भारत कोकिंग कोल लिमिटेड
(कोल इण्डिया लिमिटेड का एक अंग)
ऐक मिनीरतन कम्पनी
क्षेत्र त. – 7

Bharat Coking Coal Limited
(A Subsidiary of Coal India Limited)
A Miniratna Company
P.B. Area No. VII
OFFICE OF THE GENERAL MANAGER
P.O. – Kusunda, Dhanbad. Pin-828116
CIN : U10101JH1972GOI000918

By Speed Post

Ref. No.: BCCL/PBA/A.G.M/2017-18/97 Date: - 29-05-2017

To,
The Director
Ministry of Environment & forest and Climate Change
Regional Office (ECZ), Bungalow No. A-2
Shyamali Colony, Ranchi- 834002

Subject: - Six Monthly EC Compliance report for the period from October 2016 to March 2017 in respect of Cluster VII group of Mines.

Ref No.: **J-11015/238/2010-1A. II (M) dated 06.02.2013**

Dear Sir,

Kindly find enclosed herewith six monthly EC Compliance report for the period from October 2016 to March 2017 in respect of Cluster VII group of mines.

Thanking You,

Encl: As above

Yours sincerely,

29.5.17

Add. General Manager
P.B. Area

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

Copy to: -

1. The Director, 1A Monitoring Cell, Paryavaran Bhawan, CGO Complex, New Delhi - 110003 (By Speed Post)
2. Chairman, Jharkhand State Pollution Control Board, T.A. Division Building (Ground Floor), H.E.C. Dhruva, Ranchi – 834004 (By Speed Post)
3. Add. General Manager, Kusunda Area
4. HOD (Environment), BCCL Koyla Bhawan.
5. Project Officer (Burragarh, hurriladih)

COMPLIANCE OF EC CONDITIONS OF CLUSTER-VII

EC ORDER NO.: J-11015/238/2010-IA. II (M), DATED: 06.02.2013
(October '16 to March'17)

Sl. no.	A. Specific Conditions by MOEF:	Compliance
i	**The maximum production shall not exceed beyond that for which environmental clearance has been granted.**	The approved normative production and peak production for cluster VII **is 6.227 and 8.161 MTPA**. The total production **of Cluster-VII** is **2.921 MT** in the F.Year **2016-'17 which is well within the limit.**
ii	**The measure identified in the environmental plan for cluster VII groups of mine and the conditions given in this environmental clearance letter shall be dovetailed to the implementation of the Jharia Action Plan.**	Master Plan activities are dovetailed with compliance of environmental clearance conditions. The master plan deals with fire control and rehabilitation activities of fire affected areas in the leasehold of BCCL. By implementing complete digging out of fiery seams with water spraying in force as fire control measures air pollution and emission of Green House Gases (GHGs) from the fire affected areas are being prevented. Further rehabilitation of the families from the fire endangered area to the safe places is being taken-up with the help of State Govt. of Jharkhand. The Master plan is being implemented for BCCL as per the prioritization of fire and rehabilitation activities in approved Master Plan. The brief status of Rehabilitation and Fire control measures are enclosed **(Annexure-A)**
iii	**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 VII shall be undertaken.**	NRSC had conducted survey of fires of Jharia coalfield by remote sensing methods using thermal infra-red data and land subsidence mapping of Jharia coalfield using Inter-ferometic SAR data. Total fire affected area in Jharia Coalfield has been reduced. Report of NRSC has been attached herewith. Further, the work has been awarded and the next survey by NRSC will be started soon. For evacuation of persons from fire affected areas JRDA has nearly completed survey the basties at fire affected area for evacuation & rehabilitation of the inhabitants under Jharia Master Plan and partially distributed Identity Cards, but evacuation of non-BCCL persons have not yet been done by

		JRDA. Colliery Management have allotted quarters at other safe place to employees residing at/near fire affected area for their early evacuation and accordingly shifting of employees is going on at the allotted quarters at newly constructed colonies at East Bassuriya , Jagjivan Nagar and Karmik Nagar. In Kusunda OC, fiery coal patches are being dug out for the purpose of dealing with fire. After re-start of workings of Ena OC fiery seam will be completely dug out. At Alkusa mine, measures have been taken as per CMR'57 and DGMS Guidelines to control ug fire and entrances have been filled/sealed to stop ingress of air into fire affected area. **Enclosed as Annexure B.**
iv	**Underground mining should be taken up after completion of reclamation of Opencast mine area after 13 years.**	Complied.
v	**No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/ check such fire including in old OB dump areas where the fire could start due to presence of coal /shale with sufficient carbon content.**	Action is being taken to control, mine fires as specified in Jharia Master Plan and the mining in fiery seam is being done by OC method as per the guidelines and permissions of Directorate General of Mines Safety (DGMS).
vi	**The rejects of washeries in Cluster –VII should be send to FBC based plant.**	Coal washery does not exist in this Area.
vii	**There shall be no external OB dumps. OB produce from the whole cluster will be 378.86 Mm3. OB from 5 OCP mine shall be backfilled. At the end of the mining there shall be no void and the entire mined out area shall be re-vegetated. Areas where opencast mining was carried out and completed shall be reclaimed immediately thereafter.**	It shall be complied. Action is being taken as specified in EMP. Backfilling of OB is going on concurrent with mining and at the end of mining activity the area will be re-vegetated and reclaimed as per EMP.
viii	**A detailed calendar plan of production with plan for OB dumping and backfilling (for OC mines) and reclamation and final mine closure plan for each mine of cluster-VII shall be drawn up and implemented.**	Calendar plan is enclosed as **Annexure-C** Progressive Mine closure plan, as per the guidelines of Ministry of Coal has been prepared by Regional Institute –II, Central Mine planning and Design Institute(CMPDI), Dhanbad. MCP is being implemented in mines.
ix	**The void shall be converted into a water reservoir of a maximum depth of 15-20 m and**	It shall be complied, if safety permits.

	shall be gently sloped and the upper benches of the reservoir shall be stabilized with plantation and the periphery of the reservoir fenced. The abandoned pits and voids should be backfilled with OB and biologically reclaimed with plantation and or may be used for pisciculture	
x	**Mining shall be carried out as per statuette from the streams/nalas flowing within the lease and maintaining a safe distance from the Nalas flowing along the lease boundary. A safety barrier of a minimum 60m width shall be maintained along the nalas/water bodies. The small water bodies in OC shall be protected to the extent feasible and the embankment proposed along water body shall be strengthened with stone pitching.**	It is being followed. Embankments have been constructed and maintained as specified in EC
xi	**Active OB dumps near water bodies and rivers should be rehandled for backfilling abandoned mine voids. However, those which have been biologically reclaimed need not be disturbed.**	No OB is being dumped near water bodies.
xii	**Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 794.09 ha area would be reclaimed. The total additional area under plantation would be 1165.67 ha (90.78 ha abandoned quarry area, 516 ha active quarry area, 27.31 OB dump outside quarry area, 38.55 ha service building /mine infrastructure area /coal dump etc, 395 ha green belt around OCP, 98.5 ha barren area), by planting 2914150 plants at a total cost of Rs 642.20 lakhs.**	It shall be complied. Plantation at decoaled area is already being executed for development of green belts as per EC. At degraded OB dump sites at decoaled zone, eco-restoration work are in successful progress. Details of plantation done and Programme of eco-restoration are enclosed in **Annexure D**.
xiii	**The road should be provided with avenue plantation on both side as trees act as sink of carbon and other pollutant**	It is being complied.
xiv	**Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a critically polluted area and relevant for**	Dhanbad Action Plan has been prepared in consultation with Jharkhand Pollution Control Board for entire BCCL and not cluster wise. It is being implemented comprehensively for all the

	Cluster VII shall be implemented.	mines of BCCL. Some of the salient actions of this cluster are enclosed in **Annexure-E**.
xv	**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, flyash from TPPs, silica from natural dust, etc) and a Source Apportionment Study should be got carried out for the entire Jharia Coalfields. Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (PM_{10} and $PM_{2.5}$) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.**	Establishment of ambient environment quality monitoring stations has been done after consultation & approval of JSPCB. At present CMPDI is doing the work of monitoring of ambient environment. Report of monitoring is shown in **Annexure-F** 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.
xvi	**No groundwater shall be used for the mining activities. Additional water required, if any, shall be met from mine water or by recycling/reuse of the water from the existing activities and from rainwater harvesting measures.** **The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry to dewatering of mine**	No ground water is being utilized for the purpose of industrial use. Mine water has been channelized through pipelines and through delivery in to the old quarry for its community use & industrial use. Drinking water is being purchased from the Mineral Area Development Authority (MADA). Further for the utilization of mine water following actions has been taken by the company 1. **Installation of filter plants:** Mine water is treated by water filter plant before supply to colonies. For which in Kusunda Area, four Pressure Filters, one Slow Sand Filter and two Rapid Gravity Filter Plant are running and at East Bassuriya newly constructed Colony, installation of two Pressure Filters are under process. 2. **Rain water Harvesting:** Rain water is accumulated at dip most portion of OC mines and at abandoned UG galleries at discontinued UG mines/patch through garland drains for ground water recharge.
xvii	**Regular monitoring of groundwater level and**	Regular monitoring of Ground water is being

	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.	carried out by CMPDI. Proposal for establishment of new piezometers is under process. Enclosed as **Annexure G.**
xviii	**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.**	Being complied. The work of monitoring of ambient air and water is being carried out by CMPDI.
xix	**ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to confirm to prescribed standards in case discharge into the natural water course**	It shall be complied.
xx	**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.**	Complied. Subsidence is regularly monitored.
xxi	**Sufficient coal pillars shall be left unextracted around the air shaft (within the subsidence influence area) to protect from any damage**	Complied. Action is being taken as specified in EMP.

	from subsidence, if any.	
xxii	**High root density tree species shall be selected and planted over areas likely to be affected by subsidence**	It will be complied, if required
xxiii	**Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains.**	It will be complied, if required.
xxiv	**Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.**	It has been complied and maintained
xxv	**No depillaring operation shall be carried out below the township/colony.**	At present no ug working is there at Kusunda Area.
xxvi	**The Transportation Plan for conveyor-cum–rail for Cluster-VII should be dovetailed with Jharia Action Plan. The Plan for conveyor-cum–rail for Cluster-VII should be dovetailed with Jharia Action Plan. The road transpiration of coal during phase–I should be by mechanically covered trucks.**	CMPDIL, RI-II has been requested to conduct study and prepare the plan in this regard. At present transportation is being done by covering vehicle with tarpaulin cover. Enclosed as **Annexure H.**
xxvii	**A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport**	CMPDI RI-2 is doing the study.
xxviii	**R&R of 13605 nos of PAF's involved. They should be rehabilitated at cost of Rs 529.47Crores as per the approved Jharia Action Plan.**	Rehabilitation of PAF is taken up as per the approved Master Plan. JRDA is doing the work.
xxix	**A detailed CSR Action Plan shall be prepared for Cluster VII croup of mines. Specific activities shall be identified for CSR the budget of Rs. 311.35 Lakhs per year@ Rs 5/T of coal as recurring expenditure. The 143 ha of area within Cluster VII ML existing as waste land and not being acquired shall be put to productive use under CSR and developed with fruit bearing and other useful species for the local communities. In addition to afforesting 794.09 ha of are at the post-mining stage, 135.5 ha waste land /barren land within Cluster VII ML shall be rehabilitated/reclaimed as forest/agricultural land under CSR Plan in consultation with**	CSR activities are being taken up on priority basis. The details of activities is enclosed in the CSR booklet as **Annexure-I.**

	local communities. Third party evaluation shall be got carried out regularly for the proper implementation of activities undertaken in the project area under CSR. Issue raised in the Public Hearing shall also be integrated with activities being taken up under CSR. The details of CSR undertaken along with budgetary provisions for the village-wise various activities and expenditure thereon shall be uploaded on the company website every year. The company must give priority to capacity building both within the company and to the local youth, who are motivated to carry out the work in future.	
xxx	**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 Ranchi.**	Presently a time series map of vegetation cover in the Jharia Coal Field is being carried out through CMPDI Ranchi using satellite imagery for every 3 years. CMPDI has started to prepare "Time series of land use maps based on satellite imagery of the core zone and buffer zone. **Enclosed as Annexure J**
xxxi	**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.**	CMPDI has prepared Mine Closure Plan for progressive mine closure activities which are being implemented at mines. Final Mine Closure Plan will be prepared in time.
xxxii	**A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company for implementing environment policy and socio-economic issues and the capacity building required in this regard.**	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the Area level, one Executive in area has also been

		nominated as Nodal Officer (Environment) under General Manager of Area to co-ordinate environmental issues to the Project Officer of mine and one officer at each mine level, under Project Officer is looking after the environment related jobs and 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 motivative under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xxxiii	**Implementation of final mine closure plan for Cluster VII, subject to obtaining prior approval of the DGMS in regard to mine safety issues**	Final Mine Closure Plan, as per the guideline will be submitted 5 years before the final closure of the Mine. For the purpose of safety issues related to the closure prior approval of DGMS will be taken in this regard.
xxxiv	**Corporate Environment Responsibility:** **a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.** **b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.** **c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental**	Uploaded on Company's Website. Enclosed as **Annexure-K.** A well-defined Corporate Environment Policy has already been laid down and approved by the Board of Directors. This is also posted on BCCL website. Complied. A hierarchical system of the company to deal with environmental issues from corporate level to mine level already exists.

	clearance conditions shall be furnished. **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**	Being complied.
B	**General Conditions by MOEF:**	
i	**No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.**	Being followed.
ii	**No change in the calendar plan of production for quantum of mineral coal shall be made.**	Being followed. Production of the cluster is being done well within the peak production capacity as per EC.
iii	**Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM_{10}, $PM_{2.5}$, 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.**	Air quality monitoring stations and monitoring of ambient environment has been established after consultation with State Pollution Control Board. CMPDIL is presently doing the monitoring work. Results of monitoring is enclosed as **Annexure-L**.
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 shall be complied.
v	**Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting**	Being Complied.

	and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.	
vi	**Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 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.**	It is being followed .Mine discharged water is being reutilized for industrial purposes (sprinkling, cooling/ fire control etc.)
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.**	It is being complied.
viii	**Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analyzed through a laboratory recognized under EPA Rules, 1986.**	Air quality monitoring stations and monitoring of ambient environment has been established after consultation with State Pollution Control Board. The monitoring work is being carried out by CMPDIL.
ix	**Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.**	Being Complied. A separate full-fledged Human Resource Development Deptt. Is conducting regular training Programme on these issues. Apart from this Group Vocational Training Centers is there in the Area which provides periodical training on the safety and occupational health issue to each of the workers working in the mines. Status of training is shown in **Annexure-M**.
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 of the Area is carried out at Bhuli PME Centre, Bhuli, Dhanbad as per the Statutes and guidelines of Director General of Mines Safety (DGMS). Status of PME is shown in **Annexure-M**.
xi	**A separate environmental management cell with suitable qualified personnel shall be set**	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable

	up under the control of a Senior Executive, who will report directly to the Head of the company.	qualified multidisciplinary team of executives. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the Area level, one Executive in each area has also been nominated as Nodal Officer (Environment) under General Manager of Area and at Project level, one executive under Project Officer is looking after the environment related jobs and 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 Ranchi.**	It is being complied.
xiii	**The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the ministry of Environment & Forests at http://envfor.nic.in.**	It has been complied.
xiv	**A copy of the environmental clearance letter shall be marked to concern**	Complied.

	Panchayat/ZilaParishad, Municipal corporation or Urban local body and local NGO, if any, from whom any suggestion /representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.	
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 NO_x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.**	Complied.
xvii	**The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Offices of CPCB and the SPCB.**	Being complied.
xviii	**The Regional Office of this Ministry located at 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**	Shall be complied.

	reports.	
xix	**The Environmental statement for each financial year ending 31 March in For –V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules,1986,as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF by E-mail**	Being complied.
C	**Other Conditions by MOEF:**	
i	**The Ministry or any other Competent Authority may stipulate any further condition(s) for environmental protection.**	Agree.
ii	**Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.**	Agree.
iii	**The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.**	It is being complied.
iv	**The Environmental Clearance is subject to the outcome of the Writ Petition filed by M/S Bharat Coking Coal Limited (BCCL) in response to the closure orders issued by the Jharkhand State Pollution Control Board which is pending in the Jharkhand High Court.**	Agree.

ANNEXURE-A

STATUS OF JHARIA MASTER PLAN DOVETAILED WITH ENVIRONMENT CLEARANCE CONDITIONS

Rehabilitation and Fire control measures

Socio-economic Survey:

Survey of fire affected families (non-BCCL) at Kusunda Area has been nearly completed by JRDA and distribution of ID card has been partially done by JRDA.

Accommodation provided in Satellite Township:

- Till about 1152 quarters at newly constructed colonies situated at East Bassuriya, Jagjiwan Nagar and Karmik Nagar have been allotted to the BCCL employees residing at coal bearing/fire affected areas in different collieries under Kusunda Area and out of which 480 employees have been shifted, and 480 houses in coal bearing/fire affected area has been demolished. More quarters are under construction for phase wise shifting of employees.
- In temporary rehabilitation site at decoaled zone of East Bassuriya about 28 PAF/encroachers have been shifted.
- Non-BCCL families are being shifted by JRDA. At Dhansar-Industry 15 no. families have been shifted at Belgaria Colony. At Gondudih Khas Kusunda 15 no. encroachers have been allotted, but they are not shifted, and 10 no. unauthorized PAF have been shifted.

Status of fire dealing:

Under Master Plan, many Fire schemes have been formulated / prepared /implemented for dealing fires sites spread in collieries of BCCL. Further for expediting the fire dealing process, excavation methods has been resorted to by deploying Hired HEMM at various mines of BCCL. Total digging out of fiery coal has been adopted for dealing of fire.

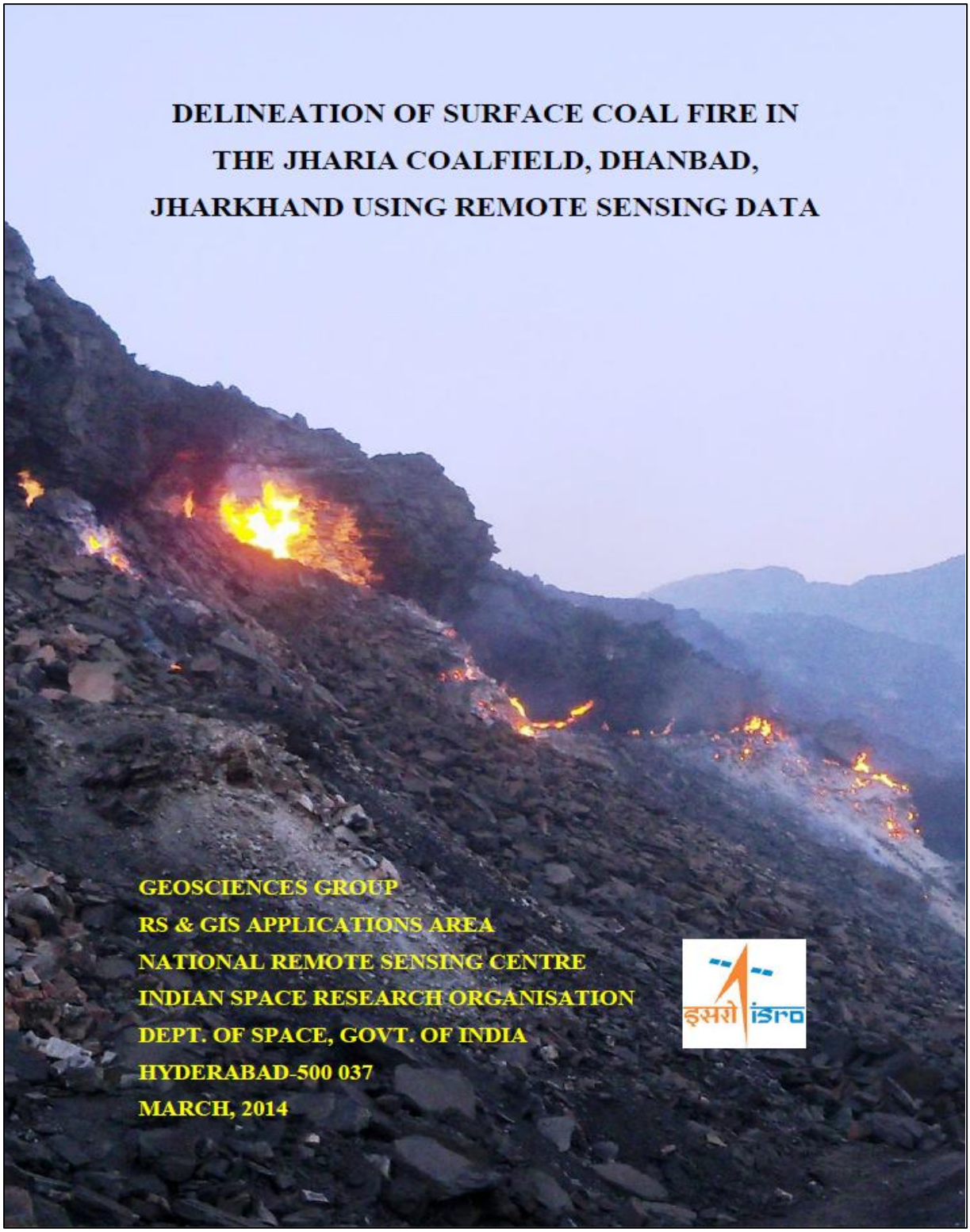
In fire patch of V/VI/VII/VIII seam of Gareria Secn. at East Bassuriya, about 1,70,000 cu.m. mitti and non-combustible material has been filled, rest will be filled by quarry OB.

At Kusunda Colliery total firey coal are being dug out as a measure of fire dealing with the deployment of hired HEMM, and at Ena OC, after restart, total firey coal will be dug out. The underground workings of Alkusa Colliery has been sealed due to fire threats after taking measures to control UG fire as per

CMR’57 and DGMS guidelines. The coal reserve of Alkusa Colliery will be extracted from Kusunda OC side.

For control and monitoring of threat of subsidence at fire affected area within Godhur lease hold special attention has been made by mine management, at Godhur OC total firey coal are being dug out as a measure of fire dealing with the deployment of hired HEMM. At Dhansar-Industry Colliery complete digging of fiery coal of X seam by OC method is being done with water jet through pipe line and submersible pump installed at Industry 2 Pit in addition by fire-tender.

ANNEXURE-B


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

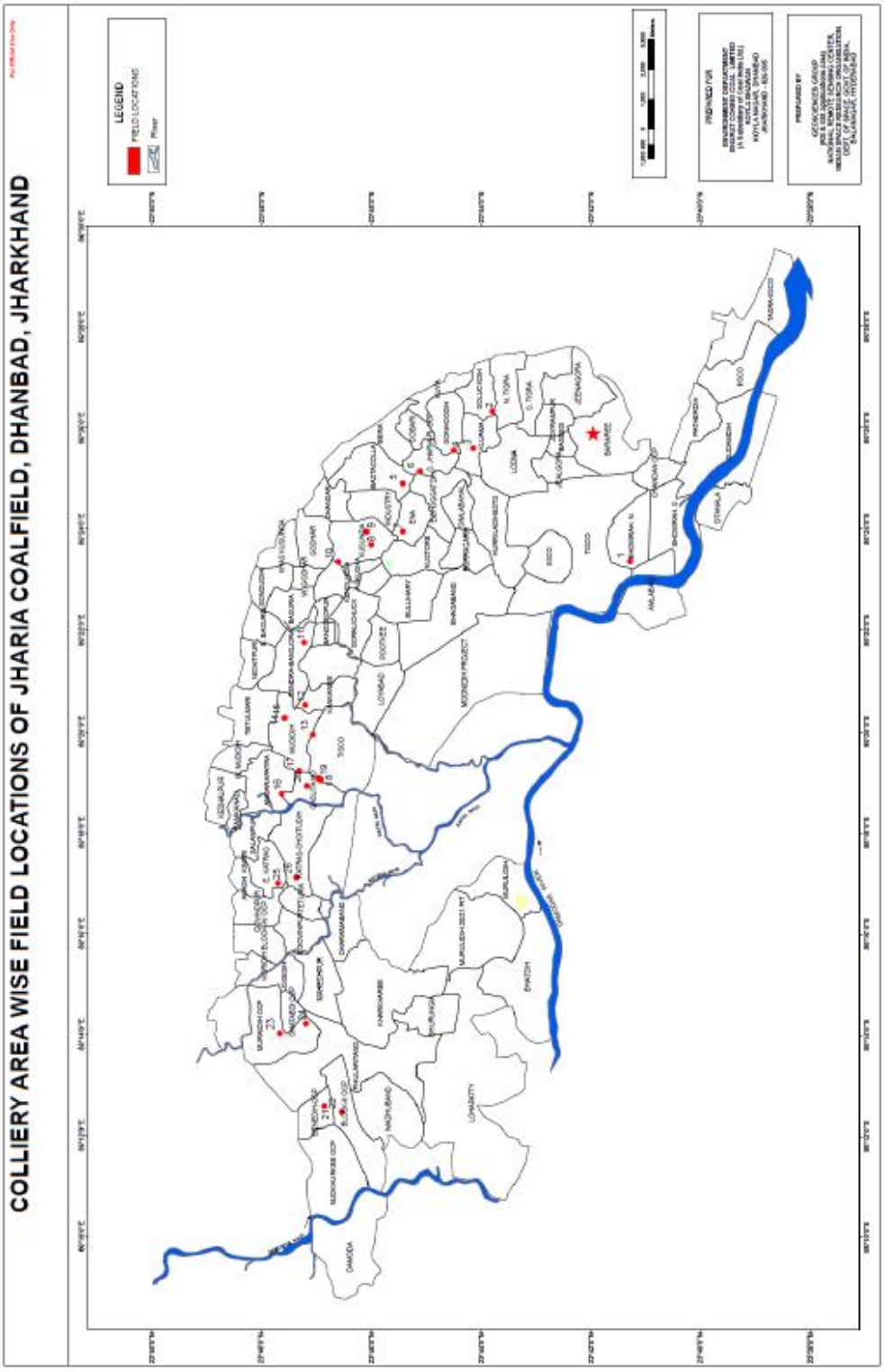


Figure 7: Field locations of coal mine fire shown over colliery area boundary in Jharia coal field, Dhanbad, Jharkhand.

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

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

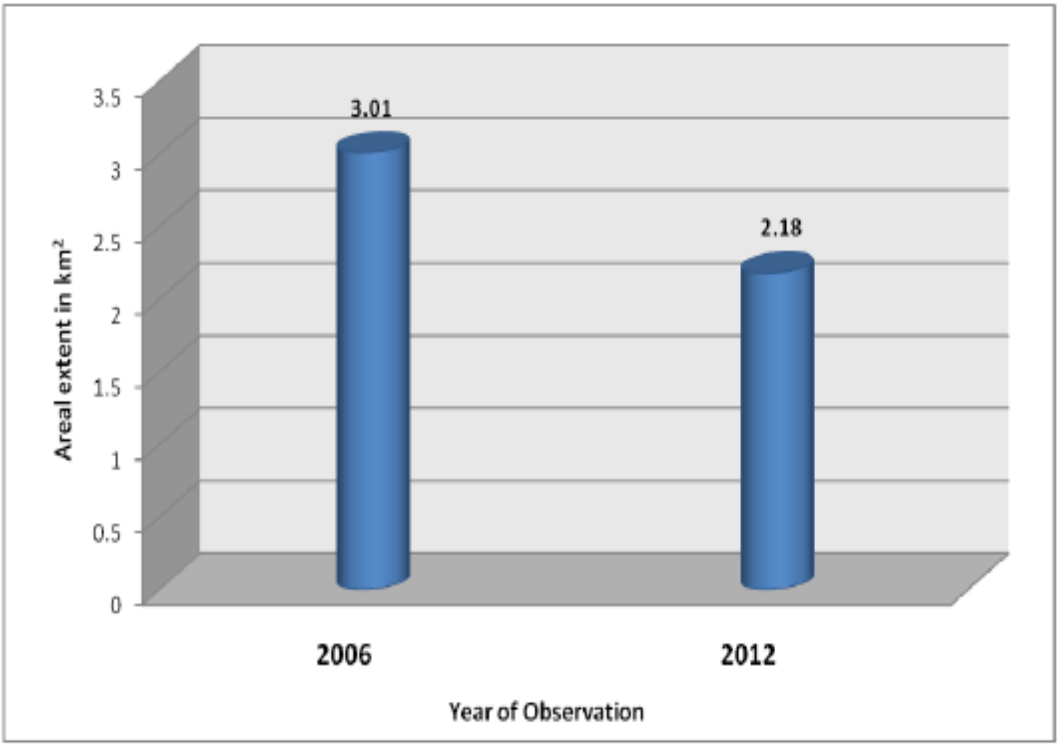


Figure 10: Total fire area statistics

ANNEXURE-C

1. **Coal Production of the Cluster is well within the limit for which environmental clearance has been granted.**

2. **OB BACKFILLING PROGRAMME**

At Kusunda OC- After progressive extraction of coal up to V/VI/VII/VIII combined seam back filling of OB is going on.

At Ena OC- At present workings are discontinued. After re-start of OC mining progressive back filling of OB will be done in continuous succession of total coal extraction

At Dhansar/Vishwakarma OC- Back filling will be done in continuous succession of total coal extraction upto '0'seam.

ANNEXURE-D

- Plantation- At Gondudih- Khas Kusunda Colliery Plantation has already been done by DFO, Dhanbad at about 10.5 Ha area of OB dump, and at present more than 26250 trees are there. 500 no. bamboo-gabion plantation have already been done. At about 2.0 Ha Ecological restoration site total about 6402 no. plants and plenty of grass-seeds have been planted successfully with encouraging results, and natural eco-system is being established there with increasing flora & fauna. At 2nd. eco-restoration site (about 1.79 Ha OB dump- area) about 2400 plants along with seeds of grass and shrubs have spread over since 2015-'16 successfully. And at 3rd. site, (about 3.0 Ha OB dump area) about 5322 plants and plenty of grass seeds have been planted and spreaded over during monsoon successfully.

PLANTATION/ECOLOGICAL-RESTORATION PROGRAMME

Plantation/Ecological Restoration Programme

YEAR	**CLUSTER VI & CLUSTER VII(Part under Kusunda Area)**	No. of saplings/plants
2016-17	3.00 Ha(approx.)	5322 nos. already planted with plenty of grass seeds and plants seeds spreaded over
2017-18	3.00 Ha(approx.)	7500
2018-19	3.00 Ha(approx.)	7500
2019-20	3.00 Ha(approx.)	7500
2020-21	6.00 Ha(approx.)	15000

ANNEXURE-E

Action taken towards Dhanbad Action Plan:

(1) Regular and sufficient water spraying by mobile tankers and through pipe lines is done at roads (haul roads, transportation roads, etc.), at all strategic dust generating points such as loading, un-loading, transfer points etc.

(2) Covered coal transportation by trucks is already implemented

(3) plantation/eco-restoration at non-coal bearing/decoaled OB dump site is being done.

(4) Making transportation road pucca and its regular maintenance

(5) Use of dust extractors at drill m/c. etc.

Note: Pollution inventory of different sources within the area apart from the coal mining is required to be carried out for actual assessment of pollution load by mining and other sources.

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

In 2015-16 about 80 m pucca road near Kusunda Office has been constructed.

In 2016-17: about 57 m cement concrete road made from NH-32 connecting pt. to Kusunda-Godhur Office.

About 37 m cement concrete made of 15 no. road from NH-32 connecting pt. to Godhur W/Bridge.

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

DUST EXTRACTOR: Regarding drilling it has already been complied in all OC mines. Drill machines are having OEM fitted DUST EXTRACTION system.

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 SPRINLKLERS

Sl. no.	Mine	Haul road length in Km	No. of mobile sprinklers	Total Capacity(KL)	Trips per day
1	Kusunda OC + Godhur mixed	6.5-7.0	6	1-20 KL each,5-12KL each	35 trips/day
2	Dhansar-Industry	5.4-5.8	6	1-28 KL, 3-12KL each, 2- 8 KL each	40 trips/day
3	Gondudih KKC	5.0-6.0	4	10 KL each	15 trips each/day,
4.	East Bassuriya	2.5-3.0	1	12KL	9 trips each/day

(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. So this action cannot be complied**.**

However to catch run-off water in colonies proposal for Rain water Harvesting in colonies is under process

(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 .

In Kusunda OC, fiery coal patches are being dug out for the purpose of dealing with fire and combustible materials are extracted out to save the coal from burning and to stop further spread of the fire. Once the total fiery coal is dug-out/excavated there will be no more chance of re-starting of fresh/ spreading of fire into other areas.

At Alkusa mine, measures have been taken as per CMR’57 and DGMS Guidelines to control ug fire and entrances have been filled/sealed to stop ingress of air into fire affected area. At Dhansar-Industry Colliery complete digging of fiery coal of X seam by OC method is being done with water jet through pipe line and submersible pump installed at Industry 2Pit in addition by fire-tender.

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

It shall be complied

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

Complied. Removed OB is used for low land filling and for making roads as and when required**.**

(9) Tree plantation on the dumps

Complied. At Gondudih- Khas Kusunda Colliery Plantation has already been done by DFO, Dhanbad at about 10.5 Ha area of OB dump, and at present more than 26250 trees are there. 500 no. bamboo-gabion plantation have already been done. At about 2.0 Ha Ecological restoration site total about 6402 no. plants and plenty of grass-seeds have been planted successfully with encouraging results, and natural eco-system is being established there with increasing flora & fauna. At 2nd. eco-restoration site (about 1.79 Ha OB dump- area) about 2400 plants along with seeds of grass and shrubs have spread over since 2015-'16 successfully. And at 3rd. site, (about 3.0 Ha OB dump area) about 5322 plants and plenty of grass seeds have been planted and spreaded over during this monsoon successfully.

(10) All hazardous wastes shall be disposed off
Complied.

1. All units have applied for authorization as per Hazardous Wastes (Management, Handling and Tran's boundary Movement) Rules.
2. Burnt/used oil is disposed of as per rule.
3. 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-F

(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.

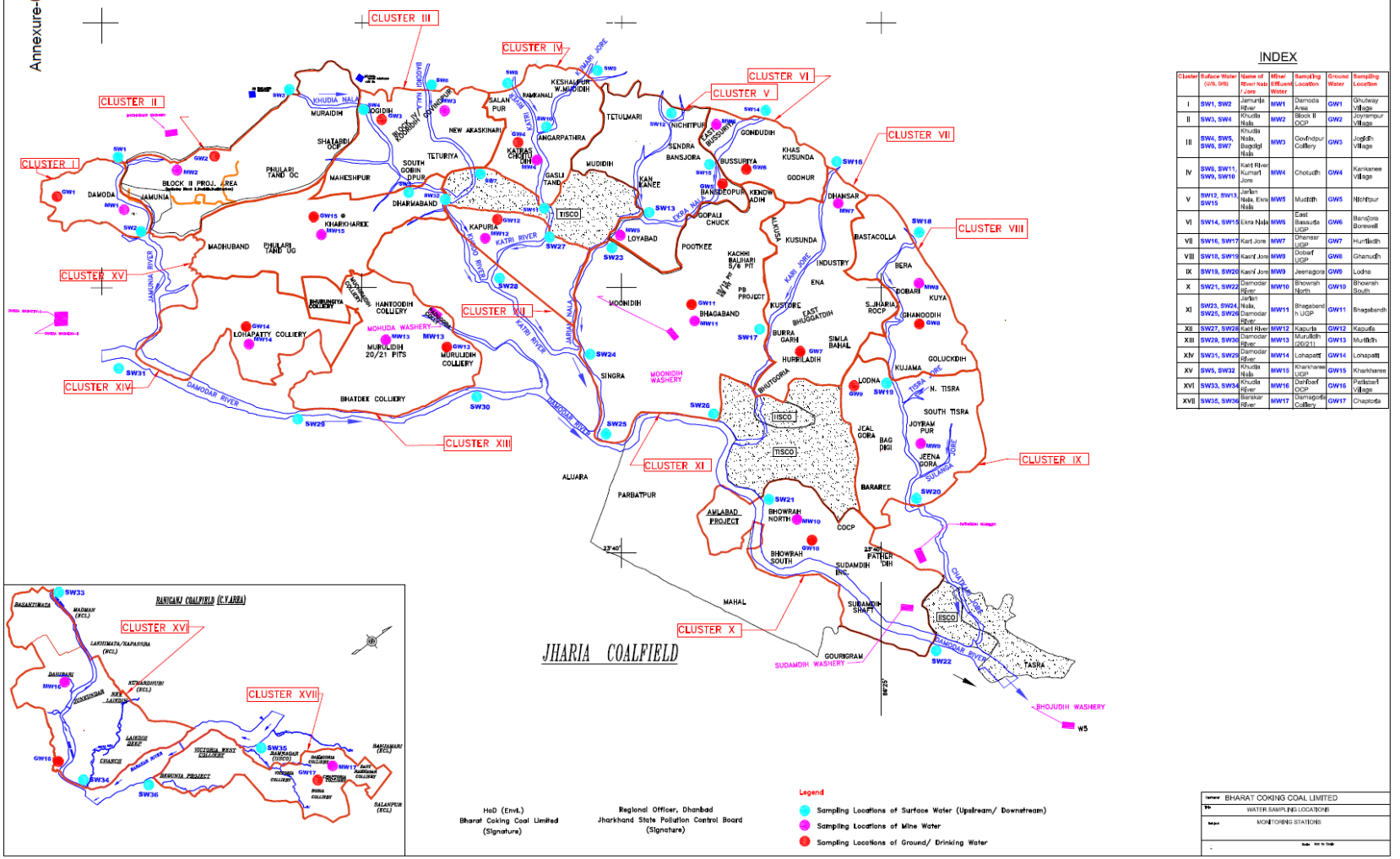
Encl-A/a.

(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	Ghuteay 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	Kari River/ Kumari Jore	MW4	Choludih	GW4	Kankanee Village
V	SW12, SW13 SW15	Jarlari 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	Kanri Jore	MW8	Dobarl UGP	GW8	Ghanoodih
IX	SW19, SW20	Kanri Jore	MW9	Jeenagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24 SW25, SW26	Jarlari Nala, Damodar River	MW11	Bhagaband h UGP	GW11	Bhagabandh
XII	SW27, SW28	Kanri River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murulidih (20/21)	GW13	Murlidih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Khudia Nala	MW15	Kharkharee UGP	GW15	Kharkharee
XVI	SW33, SW34	Khudia River	MW16	Dahibarl OCP	GW16	Patlabarl Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chapridia

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

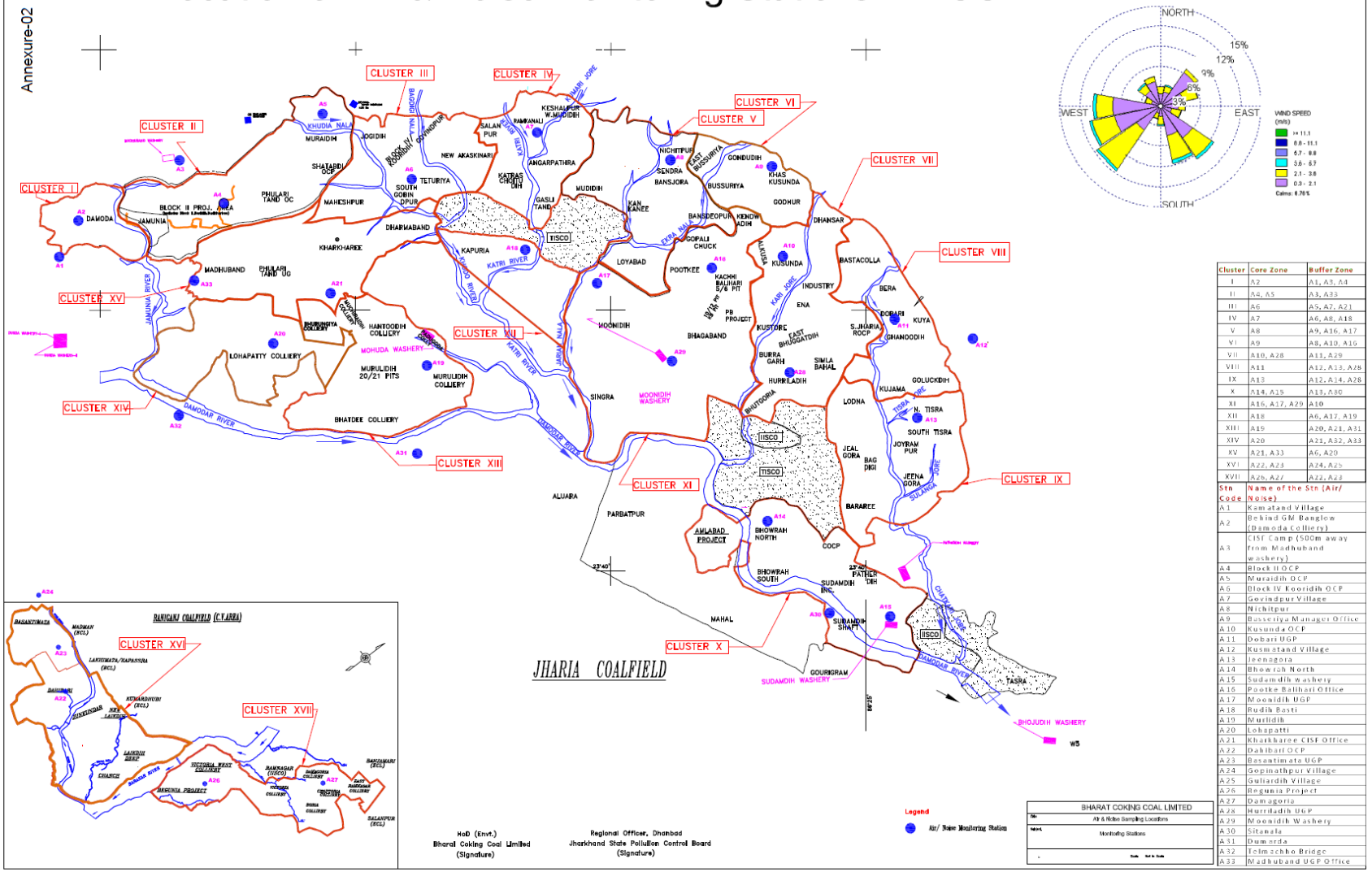
Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)

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

Owner	BHARAT COKING COAL LIMITED
Title	WATER SAMPLING LOCATIONS
Subject	MONITORING STATIONS
Scale	Not to Scale

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	Bussuriya Manager Office
A10	Kusunda OCP
A11	Dobari UGP
A12	Kusmatand Village
A13	Jeenagora
A14	Bhowrah North
A15	Sudamdih washery
A16	Pootke Balihari Office
A17	Moonidih UGP
A18	Rudih Basti
A19	Murulidih
A20	Lohapatti
A21	Kharkharee CISF Office
A22	Dahibari OCP
A23	Basantimata UGP
A24	Gopinathpur Village
A25	Guliardih Village
A26	Begunia Project
A27	Damagoria
A28	Hurriladih UGP
A29	Moonidih Washery
A30	Sitanala
A31	Dumerda
A32	Telmacchho Bridge
A33	Madhuband UGP Office

Legend

Air/ Noise Monitoring Station

BHARAT COKING COAL LIMITED	
Title	Air & Noise Sampling Locations
Subject	Monitoring Stations
Scale	Not to Scale

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

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

ANNEXURE-G

STRICTLY RESTRICTED
FOR COMPANY USE ONLY

RESTRICTED

The information given in this report is not to be communicated either directly or indirectly to the press or to any person not holding an official position in the CIL/

GROUNDWATER LEVEL & QUALITY REPORT FOR CLUSTER OF MINES, BCCL

(Assessment year - 2016)

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

JHARIA COALFIELD AND RANIGANJ COALFIELD (PART)

(BHARAT COKING COAL LIMITED)

MARCH – 2017

Regional Institute – II
Central Mine Planning & Design Institute Ltd.
(An ISO 9001:2000 Company)
(A Subsidiary of Coal India Ltd.)
Koyla Bhawan Complex, Koyla Nagar
DHANBAD – 826005

3.3 G Monitoring of Ground Water Levels of Cluster-VII

Cluster-VII consists of fourteen mines namely; Dhansar mixed mine, Kusunda OCP, Viswakarma OCP, Industry UG (closed), Alkusa UG, Ena OCP, S.Jharia/Rajapur OCP, Burragarh UG, Simlabahal UG, Hurriladih UG, Bhutgoria UG, Kustore UG (closed) and E.Bhuggatdih UG (closed) under the administrative control of Kusunda Area and Kustore Area of BCCL. This Cluster of mines is located in east central part of Jharia Coalfield in Dhanbad district of Jharkhand.

The present leasehold area of Cluster-VII is 2127.70 Ha. The area has a general undulating topography with general slope towards south. The RL varies from 172 m to 221 m above M.S.L. Kari Jore, Chatkari Jore and its tributaries are controlling the drainage pattern of the area. The area comes under the watershed of Kari Jore and Chatkari Jore.

7 hydrograph stations (D-3, D-4, D-33, D-34, D-47, D-55 and D-80) 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'2016 and the Ground water level data is enclosed in the table below:

Sl No.	Well No.	Location	Water level (bgl in meters)			
			Feb'16	Apr'16	Aug'16	Nov'16
1	D-3	Dhansar	2.10	2.35	1.20	1.90
2	D-4	Jharia	1.01	1.21	0.41	1.36
3	D-33	Kustore	1.00	2.50	0.20	1.95
4	D-34	Kusunda	0.75	2.30	0.22	0.30
5	D-47	Parastanr	3.05	3.18	3.35	2.95
6	D-55	Hariladih	2.72	2.52	1.62	3.62
7	D-80	Bastacolla	3.63	6.55	2.05	4.15
Average WL (bgl)			***2.04***	***2.94***	***1.29***	***2.32***

Ground Water Level (in bgl) varies from 0.75 to 3.63 m during February, 1.21 to 6.55 m during April, 0.20 to 3.35 m during August and 0.30 to 4.15 m during November'2016 within the Core Zone of Cluster-VII area.

ANNEXURE-H

Point XVI

सेंट्रल माईन प्लानिंग एण्ड डिज़ाइन इंस्टीच्यूट लिमिटेड
(कोल इंडिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार की एक लोक उपक्रम)
पंजीकृत कार्यालय : गोन्दवाना प्लेस , 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

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 Amartanshu Sb.
For compliance purpose.
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-I

CSR ACTIVITIES OF BCCL

Corporate Social Responsibility (CSR) in Adjoining Villages

As per Corporate Social Responsibility policy of Coal India, the community facilities is being provided by Bharat Coking Coal Limited. The following areas are being covered:

- Poor and needy section of the society
- Within the radius of 15 km for every project and areas including HQ

Scope of CSR:

a) Education
b) Water supply
c) Health care
d) Environment
e) Social empowerment
f) Infrastructure for villages
g) Sports and culture
h) Generation of Employment and setting up of co-operatives
i) Infrastructure support
j) Grant/donation/financial assistance/sponsorship to reputed NGOs of the society/locality doing/involved in the uplifting of standard of the society
k) Miscellaneous: Adoption of villages for carrying out the activities like infrastructural development , collection of old clothes from employess and distribution in the nearby villages

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

BCCL is taking up activities from the HQ level and through its administrative areas for the implementation of CSR activities. For this purpose A CSR cell is functioning at HQ. Which is headed by General Manger (CSR) under the direct control of Director (Personnel) of the company.

The CSR activities presently being done by BCCL

- To meet the acute shortage of drinking water in peripheral villages' drinking Water is provided through deep borewells, tubewells, pumps/motors, in the peripheral villages of BCCL. Water supply

through pipeline, through water tanker is provided also to the villages. Mine water is supplied after proper filtration in Filter Plants.

- **Education**: BCCL adopts a multi-pronged approach to promote quality education in backward areas. The measures taken by BCCL comprise Construction, Extension, and Renovation of school buildings etc are done to promote quality education in the nearby villages. BCCL is Extending financial aid for educational facilities to 83 nos. Private Committee Managed schools. Measures are taken to promote women literacy and carrier development.
- **Health Care**: BCCL Conducts medical/health camps for dwellers of peripheral villages for rendering free medical consultancy. CSR Clinics, wellness clinics, artificial limbs centers are organized for the benefit of the needy section of the society. Mobile medical vans are deployed as special arrangement for medical services. AIDS awareness camps are organized as special drive to develop awareness and to render free consultancy. In Kusunda Area many medical /health camps in peripheral villages and in collieries and various awareness programmes have already been conducted, and is being conducted regularly by Area Medical Team.
- **Occupational health**: awareness Programme are organized.
- **Other Welfare Activities**: this includes Construction / renovation of Community Halls, construction / repair of roads, construction of Health-sub centres, construction of drain, construction of Chhat Ghat in the ponds, Construction of Boundary wall, providing Choupal for community gatherings, etc.
- **Mashla Chakki centres :** Mashla Chakki centres has been established with machines to promote self-employment.
- **Sports & Cultural**: Various activities are organized to propagate sports and cultures. Sports/games items and instruments are also provided with playground.
- **Village adoption**: Lahbera – A SC/ST village nearby Dhansar Mine has been adopted for its all-round development and a number of development activities have been carried out including school, health care and Ambulance facility, Mashla Chakki Centre, Community Centre, Playground, etc.

Upkeep and Maintenance of Assets

Before any capital investment made the concerned State Government and the local representative of the society, took an undertaking from the representatives of the local community that they would be responsible for the maintenance of the assets.

CSR Activities in Cluster VII

A lot of CSR activities have been done in the peripheral villages in the field of **medical and civil and welfare.**

Medical CSR:

Health Campaigning at surrounding villages by MMV (Mobile Medical Van) :

Year	No. of MMV camps	Beneficiaries
2013-'14	298	11,171 patients
2014-'15	306	11,884 patients
2015-'16	380	11,013 patients

Village Health Camps-	No. of camps	Beneficiaries
2016-'17	262	6989

Special Health Camps in		
2015-'16	5	354 patients
2016-'17	2	62 children + 6 patient
CSR Clinic :2015-'16		5842 patients
2016-'17		2954 patients
Welness Clinic 2015-'16		6244 patients
2016-'17		3922 patients

In 2013-'14 , 2014-'15 , 2015-16 and 2016-17 following civil work have been completed under CSR Activity

- **Construction of compound wall for Lahbera School at Dhansar -- work completed**
- **Deeping of Pond at Lahbera Basti at Dhansar -- work completed**
- **Constr. of pcc road from Dom tola to Kali Mandir at Barki Bowa Village -- work completed**
- **Constr. of pcc road from near house of Vikash Rajak to main road at Satitand Village -- work completed**
- **Constr. of pcc road from Parduman Singh Chowk to near house of Sri Kishore Pandey at Ranguni Panchayat -- work completed**
- **Constr. of Yatri shed at Dutta Tola near Hanuman Mandir -- work completed of Ranguni Panchayat**
- **Constr. of boundary wall , Chabutra and a shed near Gram Dewata at Dhansar -- work completed**
- **Construction of PCC road in Lahbera Basti at Dhansar -- work completed**
- **Construction of 318 toilets in 179 schools in Chaibasa has been undertaken by Kusunda Area under the Pradhan Mantri Swatchh Vidyalaya Yojana. Construction of toilets in 25 boys' school, 15 girls' schools and 139 Co-education School have been undertaken. -- Out of 318, 245 toilets have been completed Upto March'2017. Rest are under construction.**

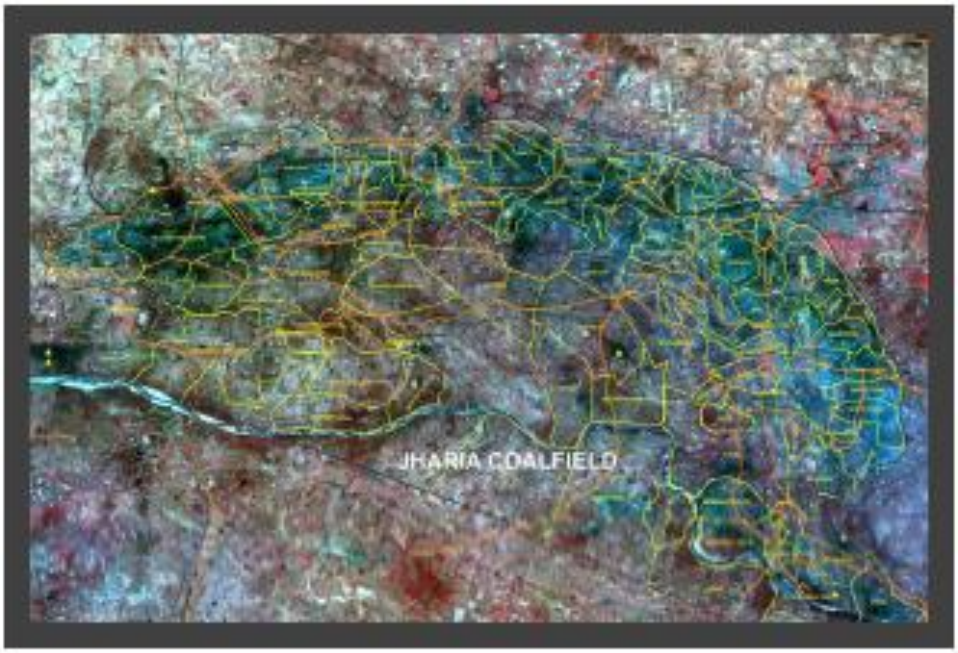
Financial assistance by Kusunda Area to Private Committee managed Schools in villages during the financial year 2016-'17:

(Fig. provided by Area Finance Deptt. Kusunda Area)

Name of School	**Total Amount (Rs.) in 2016-'17**			
L.P.School, Dhansar ; Vikash H.A.School, Bassuriya ; Bal Vikash P.V.Industry Colly.; Sanjay Gandhi S.M.V.,Godhur; Gandhi M.K.E.S.E.,Bassuriya; Madhya Vidyalay, Kurmidih ; Bassuriya Vidyalay,Bassuriya; Shishu Vikash M.Vidyalay, Godhur; J.N.Vidyalay, Gondudih; DAV School, Kusunda	**2013-'14**	**2014-15**	**2015-16**	**2016-17**
	12,67,500.00	**29,73,750.00**	**29,73,750.00**	**24,59,250.00**

ANNEXURE-J

Vegetation Cover Mapping of Jharia Coalfield based on Satellite Data of the Year- 2016



Submitted to

Bharat Coking Coal Ltd (BCCL)

Dhanbad

March 2017

cmpdi

A Mini Ratna Company

1.4 Location of the Area & Accessibility

The Jharia Coalfield (JCF) is located in the north east part of the State of Jharkhand, approximately 260 km west of Kolkata. It is linked to Kolkata and Delhi through NH 2, which is the part of Golden Quadrilateral highway network of India. The coalfield contains proven coal reserves of approximately one billion tonnes in a crescent-shaped basin of approximately 400 km^2. BCCL operates within an area of approximately 258 Sq km. The Jharia coalfield covers an area of about 393 sq km. it is bounded by Lat $23^0$49'0.63"N and $23^0$38'36.50"N and Long $86^0$08'49.91"E and $86^0$25'54.92E. The major part of coalfield (about 400 sq km) lies in Dhanbad district of Jharkhand. Coalfield is connected by Major Highways road with Ranchi (117 km), Asansol (60 km), Jamshedpur (108 km) and Dhanbad (8 km). The nearest major railway station is Dhanbad, located on Delhi-Howrah Grand Chord line oh East Central Railway which passes parallel to northern boundary of the coalfield.

1.5 Physiography and Geology

Jharia coalfield is characterized by gently undulating to a rolling topography with an overall slope towards east-southeast. The coalfield is roughly sickle shaped on plan and occurs as a basin with its axis trending broadly east-west and plunging towards the west. The southern flank is truncated by a major Boundary Fault. The general dip of the formation is 10 to 15 degrees. Flatter dips have also been noted at places. The entire southern part of Jharia coalfield in the vicinity of the Boundary Fault, however shows generally steep dipping beds with amounts increasing even up to 70 degrees.

The drainage pattern in the Jharia coalfield is dendritic in nature. This may be due to more or less homogeneous lithology and structural controls. Damodar river is the main control of drainage system along the Jharia coalfield. It is a fourth order stream to which a number of third to first order streams, viz.

Jamunia, Khudia, Katri, Ekra, Tisra, Chatkari etc. join. Damodar river flows along the southern periphery of the coalfield and is guided by the Main Boundary Fault. The main flow direction is from west to east.

The strike of the formation is generally WSW to ENE in the western part and WNW to ESE in the southern part of the coalfield. This gradually swings to EW in the centre of the coalfield and then to NS further east. In the south-eastern part the strike is generally WNW-ESE. Besides the boundary part the coalfield is traversed by a number of other major and minor faults.

The Barakar formation contains 18 standard coal horizons (numbered I to XVIII). Of the Barakar formations, the coal seams XIII and above are generally thin and of relatively superior quality. Seams XII to IX/X are of medium to superior quality and attain sizable thickness at places. The V, VI, VII, IV, III & II are generally thick seams of inferior quality. The bottom most seam I is of superior medium coking quality in the eastern part of the coalfield.

A map of India showing the location of Jharia Coalfield is given in Fig1.1.

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Chapter 4

Conclusion & Recommendations

4.1 Conclusion

In the present study, land use/ vegetation cover mapping has been carried out based on IRS-R2/ L4FMX satellite data of January, 2016 in order to monitor the impact of coal mining on land environment which may helps in formulating the mitigation measures required, if any.

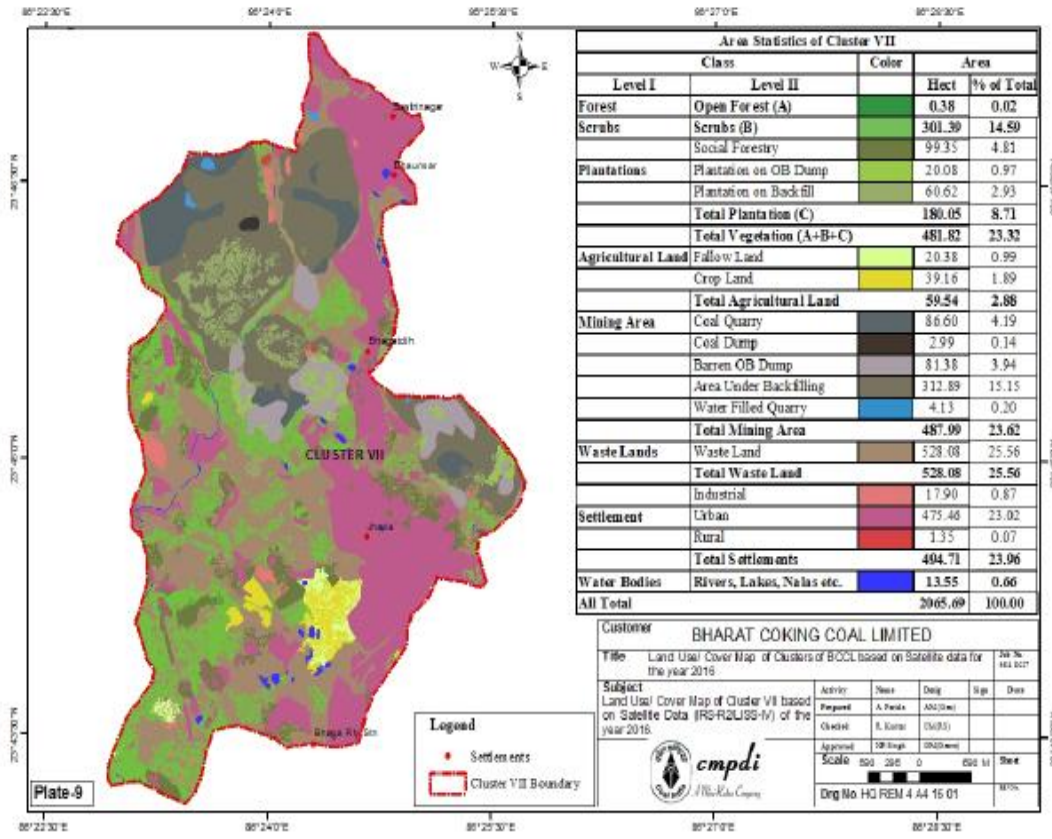
Study reveals that the total area of settlements which includes urban, rural and industrial settlements in the Jharia coalfields covers 41.08 km^2 (10.45%) area. There is a decrease in settlements by 0.49 sq km over the 2013 study primarily because dismantling of some industrial establishments. Vegetation cover which includes dense forests, open forests, scrubs, avenue plantation & plantation on over-burden dumps, covers an area of 140.54 km^2 (35.78%). As compared to 2013 study there is a decrease in overall vegetation cover by 22.11 sq km (5.62%) this is mainly because there is a reduction in scrubs areas. Area of scrubs has decreased by 16.63 sq km. because of its use in opencast mines and use of scrub land for agriculture. The analysis further indicates that total agricultural land which includes both crop and fallow land covers an area of 44.39km^2 (11.31%) has increased 4.60 sq km (1.19%) from that was in 2013. The increase in 4.60 sq km is due to some scrubland getting converted into agricultural land. The mining area which includes coal quarry, advance quarry site, barren OB dump, area under backfilling, covers 40.53 km^2 (10.32%). There is a significant increase in areas under mining operations because large areas have now been taken up for Open cast mining in BCCL. As compared to 2013 there is an increase of 5.31 sq km (1.35%) in the areas under mining operation. Wasteland covers 118.82 km^2

(30.24%). Waste lands have increased because some scrubland has been converted to wasteland. Surface water bodies covered area of 7.48 km^2 (1.90).

The detail statistical analysis is given under Table-3.2.

4.2 Recommendations

It is essential to maintain the ecological balance for sustainable development of the area together with coal mining in Jharia Coalfield. It is recommended that land reclamation of the mining area should be taken up on top priority by BCCL. Such studies should be carried out regularly to assess the impact of coal mining on land use pattern and vegetation cover in the coalfield to formulate and take remedial measures, if any, required for mitigating the adverse impact of coal mining on land environment. Regional study will also be helpful in assessing the environmental degradation / up gradation carried out by different industries operating in the coalfield area.



Area Statistics of Cluster VII				
Class		Color	Area	
Level I	Level II		Hect	% of Total
Forest	Open Forest (A)		0.38	0.02
Scrubs	Scrubs (B)		301.39	14.59
	Social Forestry		99.35	4.81
Plantations	Plantation on OB Dump		20.08	0.97
	Plantation on Backfill		60.62	2.93
	Total Plantation (C)		**180.05**	**8.71**
	Total Vegetation (A+B+C)		**481.82**	**23.32**
Agricultural Land	Fallow Land		20.38	0.99
	Crop Land		39.16	1.89
	Total Agricultural Land		**59.54**	**2.88**
Mining Area	Coal Quarry		86.60	4.19
	Coal Dump		2.99	0.14
	Barren OB Dump		81.38	3.94
	Area Under Backfilling		312.89	15.15
	Water Filled Quarry		4.13	0.20
	Total Mining Area		**487.99**	**23.62**
Waste Lands	Waste Land		528.08	25.56
	Total Waste Land		**528.08**	**25.56**
	Industrial		17.90	0.87
Settlement	Urban		475.46	23.02
	Rural		1.35	0.07
	Total Settlements		**494.71**	**23.96**
Water Bodies	Rivers, Lakes, Nalas etc.		13.55	0.66
All Total			2065.69	100.00

Customer: BHARAT COKING COAL LIMITED

Title: Land Use/ Cover Map of Clusters of BCCL based on Satellite data for the year 2016

Subject: Land Use/ Cover Map of Cluster VII based on Satellite Data (IRS-R2/LISS-IV) of the year 2016.

cmpdi

Dng No. HQ REM 4 A4 16 01

ANNEXURE-K

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-L

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

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

(FOR THE Q.E. DECEMBER, 2016)

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

March, 2017

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

EXECUTIVE SUMMARY

1.0 Introduction

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

Bharat Coking Coal Limited (BCCL), a Subsidiary company of Coal India Limited is operating Underground and Opencast Mines in Jharia Coalfield (JCF) is a part of Gondwana Coalfields located in Dhanbad district of Jharkhand, the JCF is bounded by 23º37' N to 23º52' N latitudes and 86º09' E to 86º30' 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, drinking water supply, well/ Hand pump water also surface water samples.

2.3 Noise level monitoring locations

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

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

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

3.2 Water quality

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

3.3 Noise level monitoring

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

4.0 Results and interpretations

4.1 Air quality

It has been seen from the analysis results that the 24 hours average concentration parameters like PM_{10}, $PM_{2.5}$, SO_2 and NO_X are mostly within the permissible limits in all sampling locations as per 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, IS.10500/2012 (Drinking water) and IS: 2296 (Surface water), are with in permissible limits.

4.3 Noise Level

During the noise level survey it has been observed that the noise level in the sampling locations is within the permissible limits prescribed as per 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.

CHAPTER - I

INTRODUCTION

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

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

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

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

1.1 The Cluster-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 5.08 MTPA (normative) and 6.604 MTPA (peak) capacity of coal production vide letter no. J-11015/77/2011-IA.II (M) dated 26th August, 2013.

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

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

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

CHAPTER-II

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

(as per G.S.R. 742 (E) dt. 26th 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° 39'32" N & 86° 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.

2.2 Methodology of sampling and analysis

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

2.3 Results & Interpretations

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

2.3.1 Ambient air quality

Particulate Matter PM_{10}

In core zone under Industrial area varies from 78 to 112 µ/m³

Particulate Matter $PM_{2.5}$

In core zone under Industrial area varies from 31 to 68 µ/m³

Sulphur Dioxide:

In core zone under Industrial area varies from 11 to 18 µ/m³

Oxides of Nitrogen:

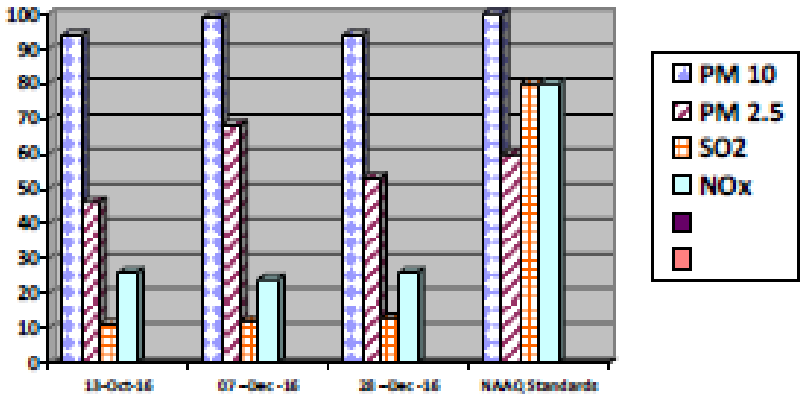
In core zone under Industrial area varies from 23 to 32 µ/m³

AMBIENT AIR QUALITY DATA

Name of the Company: Bharat Coking Coal limited
Name of the Cluster : Cluster – XI
Year : 2016-17.
Q.E.: December 2016
Station Code/Name: (a) A16 Pootkee Balihari office
(b) A17 Moonidih UGP
(c) A29 Moonidih Washery
Category: Industrial.
ZONE: Core

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

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	13- Oct - 16	94	46	11	26
2	07 –Dec -16	99	68	12	24
3	28 –Dec -16	94	53	13	26
NAAQ Standards		100	60	80	80



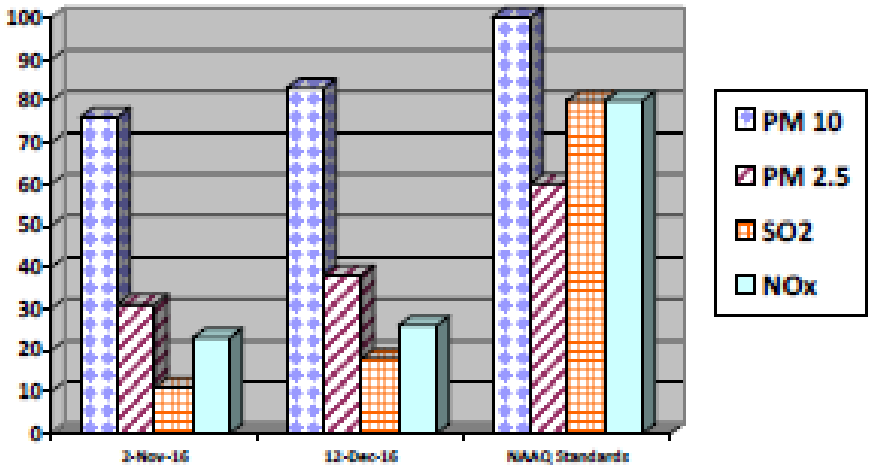
Note:

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

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed.....Dated 22.02.2017. Job No. 110310

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

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	02 - Nov -16	76	31	11	23
2	12 - Dec - 16	83	38	18	26
NAAQ Standards		100	60	80	80



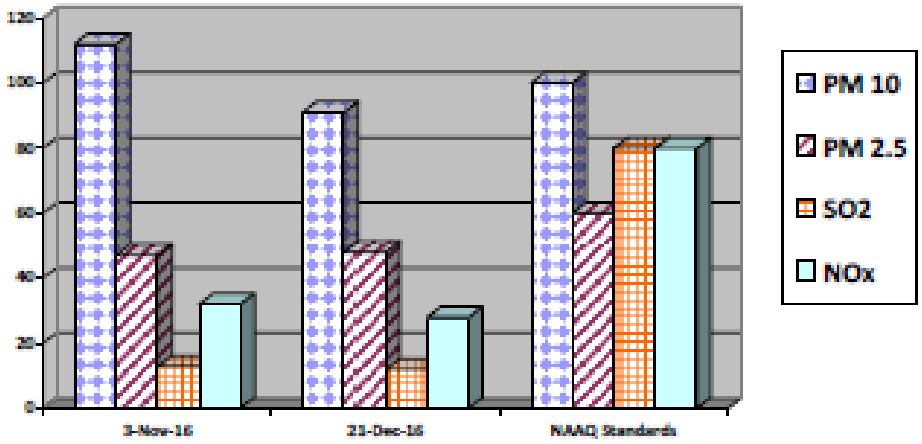
Note:

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

[2] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed.....Dated 22.02.2017. Job No. 110310

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

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	03 - Nov -16	112	47	13	32
2	21-Dec-16	91	48	12	28
NAAQ Standards		100	60	80	80



Note:

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

[3] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed.....Dated 22.02.2017. Job No. 110310

WATER QUALITY DATA

(EFFLUENT WATER FOUR PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2016-17.**

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

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

First Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 13.10.2016	As per MOEF&CC General Standards for schedule VI
1	Total Suspended Solids	20	*100 (Max)*
2	pH	8.33	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	30	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 19.10.2016	As per MOEF&CC General Standards for schedule VI
1	Total Suspended Solids	24	*100 (Max)*
2	pH	8.23	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	30	*250 (Max)*

All values are expressed in mg/lt unless specified.

Analysed By

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

WATER QUALITY DATA
(EFFLUENT WATER FOUR PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2016-17.**

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

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

First Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 14.11.2016	As per MOEF&CC General Standards for schedule VI
1	Total Suspended Solids	28	*100 (Max)*
2	pH	8.32	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	34	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 19.11.2016	As per MOEF&CC General Standards for schedule VI
1	Total Suspended Solids	24	*100 (Max)*
2	pH	8.53	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	32	*250 (Max)*

All values are expressed in mg/lt unless specified.

Analysed By

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

WATER QUALITY DATA

(EFFLUENT WATER FOUR PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2016-17.**

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

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

First Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 03.12.2016	As per MOEF&CC General Standards for schedule VI
1	Total Suspended Solids	20	*100 (Max)*
2	pH	8.65	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	36	*250 (Max)*

Second Fortnight

Sl. No.	Parameters	MW11 (Mine Discharge) 22.12.2016	As per MOEF&CC General Standards for schedule VI
1	Total Suspended Solids	28	*100 (Max)*
2	pH	8.64	*5.5 - 9.0*
3	Oil & Grease	<2.0	*10 (Max)*
4	COD	36	*250 (Max)*

All values are expressed in mg/lit unless specified.

Analysed By
JSA/SA/SSA

Checked By
Lab Incharge
Env. Lab, RI-3, CMPDI

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

WATER QUALITY

(SURFACE WATER- ALL PARAMETERS)

Name of the Company: Bharat Coking Coal Limited Year : 2016-17

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

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

Stations:

	Date of Sampling:
1. Upstream in Jarian Nala SW-23	07/12/2016
2. Downstream in Jarian Nala SW-24	24/12/2016
3. Upstream in Damodar river SW-25	24/12/2016
4. Downstream in Damodar river SW-26	24/12/2016

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	2.2	2.4	2.2	2.4	2.00	300	IS 3025 /44 : 1993, R : 2003 3 day incubation at 27°C
3	Colour (Hazen Unit)	colourless	colourless	colourless	colourless	Qualitativ e	300	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	48	30	32	66	2.00	600	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03	<0.03	<0.03	0.03	1.5	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	4.9	3.7	5.2	4.1	0.10	4	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.49	0.93	0.94	0.79	0.02	1.5	APHA, 23rd Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	0.009	0.022	0.006	0.012	0.01	0.05	APHA, 23rd Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	1.379	1.734	1.672	1.649	0.06	50	IS 3025 /53 : 2003, R : 2009, AAS-Flame
10	Lead (as Pb), mg/l, Max	0.032	0.067	0.032	0.032	0.005	0.1	APHA, 23rd Edition AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	5.34	7.88	8.05	12.13	0.50	50	APHA, 23rd Edition, UV-Spectrophotometric
12	pH value	8.39	8.59	8.60	8.74	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	0.0005	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002	<0.002	<0.002	0.002	0.05	APHA, 23rd Edition AAS-GTA
15	Sulphate (as SO_4) mg/l, Max	210	90	90	290	2.00	400	APHA, 23rd Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	330	681	338	706	25.00	1500	IS 3025/16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	<0.01	<0.01	<0.01	<0.01	0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

All values are expressed in mg/lt unless specified.

Analysed By
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Dy.Technical Manager
Env. Lab, CMPDI (HQ),
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WATER QUALITY

(DRINKING WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2016-17.**

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

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

Stations: 1. Drinking Water from Bhagaband GW-11 **Date of Sampling:** 29/12/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-11	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 23rd Edition ,Carmine
2	Colour,in Hazen Units	13			1	5	APHA, 22nd Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	36.8			1.60	75	IS:3025(40):1991, EDTA
4	Chloride (as Cl), mg/l, Max	36			2.00	250	IS:3025(32):1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS:3025(42) : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.79			0.02	1.0	APHA, 22nd Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.06			0.02	0.2	APHA, 22nd Edition, DPD
8	Iron (as Fe), mg/l, Max	2.083			0.06	0.3	IS:3025(53) : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	0.134			0.005	0.01	APHA, 23rd Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	0.020			0.02	0.1	IS:3025(59):2006, AAS-Flame
11	Nitrate (as NO_3), mg/l, Max	6.2			0.5	45	APHA, 22nd Edition, UV-Spectrophotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS:3025 (05):1983, R-2012, Qualitative
13	pH value	8.38			2.5	6.5 to 8.5	IS:3025(11):1983, R-1996, Electrometric
14	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.002			0.001	0.001	APHA, 22nd Edition,4-Amino Antipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 23rd Edition, AAS-GTA
16	Sulphate (as SO_4) mg/l, Max	76			2.00	200	APHA, 22nd Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22nd Edition. Taste
18	Total Alkalinity ($CaCO_3$), mg/l, Max	136			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	0.854			0.04	0.05	IS:3025(52):2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	394			25.00	500	IS:3025 (16):1984 R : 2006, Gravimetric
22	Total Hardness ($CaCO_3$), mg/l, Max	204			4.00	200	IS:3025(21):1983, R-2002, EDTA
23	Turbidity, NTU, Max	1			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

All values are expressed in mg/lit unless specified.

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

CHAPTER - IV

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites and their rationale

i) **Pootkee Balihari Office (N16)**
To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

ii) **Moonidih UGP (N17)**
To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

iii) **Moonidih Washery (N29)**
To assess the noise level in mine site, the noise levels were recorded in the mine area where all mining activities are in progress.

4.2 Methodology of sampling and analysis

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

4.3 Results & Interpretations

Ambient noise levels were recorded during day 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 Company: **Bharat Coking Coal Limited** Year : **2016-17.**

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

Name of the Stations & Code : **1. Pootkey Balihari office (N16)**

(a) **First Fortnight**

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Pootkey Balihari office (N16)	Industrial area	13.10.2016	62.4	75

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

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

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-I, Asansol, Signed.....Dated 22.02.2017. Job No. 110

NOISE LEVEL DATA

Name of the Company: Bharat Coking Coal Limited

Year : 2016-17.

Name of the Project: Cluster -XI

Month: November, 2016.

Name of the Stations & Code :

1. Moonidih UGP (N17)
2. Moonidih Washery(N29)

a. First Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Moonidih UGP (N17)	Industrial area	02.11.2016	62.3	75
2	MoonidihWashery(N29)	Industrial area	03.11.2016	61.2	75

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

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

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-I, Asansol, Signed..... .....Dated 22.02.2017. Job No. 110310

NOISE LEVEL DATA

Name of the Company: **Bharat Coking Coal Limited**
Year : **2016-17.**
Name of the Project : **Cluster -XI**
Month: **December, 2016.**
Name of the Stations & Code :
1. **Pootkey Balihari office (N16)**
2. **Moonidih UGP (N17)**

a. First Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Pootkey Balihari office (N16)	Industrial area	07.12.2016	58.6	75
2	Moonidih UGP (N17)	Industrial area	12.12.2016	61.9	75

b. Second Fortnight data

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Pootkee Balihari Office (N16)	Industrial area	28.12.2016	59.8	75
2	MoonidihWashery(N29)	Industrial area	21.12.2016	60.7	75

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

*** Day Time: 8.00 AM to 10.00 PM .**

[1] Report released by Shri Indranil De, Manager (Env), CMPDI, RI-I, Asansol, Signed.....Dated 22.02.2017. Job No. 110310

ANNEXURE-M

Status of Periodical Medical Examination & Training

Mines under Cluster-VII	Total PME done for the period April'16 to March'17	Total Vocational Training done for the period April'16 to March'17
Dhansar(UG, VOCP, Industry Colliery), Kusunda OC, Ena OC and Alkusa UG, Simlabahal, Hurriladih, Burragarh and ROCP	985	910

	RPL Training done for Cluster-VII mines
Recognition of Prior Learning (RPL) by NSDC	669