plan shall consist of need-based CSR Action Plan, CSR Auditing and monitoring mechanism etc. The proponent will spend 5 % of the retained earning of the previous year subject to a minimum of Rs. 5/- per tonne of coal production which should be adjusted as per the annual inflation The progress made thereon shall be uploaded on the company annually on the company website. Monitoring of the impacts of activities under CSR shall be carried out periodically.**	Being Complied. CSR work w.r.t. P.B. area carried out in FY 2015-16 (from October 15 till March 16) is enclosed. **Annexure - V**
xxxix.	**Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the Public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website every year. The company must give priority to capacity building both within the company and to the local youth, who are motivated to carry out the work in future. The gap/space available between the entire mine area should be suitably planted with native species. Plantation should also be made in vacant area and along the road side so as to reduce dust pollution.**	Agreed. Being followed.
Xl.	**Central recreation park with herbal garden should be developed for use of all inhabitants.**	Ecological park of (5 hectare in FY 2015-16 and 2 hectare in FY 2016-17) in the lease hold of Bhagabandh colliery is under construction.
Xli.	**The mine water should be treated properly before supply to the villager.**	It is being complied. An action plan for the utilization and treatment of surplus Mine Water has been prepared by Environment, Civil and CSR department conjointly. In this regard, 26 Mines have been identified for the implementation of scheme in the Phase-I.

Xlii	**Mine discharge water shall be treated to meet standards prescribed standards before discharge into natural water courses/agriculture. The quality of the water discharged shall be monitored at the outlet points and proper records maintained thereof and uploaded regularly on the company website.**	**It is being complied.** Mine discharge water is being allowed to settle down in the mine sumps before passing through sedimentation tank. The monitoring of water quality parameters was being done through Central Institute for Mining and Fuel Research (CIMFR), Dhanbad and presently CMPDIL is carrying out the environmental monitoring work. Mine water quality data has been enclosed as **Annexure VI.**
Xliii	**The void shall be converted into a water reservoir of a maximum depth of 15-20 m and shall be gently sloped and the upper benches of the reservoir shall be stabilized with plantation and the periphery of the reservoir fenced. The abandoned pits and voids should be backfilled with OB and reclaimed with plantation and or may be used for pisciculture.**	Agreed (As working in PB area does not approach combined seam therefore water reservoir cannot be formed. In due course this point will be complied in future)
Xliv	**Regular monitoring of groundwater level and quality of the study area shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be dome four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality including Arsenic and Fluoride during the month of May. Data thus collected shall be submitted to the Ministry of Environment & Forest and to the Central Pollution Control Board/SPCB quarterly within one month of monitoring. Rainwater harvesting measures shall be undertaken in case monitoring of water table indicates a declining trend.**	**It is being complied.** CMPDI RI-II has prepared a report for Location and design of Piezometers. Tender is being prepared for award of work of establishing a network of dug wells and construction of new piezometers for groundwater monitoring purpose. Groundwater monitoring data has been enclosed as **Annexure VII.**
xlv	**ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to confirm to prescribe standards in case discharge into the natural water course.**	Agreed. There is no effluent found now .However there is arrangement for treatment of effluent. There is no CHP under Cluster XI

xlvi	**For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MoEF and its Regional office at Bhubaneswar.**	**It has been complied.** Presently a time series map of vegetation cover in the Jharia Coal Field is being carried out through CMPDI, Ranchi using satellite imagery. Further CMPDI has been requested to prepare "Time series of land use maps based on satellite imagery of the core zone and buffer zone.

xlvii.	**A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests five year before mine closure for approval. Habitat Restoration Plan of the mine area shall be carried out using a mix of native species found in the original ecosystem, which were conserved in-situ and ex-situ in an identified area within the lease for reintroduction in the mine during mine reclamation and at the post mining stage for habitat restoration. the mining plan and post- mining plan, closure plan should be prepared and submitted to the Ministry;**	Agreed. Mine Closure Plan is approved in respect of Moonidih Colliery by CMPDIL.
xlviii.	**A separate management structure for implementing environment policy and socio-economic issues and the capacity building required in this regard.**	Complied.
xlix.	**The raw coal, washed coal and coal wastes (rejects) shall be stacked properly at earmarked.**	Agreed.
l.	**Site(s) within stockyards fitted with wind breakers/shields. Adequate measures hall be taken to ensure that the stored minerals do not catch fire.**	Agreed.
li.	**Hoppers of the coal crushing unit and washery unit shall be fitted with high efficiency bag filters and mist spray water sprinkling system shall be installed and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads.**	Agreed.
lii.	**All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned with mechanical sweepers.**	Already implemented in respect of Moonidih mine Cleaning of roads done manually. It is being complied for other units of Cluster- XI.

liii.	**Green belt of 3 ha shall be developed all along the periphery of the site, along the areas such as the washery unit, crushing unit, and stockyard. A 3-tier avenue plantation would be developed along vacant areas, near washery, storage yards, loading points and transfer points and along internal roads and main approach roads and on the road upto the railway siding and at the siding. The road between the coal washery and the main -road shall be black topped and thick 3-tier vegetation between the washery and villages/habitations shall be developed. In addition, a 10m thick green avenue plantation in the transportation route from washery to Majhri Railway Siding (of WCL) shall be provided in consultation with and approval of WCL under CSR.**	Agreed. Here there is no Majhri Railway siding (of WCL).
liv.	**Trucks engaged for mineral transportation outside the washery upto the railway siding shall be optimally loaded. The trucks shall be properly maintained and emissions shall be below notified limits. Facilities for parking of trucks carrying raw coal from the linked coalmines shall be created within the Unit.**	Agreed. Being Complied.
lv.	**Records of quantum of coal (in TPD) and ash content of raw coal being washed, clean coal and coal rejects produced from every batch of washing shall be maintained and details thereof uploaded on the company website.**	Agreed. Complied. Records of Coal fines/Slurry are maintained by Moonidih coal washery.
lvi.	**The washery unit shall be a zero-discharge facility and no wastewater shall be discharged from the washery into the drains/natural watercourses. Recycled water shall be used for development and maintenance of green belt and in the Plant Operations.**	There is zero discharge from the washery and water is recycled for the plant operations and for the development of plantation inside the washery premises.
lvii.	**Coal fines shall be recovered from the coal slurry, washery discharge and used in power generation and records of quantum of coal fines collected and used shall be properly maintained.**	Stock of slurry is maintained, records of coal fines are maintained.
lviii.	**No additional groundwater shall be used for the Plant Operations. Any additional water requirement envisaged shall be obtained by recycle/reuse to the maximum extent and from rainwater harvesting measures.**	Agreed

lix.	**Heavy metal content in raw coal, and washed coal shall be analysed once in a year and records maintained thereof.**	Agreed
lx.	**Corporate Environment Responsibility:**	**Enclosed as Annexure-VIII**
a.	**The Company shall have a well laid down Environment Policy approved by the Board of Directors.**	Agreed
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.**	Agreed
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.**	Agreed
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.**	Agreed
Sl. No	**B. General Conditions Conditions by MOEF:**	**Compliance**
i.	**No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.**	Being Followed.
ii.	**No change in the calendar plan of production for quantum of mineral coal shall be made.**	Being Followed.
iii.	**Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM 2.5, SO 2 and NOx monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr etc carried out at least once in six months.**	The fixing up of locations of monitoring stations in the Jharia Coalfields has been taken up with the Jharkhand State Pollution Control Board. The work of monitoring of ambient environment has been done through Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which is having CSIR laboratory recognized under the EP Rules.

iv.	**Data on ambient air quality (PM 10, PM 2.5, SO 2 and NO x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EPA rules, 1986 shall be furnished as part of compliance report.**	It is complied. Monitoring for the same is done by CMPDI which is having own laboratory recognized under EPA Rules.
v.	**Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.**	Being Complied.
vi.	**Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.**	The work of monitoring of industrial waste water was done by Central Institute of Mining & Fuel Research (CIMFR), Dhanbad which is having laboratory recognized under the EPA Rules. Presently, CMPDI Dhanbad is carrying out regular monitoring of environmental quality work. There is arrangement for treatment of effluent discharge to prescribed standards.
vii.	**Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.**	Already complied. Enclosed as **Annexure IX**
viii.	**Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986**	It is being complied.
ix.	**Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.**	Being complied. Vocational training Centers under separate Human Resource Development Department is conducting regular training programme on these issues. Enclosed as **Annexure X.**

x.	**Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.**	Initial Medical Examination (IME) and Periodical Medical Examination (PME) of all the personnel are carried out as per the Statutes and Director General of Mines Safety (DGMS)`s guideline. **Annexure X.**
xi.	**A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.**	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives (12 nos.) which includes Environment, Mining, Excavation, Civil, Survey ,Electrical & mechanical, Forestry disciplines executives and technicians (4 nos.) has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, one Executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental Acts/ Laws including environment protection measures .The activities are monitored on regular basis at Area and at Head quarters levels. GM (Environment) at head quarter level, co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xii.	**The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.**	It is being complied. Agreed to report the same soon. It is being initiated with respect to Moonidih colliery also.

xiii.	**The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at www.envfor.nic.in**	It has been complied.

xiv.	**A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.**	Complied.
xv.	**A copy of the environmental clearance letter shall be shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Sector and Collector's Office/Tehsildar's Office for 30 days.**	Complied.
xvi.	**The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant. such as PM_{10}, $PM_{2.5}$, SO_2 and NOx (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.**	Complied.
xvii.	**The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office (s) of CPCB and the SPCB.**	Being complied.
xviii.	**The Regional Office of this Ministry located at Ranchi 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.**	Agreed .It has been complied & shall be complied.

xix.	**The Environmental statement for each financial year ending 31 March in Form –V is mandated to be submitted by the project proponent to 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.**	Being complied. Agreed.
7	**The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report so also during their presentation to the EAC.**	Agreed
8	**The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project.**	Agreed
9	**The Ministry or any other competent authority may stipulate any further condition for environmental protection.**	Agreed
10	**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
11	**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

12	**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

28-5-16

Additional General Manager
P.B. Area

Additional General Manager
POOTKEE BALIHARI AREA
B.C.C.L. DHANBAD

29/5/16

Project officer
Moonidih Washery

PROJECT OFFICER
MOONIDIH COKE WASHERY

28-5-16

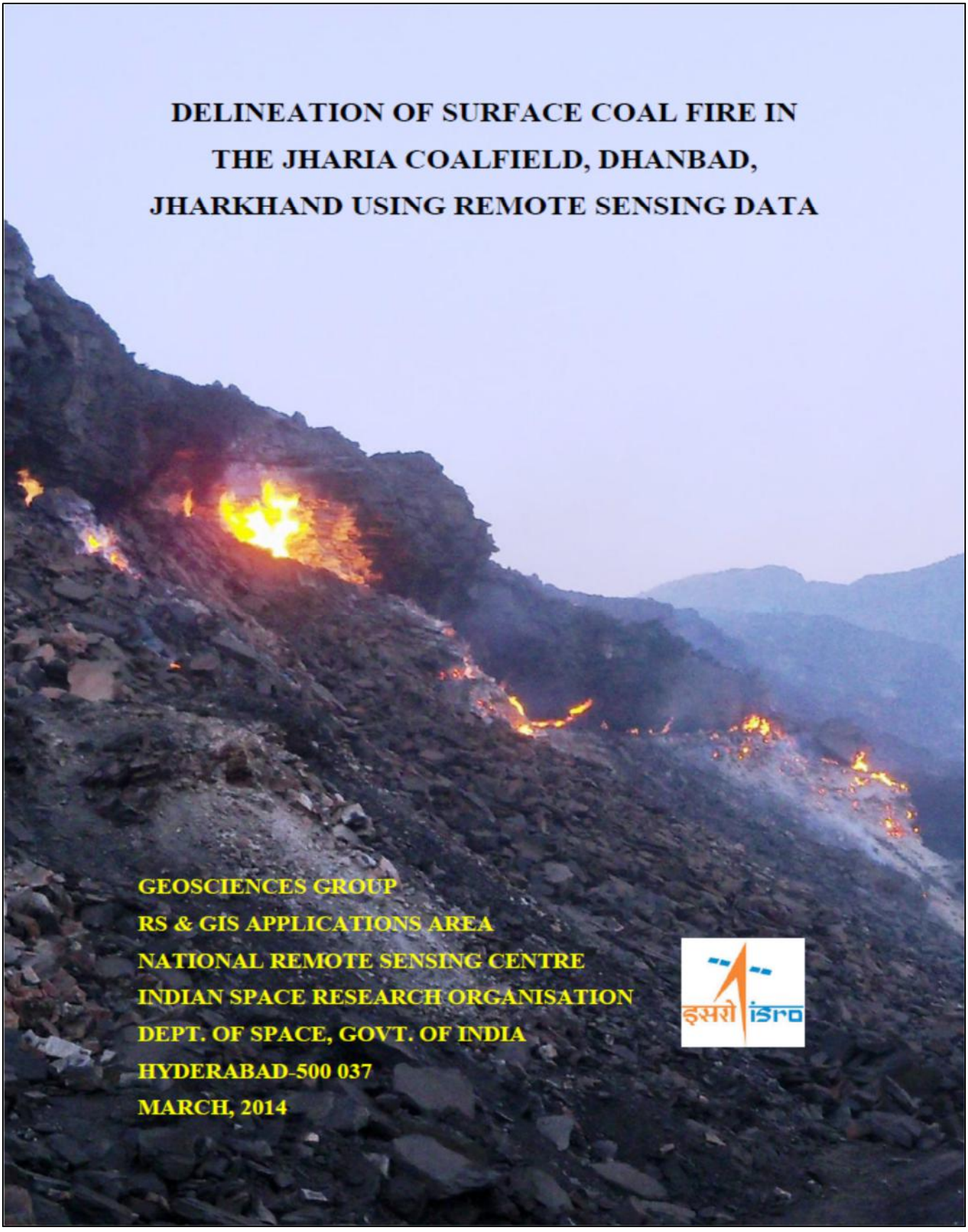
Project officer
Moonidih Colliery

ANNEXURE- I

A. Production from Oct'15 to March'16 of P.B. Area in MT

Month		Oct'15	Nov'15	Dec'15	Jan'16	Feb'16	March'16	Total (Million ton)
Cluster XI	P.B.Project	2568	2427	2653	2078	1433	1246	0.0120
	Gopalichuck	1868	2338	2670	1894	1487	1867	0.0120
	Bhagabandh	2939	2911	2881	2447	1507	1395	0.0140
	K.B.10/12 Pits	1713	1758	1824	2398	2129	2301	0.0120
	Moonidih UG Mine	20020	46530	30630	36355	39020	38100	0.2107
	Total (in Million ton)							0.2546

Annexure-II


DELINEATION OF SURFACE COAL FIRE IN
THE JHARIA COALFIELD, DHANBAD,
JHARKHAND USING REMOTE SENSING DATA
GEOSCIENCES GROUP
RS & GIS APPLICATIONS AREA
NATIONAL REMOTE SENSING CENTRE
INDIAN SPACE RESEARCH ORGANISATION
DEPT. OF SPACE, GOVT. OF INDIA
HYDERABAD-500 037
MARCH, 2014
इसरो ISRO

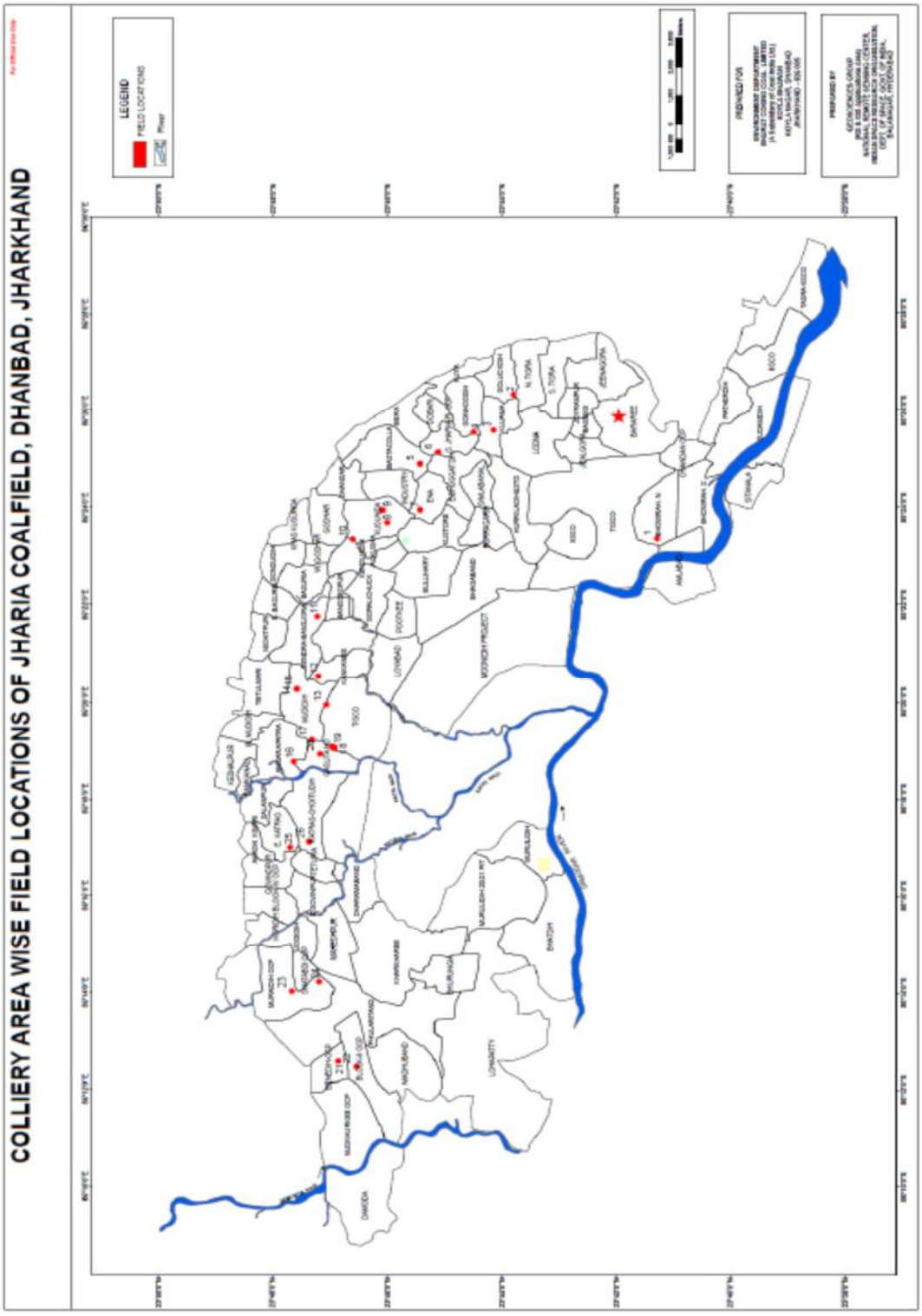


Figure 7: Field locations of coal mine fire shown over colliery area boundary in Jharia coal field, Dhanbad, Jharkhand.

5. There is a decrease in areal extent of the fire (Figure 10) from 2006 to 2012.

Note: *Estimations of fire extent (in terms of sq.km.) both in 2006 and in the present 2012 study are pixel based. They do not represent the actual ground area under fire. These estimations are made for comparative purpose only, to indicate the increase or decrease of areal disposition of fire. Hence, they should not be quoted as fire area on the ground.*

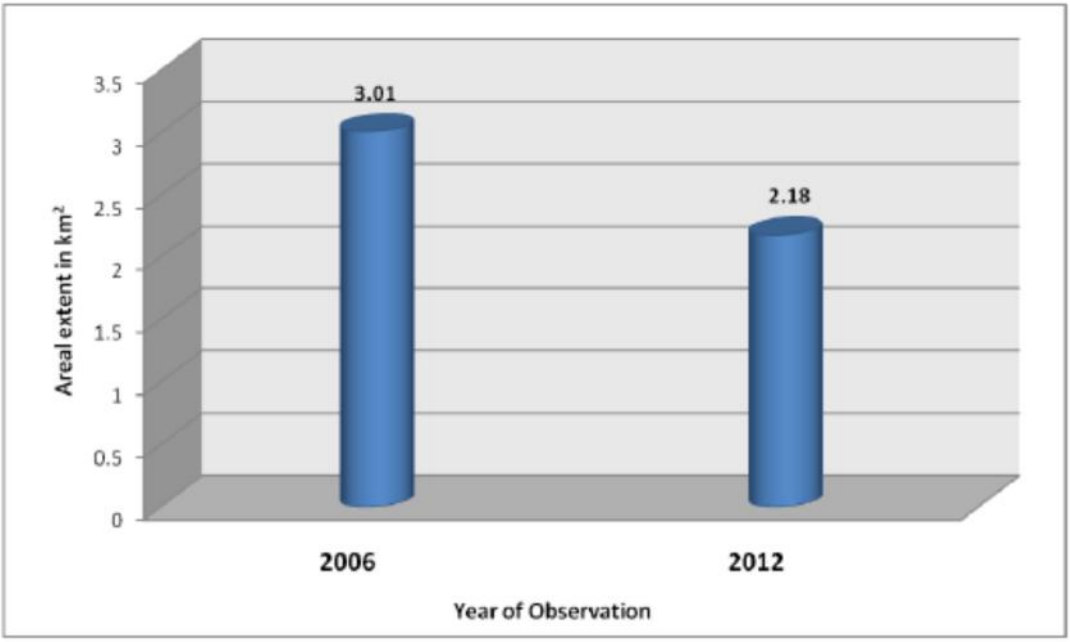


Figure 10: Total fire area statistics

Annexure-III

(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.

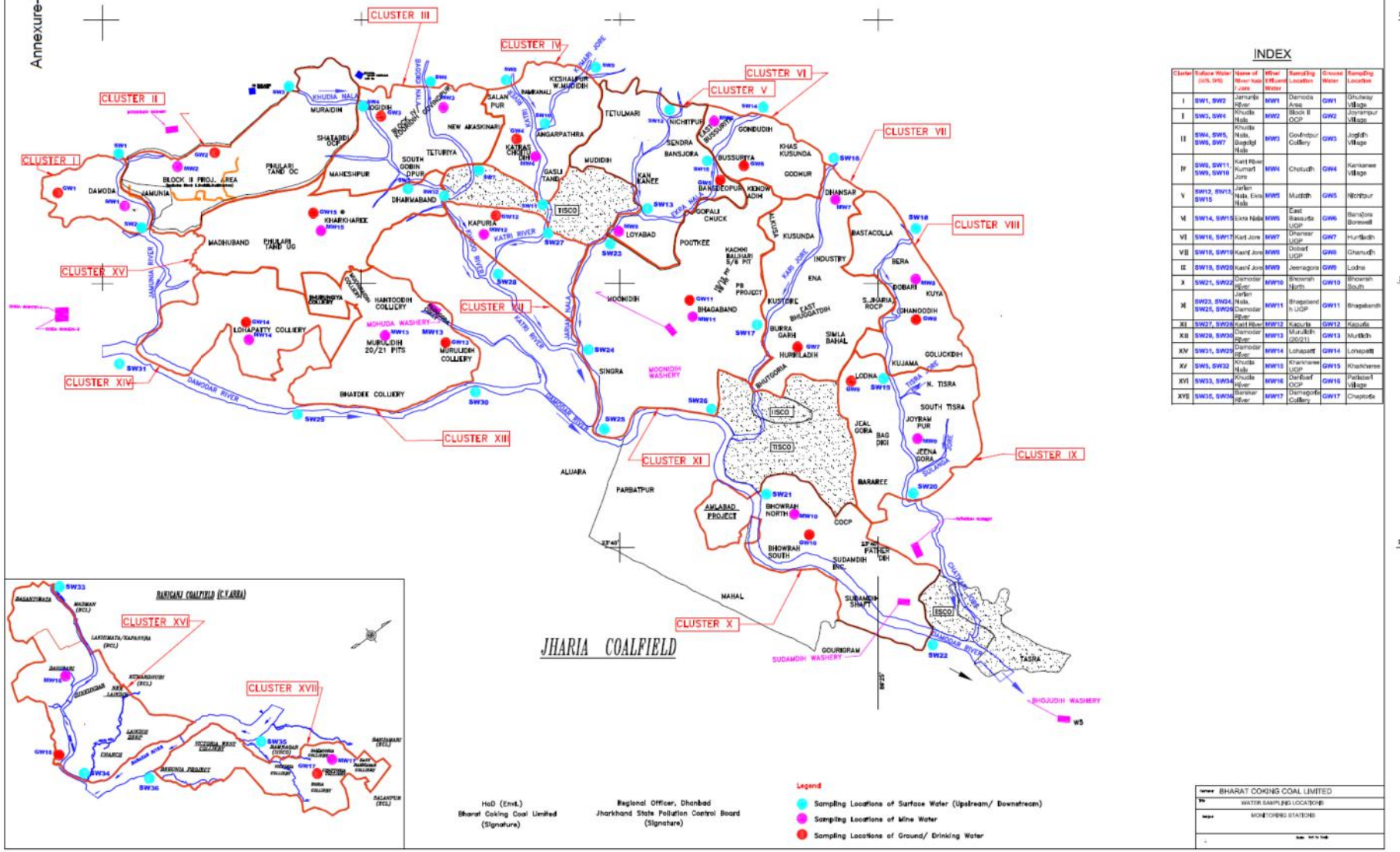
Encl-A/a.

(Dinesh Pd. Singh)
Regional Officer.

Printed by Sandip

Water Sampling Locations in BCCL

Annexure-03



INDEX

Cluster	Surface Water (U/S, D/S)	Name of River/ Nala / Lore	River /Mine Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghutiray Village
II	SW3, SW4	Khudia Nala	MW2	Block II OCP	GW2	Joynampur Village
III	SW6, SW5, SW8, SW7	Khudia Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogidih Village
IV	SW9, SW11 SW9, SW10	Kanl River, Kumarl Jore	MW4	Choludih	GW4	Kankanee Village
V	SW12, SW13 SW15	Jarlan Nala, Ekra Nala	MW5	Mudidih	GW5	Nichitpur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	BansJora Borewell
VII	SW16, SW17	Kari Jore	MW7	Dhansar UGP	GW7	Hurriladih
VIII	SW18, SW19	Kasnl Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kasnl Jore	MW9	Jeenagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarlan Nala, Damodar River	MW11	Bhagabandh UGP	GW11	Bhagabandh
XII	SW27, SW28	Kasl 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	Dardharl OCP	GW16	Parkasrl Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chapitola

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

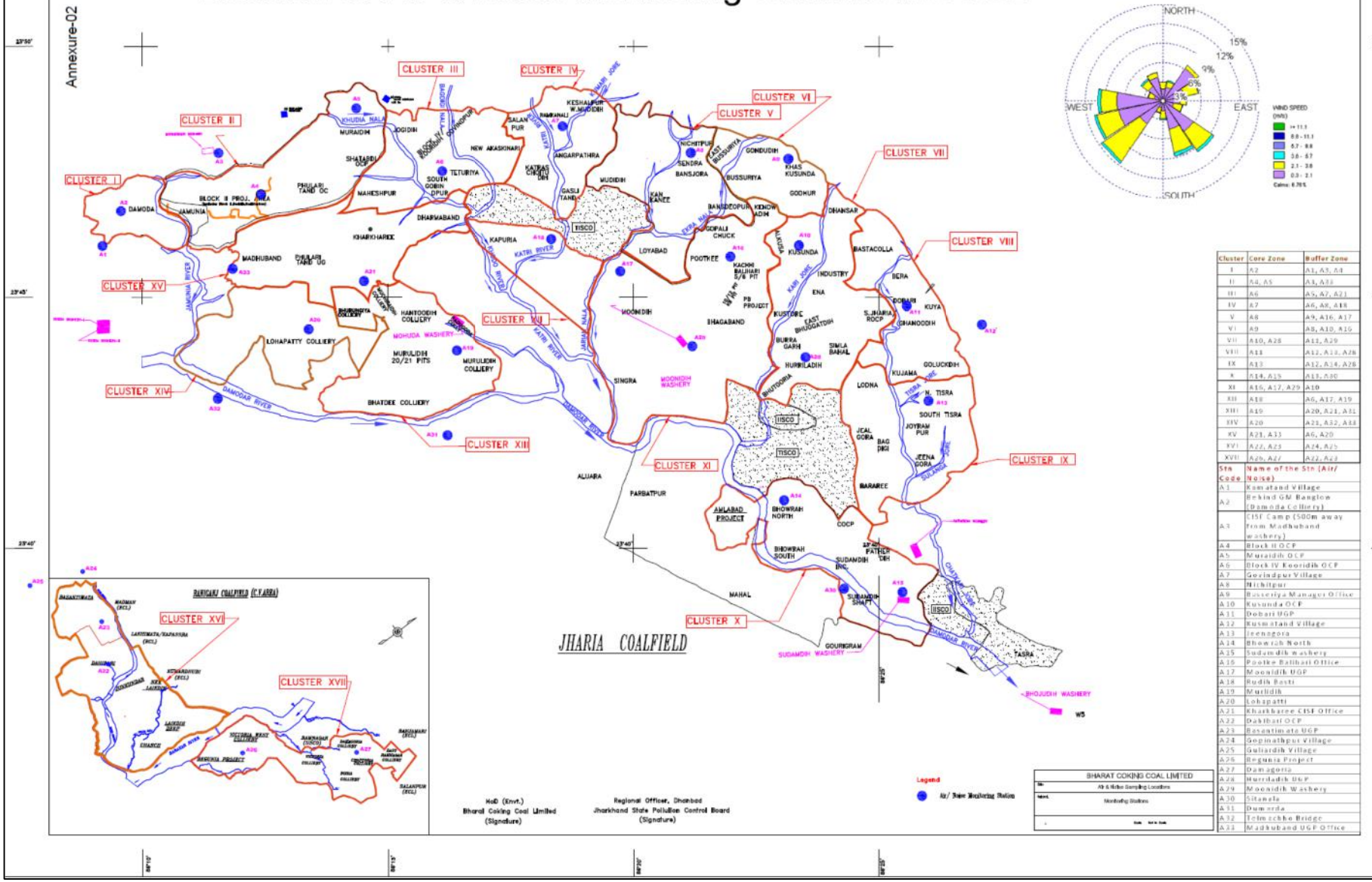
Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)

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

Location of Air & Noise Monitoring Stations in BCCL

Annexure-02



Cluster	Core Zone	Buffer Zone
I	A2	A1, A3, A4
II	A4, A5	A3, A31
III	A6	A5, A7, A21
IV	A7	A6, A8, A18
V	A8	A9, A16, A17
VI	A9	A8, A10, A15
VII	A10, A28	A11, A29
VIII	A11	A12, A13, A28
IX	A13	A12, A14, A28
X	A14, A15	A13, A30
XI	A16, A17, A29	A10
XII	A18	A6, A17, A19
XIII	A19	A20, A21, A31
XIV	A20	A21, A32, A33
XV	A21, A33	A6, A20
XVI	A22, A25	A24, A25
XVII	A26, A27	A22, A23

Stn Code	Name of the Stn (Air/ Noise)
A1	Kumatand Village
A2	Behind GM Banglow (Damoda Colliery)
A3	CISF Camp (500m away from Madhuband washery)
A4	Block II OCP
A5	Muraidih OCP
A6	Block IV Kooridih OCP
A7	Govindpur Village
A8	Nichitpur
A9	Bussuriya Manager Office
A10	Kusunda OCP
A11	Dobari UGP
A12	Kusmatand Village
A13	Jeenagora
A14	Bhowrah North
A15	Sudamdih washery
A16	Pootke Balihari Office
A17	Moonidih UGP
A18	Rudih Basti
A19	Muridih
A20	Lohapatti
A21	Kharkharee CISF Office
A22	Dakbhari OCP
A23	Basantimata UGP
A24	Gopinathpur Village
A25	Guliardih Village
A26	Beguniа Project
A27	Damagoria
A28	Hurriladih UGP
A29	Moonidih Washery
A30	Sitanala
A31	Dumerda
A32	Telmechho Bridge
A33	Madhuband UGP Office

ANNEXURE- IV

Point XVI

सेंट्रल माईन प्लानिंग एण्ड डिज़ाइन इंस्टीच्यूट लिमिटेड
(कोल इंडिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार की एक लोक उपक्रम)
पंजीकृत कार्यालय : गोन्दवाना प्लेस , कांके रोड , राँची - 834031 (झारखण्ड) भारत
क्षे क्षेत्रीय संस्थान-2, पत्रा. बीसीसीएल टाउनशीप, कोयला नगर, धनबाद 826005 (झारखण्ड) भारत
Central Mine Planning & Design Institute Limited
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)
Registered Office : Gondwana Place, Kanke Road, Ranchi –834031(Jharkhand)
Regional Institute-II, P.O. BCCL Township, Koylanagar, Dhanbad 826005(Jharkhand) India
Corporate Identity No. U14292JH1975GOI001223

पत्रांकः आर.आई.-2/पर्यावरण/एम-30/ 1150

दिनांकः 20.06.2015

सेवा में,
उप महाप्रबंधक (पर्यावरण)
बी. सी. सी. एल.
कोयला भवन
धनबाद ।

विषयः Study of installation of Rail-cum-Conveyor System in BCCL for transportation of coal.

महोदय,

This has reference to your letter no. BCCL/GM(Env.)/F-EC/13/622, dated 25.05.2013 for conducting the study and preparation of plan for installation of Rail-cum-Conveyor System for coal transportation in BCCL as a part of compliance of environmental clearance (EC) conditions stipulated by MoEF & CC in EC orders of different clusters. In this regard, we would like to inform you the following:

a. As per EC clearance order transportation plan for Rail-cum-Conveyor system should dovetailed with Jharia Action Plan (Master Plan). The system of transportation is required to be installed in 2nd phase of EC implementation i.e. after completion of Master Plan (10 years) and 5 years of gestation period.

b. JRDA has issued direction to RITES for traffic survey and data collection to initiate feasibility study regarding Diversion of Railway lines from fire affected and subsidence prone areas

c. Coal transportation route / conveyor installation layout will be finalized after liquidation of coal mine fire, rehabilitation of 595 unstable sites, road and rail route alignment and location of Rly. Sidings of BCCL.

CMPDI will be able to submit the plan / study for installation of Rail-cum-Conveyor System in BCCL for transportation of coal only after diversions and re-alignments of roads and railway lines and relocation of railway sidings

This is for your kind information.

भवदीय

(वि. कु. सिंह)
क्षेत्रीय निदेशक

Sri Amarlendhu Sb
For compliance pl/see.

दूरभाष : (+91) 0326-2230650 फैक्स / Fax : (+91) 0326-2230500
वेब साइट / Website : www.cmpdi.co.in
ईमेल / Email : ri2@cmpdi.co.in

ANNEXURE –V

Plantation and CSR work of P.B.Area carried out in FY 2015-16 (October '15 till March '16)

1	5 Years plan of Back filling (calendar plan)	As there is no opencast mines running at present. There is no five years plan of backfilling.
2	Plantation done for the years 2015-16 (from October 2015 till March 2016)	(i) 1380 plants have been planted near algaria site (ii) 2000 proposed to plant staring from July 2016

CSR Activities undertaken at P.B. Area during 2015-16

Healthcare:

1. **Mobile Medical Van:**

Month	**No. of Mobile Medical Van**	**Total No. of Beneficiaries**	**Amount (in Rs.)**
October 2015 – March 2016	75	848	15,168.90

2. **Health Awareness Programme:-**

Sl. No.	Month	Activities	Total No. of Beneficiaries	Amount (in Rs.)
1	November, 2015	Family Planning Awareness Camp	17	25,272.00
2	November, 2015	Eye Camp	19	19,918.00
3	February, 2016	Family Planning Awareness Camp	24	27,990.00
Total (in Rs)				**73,180.00**

CSR Activities undertaken at W.J. Area during 2015-16

Sl. No.	Activities	Number of village covered	Number of Beneficiaries
1	Medical Mobile Van (Swasth Rath)	24	4579
2	C.S.R Clinic (Sarokar)	-----	3839
3	Female Sterilization Camp (Mamta)	-----	27
4	Wellness Clinic (Muskan)	-----	982
5	Free Antenatal Check up (Vandemataram)	-----	289
6	H.I.V/A.I.D.S Awareness Camp	-----	272
7	Free Eye check up Camp	-----	132

Swachh Vidyalaya Abhiyan:

Sl. No.	Details	Physical Progress	Amount (in Cr.)	Remarks
1.	Construction of toilets in various schools at West Singhbhum district of Jharkhand under "Swachh Vidyalaya Abhiyan"	Layout-310 Foundation-305 P/L-305 (Plinth level) R/L-289 (Roof level) R/C-270, (Roof casted) Plaster & flooring-161 Sanitation-33 Final & Finished-19 Out of 354 Units on 31.03.2016	3.28	Work in Progress

ANNEXURE - VI

ENVIRONMENTAL MONITORING REPORT OF CLUSTER-XI MINE OF BCCL, DHANBAD

(APRIL TO JUNE 2015)

Submitted to

Bharat Coking Coal Limited
Koyla Nagar, Dhanbad

Prepared By

Environmental Management Group
CSIR-Central Institute of Mining and Fuel Research
(Council of Scientific and Industrial Research)
Barwa Road, Dhanbad 826015
Jharkhand, India

ANNEXURE-VI

Table 5: Physico-chemical characteristics of Surface water in Cluster-XI Mining Area

S. N.	Parameter and Unit	On NH32 in between putki and kapuria, from jariannala SW23 18/04/15	Mixing point of katri river and jarian-nala. SW24 18/04/15	Bhatinda falls SW25 18/04/15	Jariannala SW26 18/04/15	IS:2296
1	Color	colorless	colorless	colorless	colorless	300
2.	D.O (mg/l)	6.4	7.3	6.9	8.1	4
3	pH	7.94	7.91	8.13	7.80	8.5
4	Iron (mg/l)	0.18838	0.11062	0.07900	0.10844	50
5	Chlorides (mg/l)	152	172	192	132	600
6	BOD ((mg/l)	5.6	2.0	4.1	2.6	3
7	Total Dissolved Solids (mg/l)	551	280	311	233	1500
8	Copper (mg/l)	0.00567	0.00519	0.00515	0.00474	1.5
9	Sulphates (mg/l)	129.78	56.85	68.39	38.31	400
10	Nitrates (mg/l)	N.D	N.D	N.D	N.D	50
11	Fluorides (mg/l)	N.D	N.D	N.D	N.D	1.5
12	Selenium (mg/l)	N.D	N.D	N.D	N.D	0.05
13.	Arsenic Total (mg/l)	N.D	N.D	N.D	N.D	0.2
14	Lead (mg/l)	<0.015	<0.015	<0.015	<0.015	0.1
15.	Zinc (mg/l)	0.01337	0.01531	0.01726	0.01846	15
16	Chromium (mg/l)	<0.025	<0.025	<0.025	<0.025	0.05
17	Phenols (mg/l)	<0.001	<0.001	<0.001	<0.001	0.005
18	Cadmium(mg/l)	<0.0015	<0.0015	<0.0015	<0.0015	0.01
19	Manganese (mg/l)	0.1730	0.07740	0.09241	0.09827	0.1

Note: ND=Not Done,

Table 6: Physico-chemical characteristics of Groundwater in Cluster- XI Mining Area

Sl. No.	Parameter and Unit	Bhagabandh basti GW11 18/04/2015	**IS: 10500**
1.	Color	Colorless	5
2.	Odour	Odour	
3.	Test	Not agreeable	agreeable
4.	Turbidity NTU	<5NTU	5
5.	pH	7.55	6.5 to 8.5
6.	Alkanity (mg/l)	484	
7.	Total Hardness (mg/l)	460	300
8.	Iron (Fe) (mg/l)	0.21491	0.3
9.	Choloride (mg/l)	168	250
10.	Total residual chloride(mg/l)	<0.001	
11.	TDS (mg/l)	491	500
12.	Calcium (mg/l)	68.8	75
13.	Copper (mg/l)	0.00474	0.05
14.	Manganese (mg/l)	0.02962	0.1
15.	Sulphate (mg/l)	81.57	200
16.	Lead (mg/l)	<0.015	0.05
17.	Zinc (Zn) (mg/l)	0.05028	5
18.	Chromium (mg/l)	<0.025	0.05
19.	MPN of coliform in 100ml	<2	
20.	Phenolic compound (mg/l)	<0.001	0.001
21.	Cadmium (mg/l)	<0.0015	0.01
22.	Fluride (mg/l)	N.D	0.6 to 1.2
23.	Selenium (Se) (mg/l)	N.D	0.01
24.	Arsenic (As) (mg/l)	N.D	0.05
25.	Nitrate (mg/l)	N.D	45

Note: ND=Not Done,

Table 7: Physico-Chemical Characteristics of Effluent (Mine water) in Cluster- XI Mining Area

Sl no	Parameter and Unit	BhagabandhMines in Bhagabandh colliery Mine water 11 18/04/2015	IS:2490
1	Color	colorless	
2	Odour	odorless	
3	TSS	2.0	100
4	pH value	7.87	5.5 to 9
5	Temperature (^{o}C)	<25^{0}C	< 5^{o}c
6	Oil and grease, (mg/l)	2.4	10
7	Total residual chlorine, (mg/l)	<0.025	1
8	Ammonical nitrogen(mg/l)	<0.001	50
9	Kjeldahl N		
10	Free ammonia (as NH3) (mg/l)	<0.001	5
11	BOD (mg/l),	1.2	30
12	COD (mg/l)	12	250
13	Arsenic (mg/l)	N.D	0.2
14	Lead (mg/l)	<0.015	0.1
15	Chromium (mg/l)	<0.025	0.05
16	Total chromium (mg/l)	<0.025	2
17	Copper (mg/l)	0.00545	3
18	Zinc (mg/l)	0.01301	5
19	Selenium (mg/l)	N.D	0.05
20	Nickel (mg/l)	N.D	3
21	Fluoride (mg/l)	N.D	2
22	Dissolved Phosphate (mg/l)	<0.001	5
23	Sulphide (mg/l)	N.D	2
24	Phenolic compound (mg/l)	<0.001	1
25	Manganese (mg/l)	0.23184	2
26	Iron (mg/l)	0.12008	3
27	Nitrate (mg/l)	N.D	10

Note: ND=Not Done,

Table 8: Fifteen days interval of mine water sampling data of Bhagabandh mine of cluster-XI

Date	pH	Phenolic	BOD(mg/l)	COD(mg/l)	TSS(mg/l)	O &G (mg/l)
09/04/15	7.64	<0.001	0.9	20	0.8	1.6
26/04/15	7.73	<0.001	0.7	20	0.4	0.8
04/05/15	7.19	<0.001	1.1	32	3.6	1.2
22/05/15	7.57	<0.001	1.0	12	1.2	0.4
11/06/15	7.05	<0.001	0.8	20	23.2	0.4
25/06/15	7.33	<0.001	1.0	24	0.8	0.4

O&G- Oil and Grease

Table 10: Noise Level in the Study Area

Location name	Latitude & Longitude	Date	Noise level(dB) Average	
			Day	night
Moonidih Washery (A-29)	23^0 46'' 25' N 86^0 21'' 16' E	07/04/2015	64.2	55.1
		22/04/2015	65.1	49.3
		01/05/2015	60.2	45.6
		19/05/2015	62.3	47.5
		09/06/2015	67.2	51.2
		23/06/2015	62.8	48.6
Moonidih UGM A-17	$23^0$44"31' N $86^0$26 '' 13' E	08/04/2015	59.8	45.4
		23/04/2015	60.2	44.8
		02/05/2015	64.5	45.6
		20/05/2015	59.8	52.3
		10/06/2015	66.2	44.6
		24/06/2015	59.2	48.7

ANNEXURE-VII

GROUNDWATER LEVEL & QUALITY

REPORT

FOR CLUSTER OF MINES, BCCL

(Assessment year - 2014)

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

JHARIA COALFIELD AND RANIGANJ COALFIELD (PART)

(BHARAT COKING COAL LIMITED)

MARCH – 2015

Regional Institute – II

Central Mine Planning & Design Institute Ltd.

(An ISO 9001:2000 Company)

(A Subsidiary of Coal India Ltd.)

Koyla Bhawan Complex, Koyla Nagar

DHANBAD – 826005

Annexure – IV

GROUNDWATER SAMPLE LOCATION DETAILS

Sl No	Name of Cluster	Ground Water Sample	Dug well (CMPDI)	Location	Date of sampling
1	CLUSTER-I	GW-1	B-15	BERA VILLAGE	10.03.14
2	CLUSTER-II	GW-2	B-59	KHODOVALY VILLAGE	10.03.14
3	CLUSTER-III	GW-3	A-29	GOVINDPUR,AMBAGAN VILLAGE	10.03.14
4	CLUSTER-IV	GW-4	B-63	KESHALPUR, BATIGHAR	10.03.14
5	CLUSTER-V	GW-5	D-30	BORKIBOA VILLAGE	10.03.14
6	CLUSTER-VI	GW-6	D-25	GODHUR MORE	10.03.14
7	CLUSTER-VII	GW-7	D-80	DHANSAR MINE RESCUE STN.	11.03.14
8	CLUSTER-VIII	GW-8	D-48	NEAR GHANOODIH OC	11.03.14
9	CLUSTER-IX	GW-9	D-5	JEALGORA, NEAR P.O.	11.03.14
10	CLUSTER-X	GW-10	D-35	PATHERDIH RLY. COLONY	11.03.14
11	CLUSTER-XI	GW-11	A-32	MONNIDIH BAZAR	10.03.14
12	CLUSTER-XIII	GW-13	A-23	MACHHAYARA, BESIDE NH-32	10.03.14
13	CLUSTER-XIV	GW-14	B-23	LOHAPATTI VILLAGE	10.03.14
14	CLUSTER-XV	GW-15	B-32A	MADHUBAND VILLAGE	10.03.14
15	CLUSTER-XVI	GW-16	D-22	DAHIBARI,NICHE BASTI	11.03.14

Annexure – V

GROUNDWATER QUALITY DATA (DUG WELLS)

Parameter in (mg/l) except pH	Cluster I	Cluster II	Cluster IIII	Cluster IV	Cluster V	Cluster VI	Cluster VII	Cluster VIII	IS: 10500 – 1991 Norms
Colour	Colourless	Colourless	Colourless	Colourless	Colourless	Colourless	Colourless	Colourless	5/25
Odour	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless	Unobjectionable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	<5NTU	<5NTU	<5NTU	<5NTU	<5NTU	<5NTU	<5NTU	<5NTU	5/10
pH	7.21	7.56	7.21	8.14	7.98	7.56	6.61	7.7	6.5-8.5
Alkalinity as CaCO3	323	180	360	200	140	428	64	152	200/600
T. Hardness	256	416	444	460	152	660	128	284	300/600
Iron as Fe	0.118	0.0375	0.0371	0.0342	0.0344	0.0548	0.033	0.0354	0.30/1.0
Chloride (Cl)	60	272	192	230	64	232	148	144	250/1000
R. Chloride	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	0.2 Min
TDS	254	638	665	229	229	963	273	454	500/2000
Calcium	172	184	192	100	108	240	100	168	75/200
Copper	0.0023	0.0036	0.0044	0.0032	0.0059	0.0106	0.0037	0.0031	0.05/1.50
Manganese	0.0117	0.0092	0.0053	0.0022	0.0026	0.0064	0.1542	0.0059	0.10/0.30
Sulphate	29.25	163.97	148.32	54.38	54.38	279.33	74.16	64.27	200/400
Lead	0.0094	0.015	0.0153	0.0095	0.0057	0.0196	0.0973	0.0108	0.05
Zinc	0.0185	0.0035	0.0075	0.0057	0.0078	0.0112	0.1653	0.0082	5/15
Chromium	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.05
Phenolic Compounds	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001/0.002

*Sampling location details and sampling date has been given in **Annexure-IV.**

ANNEXURE-VIII

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

Chairman-cum-Managing Director

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

Annexure-IX

भारत कोकिंग कोल लिमिटेड

(कोल इंडिया लिमिटेड का एक अंग)

BHARAT COKING COAL LIMITED

(A Subsidiary of Coal India Limited)

Corporate Identity No. (CIN): U10101JH1972GOI000918

Civil Engineering Department, Koyla Nagar, Dhanbad – 826 005 (JH), India.

Phone: 0326-2230338, FAX: 0326-2230338, e-mail: gmcivil@bccl.gov.in

Ref. No.: BCCL/CED/GM (C)/E-NIT-46//2014-15/1637 Date: 31.03.2015

Cancellation of Tender

Name of the Work	:	**To conduct Source Apportionment Study for varying sources of gasses/smoke/dust emission from source to source for the entire Jharia Coalfields (within and up to 10 K.M from the periphery / boundary of BCCL, Dhanbad, Jharkhand).**
NIT Ref. No.	:	**BCCL/CED/TC/e-NIT-46/2014-15/1289 dtd. 20.01.2015**
Estimated Cost	:	Rs. 56,00,000.00

The above referred tender stands cancelled. Out of 3 bidders, no bidders qualified in Part – I tender. This issues with competent approval.

Sd/-

General Manager (Civil)

Copy to:-

1) CVO/D (T) P&P/D(T) OP, BCCL ..... for kind information
2) GM (Envt.), Koyla Bhawan
3) Chief Manager (Civil), TC
4) Prof (Dr.) L.C Singhi, IAS (Retd.), L-31, Third Floor, Kailash Colony, New Delhi-110048
5) Shri Naresh Chaturvedi, IAS, (Retd.), CL-14, Sector – II, Salt Lake, Kolkata – 700 091
6) M/s Automotive Research Association of India, S. No. 102, Vetal Hill, Off Paud Road, Kothrud, Pune – 411 038, MH
7) The Energy and Resources Institute (TERI), Darbari Set Block, IHC Complex, Lodhi Road, New Delhi – 110 003
8) M/s Bhagavathi Ana Labs Limited, #8-2-248/5/A/42, Venkateshwara Hills, RoadNo. 3, Banjara Hills, Hyderabad – 500 034
9) Notice Board.

ANNEXURE-X

A. Training (VTC) (P.B.Area)

No of employees (Departmental & Contractual) received training in Cluster XI (Oct'15 to March'16)	
Types of Courses	**Numbers**
Basic Training	132
Refresher Training	462
Special Training	53

B. PME report for cluster XI (P.B.Area) from October 2015 till March 2016

PME REPORT FOR THE MONTH OF OCT'15 TO MARCH'16							
Sl.no.	**Unit/Colliery**	**Oct'15**	**Nov'15**	**Dec'15**	**Jan'16**	**Feb'16**	**March'16**
1	**Pootkee**	3	5	6	6	4	6
2	**Gopalichuck**	7	13	3	9	17	7
3	**Bhagabandh**	19	15	NIL	11	16	28
4	**KB 10/12 Pit**	10	5	2	6	16	5
5	**PBP Colliery**	45	52	40	39	76	84
6	**Other Areas**	1	21	30	NIL	11	9
	Total	**85**	**111**	**81**	**71**	**140**	**139**

ANNEXURE –V

भारत कोकिंग कोल लिमिटेड
(कोल इंडिया का एक उपक्रम)
कोयला भवन, कोयला नगर,
धनबाद - 826005
सीआइएन : U10101JH1972GOI000918
महाप्रबंधक का कार्यालय
पश्चिमी झरिया क्षेत्र
पो. मुनीडीह, जिला: धनबाद (झारखण्ड) 828129
फोन नं. 0326 2273483; फैक्स: 0326 2273445, ई-मेल: cgmwj@bccl.gov.in

Bharat Coking Coal Limited
(A Subsidiary of Coal India Limited)
Regd. Off. : Koyla Bhawan, Koyla Nagar
Dhanbad - 826005
CIN : U10101JH1972GOI000918
OFFICE OF THE GENERAL MANAGER
WESTERN JHARIA AREA
PO: MOONIDIH, DISTT: DHANBAD (JHARKHAND) - 828129
PHONE NO 0326 2273483, FAX NO: 0326 2273445, e-mail cgmwj@bccl.gov.in

Ref No:

Date:09/04.2016

C.S.R ACTIVITIES IN W.J.AREA FROM 01.04.2015 TO 31.03.2016

(1) MEDICAL MOBILE VAN (SWASTH RATH)

NO OF VILLAGES COVERED 24
NO OF BENEFICIARIES.....4579

(2) C.S.R CLINIC (SAROKAR)

NO OF BENEFICIARIES .....3839.

(3) FEMALE STERILIZATION CAMP (MAMTA)

NO OF BENEFICIARIES..... 27

(4) WELLNESS CLINIC (MUSKAN)

NO OF BENEFICIARIES.....982

(5) FREE ANTENATAL CHECK UP (VANDEMATARAM)

NO OF BENEFICIARIES.....289

(6) H.I.V /A.I.D.S AWARENESS CAMP

NO OF BENEFICIARIES 272

(7) FREE EYE CHECK UP CAMP

NO OF BENEFICIARIES.....132

9/4/16

ANNEXURE- X

भारत कोकिंग कोल लिमिटड
(कोल इंडिया का एक उपक्रम)
पंजीकृत कार्यालय कोयला भवन, कोयला नगर,
धनबाद 826005
सीआइएन : U10101JH1972GOI000918.
महाप्रबंधक का कार्यालय
पश्चिमी झरिया क्षेत्र
पो. मुनीडीह, जिला: धनबाद (झारखण्ड)-828129
फोन नं. 0326 2273483: फैक्स: 0326 2273445, ई-मेल: cgmwj@bccl.gov.in

Bharat Coking Coal Limited
(A Subsidiary of Coal India Limited)
Regd. Off. : Koyla Bhawan, Koyla Nagar
Dhanbad - 826005
CIN : U10101JH1972GOI000918
OFFICE OF THE GENERAL MANAGER
WESTERN JHARIA AREA
PO: MOONIDIH, DIST.: DHANBAD (JHARKHAND) 828129
PHONE NO: 0326 2273483, FAX NO: 0326 2273445

No Amc/108
5/4/16

PME REPORT (W.J.AREA)-FROM APRIL 2015 TO MARCH 2016

MONTH	TARGET	PME DONE EMPLOYEE	CONTRACTUAL WORKER
APRIL,2015	76	NIL	31
MAY,2015	76	NIL	47
JUN'2015	76	86	67
JULY'2015	76	124	12
AUST'2015	76	124	24
SEPT'2015	76	103	25
OCTO'2015	76	78	21
NOV'2015	76	26	23
DEC'2015	76	18	34
JAN'2016	76	162	17
FEB'2016	76	120	34
MARCH'2016	76	90	18
TOTAL	**912**	**931**	353

4/4/16
AMO/CMS (W.J.AREA)

AMO/CMS
Moonidih Hospital
(W. J. Area)

COPY TO;
1.CMS I/C (BCCL.HQ)
2.G.M.(W.J.AREA)
3.ASO (W.J.AREA)
4.PME I/C (W.J.AREA)
5.O/C

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

(FOR THE Q.E. MARCH, 2016)

E. C. no. J-11015/77/2011-IA.II (M) dated 26.08.2013.

June, 2016

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CLUSTER - XI

(FOR THE Q.E. March, 2016)

CONTENTS

ENVIRONMENTAL MONITORING REPORT OF BHARAT COKING COAL LIMITED CLUSTER – XI

(FOR THE Q.E. MARCH, 2016)

E. C. no. J-11015/77/2011-IA.II (M) dated 26.08.2013.

June, 2016

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

EXECUTIVE SUMMARY

1.0 Introduction

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

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

2.0 Sampling location and rationale

2.1 Ambient air sampling locations

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

2.2 Water sampling stations

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

2.3 Noise level monitoring locations

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

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

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

3.2 Water quality

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

3.3 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 MoEFCC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines and National Ambient Air Quality Standard -2009. Sometimes the concentration of PM_{10} & $PM_{2.5}$ exceeds the limits due to heavy public traffic, poor road condition, coke oven plants, burning of coal by surrounding habitants, brick making, municipal waste dumps and industries like Steel Plant, thermal Plants including their fly ash etc.

4.2 Water quality

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

4.3 Noise Level

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

CHAPTER - I

INTRODUCTION

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

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

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

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

1.1 The Cluster-XI is in the Western & Southern part of the Jharia coalfield. It includes a group of 5 Mines (viz. Gopalichak UG Mine**,** Kachhi Balihari 10/12 Pit UG Mine**,** PB UG Project, Bhagabandh UG Mine, Moonidih UG mine. The Cluster – XI is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – XI 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 & Damodar River.

1.2 The Cluster-XI is designed to produce 5.08 MTPA (normative) and 6.604 MTPA (peak) capacity of coal.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEFCC) for a rated capacity 5.08 MTPA (normative) and 6.604 MTPA (peak) capacity of coal production vide letter no. J-11015/77/2011-IA.II (M) dated 26th August, 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, NO_x monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State

Pollution Control Board." And other conditions regarding water / effluent and noise level monitoring.

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

CHAPTER-II

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

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

2.1.1 Ambient Air Quality Sampling Locations

I. CORE ZONE Monitoring Location

i) Pootkee Balihari Office (A16): Industrial Area

The location of the sampling station is 23^{o}40.977' N 086^{o}23.963'E. The sampler was placed at Ground level of Project Office.

ii) Moonidih UGP (A17): Industrial Area

The location of the sampling station is 23^{0} 39'32" N & 86^{0} 26'13" E. The sampler was placed at ground level of project office.

iii) Moonidih Washery (A29): Industrial Area

The location of the sampling station is 23^{o}44'31'' N & 086^{o}26'13''E. The sampler was placed at Ground level of Project office.

II. BUFFER ZONE Monitoring Location

I) Kusunda OCP (A10)

The location of the sampling station is 23^{0} 46. 822' N & 86^{0} 24. 241' E. The sampler was placed at Ground level of Safety Office.

2.2 Methodology of sampling and analysis

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

2.3 Results & Interpretations

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

2.3.1 Ambient air quality

Particulate Matter PM_{10}

In **core zone** under **Industrial area** varies from 64 to 98 µ/m^3
In **buffer zone** in **Industrial area** varies from 79 to 93 µ/m^3

Particulate Matter $PM_{2.5}$

In **core zone** under **Industrial area** varies from 32 to 49 µ/m^3
In **buffer zone** in **Industrial area** varies from 37 to 48 µ/m^3

Sulphur Dioxide:

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

Oxides of Nitrogen:

In **core zone** under **Industrial area** varies from 20 to 29 µ/m^3
In **buffer zone** in **Industrial area** varies from 19 to 26 µ/m^3

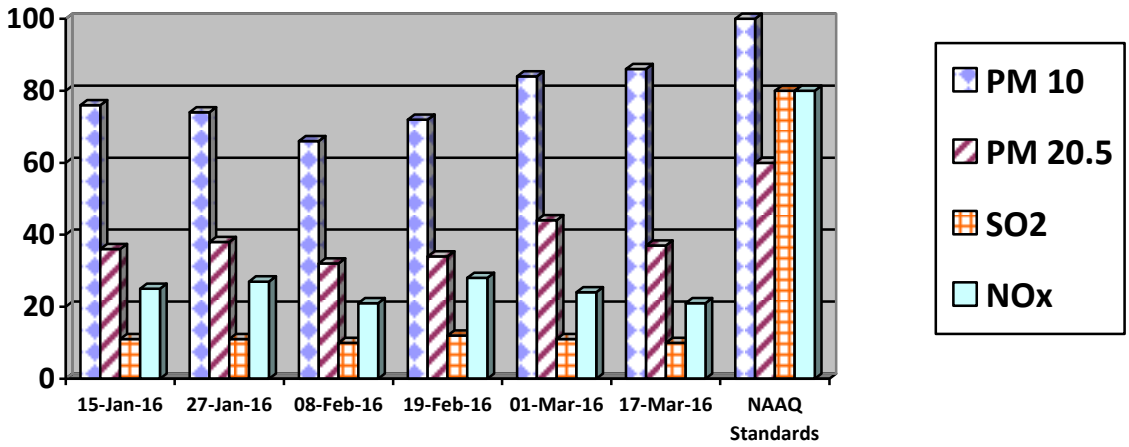
AMBIENT AIR QUALITY DATA

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

Station Code/Name: (a) A16 Pootkee Balihari office **Category:**
(b) A17 Moonidih UGP **Industrial.**
(c) A29 Moonidih Washery
ZONE: Core

(a). Station Code/Name: A16- Pootkee Balihari office Category: Industrial[1].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	15 - Jan -16	76	36	11	25
2	27 - Jan - 16	74	38	11	27
3	08 - Feb -16	66	32	<10.0	21
4	19 - Feb - 16	72	34	12	28
5	01 - Mar - 16	84	44	11	24
6	17 - Mar - 16	86	37	<10.0	21
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

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

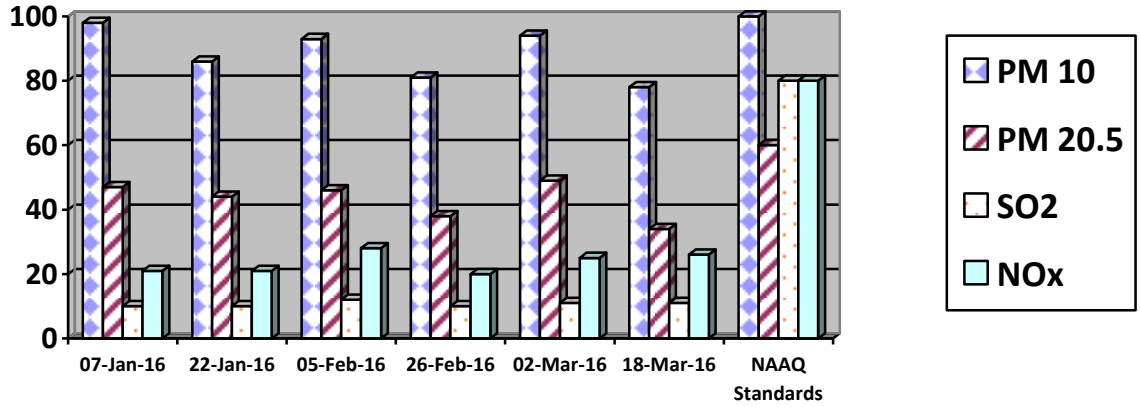
Note:

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

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

(b). Station Code/Name: A17- Moonidih UGP Category: Industrial[2].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	07 - Jan -16	98	47	<10.0	21
2	22 - Jan - 16	86	44	<10.0	21
3	05 - Feb -16	93	46	12	28
4	26 - Feb - 16	81	38	<10.0	20
5	02 - Mar - 16	94	49	11	25
6	18 - Mar - 16	78	34	11	26
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

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

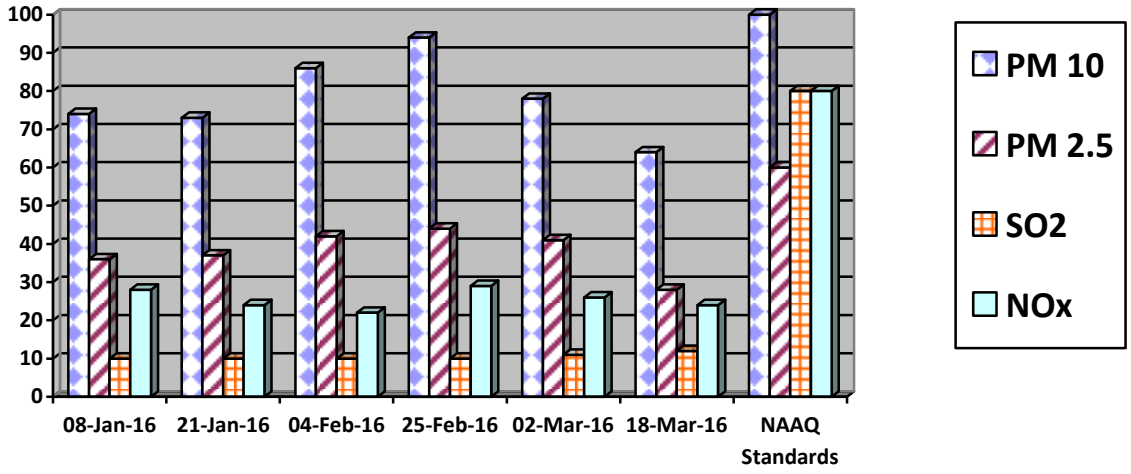
Note:

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*
- *Predominant wind direction South – West.*

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

(c). Station Code/Name: A29- Moonidih Washery Category: Industrial[3].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	08 - Jan -16	74	36	<10.0	28
2	21 - Jan - 16	73	37	<10.0	24
3	04 - Feb -16	86	42	<10.0	22
4	25 - Feb - 16	94	44	<10.0	29
5	02 - Mar - 16	78	41	11	26
6	18 - Mar - 16	64	28	12	24
NAAQ Standards		100	60	80	80



Trace Metal analysis report of Ambient Air Quality

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

Note:

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

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

AMBIENT AIR QUALITY DATA

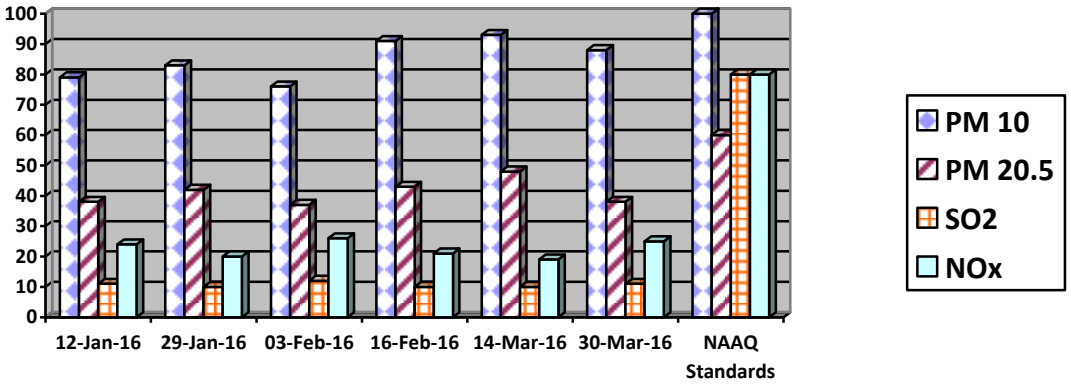
Name of the Company: **Bharat Coking Coal limited** Year : **2015-16.**
Name of the Cluster : **Cluster – XI** Q.E.: **March 2016**

Station Code/Name: (a) A10 Kusuda OCP **Category: Industrial.**

ZONE: BUFFER

(a). Station Code/Name: A10 – Kusuda OCP, Category: Industrial[4].

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_X
1	12 - Jan -16	79	38	11	24
2	29 - Jan - 16	83	42	<10.0	20
3	03 - Feb -16	76	37	12	26
4	16 - Feb - 16	91	43	<10.0	21
5	14 - Mar - 16	93	48	<10.0	19
6	30 - Mar - 16	88	38	11	25
	NAAQ Standards	100	60	80	80



Trace Metal analysis report of Ambient Air Quality

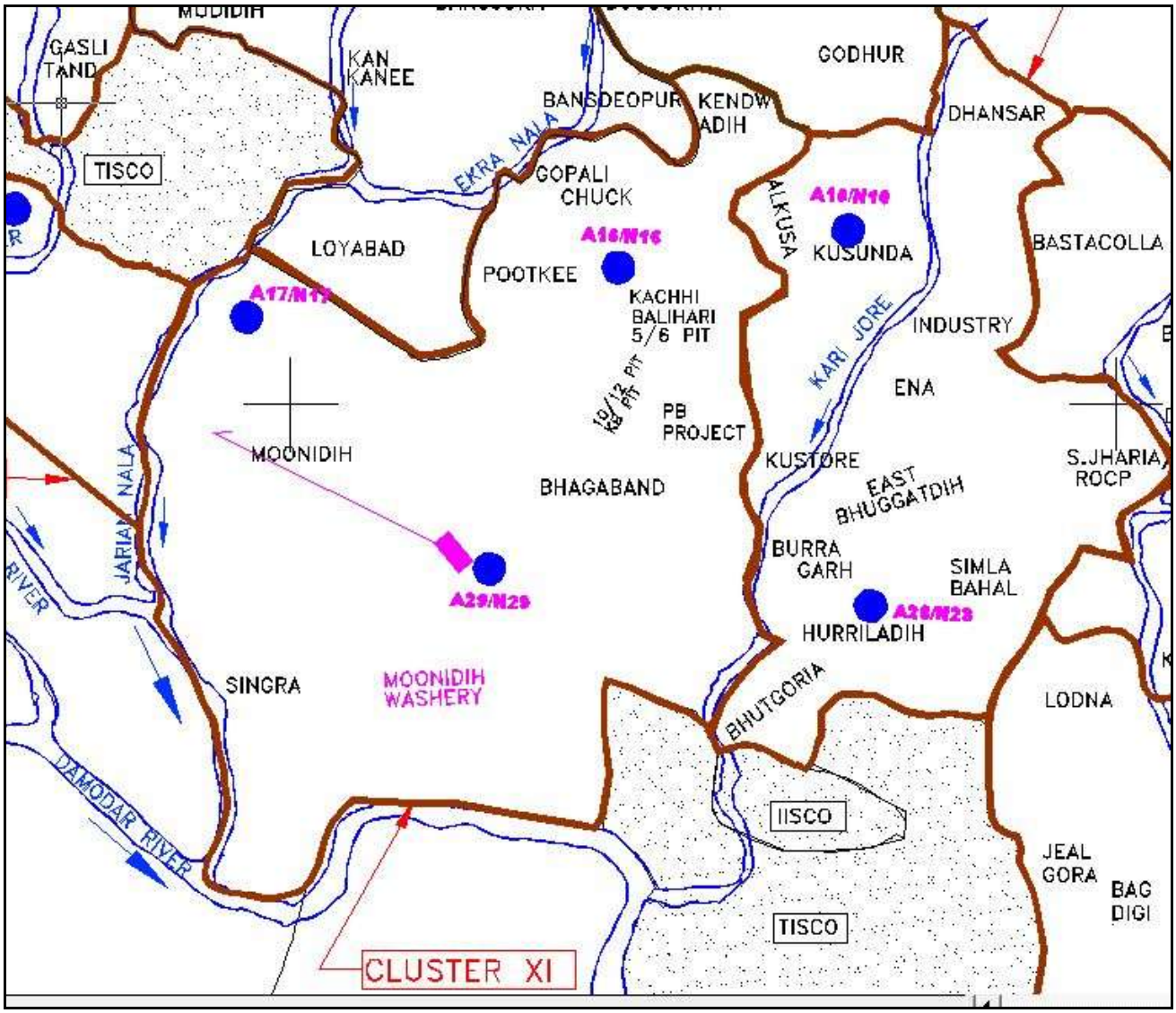
Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration($\mu g/m^3$)	<0.005	<0.001	<0.01	<0.001	<0.01	<0.005

Note:

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

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

Ambient Air Monitoring Stations in Cluster- XI in Core & Buffer Zones



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

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

Note:

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

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention 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/m^3	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO_2), µg/m^3	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/m^3	Annual * 24 Hours **	60 100	60 100	-Gravimetric -TEOM -Beta attenuation
Particulate Matter (Size less than 2.5µm) or $PM_{2.5}$, µg/m^3	Annual * 24 Hours **	40 60	40 60	-Gravimetric -TEOM -Beta attenuation
Ozone (O_3) , µg/m^3	8 Hours * 1 Hour **	100 180	100 180	-UV Photometric -Chemiluminescence -Chemical Method
Lead (Pb) , µg/m^3	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/m^3	8 Hours ** 1 Hour **	02 04	02 04	-Non dispersive Infrared (NDIR) Spectroscopy
Ammonia (NH_3), µg/m^3	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C_6H_6), µg/m^3	Annual *	05	05	-Gas Chromatography (GC) based continuous analyzer -Adsorption and desorption followed by GC analysis
Benzo(a)Pyrene (BaP) Particulate phase only, ng/m^3	Annual *	01	01	-Solvent extraction followed byHPLC/GC analysis
Arsenic (As), ng/m^3	Annual *	06	06	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper
Nickel (Ni), ng/m^3	Annual *	20	20	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper

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

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

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

CHAPTER – III

WATER QUALITY MONITORING

3.1 Location of sampling sites

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

i) **Mine Discharge of Bhagabandh (MW11)**
A sampling point is fixed to assess the effluent quality of Mine discharge. This location is selected to monitor effluent discharge in to Kari jore.

ii) Drinking Water quality at **Bhagabandh (DW11)**

iii) Surface Water quality at **U/S of Jarian Nala (SW23)**

iv) Surface Water quality at **D/S of Jarian Nala (SW24)**

v) Surface Water quality at **U/S of Damodar River (SW25)**

vi) Surface Water quality at **D/S of Damodar River (SW26)**

3.2 Methodology of sampling and analysis

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

3.3 Results & Interpretations

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

WATER QUALITY DATA

(EFFLUENT WATER FOUR PARAMETERS)

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

Year : **2015-16.**

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

Month: **January, 2016.**

Name of the Stations & Code :

1. MW11- Mine Discharge of Bhagabandh

First Fortnight

Sl. No.	**Parameters**	**MW11** (Mine Discharge) 02.01.2016	**As per MOEF General Standards for schedule VI**
1	Total Suspended Solids	30	*100 (Max)*
2	pH	7.64	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	24	*250 (Max)*

Second Fortnight

Sl. No.	**Parameters**	**MW11** (Mine Discharge) 25.01.2016	**As per MOEF General Standards for schedule VI**
1	Total Suspended Solids	24	*100 (Max)*
2	pH	7.59	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	20	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By

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

WATER QUALITY DATA

(*EFFLUENT WATER FOUR PARAMETERS)*

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

Year : **2015-16.**

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

Month: **February, 2016.**

Name of the Stations & Code : **1. MW11- Mine Discharge of Bhagabandh**

First Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 09.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	46	*100 (Max)*
2	pH	7.45	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	40	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 25.02.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	28	*100 (Max)*
2	pH	7.52	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By

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

WATER QUALITY DATA

(*EFFLUENT WATER FOUR PARAMETERS)*

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

Year : **2015-16.**

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

Month: **March, 2016.**

Name of the Stations & Code : **1. MW11- Mine Discharge of Bhagabandh**

First Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 02.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	42	*100 (Max)*
2	pH	8.05	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	20	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 16.03.2016	As per MOEF General Standards for schedule VI
1	Total Suspended Solids	48	*100 (Max)*
2	pH	8.10	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	40	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By

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

WATER QUALITY

(EFFLUENT WATER- ALL PARAMETERS)

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

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

Area : **Bhagabandh UGP** **Project:** **Cluster XI Bhagabandh UGP**

Stations: **Date of Sampling:**

1. Mine Water Discharge Bhagabandh UGP MW-11 16/03/2016

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		MW-11	2	3			
1	Ammonical Nitrogen, mg/l, Max	0.73			0.02	50.0	IS 3025/34:1988, R : 2009, Nessler's
2	Arsenic (as As), mg/l, *Max*	<0.002			0.002	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
3	B.O.D (3 days 27°C), mg/l, Max	<2.00			2.00	30.0	IS 3025 /44:1993,R:2003 3 day incubation at 27°C
4	COD, mg/l, Max	40			4.00	250.0	APHA, 22nd Edition, Closed Reflux, Titrimetric
5	Colour	colourless			Qualitative	Qualitative	Physical/Qualitative
6	Copper (as Cu), mg/l, *Max*	<0.03			0.03	3.0	IS 3025/42: 1992 R : 2009, AAS-Flame
7	Dissolved Phosphate, mg/l, Max	<0.30			0.30	5.0	APHA, 22nd Edition Molybdovanadate
8	Fluoride (as F) mg/l, *Max*	0.51			0.02	2.0	APHA, 22nd Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.01			0.01	5.0	IS:3025/34:1988, Nesseler's
10	Hexavalent Chromium, mg/l, Max	<0.01			0.01	0.1	APHA, 22nd Edition, Diphenylcarbohydrazide
11	Iron (as Fe), mg/l, *Max*	<0.06			0.06	3.0	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
12	Lead (as Pb), mg/l, *Max*	<0.0005			0.005	0.1	APHA, 22nd Edition, AAS-GTA
13	Manganese(as Mn), mg/l, Max	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, *Max*	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, *Max*	<0.5			0.50	10.0	APHA, 22nd Edition, UV-Spectrphotometric
16	Oil & Grease, mg/l, Max	<2.00			2.00	10.0	IS 3025/39:1991, R : 2003, Partition Gravimetric
17	Odour	Agreeable			Agreeable	Qualitative	Is-3015/5:1983/R:2012/Qualitative
18	pH value	8.10			2.5	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
19	Phenolic compounds (as C_6H_5OH),mg/l, *Max*	<0.002			0.002	1.0	APHA, 22nd Edition 4-Amino Antipyrine
20	Selenium (as Se), mg/l, *Max*	<0.002			0.002	0.05	APHA, 22nd Edition, AAS-GTA
21	Sulphide (as SO_3), mg/l, Max	<0.005			0.005	2.0	APHA, 22nd Edition Methylene Blue
22	Temperature (°C)	36.4			Shall not exceed 5^0 C above the receiving temp.		IS-3025/09:1984, Thermometeric
23	Total Chromium (as Cr), mg/l, *Max*	<0.04			0.04	2.0	IS-3025/52:2003, AAS-Flame
24	Total Kjeldahl Nitrogen, mg/l, Max	1.4			1.00	100.0	IS:3025/34:1988, Nesseler's
25	Total Residual Chlorine, mg/l, Max	0.02			0.02	1.0	APHA, 22nd Edition, DPD
26	Total Suspended Solids, mg/l, Max	48			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
27	Zinc (as Zn), mg/l, *Max*	0.011			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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

WATER QUALITY

(SURFACE WATER- ALL PARAMETERS)

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

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

Area : **Bhagabandh UGP** **Project:** **Cluster XI**
Bhagabandh UGP

Stations: **Date of Sampling:**

1. Upstream in Jarian Nala SW-23 16/03/2016
2. Downstream in Jarian Nala Sw-24 15/03/2016
3. Upstream in Damodar river SW-25 16/03/2016
4. Downstream in Damodar river SW-26 16/03/2016

Sl. No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		SW-23	Sw-24	SW-25	SW-26		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.8	3.0	2.6	2.8	2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	colourless	colourless	colourless	colourless	Qualitative	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	36	62	38	52	2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.01	<0.01	<0.01	<0.01	0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Disolved Oxygen, min.	5.6	4.9	6.0	5.2	0.10	IS 3025/381989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.91	1.21	1.01	1.05	0.02	APHA, 22nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<0.01	<0.01	0.01	APHA, 22nd Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.06	<0.06	<0.06	<0.06	0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005	<0.005	<0.005	0.005	APHA, 22nd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	7.97	13.29	1.33	3.54	0.50	APHA, 22nd Edition, UV-Spectrphotometric
12	pH value	7.85	7.52	8.10	8.28	2.5	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	APHA, 22nd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	280	320	210	240	2.00	APHA, 22nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	556	614	432	478	25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	0.038	0.016	0.020	0.014	0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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

WATER QUALITY

(DRINKING WATER- ALL PARAMETERS)

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

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

Area : **Bhagabandh UGP** **Project:** **Cluster XI Bhagabandh UGP**

Stations: 1. Drinking Water from Bhagaband DW-11 **Date of Sampling:** 14/03/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		DW-11	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	4			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	122			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	210			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.50			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.06			0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22nd Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	17			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.98			2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22nd Edition,4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22nd Edition, AAS-GTA
16	Sulphate (as SO_4) mg/l, Max	162			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity (c_aco_3),, mg/l, Max	224			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	1180			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	680			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	6			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.028			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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

WATER QUALITY

(GROUND WATER- ALL PARAMETERS)

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

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

Area : **Bhagabandh UGP** **Project:** **Cluster XI Bhagabandh UGP**

Stations: 1. Ground Water from Monnidih Bazar GW-11 **Date of Sampling:** 28/02/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-11	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	4			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	40			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	94			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.27			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.03			0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 22nd Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	17			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.56			0.20	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22nd Edition,4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22nd Edition, AAS-GTA
16	Sulphate (as SO_4) mg/l, Max	70			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity (c_aco_3),, mg/l, Max	84			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	390			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	160			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	5			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.04			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

Analysed By

18/5/16

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

CHAPTER - IV

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites and their rationale

i) **Pootkee Balihari Office (N16)**

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

ii) **Moonidih UGP (N17)**

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

iii) **Moonidih Wahery (N29)**

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

iv) **Kusunda OCP (N10)**

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

4.2 Methodology of sampling and analysis

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

4.3 Results & Interpretations

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

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

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

NOISE LEVEL DATA

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

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

Name of the Stations & Code :

1. **Pootkey Balihari office (N16)**
2. **Moonidih UGP (N17)**
3. **Moonidih Washery(N29)**
4. **Kusunda OCP (N10)**[1]

(a) First Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	Pootkee Balihari Office (N16)	Industrial area	15.01.2016	61.8	*75*
2	Moonidih UGP (N17)	Industrial area	07.01.2016	67.6	*75*
3	Moonidih Washery (N29)	Industrial area	08.01.2016	60.6	*75*
4	Kusunda OCP (N10)	Industrial area	12.01.2016	63.8	*75*

(b) Second Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	Pootkee Balihari Office (N16)	Industrial area	27.01.2016	53.4	*75*
2	Moonidih UGP (N17)	Industrial area	22.01.2016	61.5	*75*
3	Moonidih Washery (N29)	Industrial area	21.01.2016	59.8	*75*
4	Kusunda OCP (N10)	Industrial area	29.01.2016	62.6	*75*

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

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

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

NOISE LEVEL DATA

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

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

Name of the Stations & Code :

1. **Pootkey Balihari office (N16)**
2. **Moonidih UGP (N17)**
3. **Moonidih Washery(N29)**
4. **Kusunda OCP (N10)**[2]

a. First Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	Pootkee Balihari Office (N16)	Industrial area	08.02.2016	63.2	*75*
2	Moonidih UGP (N17)	Industrial area	05.02.2016	59.8	*75*
3	Moonidih Washery (N29)	Industrial area	04.02.2016	61.3	*75*
4	Kusunda OCP (N10)	Industrial area	03.02.2016	61.3	*75*

b. Second Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	Pootkee Balihari Office (N16)	Industrial area	19.02.2016	66.8	*75*
2	Moonidih UGP (N17)	Industrial area	26.02.2016	61.3	*75*
3	Moonidih Washery (N29)	Industrial area	25.02.2016	62.6	*75*
4	Kusunda OCP (N10)	Industrial area	16.02.2016	58.7	*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, +Night Time: 10.00 PM to 6.00 AM.**

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

NOISE LEVEL DATA

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

Year : **2015-16.**

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

Month: **March, 2016.**

Name of the Stations & Code :

1. **Pootkey Balihari office (N16)**
2. **Moonidih UGP (N17)**
3. **Moonidih Washery(N29)**
4. **Kusunda OCP (N10)**[3]

a. First Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	**Pootkee Balihari Office (N16)**	**Industrial area**	01.03.2016	53.5	*75*
2	**Moonidih UGP (N17)**	**Industrial area**	02.03.2016	58.6	*75*
3	**Moonidih Washery (N29)**	**Industrial area**	02.03.2016	61.8	*75*
4	**Kusunda OCP (N10)**	**Industrial area**	14.03.2016	55.6	*75*

b. Second Fortnight data

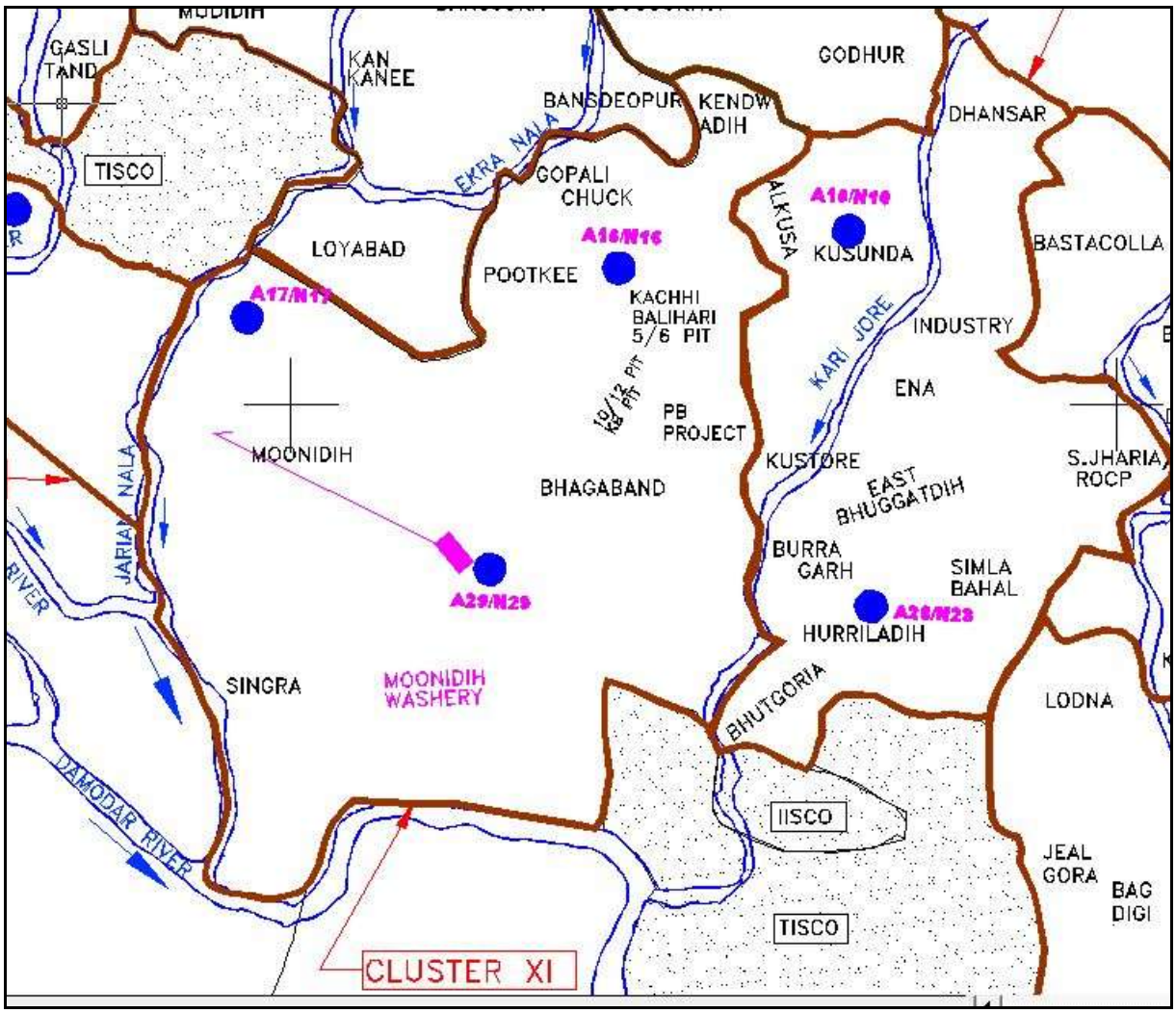
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	**Permissible Limit of Noise level in dB(A)*
1	**Pootkee Balihari Office (N16)**	**Industrial area**	17.03.2016	61.7	*75*
2	**Moonidih UGP (N17)**	**Industrial area**	18.03.2016	62.3	*75*
3	**Moonidih Washery (N29)**	**Industrial area**	18.03.2016	58.7	*75*
4	**Kusunda OCP (N10)**	**Industrial area**	30.03.2016	64.8	*75*

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

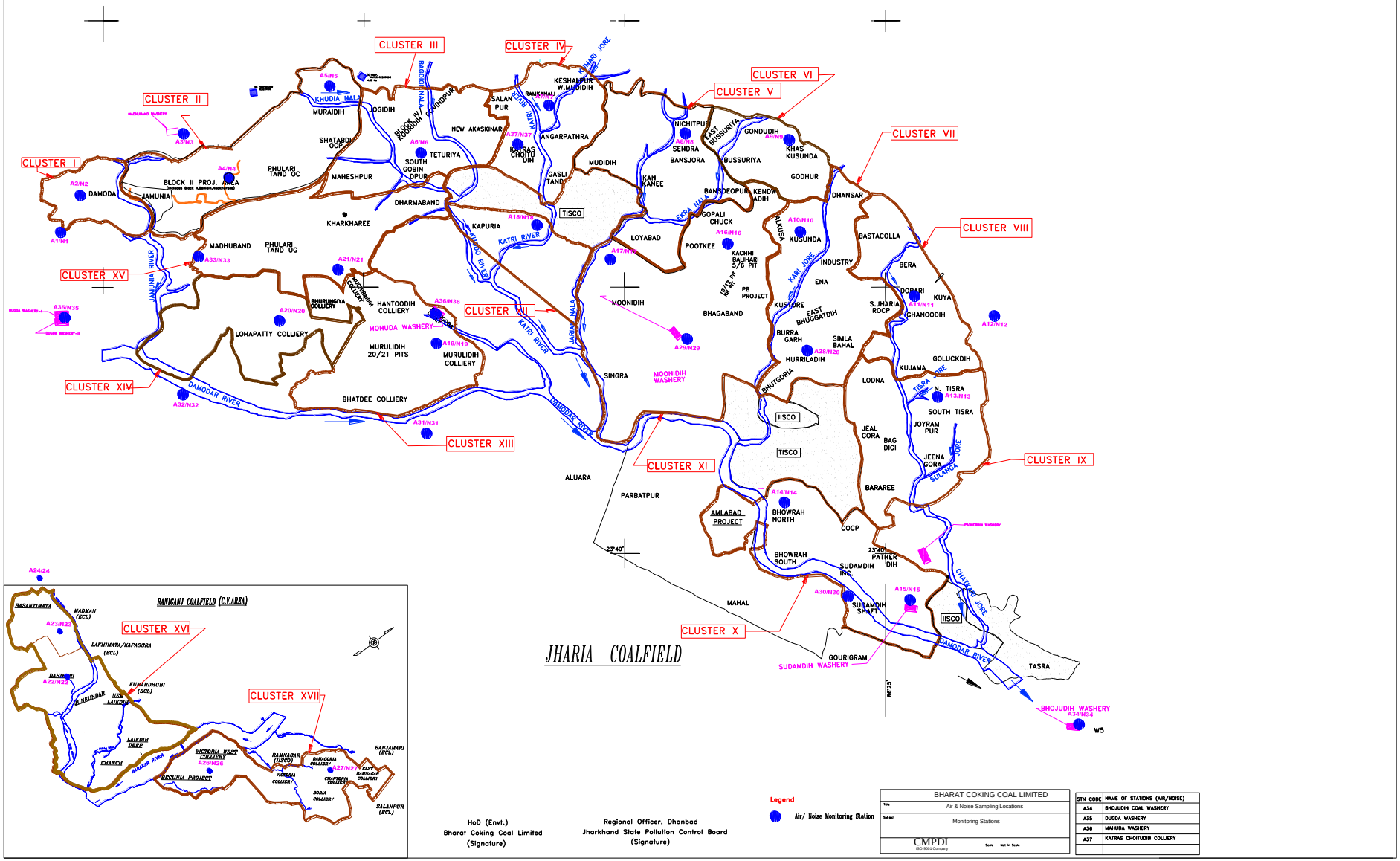
*** Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.**

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

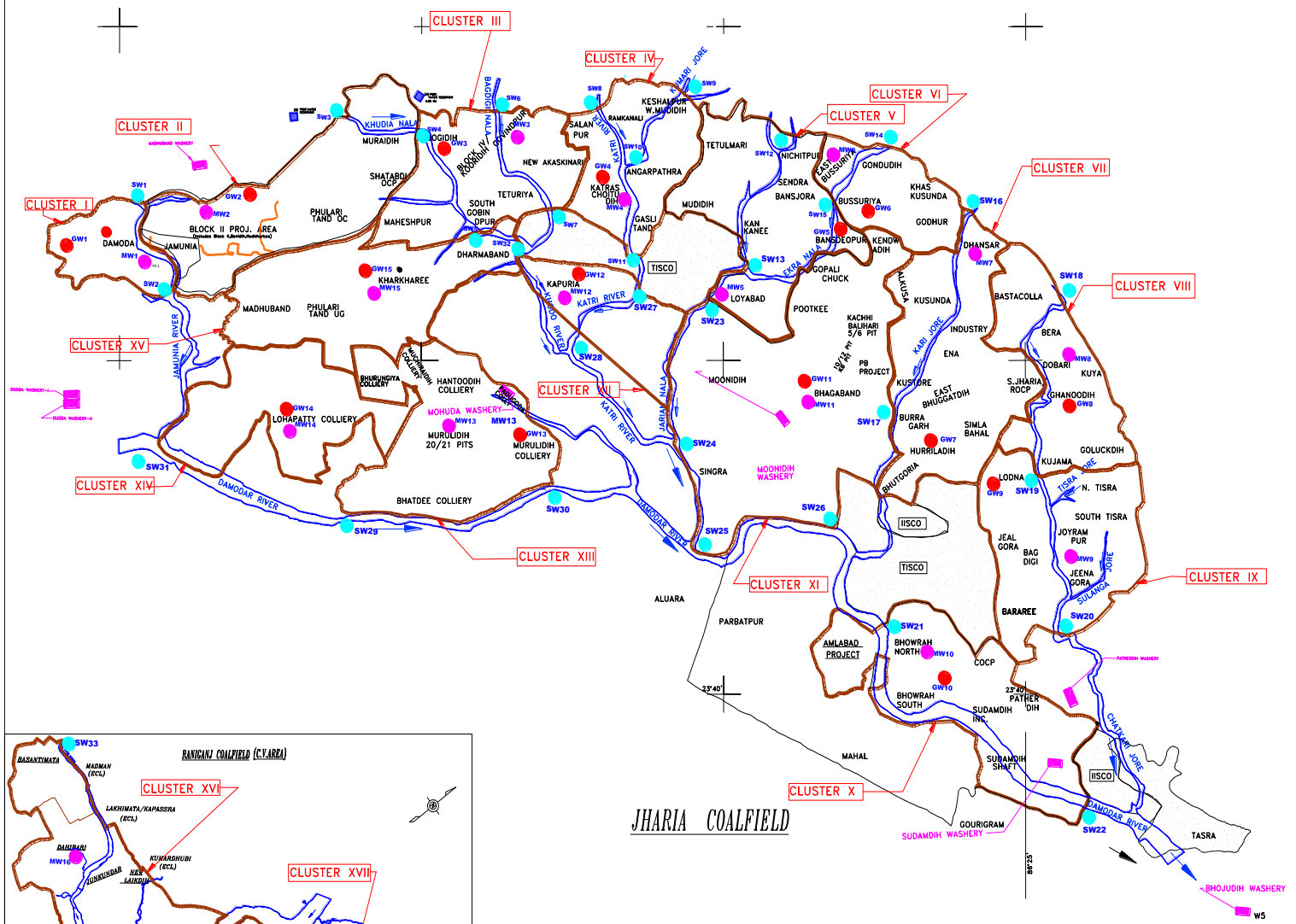
Noise Level Monitoring Location of Cluster XI



Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



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Cluster	Suface Water (U/S, D/S)	Name of River/ Nala / Jore	Mine/ Effluent Water	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	Joyrampur 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	Chotudih	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 Jore	MW7	Dhansar UGP	GW7	Hurriladih
VIII	SW18, SW19	Kashi Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kashi Jore	MW9	Jeenagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband UGP	GW11	Bhagabandh
XII	SW27, SW28	Katri River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murulidih (20/21)	GW13	Murilidih
XIV	SW31, SW29	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	Patlabari Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria