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

(OCTOBER'17 – MARCH'18)

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. Correspondences for NPV payment are done with concerned DFO. Pegging is being done for preparation of KML file.
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**	**It is being complied.** The production from the cluster is within the limit for which environmental clearance has been granted. Enclosed as **Annexure I**.

	for the cluster XI.	
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.**	**Complied.** Various mechanically covered trucks Manufacturers for the transportation of Coal and OB in India have been contacted and things are under process. At present coal transportation has been done by trucks with tarpaulin cover. Covering of truck has been made mandatory in the transportation contract.
vi.	**Green belts shall be developed on both sides of the roads.**	Complied. A garden with fountain has been developed near Moonidih Colliery office. Time to time plantation is done either departmental or with the help of forest department Dhanbad.
vii.	**Action plan for quenching of fires and rehabilitation alongwith the details of master plan be submitted to the MoEF for Monitoring purpose.**	**Complied**. Master Plan is already uploaded on BCCL website.
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.**	No alternate route for coal transportation has been explored till date.
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 has initiated.
xi.	**The approved mining plan be submitted to the MoEF.**	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 with Jharia Action Plan.

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 utilized for control of fire in Jharia Coalfields and for their reclamation and to further minimize time for fire and subsidence control. Isothermal mapping using thermal imaging has been got done by NRSA. Measures would be taken 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. NRSC has been awarded work to carry out study. The copy of work order is 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.**	It is being complied
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.**	Complied as per statute. There are U/G mines are operating under cluster XI.
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.**	Green belt is being developed and 5 ha of ecological park (taken up in FY 2015-16), 2 ha taken up in FY 2016-17 for plantation and 2 Ha is taken up for plantation in FY 2017-18 under P.B. Area of cluster XI and 5 Ha is taken up in FY 2018-19 under P.B.Area and 1.5 ha taken under W.J.Area.
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.**	**Complied. Enclosed as Annexure III.**

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. **Enclosed as Annexure IV.**
xx.	**The locations of monitoring stations in the Jharia Coalfields should be finalized in consultation with the Jharkhand State Pollution Control Board. The Committee stated that smoke/dust emission vary from source to source (fuel wood, coal, fly ash from TPPs, silica from natural dust, etc.) and a Source Apportionment Study should be got carried out for the entire Jharia Coalfields. Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (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. **Enclosed as Annexure V** Tender for conducting source apportionment study for BCCL was floated twice, however, none of the bidders qualified. Therefore, as per the MoU "Sustainable Coal Mining in Coal India Limited" entered between CIL and NEERI, NEERI Nagpur was approached for conducting Source Apportionment Study BCCL for compliance of EC conditions. The proposal regarding Conducting the Source Apportionment Study has been submitted by NEERI. Presently it has been submitted to CIL for further scrutiny and approval. **Annexure X**
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 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.**	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. 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 VI.**

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. Regular subsidence monitoring is done at underground mines.
Xxiv.	**Coal Extraction shall also be optimized in areas where agricultural production is continuing. Some pillars shall be left below the agricultural land. No depillaring & coal extraction should be carried out below habitation, H.T. Lines & beneath road, water bodies.**	It is being complied. 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.**	It is being complied.
xxvi.	**3-tier plantation should be developed 2 km stretch of road from the mine using native species.**	**It is being complied.** Plantation is being done on roadside in non-coal bearing areas and colonies. Carbon sequestration study may be conducted to assess the impact of plantation to reduce the pollutants.
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. Sprinkler arrangement provided in respect of Moonidih washery and also some more new sprinkler arrangement has been done near transfer points and haulage roads.
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.** 4000 saplings have been Planted from April'17 till date in mines 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.**	**It is being complied.** Being Monitored. Moonidih washery is operating under closed water circuit system. Pilot scale Mine Water Treatment Plant is also installed in P.B. Area to convert mine water into drinking water.
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.**	**It is being complied.** 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 checkup of their workers, 10% of the workers identified from workforce engaged in active mining operations shall be subjected to health checkup 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.** NIOH has done the health surveillance in 2016. Draft Report has been submitted to BCCL in the month of October'17. Final Report is still awaited, NIOH also done an Awareness workshop on occupational diseases.
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.**	Complied
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.**	Complied .Already implemented in case of Moonidih Mine. Complied 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.**	Plantation in BCCL is being done on 3-tier basis, in which both, Monocotyledonae (Monocots) such as grasses, bamboo etc and Dicotyledonae (Dicots) such as sheesham, mango etc are being planted for developing an extensive root system. The Monocots having fibrous root system helps in developing the root density at the topsoil level while, Dicots having the tap root system have a distributed root density in topsoil, subsoil and regolith layer of soil. These two

		root system together forms the high root density system.
xxxvi.	**Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by Cutting drains.**	Being Complied
xxxvii.	**Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.**	Being Complied.
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 is handled at Headquarter level and every area is assigned work. CSR work carried out in FY 2017-18 (Oct'17 till Mar'18) is enclosed as **Annexure – III**
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.**	It is being complied.
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. Eco-restoration site of (1.5 hectare in FY 2018-19) in the lease hold area of Moonidih Colliery.

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. A pilot scale mine water treatment plant in collaboration with CSIR, CIMFR is installed at P.B. Area office to convert mine water into drinking water.
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. CMPDIL is carrying out the environmental monitoring work. Mine water quality data has been enclosed as Annexure VII.
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.**	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 piezometers. 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. Groundwater monitoring data has been enclosed as **Annexure VIII**
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.**	There is no effluent found now .However there is arrangement for treatment of effluent. There is no CHP under P.B.Area and W.J.Area of 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.**	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. Report of land use pattern monitoring submitted by CMPDI has been enclosed as Annexure -IX
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;**	It shall be complied. It will be complied when mine life will reach its final phase. 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.**	Being Complied by Washery
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.**	Being Complied
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.**	Being Complied. At Moonidih Washery some more water sprinklers have been added nearby Hopper of Coal crushing unit for Water spraying and also mobile water tanker are used for spraying water in transportation road.

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. Different agencies are contacted for mechanical sweepers.
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.**	Being Complied. The trucks which are carrying coal from different collieries to Moonidih washery are regularly maintained in their workshop and are parked at proper place.
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.**	Being 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.**	**Complied.**
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-XI**
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.**	It is 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. Enclosed as ANNEXURE V The work of monitoring of ambient environment has been done through CMPDI, Regional Institute-II, 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. Enclosed in Annexure-VII
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.**	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.
viii.	**Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analyzed through**	It is being complied.

	a laboratory recognized 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 recognized under EPA Rules, 1986.	
ix.	**Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.**	Being complied. Vocational training Centers under separate Human Resource Development Department is conducting regular training programme on these issues. Enclosed as Annexure XI.
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 XI.
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 which includes Environment, Mining, Excavation, has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, one Executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental Acts/ Laws including environment protection measures .The activities are monitored on regular basis at Area and at Headquarters levels. GM (Environment) at head quarter level, co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xii.	**The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.**	It is being complied.

xiii.	**The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of 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.
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.**	Complied.
8	**The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project.**	Complied.
9	**The Ministry or any other competent authority may stipulate any further condition for environmental protection.**	Complied.
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.**	Complied.

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.	Complied
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.	Complied.

Additional General Manager
P.B. Area

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

11/6/18

Project officer
Moonidih Washery

Project Officer
Moonidih Washery
WWZ

Project officer
Moonidih Colliery

PROJECT OFFICER/AGENT
MOONIDIH COLLIERY
B.C.C. LTD.

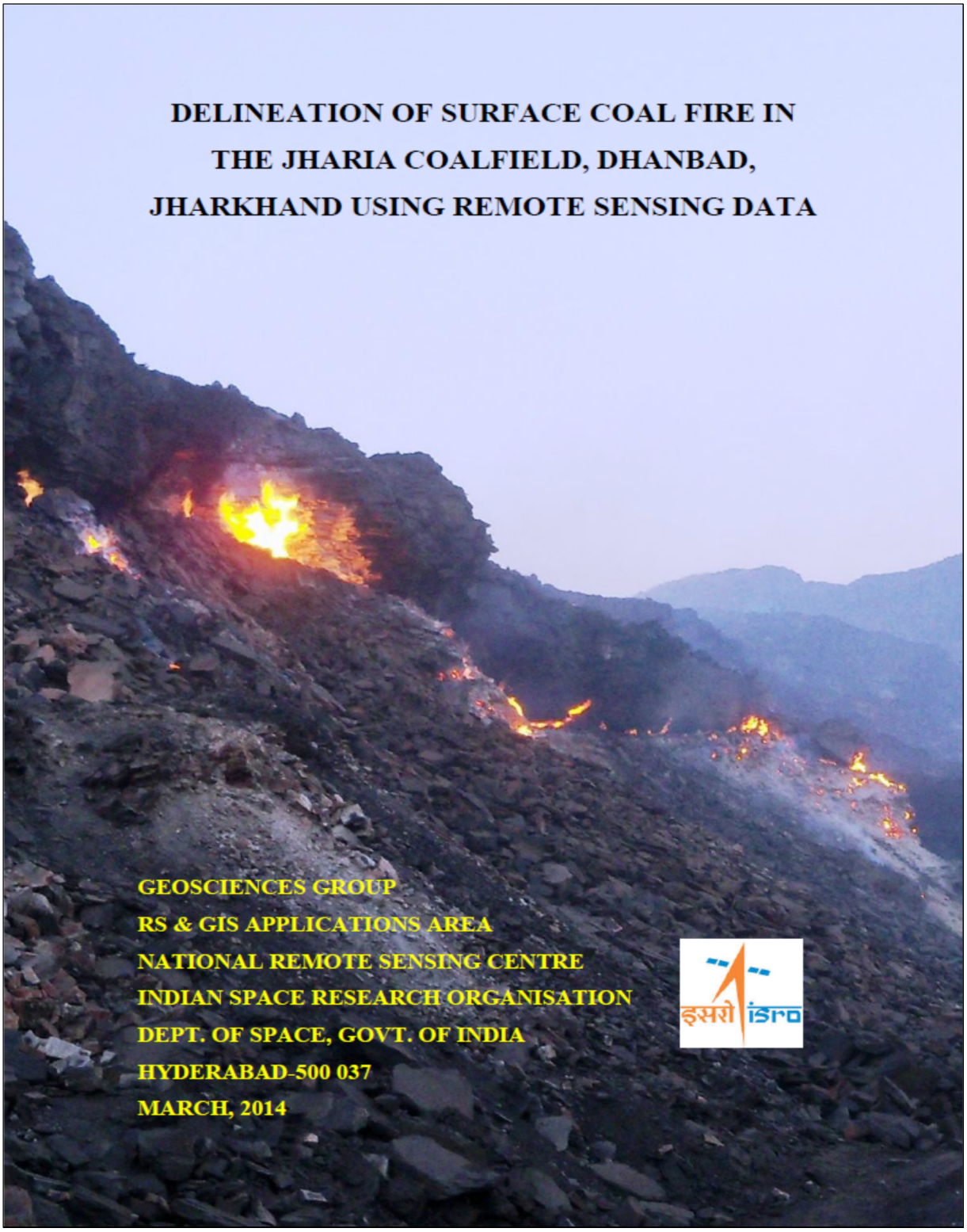
ANNEXURE- I

EC grant for cluster XI is 5.08 and 6.604 MTPA normative and peak production respectively. The production from area is .35 MT for six months, which is well within the limits.

Production From October'17 to March'18 (Tonne)	
Cluster XI	**Production**
Total Production from cluster is	**359895**

ANNEXURE-II

As per specific condition no 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.



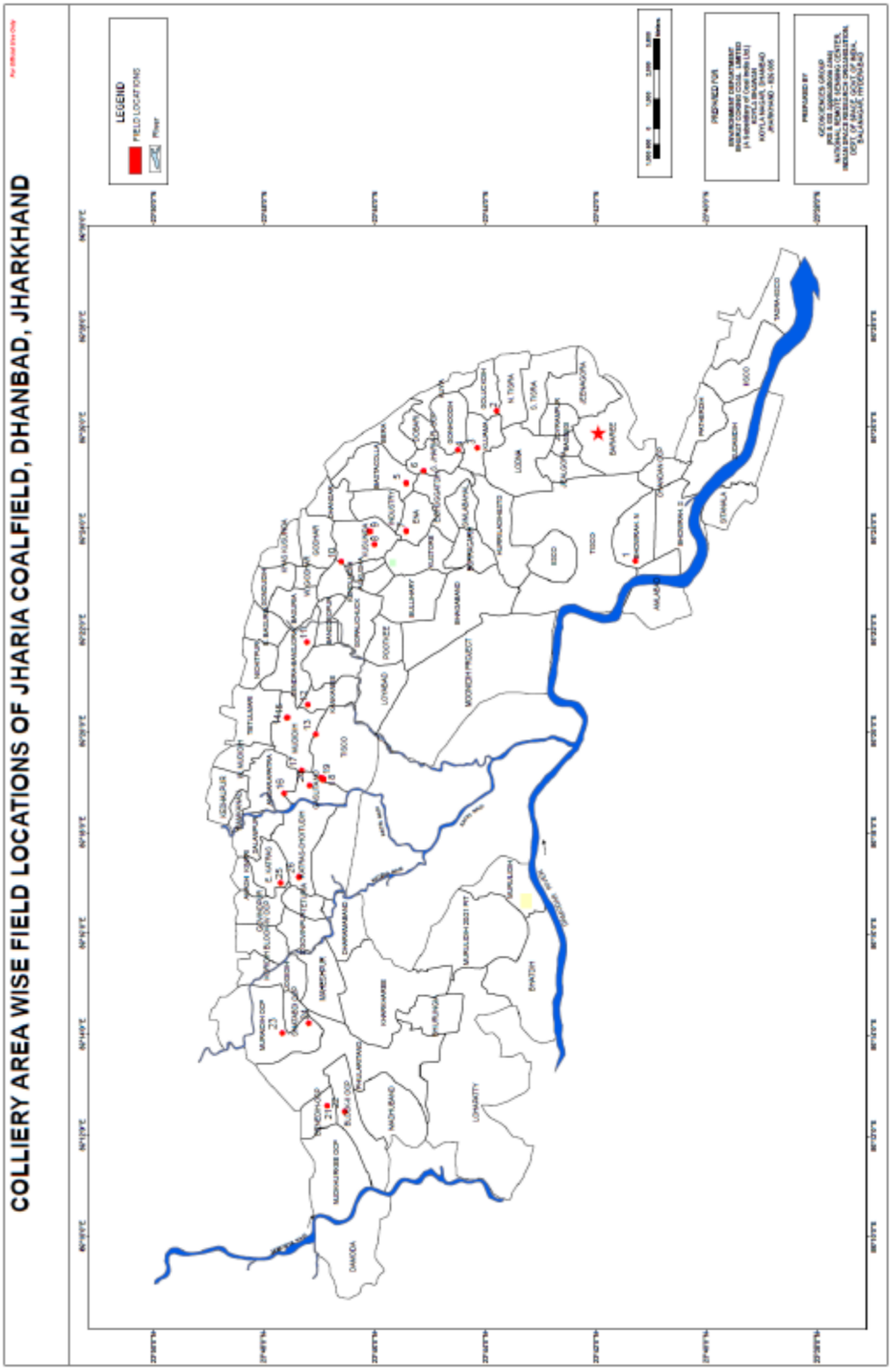


Figure 7: Field locations of coal mine fire shown over colliery area boundary in Jharia coal field, Dhanbad, Jharkhand.

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.*

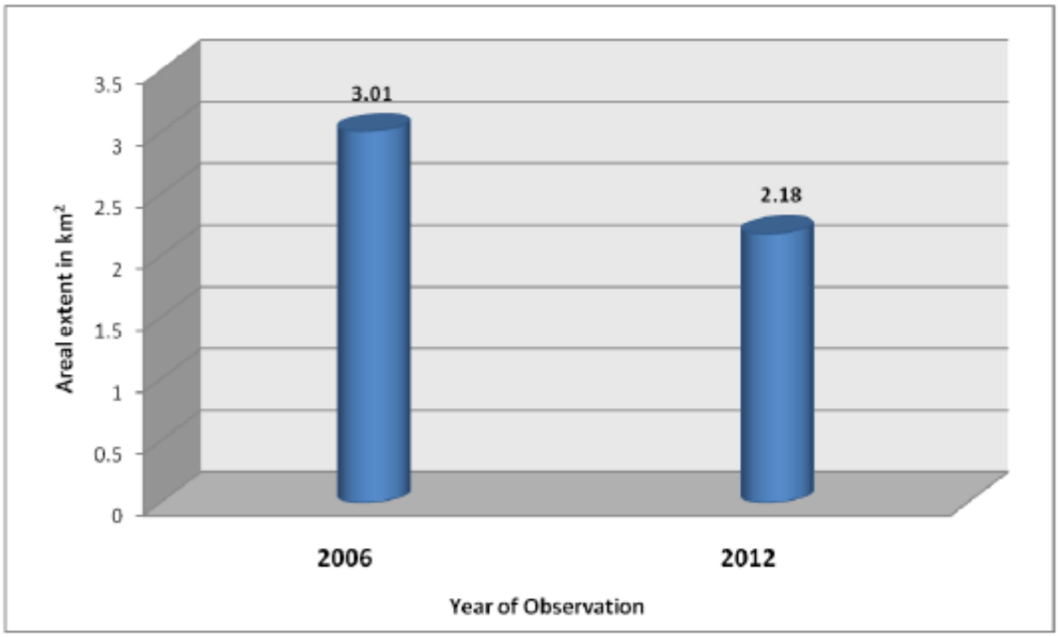


Figure 10: Total fire area statistics

ANNEXURE –III

CSR, R&R and Transportation Plan of Cluster XI

As per EC Condition

(Specific Condition No XVIII)

Details of transportation, CSR, R&R and implementation of environmental action plan for each of the 17 clusters should be brought out in a booklet form

Bharat Coking Coal Limited

(A Mini Ratna Company)

P.B Area

Dhanbad

UNDERSTANDING THE SCOPE OF CSR INTERVENTION

(BASELINE STUDY REPORT)

FOR

BHARAT COKING COAL LTD. (BCCL)

DHANBAD

BY-

NATIONAL CORPORATE SOCIAL RESPONSIBILITY HUB

TISS, MUMBAI

25th NOVEMBER 2013

CIL'S POLICY FOR CORPORATE SOCIAL RESPONSIBILITY (CSR)

Introduction

Mining of coal has profound impact on the people living in and around the areas where the mines are established. The obvious impact of the introduction of any production activity in such areas change the traditional lifestyle of the original inhabitants and indigenous communities and also change the socio-economic profile of the Area. Hence, the primary beneficiaries of CSR for the company are:

- Land oustees
- PAPs and
- Those staying within the radius of 25 Kms of the Project.

Poor and needy section of the society living in different parts of India are the second beneficiaries.
In the aforesaid backdrop, policy on Corporate Social Responsibility of CIL has been framed after incorporating the features of the Companies Act 2013 and as per notification issued by Ministry of Corporate Affairs, Govt. of India on 27.02.2014 as well as DPEs guidelines and broadly covers the following: -

a) Welfare measures for the community at large, so as to ensure the poorer section of the Society derived the maximum benefits.
b) Contribution to the society at large by way of social and cultural development, imparting education, training and social awareness especially with regard to the economically backward class for their development and generation of income to avoid any liability of employment.
c) Protection and safeguard of environment and maintaining ecological balance.

Objectives

The main objective of CSR policy is to lay down guidelines for the coal companies to make CSR a key business process for sustainable development for the society. It aims at supplementing the role of the Govt. in enhancing welfare measures of the society based on the immediate and long term social and environmental consequences of their activities. CIL will act as a good Corporate Citizen, subscribing to the principles of Global Compact for implementation.

Areas Covered under CSR

- The poor and needy Section of the Society living in different parts of India are covered.

- The CSR Programme also covers the existing components of Special Component Plan (SCP) and Tribal Sub Plan (TSP) for development of the SC and ST population besides development components for the entire population.

80% of the budgeted amount is spent within the radius of 25 Km of the Project Site/Mines/Area HQ/Company HQ and 20% of the budget is spent within the State.

Allocation of Fund

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

Scope

As per Schedule VII of New Companies Act 2013, the following are the Scope of Activities under Corporate Social Activities:

i) Eradicating hunger, poverty and malnutrition, promoting healthcare including preventive health care and sanitation and making available safe drinking water.

ii) Promoting education, including special education and employment enhancing vocation skills especially among children, women, elderly, and differently abled and livelihood enhancement projects;

iii) Promoting gender equality, empowering women, setting up homes and hostels for women and orphans, setting up old age homes, day care centers and such other facilities for senior citizens and measures for reducing inequalities faced by socially and economically backward groups;

iv) Ensuring environmental sustainability, ecological balance, protection of Flora and Fauna, animal welfare, agro-forestry, conservation of natural resources and maintaining quality of soil, air and water;

v) Protection of national heritage, art and culture including restoration of buildings and sites of historical importance and works of art; setting up public libraries, promotion and development of traditional arts and handicrafts;

vi) Measures for the benefit of armed forces veterans, war widows and their dependents

vii) Training to promote rural sports, nationally recognized sports, Paralympics sports and Olympic sports;

viii) Contribution to the Prime Minister's National Relief Fund or any other fund set up by the Central Government for socio-economic development and relief and welfare of the Scheduled Castes, the Scheduled Tribes, other backward classes, minorities and women;

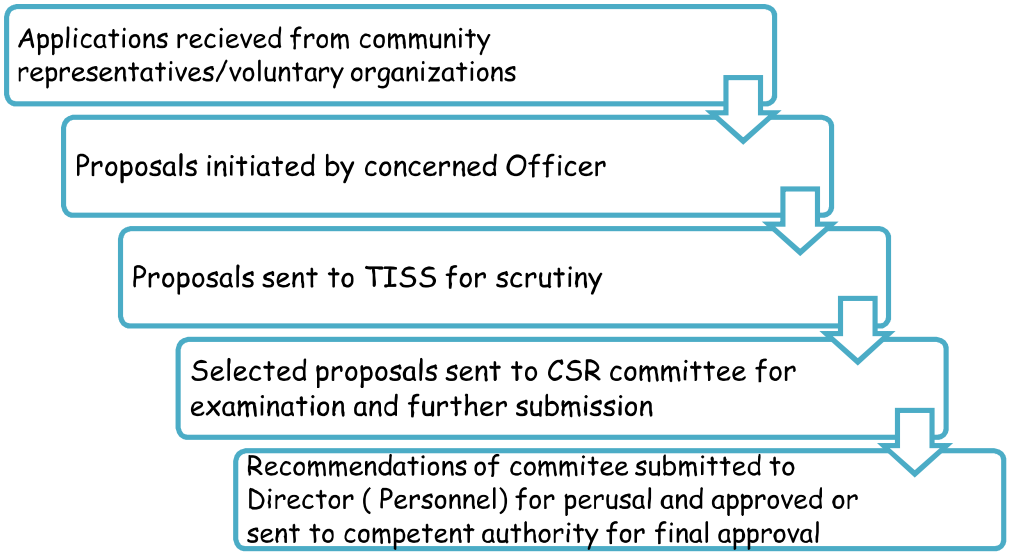
ix) Contributions or funds provided to technology incubators located within academic institutions which are approved by the Central Government;

x) Rural development projects

Implementation

- The investment in CSR is project based and for every project time framed periodic mile stones should be finalized at the outset.
- Project activities identified under CSR are implemented by Specialized Agencies. Specialized Agencies are made to work singly or in tandem with other agencies. Specialized agencies that are included presently for implementation of CSR projects in Cluster VII are through Contracted agencies for civil works.

Institutional Arrangement

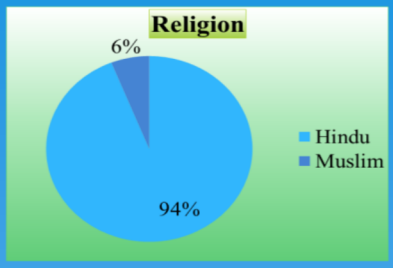


Baseline study done by TISS (Putki Balihari Area)
Kenduahdih

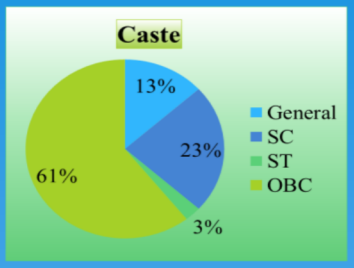
Tola: Kenduahdih (Ward 12) | Panchayat: Kenduahdih | Block: Dhanbad | District: Dhanbad

Census Year	2001
Households	150
Population	1300

Religion



Caste



Source of water	
Irrigation	None
Drinking Purpose	Tank, Public and private tap

Migration Pattern

Location	Status
Outside State (Agri Labour)	Few

Sources of Livelihood

Own farm activities
Agricultural labour
Non-agri labour (rural)
Salaried employment
Petty business/trade
Collect & sale forest/mining products, factory labor
Rent/pension/remittance

Crop Grown

Paddy
Maize
Wheat
vegetables

Recreation / Common Facilities

Playground
Samaaj Mandir
Cremation Place, community hall

Accessibility to Forest/Mining Produce

Coal Collection, Firewood
Cultivation

Common Transport Facilities

Motor Cycle
Bicycle

Facilities Located in Villages

Cemented tar road
PDS Shop
Grocery Shop
Pre-Pri/Nursery School
Govt Primary School
Pvt. Primary School
Govt Secondary School
Higher Sec School
Pvt Clinic (RMP+)
Asha worker
Dai

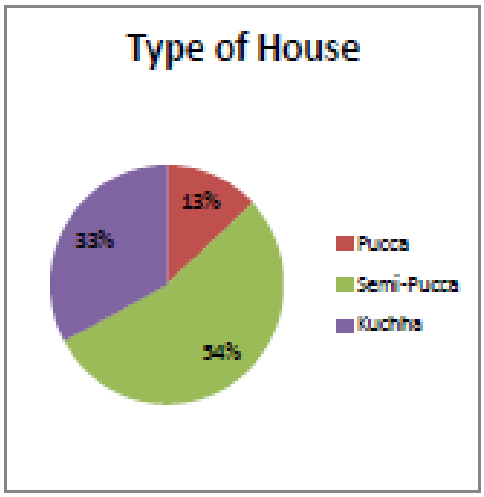
Facilities Located More Than 5 Kms

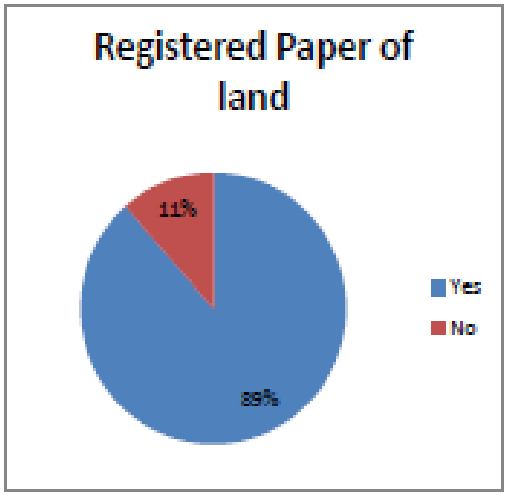
Weekly Market
Block Development Office (Dhanbad)
District Headquarters (Dhanbad)
Warehouse (Dhanbad)
APMC/Mandi (Dhanbad)
ITI/Polytechnic(Dhanbad)
Health Sub – Centre (Karkend Mor)
Primary Health Centre(Dhanbad)
Veterinary Clinic(Karkend Mor)

Facilities Located Within 5 Kms

Bus Stop (Putki)
Daily Evening Market (Boragarh)
DTP/Xerox (Bhagabandh)
Post Office (Bhagabandh)
Railway Station (Bhagabandh)
Police Station (Putki)
Gram Panchayat Office (South Balihari)
Cooperative Society (Putki)
Bank for S/B account (Bhagabandh)
Degree College(Jharia)
CHC Govt /Gen Hospital (Bhagabandh)
Private Hospital (Bhagabandh)
Medical Shop/Chemist (Bhagabandh)

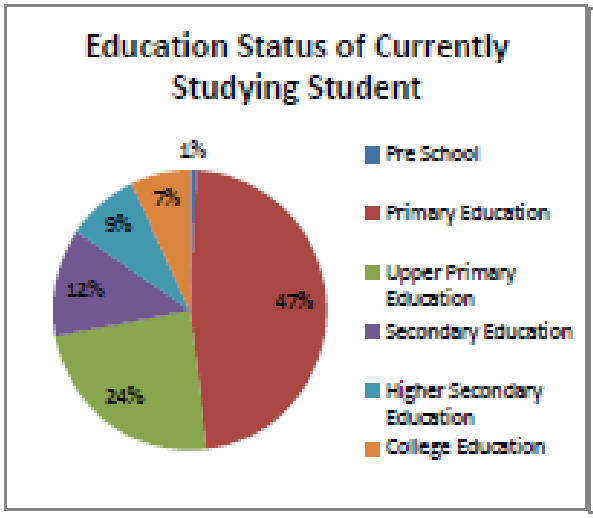
4.10.1.1 HOUSEHOLD STATUS

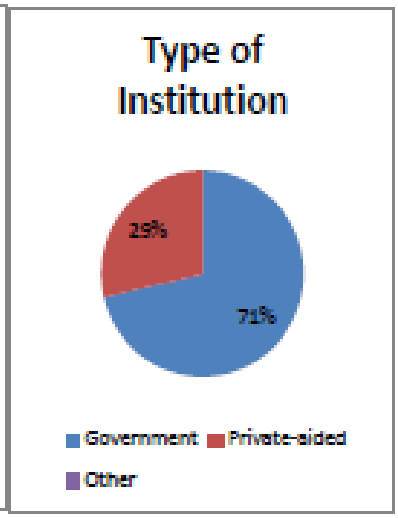




In Kenduahdih Basti, 40% of the households are found to be Semi- Pucca while 48% are Kuchha and 12% are Pucca. 95% of the houses are registered while only 5% was found to be non-registered. Nearly 85% of the houses in this village are electrified.

4.10.1.2 EDUCATION





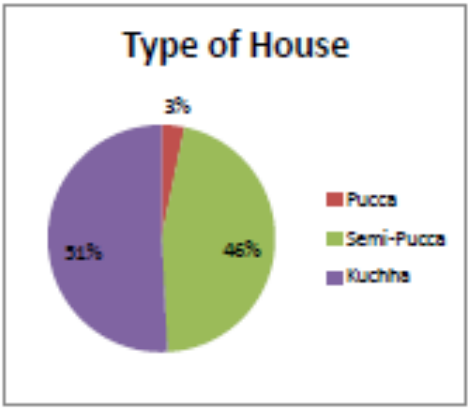
In Kenduahdih Basti, it has been found that 35% of the students are enrolled in Primary education followed by 28% in Upper primary, 10% in secondary education, and 5% in higher secondary, 3% in college. Education after 12th standard is found comparatively less with any

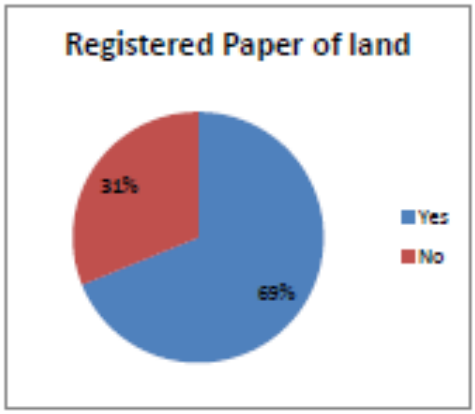
Major Problems and Recomendations

Area	Major problems and Recommendations
Education	There is no road which can join schools to main working road
	No electricity and in-house circuiting of lights and fans in the class room of primary school
	Shakti Nath Mehto School needs school boundary and toilet in school premises
Water Supply	Pipeline already exists in this village. More number of pipelines are required in Harijan Basti of Kenduahdih
Health Care	Mobile medical Van should treat children every month in primary school
	Maternity health camp should be initiated through MMV
Social Empowerment	Nearly 5-6 SHG has been identified in this village. SHG *(Ma Saraswati Mahila Samuh)* already exist in the village. They need are trained in agriculture. They need support of land to start collective farming of horticultural crops. They are also trained in preparation *Agarbatti* and bangles made from lac.
	Vocational training school for girls and boys is needed in this village. School building of Shakti Nath Mehto School can be used for providing vocation al training center in the weekends or after the school hours with prior permission of the school administration. Not only that the training center for women to start small enterprise can be establish in the same school premises.
Sanitation	No toilets in any of the households. Toilets is needed to construct
Infrastructural Development	There *Kuccha* road in the village which creates problem during rainy season
	On hand pump/tap point is needed in ICDC
	One kitchen room is required in primary school
	Playground boundary in needed with gate in primary school

4.10.2 BHAGABANDH

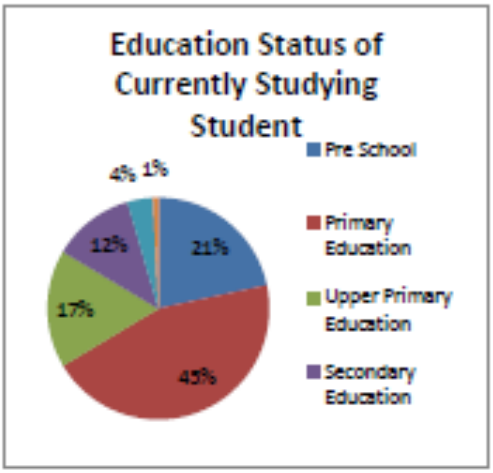
4.10.2.1 HOUSEHOLD STATUS

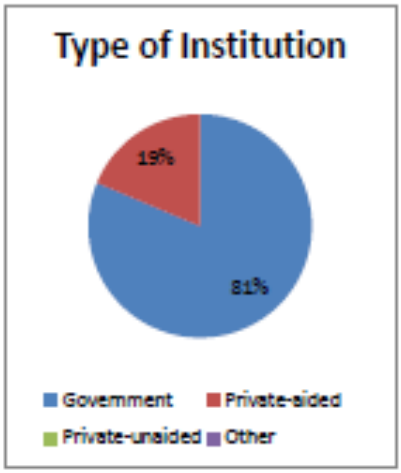




In Bhagabandh Village, 3% of the sample is living in pucca house and 51% were having kuccha house while 46% were having semi -pucca house. Among the sample 69% of the people have registered paper of land while 31% of them do not have registered paper of land. 94% of the sample is living in electrified.

4.10.2.2 EDUCATION





In Bhagabandh Village, status of education does not seem positive as far as college education is considered, only 1% of the children among sample households are found at the time of data collection enrolled in higher education. Among the students of sample households who are currently studying, 45% are currently studying in primary school, 17% are in upper primary school, 12% in secondary school and another 4% is studying in

295

Major Problems and Recommendations

AREA	MAJOR PROBLEMS AND RECOMMENDATIONS
Education	There should scholarship for the children belongin to underprivileged section of the society who is going for education after matriculation to schools of Dhanbad by BCCL
	Library is required in this village
	Evening school has been requested by the people
Water Supply	More number of tap points are required in Manjhi Tola of Bhagabandh Basti
Health Care	Maternity health ccmpa
	Regular check-up of primary school children
Rural Electrification	School should have in-house electric fitting of fans and light
Sports & Culture	Sports equipment should be provided to the sports club

Sanitation	No toilets in houses.
	There should be provision for garbage disposal By BCCL at regular interval along with fumigation
	Ponds should be cleaned with involving community by providing them daily wage as followed in MNREGS
Social Empowerment	SHG for women and men should be formed to start Income Generation activity
	Group activity on Piggery and poultry has been requested by the people. But for that a formal group has to be formed who have to register in the local bank
	Women who are not getting widow pension should be supported with livestock's like poultry, duckery and goatry
Infrastructural Development	Playground for children with boundary
	Repair of damage road should be done so that medical vans or ambulance should reach at the door step for pregnant women
	Playground with boundary should be constructed
	There is requirement of High school covering students from nearby villages like Bhagabandh. It can be done constructing additional school building in government secondary school in the village itself

CSR Report (October, 2017 to March, 2018)

"BCCL Ke LAL and BCCL Ki Ladli" Scheme Batch 2018-20:

Bharat Coking Coal Limited (BCCL) under its CSR Programme started a new initiative "BCCL Ke Lal and BCCL Ki Ladli" for providing free educational support & grooming them for competitive entrance examination of engineering like IIT, NITs, etc. to meritorious male and female students. "BCCL Ke Lal and BCCL Ki Ladli" aims at facilitating the meritorious students of PAPs(Project Affected Persons), people residing in the command area of BCCL or son/daughter of BCCL wage board Employee. These students particularly belong to poor and weaker section of the society and BCCL's objective is to provide them free school education, coaching from experts to prepare them to appear in admission in Engineering colleges like IITs, NITs and other prestigious colleges of the country.

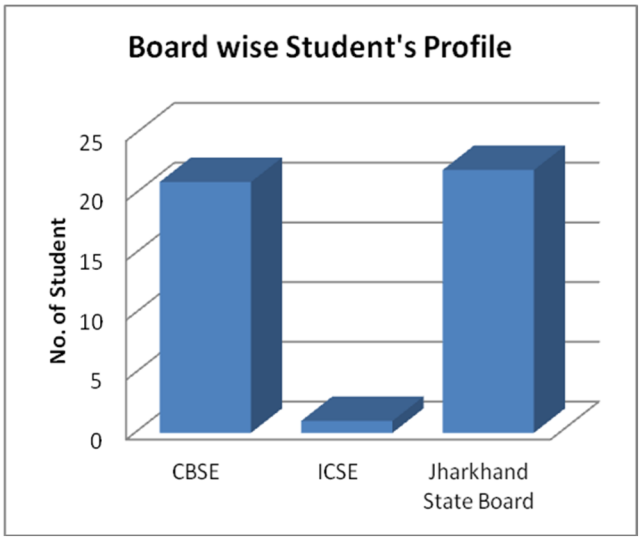
Details of Study Centres:

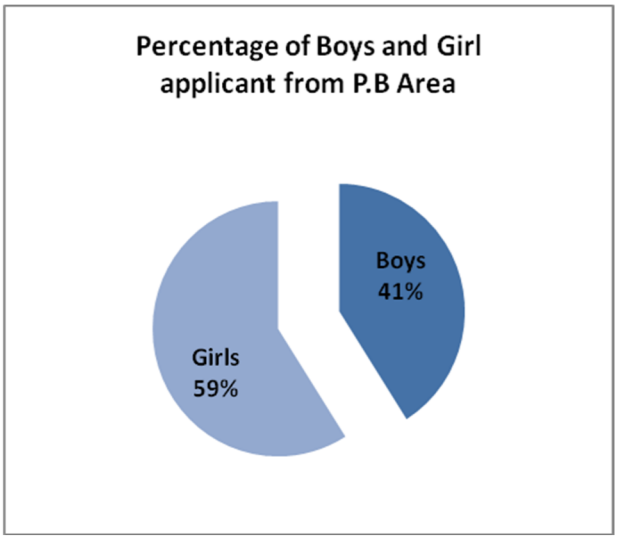
Four Coaching Centers were set-up wherein classes are conducted through Video Conferencing. Each centre has maximum 50 Students seat each (200 Students in all). 10 seats are reserved for Female Students at each VC Centre. These centers are established at:

a. Kalyan Bhawan, Jagjiwan Nagar (Dhanbad District)
b. Lodna Area (Dhanbad District)
c. Katras Area (Dhanbad District)
d. Block II Area (Dhanbad District)

Profile of Candidates who submitted applications from P.B Area:

Based on eligibility criteria for "BCCL Ke LAL and BCCL Ki Ladli" scheme, applications were invited from students who were appearing or appeared in Class 10th Board Exam in 2018. Total 44 students submitted their application form at P.B Area office. There is an increase in percentage of Girl applicants from last year as in last year the percentage of girl applicant was 37% out of total applicant but this year the percentage of girl applicant increased to 59% out of total applicant. Entrance Test was conducted on 13th May, 2018 at DAV Public School Koylanagar, Dhanbad by BCCL under "BCCL Ke LAL and BCCL Ki Ladli" scheme.





The final merit list for entrance test 2018 will be published only for those candidates who have secured at least 60% aggregate (for any Board) in Class 10th Board Examinations. If he/she fails in the above condition his/her selection will be cancelled and the merit list will be re-drawn accordingly. All students of VC Centres will be provided the facility of Smart Class for coaching at 4 Centres of BCCL (Barora, Katras, Lodna and HRD, Jagjiwan Nagar, Dhanbad) with online Video & Audio interactive session facility with two such set up at each centre for class 11th & 12th separately.

Details of the "BCCL Ke LAL and BCCL Ki Ladli" Batch 2017-19 Scheme till now is as under:

Based on Based on eligibility criteria for "BCCL Ke LAL and BCCL Ki Ladli" scheme, applications were invited from students who were appeared in Class 10th Board Exam in 2017. Total 116 students submitted their application form at P.B Area office. These students were appeared in Entrance Test conducted by BCCL under "BCCL Ke LAL and BCCL Ki Ladli" scheme. Among 116 students, 18 students got selected for admission in VC Centre. Regular PTA (Parent Teacher Association Meeting) with students for interaction and review of student's performance and analysis of needs of the parents are organized at regular intervals. Regular Doubt Clearing Classes along with regular tests are conducted for continuous improvement of the students.

VC Center Kalyan Bhawan, Jagjiwan Nagar

Area VC Center

Healthcare activities under CSR Head

1. **Medical Camps/Health Awareness camp organized during October, 2017 to March, 2018:**

Name of Camp	Month	Total No. of Beneficiaries
Diabetics/Sugar Camp	October, 2017	493
BP and Sugar Test	November, 2017	561
Sugar Test	December, 2017	460
BP, Sugar and Bone Test	January, 2018	110
BP, Sugar and ECG Test	March, 2018	130

2. **No. of Beneficiaries counseled/ treated at CSR Clinic:**

Dispensary	Duration					
	26.09.2017 to 25.10.17	26.10.2017 to 25.11.17	26.11.2017 to 25.12.17	26.12.2017 to 25.01.18	26.01.2018 to 25.02.18	26.02.2018 to 25.03.18
P.B Project Dispensary	93	91	90	146	127	163
Hurriladih Dispensary	50	45	75	60	40	42

Burragarh Dispensary	30	52	40	46	38	36
Putki Dispensary	41	42	30	21	27	22
Bhagabandh Dispensary	160	201	46	72	82	49
KB 10/12 Pit Dispensary	80	140	99	87	71	30
Gopalichak Dispensary	60	110	93	83	73	87
Total	514	681	473	515	458	429

Expenditure on Civil Work

Civil work done under CSR during the period April, 2017 to September, 2017: Nil

Rehabilitation & Resettlement during April, 2016 to March, 2017

Total 9 households from Kenduahdih & Simlabahal Collieries were shifted to Rehabilitation Site in August, 2016. Details of Households are as follows:

S. No.	Total Number of Houses Shifted
1	09

Transportation Plan

The transportation plan for cluster XI for the financial year 2017-18 is shown below:

Sl. No.	Mine	Existing siding	Other Transport Sites	Existing Transport distance (in KM)	Avg. Capacity of Dumper (T)
1.	P.B. Project	Burragarh		7	15
			Jamadoba Washery	9	15
			Moonidih washery	4.75	15
			Mahuda washery	10	15
2.	Gopalichuck	Burragarh		5.9	15
			Moonidih	6.6	15
3.	Bhagabandh	Burragarh		1-2	18
			Moonidih	4-5	18
4.	KB 10-12	Burragarh		3-4	18

ANNEXURE-IV

COMPLIANCE OF DHANBAD ACTION PLAN

(1) Covering of loaded transport vehicles

It has been complied. The clause of covering of loaded coal transport vehicle has also been incorporated in the transport agreement/ contract.

(2) Coal transport roads shall be made pucca

Mine	Proposed pucca road in Mtrs	Work Completed in Mtrs	Proposal processed/ approved	Likely date of completion
P.B. project	150			Owing to the restriction due to implementation of Govt. of India approved Master Plan and The Jharkhand State Restriction on construction in unsafe areas, Act 2002. BCCL is in the process of constructing 5.10 km WBM Roads.

(3) All drillings to be done with dust containment and suppression systems. Sprinklers will be installed including at all coal stock & sidings

Complied. Water sprinkling at all coal stock and sidings is being done by mobile water tankers and through pipe lines. Proposal for installation of fixed sprinklers at siding is under process.

(4) Mobile Sprinklers

Sl. no.	Mine/Workshop	No. of mobile sprinklers	Total Capacity(KL)	Trips per day
1	Bhagabandh UG Mine	1	45	2
2	P.B. project Colliery UG Mine	1	40	2
3	Central Auto Workshop	1	8	2
4	Kustore Akra Workshop	1	45	2

(5) The direction of surface run-off of the premises of collieries shall be diverted to created water bodies.

Creation of water bodies in coal bearing area will pose safety threats to nearby mine and it will be violation of mines act. This will also create grave danger of inundation of the adjacent mines since the mines are 100 years old and interconnected with each other. However, artificial ponds have been created where, there are no chances of future coal extraction.

(6) Dealing of mine fires

A Master plan for Dealing with fires and subsidence and rehabilitation in the Leasehold of BCCL has been approved by Govt. of India vide letter no- 22020/1/2005-CRC dated 12 08 09. In fire patch of V/VI/VII/VIII seam of Gareria Secn. At East Bassuriya about 1, 70,000 cu. m. mitti and non-combustible material has been filled, rest will be filled by quarry OB.

(7) The waste water shall be passed through oil separator-cum-filtration system

Complied. 1 number of Oil Separator has been constructed at P.B. Project Colliery

(8) The removed OBs shall be utilized for low land filling or for making roads

This condition does not apply as there is no OCP in P.B. Area under cluster XI

(9) Tree plantation on the dumps

Complied. As there is no OCP in P.B. Area under cluster XI. However, ecological park is being under construction in lease hold of Bhagabandh. 5 Ha site was taken up in FY 2015-16 and 2 Ha in FY 2016-17. 2000 saplings have been planted starting from April'16 till September'16

(10) All hazardous wastes shall be disposed off

Complied.

a. All units have applied for authorization as per Hazardous Wastes (Management, Handling and Trans boundary Movement) Rules.
b. Burnt/used oil is disposed off as per rule.
c. Disposal of Hazardous waste, burnt Oil / batteries is being done through E-auctioning to authorized recycler/ re-processor having valid authorization from CPCB/ SPCB. Return are also being filed.

(11) Monitoring and Reporting six monthly

Monitoring work has been done by CMPDI, Dhanbad as per work order issued by BCCL HQ.

(12) Introduction of GIS/ GPS

CMPDI, HQ has been given the job of satellite surveillance of the Jharia coal field through NRSA Hyderabad and the information is being uploaded in the website.

ANNEXURE-V

(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.

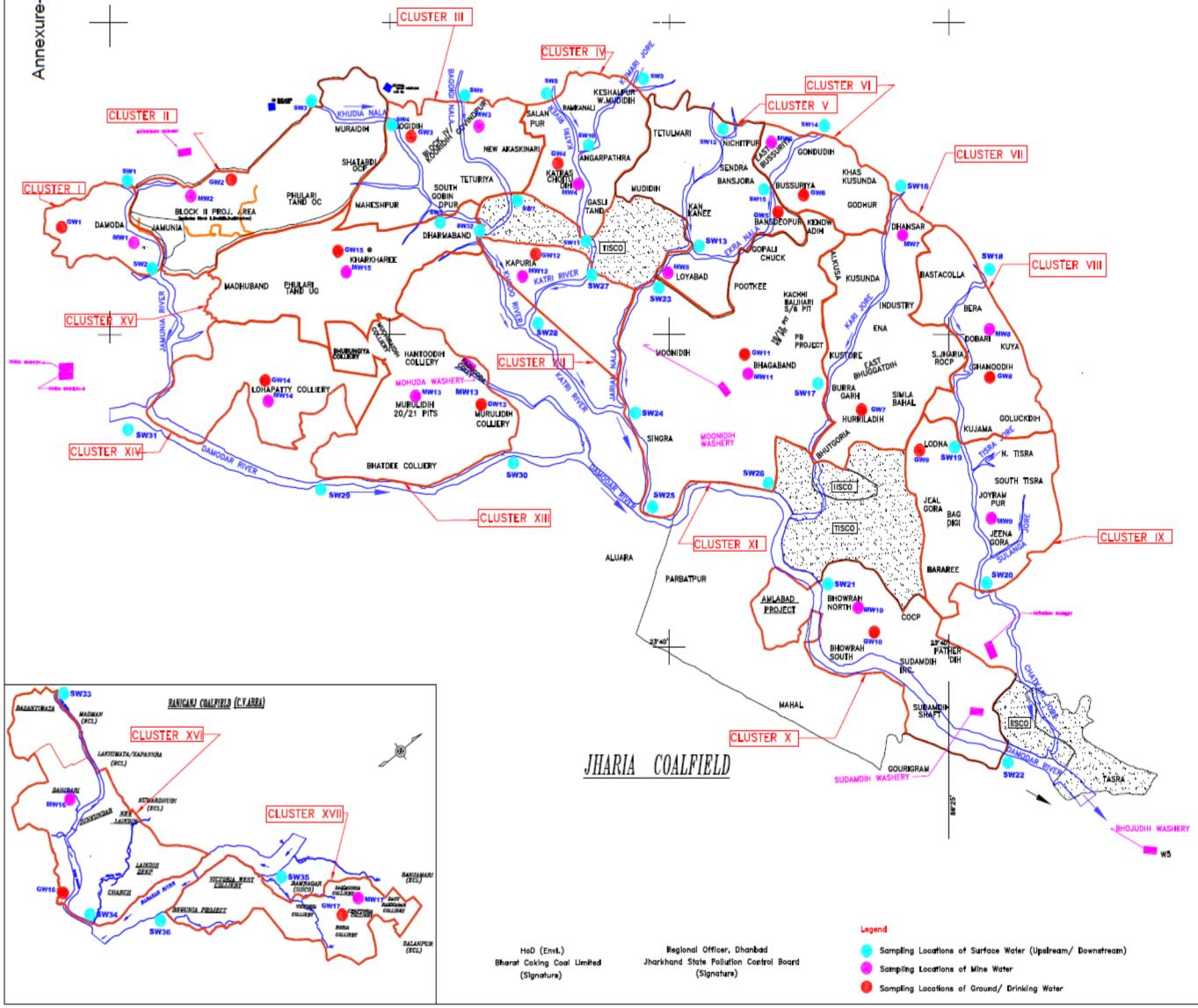
Encl-A/a.

(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 / Jore	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghuttway 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	Kaid River Kumari 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	Banajora Borewell
VII	SW16, SW17	Kari Jore	MW7	Dhansar UGP	GW7	Hurriladih
VIII	SW18, SW19	Kashi Jore	MW8	Dobari UGP	GW8	Ghanoodih
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	Jarlan Nala, Damodar River	MW11	Bhagaband h UGP	GW11	Bhagabandh
XII	SW27, SW28	Katri River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murulidih (20/21)	GW13	Murlidih
XIV	SW31, SW29	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Khudia Nala	MW15	Kharkharee UGP	GW15	Kharkharee
XVI	SW33, SW34	Khudia Nala	MW16	Dahibari OCP	GW16	Pahlibari Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chaptorja

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

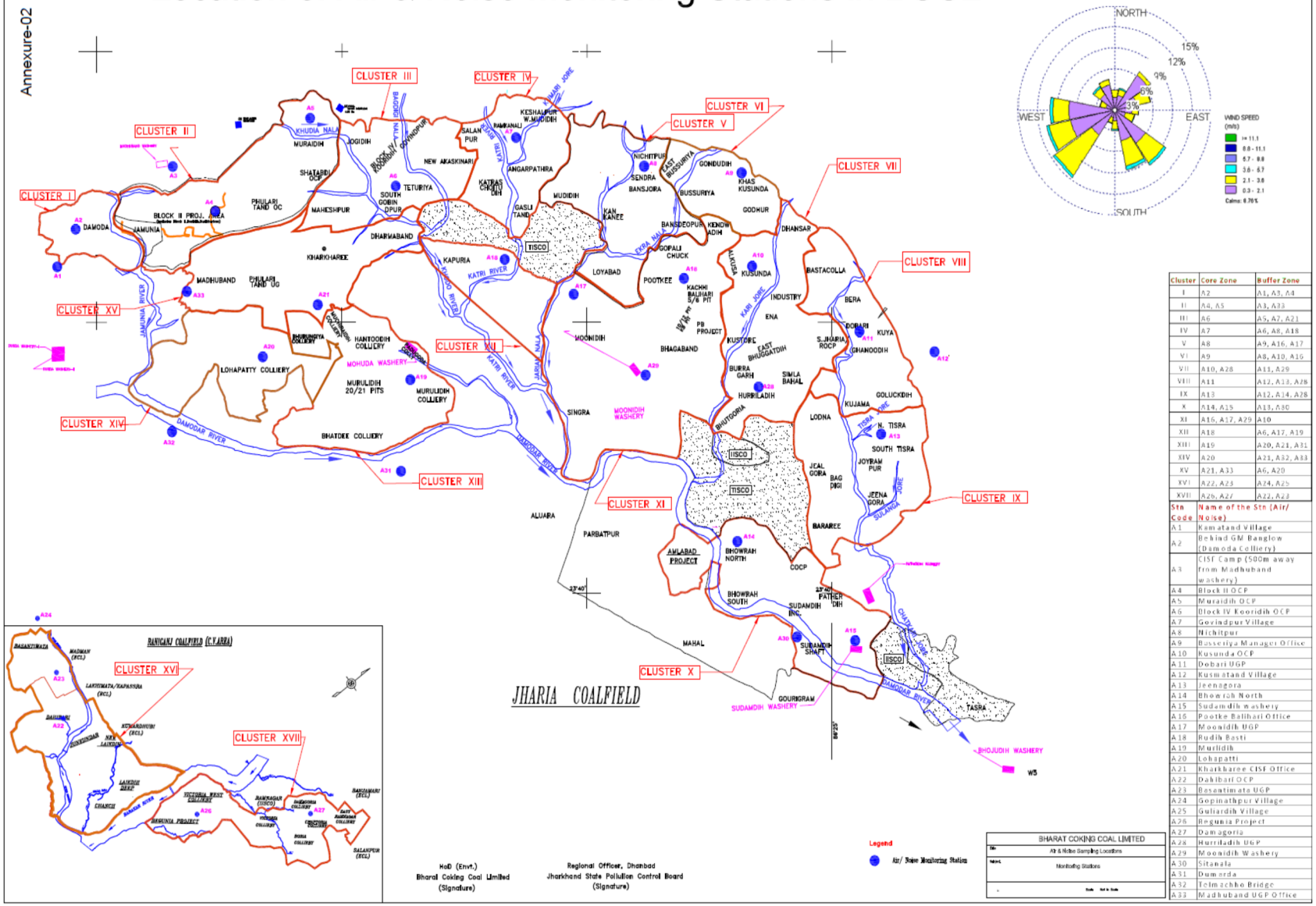
Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)

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, A33
III	A6	A5, A7, A21
IV	A7	A6, A8, A18
V	A8	A9, A16, A17
VI	A9	A8, A10, A16
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, A23	A24, A25
XVII	A26, A27	A22, A23

Stn Code	Name of the Stn (Air/ Noise)
A1	Kamatand 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	Basseriya 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	Murlidih
A20	Lohapatti
A21	Kharkharee CISF Office
A22	Dahibari OCP
A23	Basantimata UGP
A24	Gopinathpur Village
A25	Gutiardih Village
A26	Begunia Project
A27	Damagoria
A28	Hurriladih UGP
A29	Moonidih Washery
A30	Sitanala
A31	Dumerda
A32	Telmachho Bridge
A33	Madhuband UGP Office

BHARAT COKING COAL LIMITED
Air & Noise Sampling Locations
Monitoring Stations

Legend
Air/ Noise Monitoring Station

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

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

ANNEXURE- VI

Point XVI

cmpdi
A Mini Ratna Company

सेंट्रल माईन प्लानिंग एण्ड डिज़ाइन इंस्टीच्यूट लिमिटेड
(कोल इंडिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार की एक लोक उपक्रम)
पंजीकृत कार्यालय : गोन्दवाना प्लेस , काँके रोड , राँची - 834031 (झारखण्ड) भारत
क्षे त्रीय 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

Dy. (Envt.) Envt. Deptt. No. 402(1.2) Date 22/6/15 C.C.L

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 Awantanshu Sir
For compliance perpose.
23/6/15

फोन : (+91) 0326-2230850 फैक्स / Fax : (+91) 0326-2230500
वेब साइट / Website : www.cmpdi.co.in
ईमेल / Email : ri2@cmpdi.co.in

ANNEXURE-VIII

GROUNDWATER LEVEL & QUALITY REPORT

FOR CLUSTER OF MINES, BCCL

(Assessment year - 2017)

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

JHARIA COALFIELD AND RANIGANJ COALFIELD (PART)

For

(BHARAT COKING COAL LIMITED)

(A Subsidiary of Coal India Limited)

KOYLA BHAWAN (DHANBAD)

MARCH – 2018

Prepared by

Hydrogeology Department

Exploration Division

CMPDI (HQ), Ranchi

JOB NO – 200417005

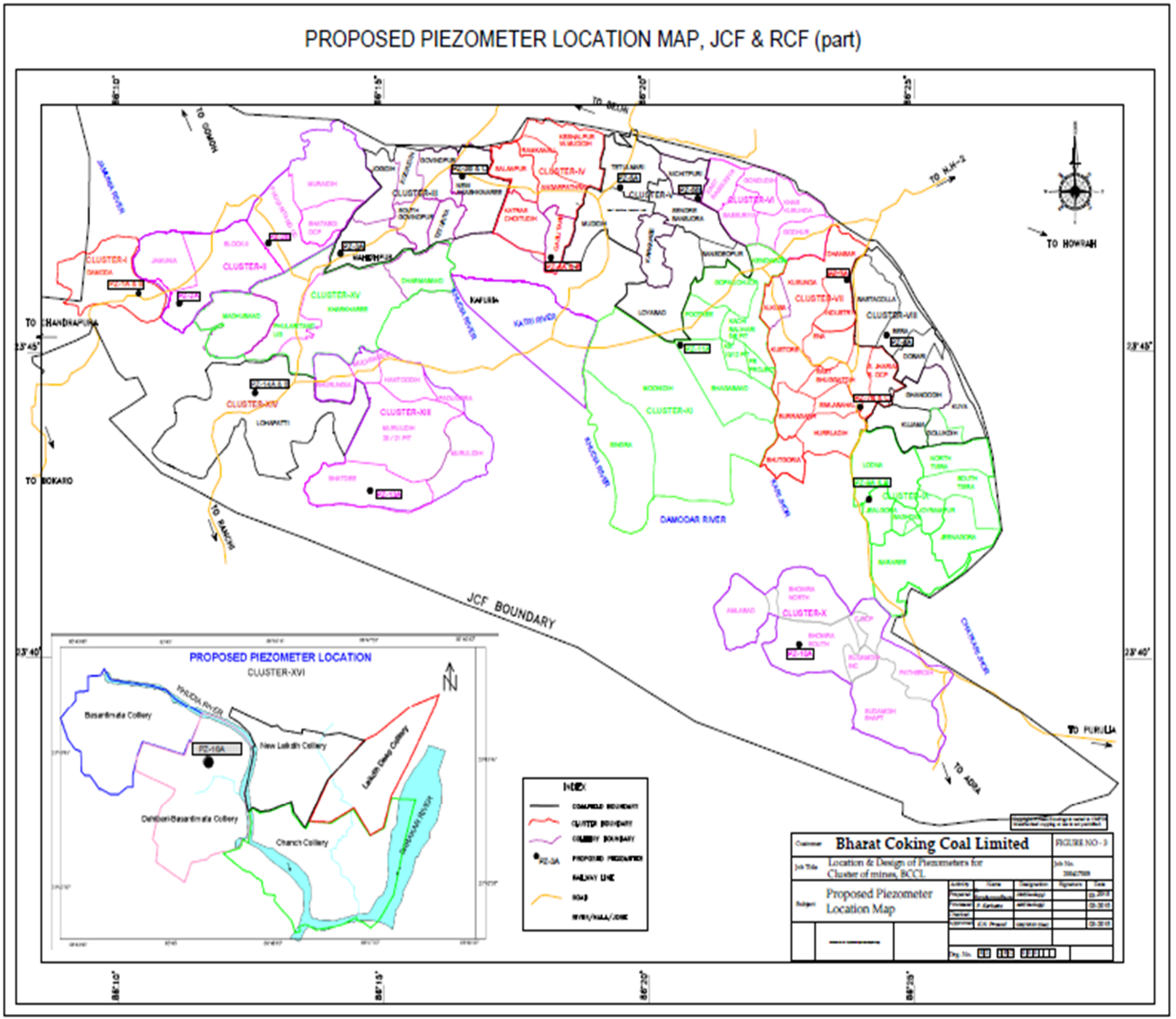
Cluster–XI consists of eight coal mines and one coal Washery namely; Gopalichak UG Project, Kachi Balihari 10/12 Pit UG, Pootkee Balihari Project UG, Bhagaband UG, Kendwadih UG (closed), Pootkee UG (closed), Kachi Balihari 5/6 Pit UG (closed) are under the administrative control of Pootkee Balihari Area and Moonidih UG & Moonidih Washery are under the administrative control of Western Jharia Area of BCCL. This Cluster of mines is located in central part of Jharia Coalfield in Dhanbad district of Jharkhand.

The present leasehold area of Cluster-XI is 3527.58 Ha. The area has an undulating topography with gentle slope towards south. The RL varies from 201 m to 166 m AMSL. Katri River, Jarian Nala, Ekra Jore and Kari Jore are controlling the drainage of the area. The area comes under the watershed of Katri River and Kari Jore.

5 hydrograph stations (**A-17, A-18, A-20, A-32 and D-34**) are located in the core zone of the mine area. Water level monitoring in these monitoring stations has been done in the months of February, April, August & November'2017 and the Ground water level data is enclosed in the table below:

Sl No.	Well No.	Location	Water below (bgl in meters)			
			Feb'17	Apr'17	Aug'17	Nov'17
1	A-17	Kachi Balihari	2.24	2.44	1.76	2.24
2	A-18	Baghaband	0.99	1.29	0.55	0.99
3	A-20	Gorbudih	3.17	4.27	2.17	1.77
4	A-32	Baludih	2.68	3.15	0.65	1.55
5	A-34	Bhatdih	8.45	12.45	2.50	4.45
Average GW (bgl)			***3.51***	***4.72***	***1.53***	***2.20***

Ground Water Level (in bgl) varies from 0.99 to 8.45 m during February, 1.29 to 12.45 m during April, 0.55 to 2.50 m during August and 0.99 to 4.45 m during November within the Core Zone of Cluster-XI area.


PROPOSED PIEZOMETER LOCATION MAP, JCF & RCF (part)
TO GOMOH
TO DELHI
TO NH-2
TO HOWRAH
TO CHANDRAPURA
TO BOKARO
TO RANCHI
TO PURULIA
TO ASRA
JCF BOUNDARY
DAMODAR RIVER
CLUSTER-I
CLUSTER-II
CLUSTER-III
CLUSTER-IV
CLUSTER-V
CLUSTER-VI
CLUSTER-VII
CLUSTER-VIII
CLUSTER-IX
CLUSTER-X
CLUSTER-XI
CLUSTER-XII
CLUSTER-XIV
CLUSTER-XV
PROPOSED PIEZOMETER LOCATION
CLUSTER-XVI
Basantimata Colliery
New Lakdih Colliery
Lakdih Deep Colliery
Dahibari Basantimata Colliery
Chanch Colliery
PZ-16A
INDEX
PROPOSED PIEZOMETER
RAILWAY LINE
ROAD
Bharat Coking Coal Limited
FIGURE NO - 3
Location & Design of Piezometers for Cluster of mines, BCCL
Proposed Piezometer Location Map

ANNEXURE-IX

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-X

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-XI

A. Training from (October'17 to March' 18)
(As provided by Vocational Training Dept.)

No of employees (Departmental & Contractual) received training in Cluster XI (October'17 to March' 18)	
Types of Training	**Numbers**
Refresher Training	194

B. PME report for cluster XI (P.B. Area) from October'17 to March' 18
(As provided by Safety Dept.)

PME from P.B. Area under cluster XI	
PME from P.B. Area	**Numbers**
Gopalichuck, Pootkee, Bhagabandh, KB 10-12, PBP colliery, Kustore regional hospital, etc.	642

ANNEXURE - VII

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

(FOR THE MONTH OCTOBER, 2017)

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

February, 2018

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CONTENTS

EXECUTIVE SUMMARY

1.0 Introduction

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

Bharat Coking Coal Limited (BCCL), a Subsidiary company of Coal India Limited is operating Underground and Opencast Mines in Jharia Coalfield (JCF) is a part of Gondwana Coalfields located in Dhanbad district of Jharkhand, the JCF is bounded by $23^0$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 MoEF&CC while granting environmental clearance of project, consent letter issued by the respective SPCB, and other statutory requirements.

2.0 Sampling location and rationale

2.1 Ambient air sampling locations

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

2.2 Water sampling stations

The Water sampling stations were selected for mine sump water.

2.3 Noise level monitoring locations

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

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM_{10}), Fine Particulate Matter ($PM_{2.5}$), Sulphur Di-oxide (SO_2) and Nitrogen Oxides (NO_X). Respirable Dust Samplers (RDS) and Fine Dust

Sampler ($PM_{2.5}$ sampler) were used for sampling of PM_{10}, SO_2, & NO_X and Fine Dust Sampler ($PM_{2.5}$ sampler) were used for sampling of $PM_{2.5}$ at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI, RI-II, DHanbad.

3.2 Water quality

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

3.3 Noise level monitoring

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

4.0 Results and interpretations

4.1 Air quality

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

4.2 Water quality

The test results indicate that the major parameters compared with MoEF&CC Gazette Notification No. GSR 742(E) dt. 25.09.2000 Standards for Coal Mines were within permissible limits.

4.3 Noise Level

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

INTRODUCTION

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

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

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

1.1 The Cluster-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, Forests and Climate Change (MoEF&CC) for a rated capacity 1.762 MTPA (normative) and 2.289 MTPA (peak) capacity of coal production vide letter no. J-11015/380/2010-IA.II (M) dated 06th February, 2013.

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

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

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

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

2.1.1 Ambient Air Quality Sampling Locations

I. CORE ZONE Monitoring Location

i) Pootkee Balihari Office (A16): Industrial Area

The location of the sampling station is 23º40.977' N 086º23.963'E. The sampler was placed at an elevated platform approx. 1.5m above ground level at 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 an elevated platform approx. 1.5m above ground level at project office.

iii) Moonidih Washery (A29): Industrial Area

The location of the sampling station is 23º44'31'' N & 086º26'13''E. The sampler was placed at a height of approx. 1.5m above ground level at Project office.

II. BUFFER ZONE Monitoring Location

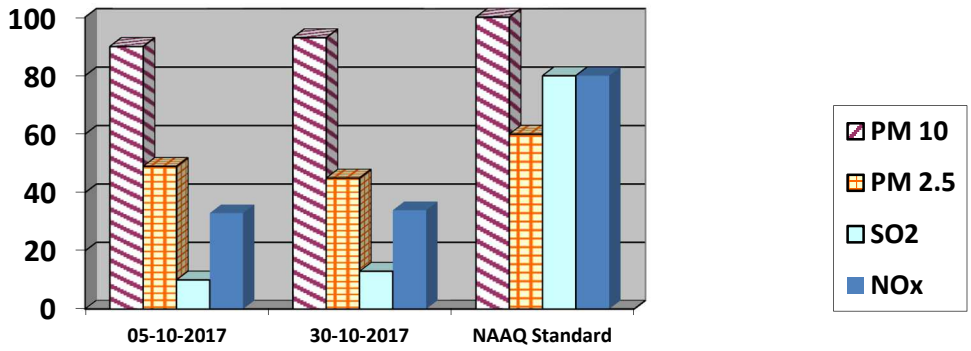
I) Kusunda OCP (A10)

The location of the sampling station is 23^0 46. 822' N & 86^0 24. 241' E. The sampler was placed at a height of approx. 1.5m above ground level at Safety Office.

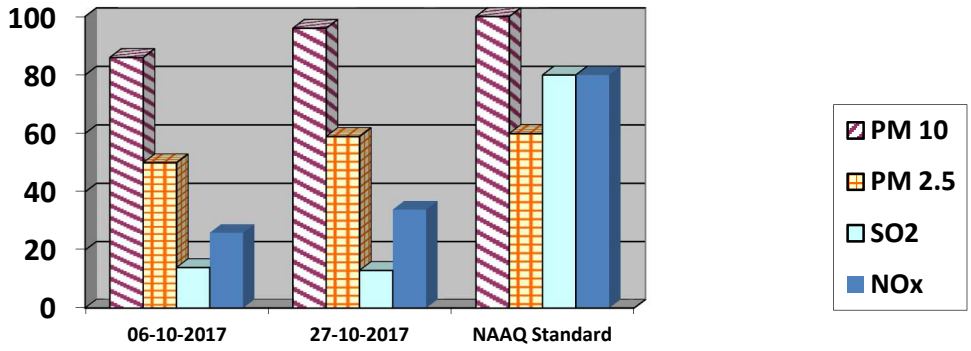
AMBIENT AIR QUALITY DATA

Cluster –XI, Bharat Coking Coal limited Month: **Oct - 2017** Year : **2017-18.**

StationName A16-Pootkee Balihari office		Zone: Core		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_x**
1	05-10-2017	90	49	10	33
2	30-10-2017	93	45	13	34
	NAAQ Standard	100	60	80	80



StationName: A17- Moonidih UGP		Zone: Core		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_x**
1	06-10-2017	86	50	14	26
2	27-10-2017	96	59	13	34
	NAAQ Standard	100	60	80	80

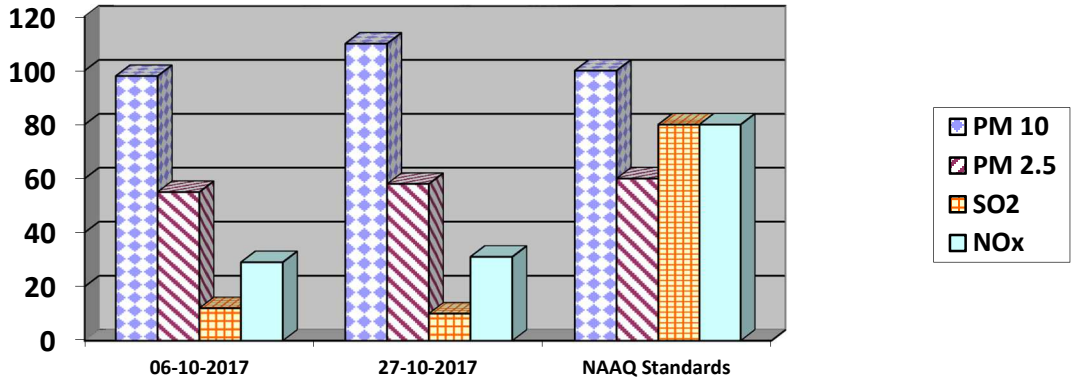


Analysed By
JSA/SA/SSA

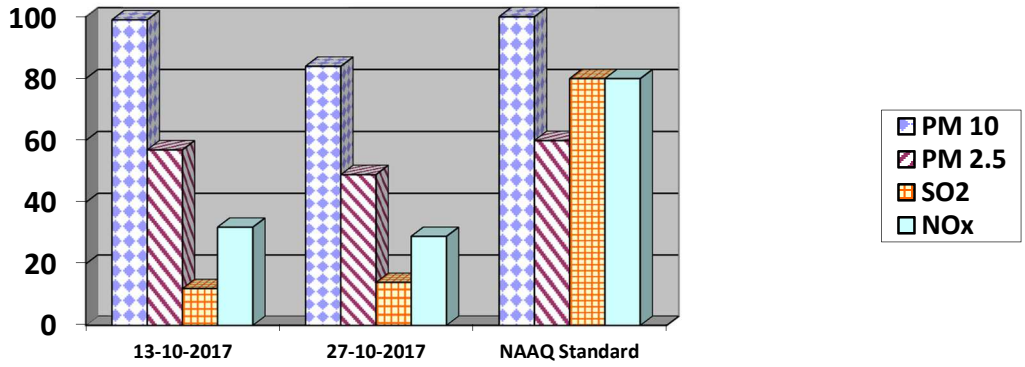
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

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

Station Name: A29-Moonidih Washery		Zone: Core		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	06-10-2017	98	55	12	29
2	27-10-2017	110	58	10	31
	NAAQ Standards	100	60	80	80



StationName:Kusunda OCP (A10)		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO_2	NO_x
1	13-10-2017	99	57	12	32
2	27-10-2017	84	49	14	29
	NAAQ Standard	100	60	80	80



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

Analysed By
JSA/SA/SSA

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

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

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. – II**)

i) Mine Discharge of 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.

3.2 Methodology of sampling and analysis

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

3.3 Results & Interpretations

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

WATER QUALITY DATA

(EFFLUENT WATER- FOUR PARAMETERS)

Name of the Cluster: **Cluster-XI**		Month: **October, 2017**	Name of the Station: **Mine Discharge of Bhagabandh**	
Sl. No.	**Parameters**	**MW11** First Fortnight 05.10.2017	**MW11** Second Fortnight 30.10.2017	**As per MOEF General Standards for schedule VI**
1	Total Suspended Solids	44	28	*100 (Max)*
2	pH	7.80	7.64	*5.5 - 9.0*
3	Oil & Grease	<2.0	<2.0	*10 (Max)*
4	COD	28	36	*250 (Max)*

All values are expressed in mg/lit except pH.

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JSA/SA/SSA

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Lab In Charge
RI-2, CMPDI, Dhanbad

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

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites

1. **Pootkee Balihari Office (N16)**
2. **Moonidih UGP (N17)**
3. **Moonidih Washery (N29)**
4. **Kusunda OCP (N10)**

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).

4.2 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of 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 Project: **Cluster -XI**			Month: **October, 2017**		
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**	05.10.2017	64.5	*75*
2	**Moonidih UGP (N17)**	**Industrial area**	06.10.2017	61.4	*75*
3	**Moonidih Washery (N29)**	**Industrial area**	06.10.2017	60.5	*75*
4	**Kusunda OCP (N10)**	**Industrial area**	13.10.2017	63.4	*75*
5	**Pootkee Balihari Office (N16)**	**Industrial area**	30.10.2017	62.2	*75*
6	**Moonidih UGP (N17)**	**Industrial area**	27.10.2017	61.8	*75*
7	**Moonidih Washery (N29)**	**Industrial area**	27.10.2017	60.3	*75*
8	**Kusunda OCP (N10)**	**Industrial area**	27.10.2017	62.5	*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.**

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JSA/SA/SSA

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

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

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

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
III Coal mines located in the coal fields of • Jharia • Raniganj • Bokaro	Suspended Particulate Matter (SPM)	Annual Average * 24 hours **	500 µg/m^3 700 µg/m^3	- High Volume Sampling (Average flow rate not less than 1.1
	Respirable Particulate Matter (size less than 10 µm) (RPM)	Annual Average * 24 hours **	250 µg/m^3 300 µg/m^3	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide (SO_2)	Annual Average * 24 hours **	80 µg/m^3 120 µg/m^3	1.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.

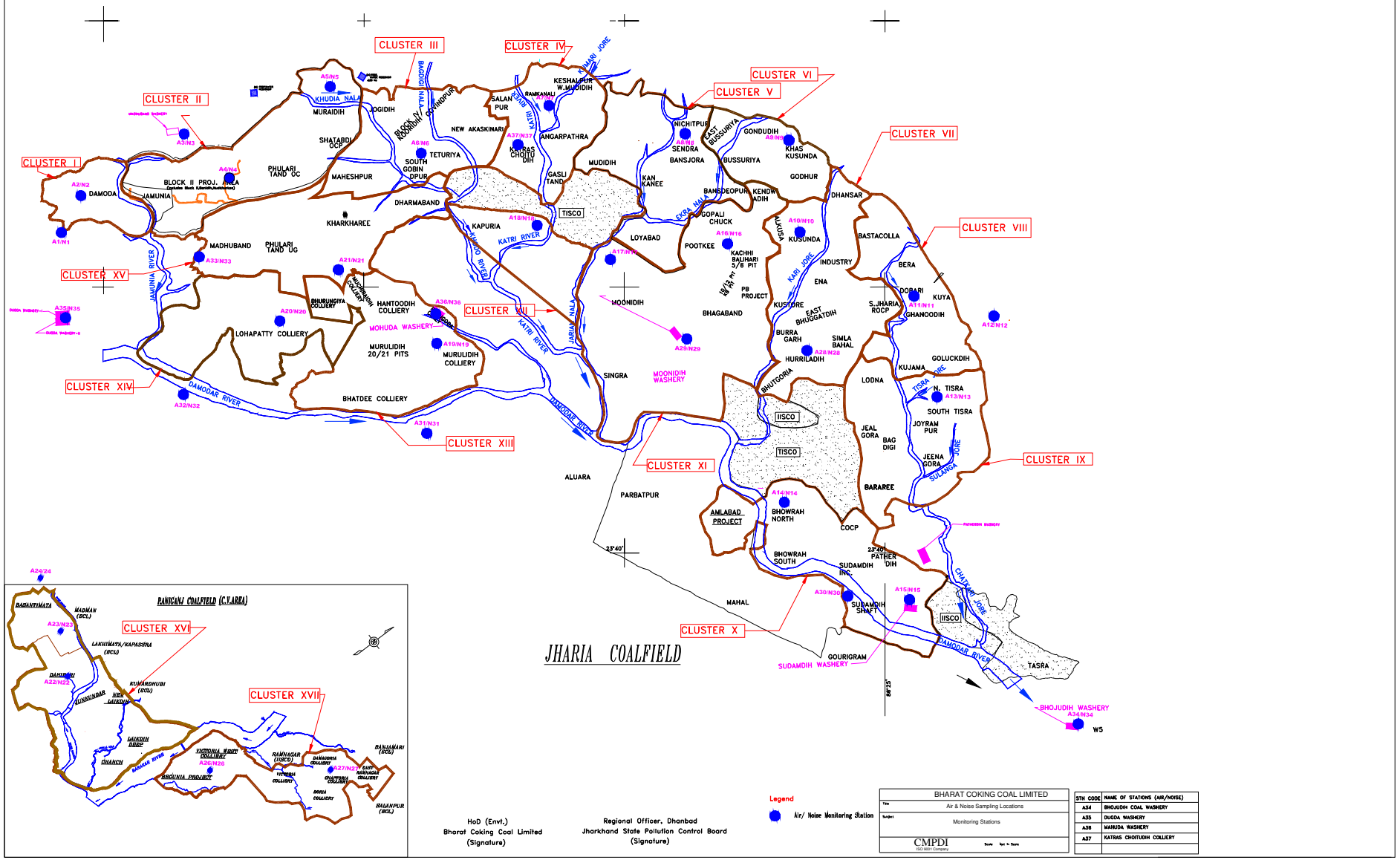
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO_2), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet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

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

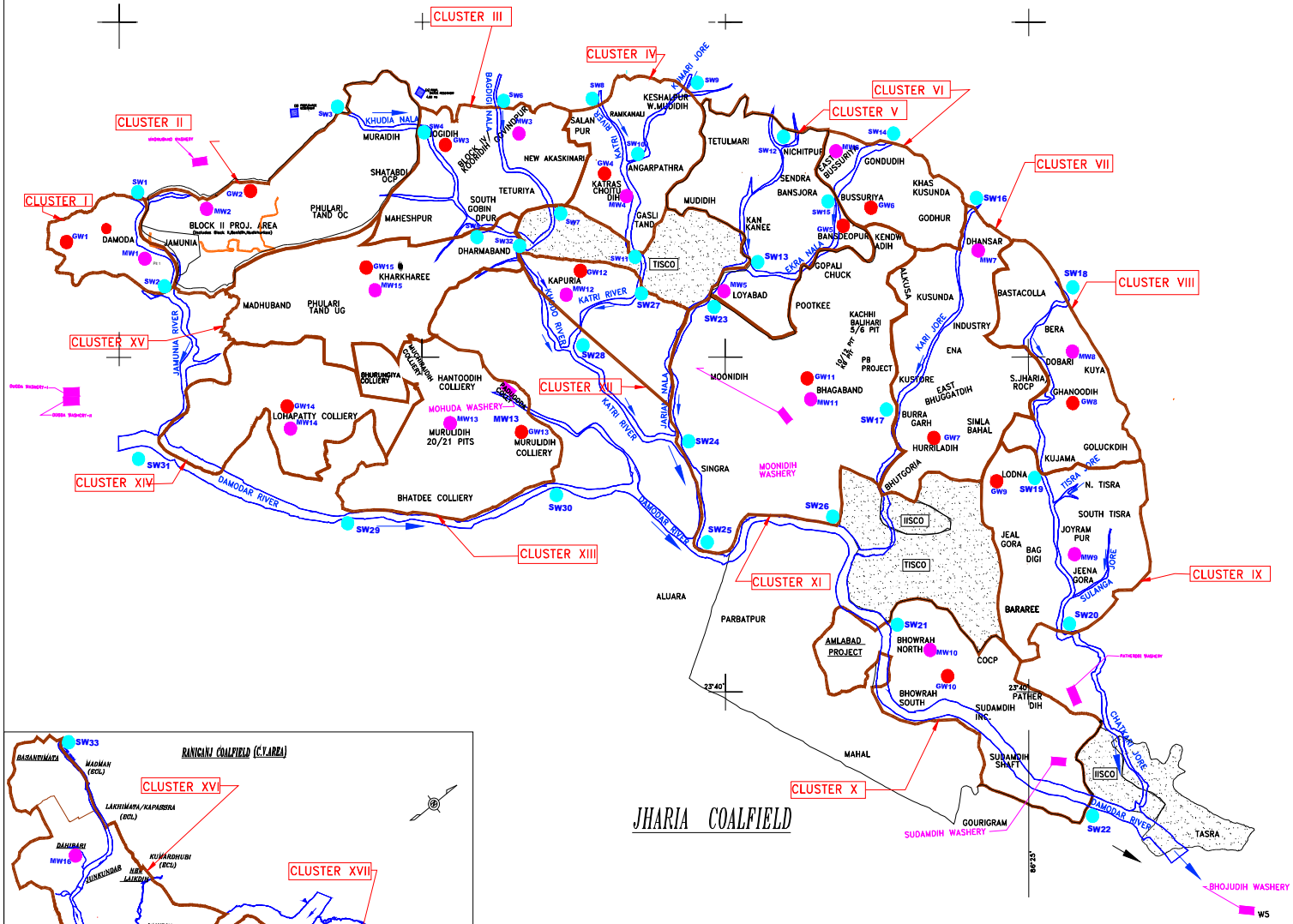
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

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

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

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 h 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

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

Customer: BHARAT COKING COAL LIMITED
Title: WATER SAMPLING LOCATIONS
Subject: MONITORING STATIONS
CMPDI
ISO 9001 Company
Scale: Not to Scale

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

(FOR THE MONTH NOVEMBER, 2017)

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

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CONTENTS

EXECUTIVE SUMMARY

1.0 Introduction

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

Bharat Coking Coal Limited (BCCL), a Subsidiary company of Coal India Limited is operating Underground and Opencast Mines in Jharia Coalfield (JCF) is a part of Gondwana Coalfields located in Dhanbad district of Jharkhand, the JCF is bounded by $23^0$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 MoEF&CC while granting environmental clearance of project, consent letter issued by the respective SPCB, and other statutory requirements.

2.0 Sampling location and rationale

2.1 Ambient air sampling locations

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

2.2 Water sampling stations

The Water sampling stations were selected for mine sump water.

2.3 Noise level monitoring locations

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

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM_{10}), Fine Particulate Matter ($PM_{2.5}$), Sulphur Di-oxide (SO_2) and Nitrogen Oxides (NO_X). Respirable Dust Samplers (RDS) and Fine Dust

Sampler ($PM_{2.5}$ sampler) were used for sampling of PM_{10}, SO_2, & NO_X and Fine Dust Sampler ($PM_{2.5}$ sampler) were used for sampling of $PM_{2.5}$ at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI, RI-II, DHanbad.

3.2 Water quality

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

3.3 Noise level monitoring

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

4.0 Results and interpretations

4.1 Air quality

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

4.2 Water quality

The test results indicate that the major parameters compared with MoEF&CC Gazette Notification No. GSR 742(E) dt. 25.09.2000 Standards for Coal Mines were within permissible limits.

4.3 Noise Level

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

INTRODUCTION

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

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

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

1.1 The Cluster-XI is in the Western & Southern part of the Jharia coalfield. It includes a group of 5 Mines (viz. Gopalichak UG Mine**,** KachhiBalihari 10/12 Pit UG Mine**,** PB UG Project, Bhagabandh UG Mine, MoonidihUG 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 &DamodarRiver.

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, Forests and Climate Change (MoEF&CC) for a rated capacity 1.762 MTPA (normative) and 2.289 MTPA (peak) capacity of coal production vide letter no. J-11015/380/2010-IA.II (M) dated 06thFebruary, 2013.

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

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

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

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

2.1.1 Ambient Air Quality Sampling Locations

I. CORE ZONE Monitoring Location

i) Pootkee Balihari Office (A16): Industrial Area

The location of the sampling station is 23°40.977' N 086°23.963'E. The sampler was placed at an elevated platform approx. 1.5m above ground level at 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 an elevated platform approx. 1.5m above ground level at project office.

iii) Moonidih Washery (A29): Industrial Area

The location of the sampling station is 23°44'31'' N & 086°26'13''E. The sampler was placed at a height of approx. 1.5m above ground level at 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 a height of approx. 1.5m above ground level at Safety Office.

AMBIENT AIR QUALITY DATA

Cluster –XI,Bharat Coking Coal limited Month:**Nov -2017** Year : **2017-18.**

StationNameA16-Pootkee Balihari office		Zone: Core		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_x**
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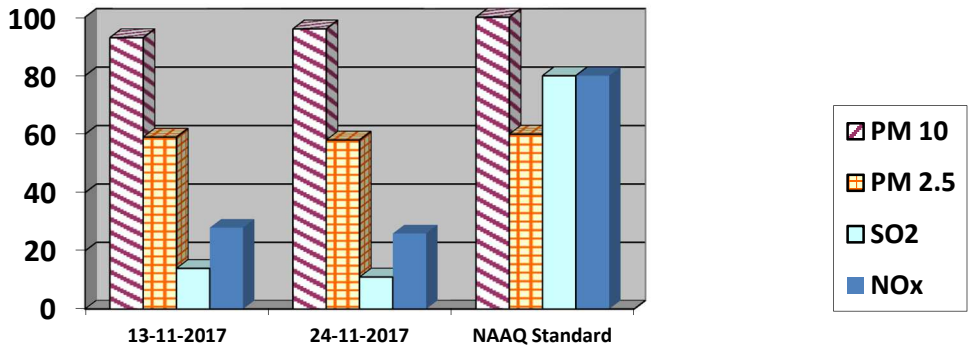

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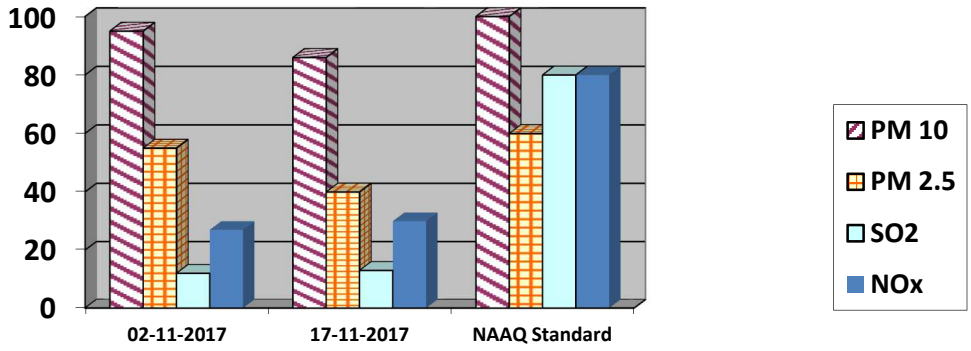

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Approved By
HOD(Mining/Environment)
RI-2, CMPDI, Dhanbad

Station Name:A29-Moonidih Washery		Zone: Core		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
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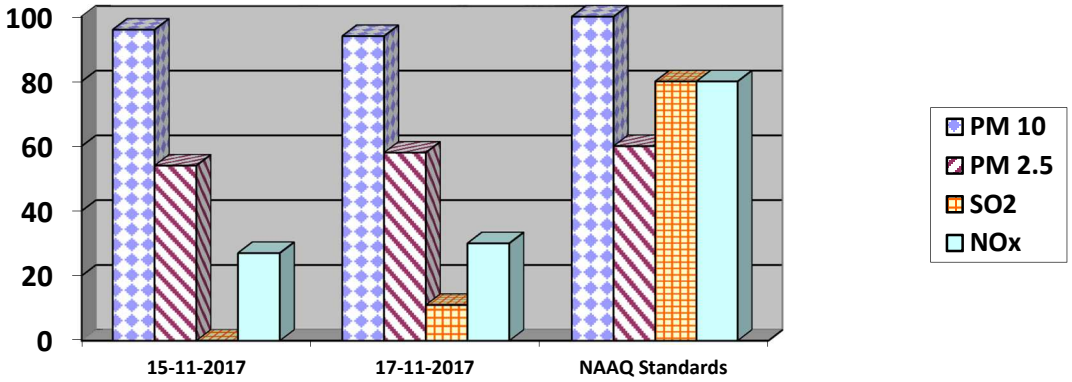

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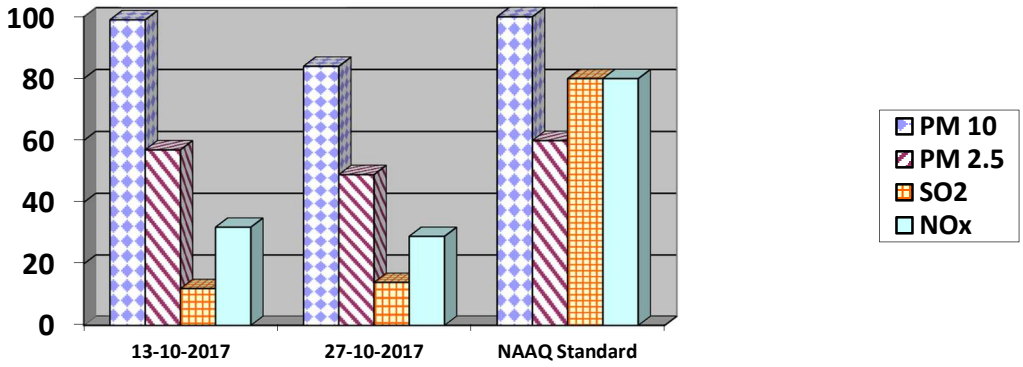

- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*

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

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.

3.2 Methodology of sampling and analysis

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

3.3 Results & Interpretations

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

WATER QUALITY DATA

(EFFLUENT WATER- FOUR PARAMETERS)

Name of the Cluster: **Cluster-XI**		Month: **NOVEMBER, 2017**	Name of the Station: **Mine Discharge of Bhagabandh**	
Sl. No.	**Parameters**	**MW11** First Fortnight	**MW11** Second Fortnight	**As per MOEF General Standards for schedule VI**
		02-11-2017	27-11-2017	
1	Total Suspended Solids	28	24	*100 (Max)*
2	pH	8.00	7.97	*5.5 - 9.0*
3	Oil & Grease	<2.0	<2.0	*10 (Max)*
4	COD	32	36	*250 (Max)*

All values are expressed in mg/lit except pH.

Analysed By
JSA/SA/SSA

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

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

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites

1. **Pootkee Balihari Office (N16)**
2. **Moonidih UGP (N17)**
3. **Moonidih Washery (N29)**
4. **Kusunda OCP (N10)**

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).

4.2 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of 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 Project: **Cluster -XI**			Month: **NOVEMBER, 2017**		
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**	13-11-2017	63.7	*75*
2	**Moonidih UGP (N17)**	**Industrial area**	02-11-2017	62.5	*75*
3	**Moonidih Washery (N29)**	**Industrial area**	15-11-2017	61.4	*75*
4	**Kusunda OCP (N10)**	**Industrial area**	06-11-2017	63.6	*75*
5	**Pootkee Balihari Office (N16)**	**Industrial area**	24-11-2017	62.7	*75*
6	**Moonidih UGP (N17)**	**Industrial area**	17-11-2017	60.0	*75*
7	**Moonidih Washery (N29)**	**Industrial area**	17-11-2017	63.2	*75*
8	**Kusunda OCP (N10)**	**Industrial area**	15-11-2017	65.1	*75*

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

*** Day Time: 6.00 AM to 10.00 PM.**

Analysed By
JSA/SA/SSA

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Lab In Charge
RI-2, CMPDI, Dhanbad

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

Ambient Air Quality Standards for Jharia Coal Field

As per the Environment (Protection) Amendment Rules, 2000 notified vide notification G.S.R. 742(E), dated 25.9.2000.

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

Note:

* Annual Arithmetic mean for the measurements taken in a year, following the guidelines for frequency of sampling laid down in clause2.

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

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

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

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

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

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

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

(FOR THE MONTH DECEMBER, 2017)

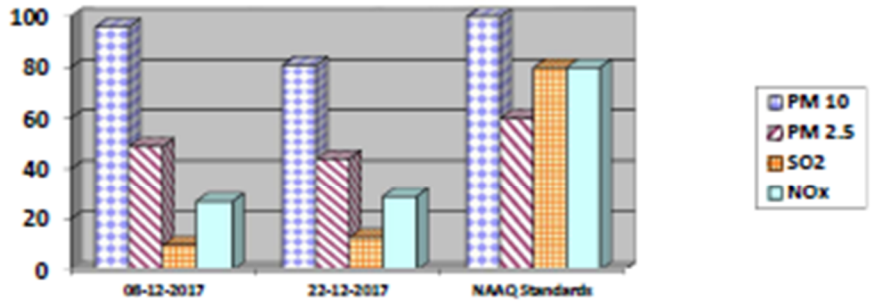
E. C. no. J-11015/77/2011-IA.II (M) dated 26.08.2013.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

AMBIENT AIR QUALITY DATA

Cluster –XI, Bharat Coking Coal limited Month:**Dec-2017** Year : **2017-18.**

Station Name: A16 Pootki Balihari office		Zone: Core		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO2**	**NOx**
1	08-12-2017	96	49	10	27
2	22-12-2017	81	44	13	29
	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(µg/m³)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

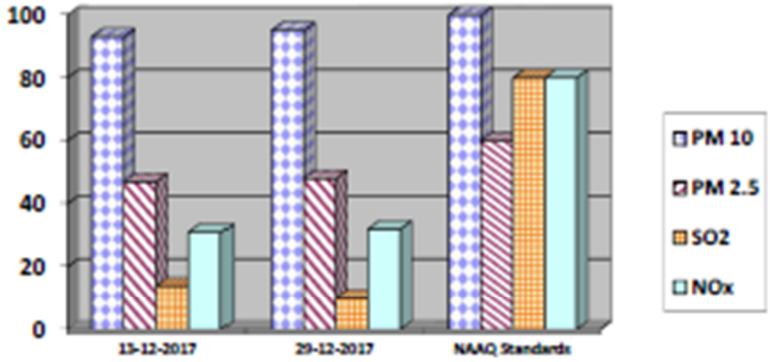
- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*

Analysed By
JSA/SA/SSA

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

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

Station Name: A17 – Moonidih UGP		Zone: Core		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	13-12-2017	93	47	14	31
2	29-12-2017	95	48	10	32
	NAAQ Standards	100	60	80	80



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

Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration(µg/m³)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

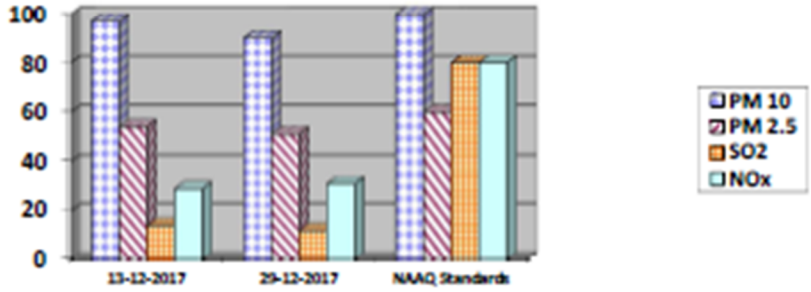
- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*

Analysed By
JSA/SA/SSA

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

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

Station Name: Moonidih Washery (A29)		Zone: Core		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	13-12-2017	97	54	14	29
2	29-12-2017	90	51	12	31
	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(µg/m³)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

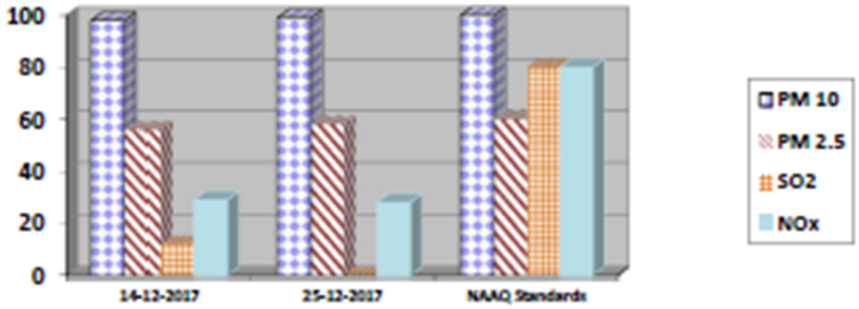
- *All values are expressed in microgram per cubic meter.*
- *24 hours duration*

Analysed By
JSA/SA/SSA

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

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

Station Name: A10 – Kusunda OCP		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	14-12-2017	98	56	12	29
2	25-12-2017	99	58	<10	28
	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(µg/m³)	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

Note:

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

Analysed By
JSA/SA/SSA

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

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

WATER QUALITY MONITORING

3.1 Location of sampling sites

(Refer **Plate No. – II**)

i) **Mine Discharge of 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.

3.2 Methodology of sampling and analysis

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

3.3 Results & Interpretations

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

WATER QUALITY DATA

(EFFLUENT WATER- FOUR PARAMETERS)

Name of the Cluster: **Cluster-XI**		Month: **DECEMBER, 2017**	Name of the Station: **Mine Discharge of Bhagabandh**	
Sl. No.	**Parameters**	**MW11** First Fortnight	**MW11** Second Fortnight	**As per MOEF General Standards for schedule VI**
		09.12.2017	22.12.2017	
1	Total Suspended Solids	28	30	*100 (Max)*
2	pH	7.43	8.04	*5.5 - 9.0*
3	Oil & Grease	<2.0	<2.0	*10 (Max)*
4	COD	32	36	*250 (Max)*

All values are expressed in mg/lit except pH.

Analysed By
JSA/SA/SSA

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

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

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites

1. **Pootkee Balihari Office (N16)**
2. **Moonidih UGP (N17)**
3. **Moonidih Washery (N29)**
4. **Kusunda OCP (N10)**

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).

4.2 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of 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 Project: **Cluster -XI**			Month: **DECEMBER, 2017**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)LEQ**	****Permissible Limit of Noise level in dB(A)***
1	Pootki	**Industrial area**	08-12-2017	61.8	*75*
2	Pootki	**Industrial area**	22-12-2017	63.3	*75*
3	Moonidih UGP	**Industrial area**	13-12-2017	60.9	*75*
4	Moonidih UGP	**Industrial area**	29-12-2017	62.4	*75*
5	Kusunda	**Industrial area**	14-12-2017	64.2	*75*
6	Kusunda	**Industrial area**	25-12-2017	61.7	*75*
7	Moonidih Washery	**Industrial area**	13-12-2017	62.6	*75*
8	Moonidih Washery	**Industrial area**	29-12-2017	64.5	*75*

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

*** Day Time: 6.00 AM to 10.00 PM.**

Analysed By
JSA/SA/SSA

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

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

WATER QUALITY REPORT OF BHARAT COKING COAL LIMITED, CLUSTER – XI

(FOR THE Q.E. DEC 2017)

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

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD: **Q.E. DEC 2017.**

Type of Sample: Mine Discharge Water Sample Name of Mine KB 10/12 Pit

Testing Protocol: As per DW Standards (IS- 10500) Date of Sampling: 23-Dec -17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	5	1	5	APHA, 22nd Edition ,PtCo. Method
3	Calcium (as Ca), mg/l, Max	48.9	1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	46	2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.051	0.001	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.65	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	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	0.13	0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	9.42	0.5	45	APHA, 22nd Edition, UV-Spectrophotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	8.06	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 Antipyrine
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	86	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	137	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	695	25.00	500	IS 3025 / 16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	447	4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	1.0	1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.044	0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	<0.005	0.005	0.02	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

All values are expressed in mg/lit unless specified.

Analysed By
JSA/SA/SSA

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

21/12/17

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

WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD: **Q.E. DEC 2017.**

Type of Sample: Mine Discharge Water Sample
Testing Protocol: As per DW Standards (IS- 10500)

Name of Mine GOPALICHUCK
Date of Sampling: 25-Dec-17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmin
2	Colour,in Hazen Units	5	1	5	APHA, 22nd Edition ,Pt-Co. Method
3	Calcium (as Ca), mg/l, Max	55.4	1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	42	2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.014	0.001	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.47	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	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	0.046	0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	8.97	0.5	45	APHA, 22nd Edition, UV-Spectrophotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	8.32	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-A mino Antipyrine
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	98	2.00	200	APHA, 22nd Edition, Turbidity
17	Taste	Acceptable	Qualitative	Acceptable	APHA, 22nd Edition, Tatic
18	Total Alkalinity (c_aco_3), mg/l, Max	104	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	625	25.00	500	IS 3025/16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	385	4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	3.0	1.0	1	IS-3025/ 10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.034	0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	0.014	0.005	0.02	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

All values are expressed in mg/lt unless specified.

Analysed By
JSA/SA/SSA

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

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

WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD: **Q.E. DEC 2017.**

Type of Sample: Mine Discharge Water Sample Name of Mine GOPALICHUK HYDROMINING PIT

Testing Protocol: As per DW Standards (IS- 10500) Date of Sampling: 30-Nov.-17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour,in Hazen Units	1	1	5	APHA, 22nd Edition ,Pt-Co. Method
3	Calcium (as Ca), mg/l, Max	52.3	1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	32	2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.007	0.001	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.78	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	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	0.026	0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	6.50	0.5	45	APHA, 22nd Edition, UV-Spectrophotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025/05:1983, R-2012, Qualitative
13	pH value	7.88	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 Antipyrine
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	74	2.00	200	APHA, 22nd Edition, Turbidity
17	Taste	Acceptable	Qualitative	Acceptable	APHA, 22nd Edition, Tastic
18	Total Alkalinity (C_aCO_3), mg/l, Max	106	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	653	25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (C_aCO_3), mg/l, Max	387	4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	3.0	1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.062	0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	<0.005	0.005	0.02	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

All values are expressed in mg/lit unless specified.

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WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD: **Q.E. DEC 2017**

Type of Sample: Mine Discharge Water Sample Name of Mine PUTKEE COLLIERY

Testing Protocol: As per DW Standards (IS- 10500) Date of Sampling: 14-Dec-17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmin
2	Colour,in Hazen Units	1	1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	44.1	1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	56	2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.014	0.001	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.63	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	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	0.038	0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	14.48	0.5	45	APHA, 22nd Edition, UV-Spectrophotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.71	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 Antipyrine
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	85	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	94	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	698	25.00	500	IS 3025 / 16:1984 R : 2006, Gravimetric
22	Total Hardness (c_aco_3), mg/l, Max	434	4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	3.0	1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.035	0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	<0.005	0.005	0.02	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD:**Q.E. DEC 2017**

Type of Sample: Mine Discharge Water Sample Name of Mine P.B.PROJECT

Testing Protocol: As per DW Standards (IS- 10500) Date of Sampling: 09-Dec-17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmine
2	Colour ,in Hazen Units	2	1	5	APHA, 22nd Edition ,Pt-Co. Method
3	Calcium (as Ca), mg/l, Max	76.4	1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	52	2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.008	0.001	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.54	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	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	0.029	0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	17.85	0.5	45	APHA , 22nd Edition, UV-Spectrophotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.54	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-A mino Antipyrine
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	112	2.00	200	APHA, 22nd Edition, Turbidity
17	Taste	Acceptable	Qualitative	Acceptable	APHA, 22nd Edition, Tastc
18	Total Alkalinity (C_aCO_3), mg/l, Max	91	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	687	25.00	500	IS 3025/16:1984 R : 2006, Gravimetric
22	Total Hardness (C_aCO_3), mg/l, Max	435	4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity , NTU, Max	3.0	1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.049	0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	0.007	0.005	0.02	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD: **Q.E. DEC 2017.**

Type of Sample: Mine Discharge Water Sample Name of Mine MOONIDIH

Testing Protocol: As per DW Standards (IS- 10500) Date of Sampling: 09-Dec-17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmin
2	Colour,in Hazen Units	4	1	5	APHA, 22nd Edition, Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	38.9	1.60	75	IS-3025(40):1991, EDTA
4	Chloride (as Cl), mg/l, Max	52.0	2.00	250	IS-3025(32):1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.014	0.001	0.05	IS 3025(42) : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.72	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	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	0.0035	0.02	0.1	IS-3025(59):2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	10.37	0.5	45	APHA, 22nd Edition, UV-Spectrophotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	8.01	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 Antipyrine
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	90	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	124	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	686	25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (C_aCO_3), mg/l, Max	416	4.00	200	IS-3025(21):1983, R-2002, EDTA
23	Turbidity, NTU, Max	4.0	1.0	1	IS-3025(10):1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.009	0.01	5.0	IS 3025(49) : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	0.014	0.005	0.02	IS 3025(49) : 1994, R : 2009, AAS-Flame

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WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD: **Q.E. DEC 2017.**

Type of Sample: Mine Discharge Water Sample Name of Mine SOUTH BALIHARI UG

Testing Protocol: As per DW Standards (IS- 10500) Date of Sampling: 09-Dec-17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmin
2	Colour,in Hazen Units	3	1	5	APHA, 22nd Edition ,PtCo. Method
3	Calcium (as Ca), mg/l, Max	56.7	1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	42	2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.016	0.001	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.74	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	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	0.053	0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	13.23	0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.71	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 Antipyrin
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	96	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	132	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	632	25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (C_aCO_3), mg/l, Max	368	4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	4.0	1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.045	0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	0.014	0.005	0.02	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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WATER QUALITY

(MINE EFFLUENT- 25 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Cluster : **Cluster -XI** PERIOD: **Q.E. DEC 2017.**

Type of Sample: Mine Discharge Water Sample Name of Mine KENDUADIH EB SECTION UG

Testing Protocol: As per DW Standards (IS- 10500) Date of Sampling: 14-Dec-17

Sl. No	Parameter	Test Result	Detection Limit	Permissible Limit	Method of Testing
1	Boron (as B), mg/l, Max	<0.20	0.20	0.5	APHA, 22nd Edition ,Carmin
2	Colour,in Hazen Units	5	1	5	APHA, 22nd Edition ,PC-Co. Method
3	Calcium (as Ca), mg/l, Max	84.8	1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	72	2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.001	0.001	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.28	0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	<0.02	0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	0.61	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	8.07	0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
12	Odour	Agreeable	Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.92	2.5	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.001	0.001	0.001	APHA , 22nd Edition,4-Amino Antipyrine
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	49	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	92	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	526	25.00	500	IS 3025 / 16:1984 R : 2006, Gravimetric
22	Total Hardness (C_aCO_3), mg/l, Max	388	4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	0.3	1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	<0.01	0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel as Ni, mg/l Max	<0.005	0.005	0.02	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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WATER QUALITY

(SURFACE WATER- 17 PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2017-18.**

Name of the Project : **Cluster - XI** Period: **Q.E. DEC 2017.**

Stations: **Date of Sampling:**

1. Upstream in Jarian Nala SW-23 — 16/12/2017
2. Downstream in Jarian Nala SW-24 — 16/12/2017
3. Upstream in Damodar river SW-25 — 11/12/2017
4. Downstream in Damodar river SW-26 — 11/12/2017

Sl. No	Parameter	Sampling Stations				Detection Limit	IS:2296– 1982 (Inland surface water) Class C	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	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	3.0	2.4	2.6	3.0	2.00	300	IS 3025/44: 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	colourless	colourless	colourless	colourless	Qualitative	300	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	30	44	54	50	2.00	600	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	0.12	0.07	0.13	0.04	0.001	1.5	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	4.4	3.8	3.4	4.2	0.10	4	IS 3025/381989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.46	0.67	0.49	0.53	0.02	1.5	APHA, 22nd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01	<0.01	<0.01	0.01	0.05	APHA, 22nd Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	0.07	0.08	0.16	0.09	0.06	50	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	0.1	APHA, 22nd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	13.95	14.19	7.43	11.23	0.50	50	APHA, 22nd Edition, UV-Spectrophotometric
12	pH value	8.25	8.10	8.20	8.19	2.5	6.5-8.5	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	5.0	APHA, 22nd Edition 4-Amino Antipyrin
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	0.05	APHA, 22nd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	177	133	69	57	2.00	400	APHA, 22nd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	659	683	375	343	25.00	1500	IS 3025/16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	0.07	0.20	0.21	0.08	0.01	5.0	IS 3025/49 : 1994, R : 2009, AAS-Flame

All values are expressed in mg/lit unless specified.

Analysed By
JSA/SA/SSA

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

21/12/17

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

ANNEXURE - X

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.