

**ENVIRONMENTAL CLEARANCE COMPLIANCE OF**  
**CLUSTER-XIV (GRANTED VIDE LETTER NO.J-**  
**11015/10/2010-IA.II (M) DATED 06.06.2013**

**(APRIL'17 – SEPT'17)**

Sl. No.	A. Specific Conditions by MOEF:	Compliance
i.	<b>No mining shall be undertaken in/under the forestland until prior forestry clearance has been obtained under the provisions of FC Act 1980.</b>	Application for forest clearance was applied on 16.3.2010 to DFO, Dhanbad vide ref. no. WJA/MND/F/10/13 dated 16.3.2010. The initial application was misplaced from the office of DFO Dhanbad. It was further directed to apply again demanding “Jungle- Jhari” report for the whole leasehold area. We applied to get the above report from concerned Circle Officer. After several correspondences, C.O. sent the “Jungle- Jhari report for 3 mouzas out of 14 mauza only, showing unavailability/ tearing off of Khatiyani. After putting up the above report to DFO, Dhanbad, he directed to get the above report for rest of Mouzas from D.C’s Office, Dhanbad. D.C’s office issued the same for 2 mauzas only showing unavailability/tearing off of Khatiyani. Hence, application for forest clearance was again applied to DFO, Dhanbad vide ref. no. WJA/MND/GM/2013/2529 dt. 22.4.13/28.5.13 including above report. There are two no. of Mouzas namely Kunji and Lohapatti which have forest land under leasehold area of Lohapatti colliery. NOC from above Mouzas are obtained from the village panchayats as per the advice of the DFO. DFO, Dhanbad directed us to apply forest clearance of the same through ON-LINE. So Online registration for the same was done vide Unique Proposal no. FP/JH/MIN/9728/2015. Form ‘A’ application for the same has been completed, top sheets uploaded and Geo-reference is being done. Correspondences for NPV payment are done with concerned DFO. Demarcation of Boundary line of forest land being done, accordingly DGPS reading of the same will be done preparation of KML file.
ii.	<b>The maximum production in the cluster shall not exceed beyond that for which environmental clearance has been granted for the cluster XIV.</b>	It is being complied.  Annexure - I
iii.	<b>The measure identified in the environmental plan for cluster–XIV group of mine and the condition given in this</b>	Implementation of Jharia Action Plan is under

	<b>environmental clearance letter shall be dovetailed to the implementation of Jharia Action Plan.</b>	process.
Iv.	<b>As there is no fire in cluster XIV but the measure should be adopted proponent to control spread of neighboring fire to this cluster XIV. The proponent shall prepare time series maps of Jharia Coal field through NRSA to monitor &amp; prevent fire problems in this Jharia Coalfield by Isothermal mapping / imaging and monitoring temperatures of the coal seam (whether they are closed 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 fire in other areas including in mines of cluster - XIV shall be undertaken.</b>	Work Order Issued to National Remote Sensing Center, ISRO for “Delineation of Surface Coal Fire and associated Land Subsidence in Jharia Coalfield, Jharkhand using satellite based remote – sensing techniques”.  Annexure - II
V.	<b>Underground mining should be taken up after completion of reclamation of O/C mine area after two years.</b>	Agreed.  Lohapatti O/C project yet not started.
vi.	<b>No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/check such fire including in old OB dump.</b>	At present there is no fire.
vii.	<b>A part of Cluster XIV is under River Damodar. It was clarified that although the mine is underground, there is no coal underneath River Damodar, which would be mined. The Committee desired that the data of bore wells near River Damodar require to be monitored for permeability and seepage of water of River Damodar.</b>	Agreed.  There is no coal mining underneath of River Damodar.
viii.	<b>The rejects of washeries in Cluster –XIV should be send to FBC based plant.</b>	There is no washery in cluster XIV, so rejects of washery in cluster XIV cannot be sent to FBC based plant.
ix	<b>There shall be no external OB dumps.OB produce from the whole cluster will be 7.29 Mm<sup>3</sup>. OB from one patch 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.</b>	Will be complied. There is no opencast mine in this cluster at present.



x.	<b>A detailed calendar plan of production with plan for OB dumping and back filling (for open cast mines) and reclamation and final mine closure plan for each mine of cluster XIV shall be drawn up &amp; implemented.</b>	Being implemented. Mine closure plan is approved.
xi.	<b>The void in 5 ha area shall be converted in to a water reservoir of maximum depth of 15-20 mtr in post mining stage and shall be gently sloped and upper benches of the reservoir shall be stabilized with plantation and periphery of the reservoir fenced . The abandoned pits and voids should be backfilled with OB &amp; biologically reclaimed with plantation and or may used for pisciculture.</b>	Will be Complied. As there is no opencast mine in this cluster at present.
xii.	<b>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.</b>	Being Complied.  There is no running opencast mine in this cluster at present.
xiii.	<b>Active OB dumps near water body and rivers should be rehandled for back filling abandoned mine voids. However, those which have been biologically reclaimed need not be disturbed.</b>	No active OB dumps in this cluster at present.
xiv.	<b>Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 47.63 ha would be reclaimed and afforested by planting native species in consultation with local DFO/Agriculture deptt. Institutions with the relevant discipline. The density of the trees should be around 2500 plants per ha.</b>	Agreed. Sufficient plantation in required area is done and is also being done. There is no reclaimed land under the leasehold area of cluster XIV and so thick green belt is already developed in adjoining area of cluster XIII (Ecological restoration of 4.2 ha, 1.5 ha, 1.8 ha & 0.9 ha area are maintained for the purpose in reclaimed land by planting native species – FRI, Dehradun is doing monitoring of 4.2 ha eco-restoration site).
xv.	<b>The roads should be provided with avenue plantation on both sides as trees act as sink of carbon and other pollutant.</b>	Agreed. Being complied.
xvi.	<b>Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a</b>	Implemented. Environmental action plan is maintained for the purpose.

	<b>critically polluted are and relevant for Cluster- XIV shall be implemented.</b>	
xvii.	<b>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 (PM10 and PM2.5) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.</b>	Location of monitoring stations was already finalized. Source Apportionment Study:- 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.
xviii.	<b>No ground water shall be used for mining activities. Additional water required, if any, shall be met from mine water or by recycling / reused of the water from the existing activities and from rain water harvesting measures. The project authority shall meet water requirement of nearby village(s) in case the village wells go dry to dewatering of mine.</b>	Already being done water supplied to Kandra and Bhurungia village and all other adjoining villages. There are 8 no. of ponds maintained for the purpose within leasehold area of Cluster XIV.
xix.	<b>Regular monitoring of groundwater level and quality of the study area shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality including Arsenic and Fluoride during the month of May. Data thus collected shall be submitted to the Ministry of Environment &amp; 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.</b>	Complied by CMPDI, DHANBAD. Locations and Design of Piezometer has been finalized by CMPDIL and the budget estimated has been done. E-Tender Notice was floated on 28.03.2017. The tender for installation of piezometer was opened on 05.05.2017 in which only one bidder has participated. Hence, that tender was cancelled and retendering for this work will be done. 8 no. of ponds within leasehold area of Cluster XIV maintained for rain water harvesting.

xx.	<b>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.</b>	Being complied. Monitoring work being done by CMPDI. Records maintained for the purpose.
xxi.	<b>ETP shall also be provided for workshop, and CHP, if any. Effluents shall be treated to confirm to prescribe standards in case discharge into the natural water course.</b>	There is no effluent discharge into natural water course. However there is arrangement for treatment of effluent discharge to prescribed standards. There is neither Open Cast mine running nor CHP nor such workshop in this cluster at present.
xxii.	<b>Regular monitoring of subsidence movement on the surface over and around the working area and impact natural drainage pattern, water bodies, vegetation, structure, roads and surroundings shall be continued till movement ceases completely. In case observation of any high rate of subsidence movement, appropriate effective corrective measure shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil /suitable material.</b>	At present there is no active depillaring operation in the underground workings of ClusterXIV. There is no chance of active subsidence at present. However subsidence monitoring is being done.
xxiii.	<b>Sufficient coal pillars shall be left un extracted around the air shaft (within subsidence influence area) to protect from any damage from subsidence, if any.</b>	Already complied as per DGMS provisions.
xxiv.	<b>High root density tree species shall be selected and planted over areas likely to be affected by subsidence.</b>	Plantation in required area is done and is also being done. There is no chance of active subsidence at present.
Xxv.	<b>Depression due to subsidence resulting in water accumulating within low lying areas shall be filled up or drained out by cutting drains.</b>	At present there is no active depillaring operation in the underground workings of ClusterXIV. There is no chance of active subsidence at present. However subsidence monitoring is being done.
Xxvi.	<b>Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the road.</b>	Already complied as per DGMS's statutory provisions.
xxvii.	<b>No depillaring operation shall be carried out below the township/colony.</b>	At present there is no active depillaring operation in the underground workings of Cluster XIV. There is no chance of active subsidence at present.
xxviii.	<b>The transportation plan for conveyor – cum – rail for cluster XIV should be dovetailed with Jharia Action Plan. Road transportation of coal during phase I should be by mechanically covered trucks,</b>	Presently tarpaulin covered coal transportation is being done as earlier there were no OEM (original equipment manufacturer) which were supplying such trucks for coal transportation. However, Initiatives has been taken at corporate level of coal

	<b>which should be introduced at the earliest. The plan for conveyor – cum – rail for cluster XIV should be dovetailed with Jharia Action Plan. The road transportation of coal during phase I should be by mechanically covered trucks.</b>	India Limited for developing the mechanically covered trucks and a vendor meeting for the same has been held with the OEM on dated 07.05.2016. Further, a proposal for inclusion of mechanically covered trucks in the Contract Terms has been initiated to ensure that the Outsourcing company should deploy Mechanically Covered Trucks for coal Transportation. Further CMPDIL has been entrusted the work for installation of rail cum conveyor system. The conveyor-cum-rail system will be installed during phase-II of Master Plan.
xxix.	<b>A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.</b>	Pollution load study report for has been submitted by CMPDI.  Annexure- III
xxx.	<b>R &amp; R of 713 nos. of PAF's involved. They should be rehabilitated at cost of Rs. 5035.38 lacs as per the approved Jharia Action Plan.</b>	PAF's involved is being rehabilitated as per cost specified as per Jharia Action Plan.

Xxxi.	<b>Details of transportation, CSR, R&amp;R and implementation of environmental action plan for each of the 17 clusters should be brought out in a booklet for and submitted to Ministry.</b>	Will be Complied.
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Xxxii.	<p><b>A detailed CSR action plan shall be prepared for cluster XIV group of mines. Specific activities shall be identified for CSR of Rs. 20.25 / annum @of Rs.5/ton of coal production as recurring expenditure. The area within the cluster XIV ML that would be existing 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 . Third party evaluation shall be got carried out regularly for the proper implementation of activities under taken in the project area under CSR. Issue raised in the public hearing should 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 the 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.</b></p>	<p>Agreed. Being complied</p>
xxxiii.	<p><b>For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1:5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MoEF and its Regional office at Bhubaneswar.</b></p>	<p>Time series map of vegetation cover in the Jharia Coal field has been carried out through CMPDI in the year 2014 and 2017( which is enclosed as Annexure- IV )</p>
xxxiv.	<p><b>A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment &amp; 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.</b></p>	<p>Mine closure plan has already been approved.</p>

xxxv.	<b>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 Company for implementing environment policy and socio – economic issues and the capacity building required in this regard.</b>	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives which includes Environment, Mining, Excavation has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, one executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental Acts/ Laws including environment protection measures .The activities are monitored on regular basis at Area and at Headquarters levels. GM (Environment) at head quarter level, co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xxxvi.	<b>Implementation of final mine closure plan for cluster XIV, subject to obtaining prior approval of the DGMS in regard to mines safety issues.</b>	Mine closure plan has been approved.  Will be implemented.

xxxvii.	<b>Corporate Environment Responsibility:</b>	Annexure- IV
a)	<b>The Company shall have a well laid down Environment Policy approved by the Board of Directors.</b>	Agreed
b)	<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.</b>	Complied
c)	<b>The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.</b>	Complied
d)	<b>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.</b>	Complied
Sl. No.	<b>B. General Conditions Conditions by MOEF:</b>	<b>Compliance</b>
i.	<b>No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.</b>	Being Complied
ii.	<b>No change in the calendar plan of production for quantum of mineral coal shall be made.</b>	Being Complied
iii.	<b>Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM 2.5, SO<sub>2</sub> and NO<sub>x</sub> monitoring.</b>	The locations of monitoring stations in the Jharia Coalfields has been finalized in consultation with the Jharkhand State Pollution Control Board. The work of monitoring of ambient environment is

	<b>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.</b>	being done through CMPDIL which is having laboratory under EP rule.  Records for the same are maintained.  Annexure - V
iv.	<b>Data on ambient air quality (PM10, PM 2.5, SO<sub>2</sub> and NO<sub>x</sub>) 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.</b>	Being complied. Monitoring for the same is done by CMPDIL.  Annexure - VI
v.	<b>Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.</b>	Being complied  No opencast projects at present in Cluster XIV.
vi.	<b>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 31<sup>st</sup> December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.</b>	The work of monitoring of ambient environment done through CMPDIL which is having laboratory under EP rule. There is neither Open Cast mine running nor CHP nor such workshop from where effluent discharge is found. Very small quantity of burnt oil is generated which is used to lubricate the machines.
vii.	<b>Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.</b>	Already Complied.
viii.	<b>Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognized under EPA Rules, Monitoring of</b>	It is complied.Montoring for the same is being done by CMPDI which is having laboratory under EP rule.  Annexure - VI




	<b>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.</b>	
ix.	<b>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.</b>	Being Complied. Vocational training Centers under separate Human Resource Development Deptt. is conducting regular training programme on these issues.
x.	<b>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.</b>	Initial Medical Examination (IME) and Periodical Medical Examination (PME) of all the personnel are carried out as per the Statutes and Director General of Mines Safety (DGMS) `s guideline.
xi.	<b>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.</b>	A full-fledged Environment Department, headed by a HoD (Environment) along with a suitable qualified multidisciplinary team of executives which includes Environment, Mining & Excavation has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater harvesting methods etc. At the project level, One executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental Acts/ Laws including environment protection measures .The activities are monitored on regular basis at Area and at Head quarters levels. GM (Environment) at head quarter level, co-ordinates with all the Areas and reports to the Director (Technical) and in turn he reports to the CMD of the company. The team is multidisciplinary and very much motivated under the guidance of company's Director (Technical) and CMD. Further capacity building at both corporate and operating level is being done.
xii.	<b>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</b>	It is being initiated to comply the same. Agreed to report the same.

	<b>Regional Office at Bhubaneswar.</b>	
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xiii.	<b>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 &amp; Forests at <a href="http://envfor.nic.in">www.envfor.nic.in</a> <a href="http://envfor.nic.in">http://envfor.nic.in</a>.</b>	It has been complied.
xiv.	<b>A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on company's website.</b>	Complied.
xv.	<b>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.</b>	Complied.
xvi.	<b>The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant. such as PM10, PM2.5, SO 2 and NOx (ambient) and critical sectorial parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.</b>	Complied.

xvii.	<b>The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office s of CPCB and the SPCB.</b>	Being complied.
xviii.	<b>The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/information/monitoring reports.</b>	Agreed .It is being and shall be complied.
xix	<b>The Environmental statement for each financial year ending 31<sup>st</sup> March – Form – V is mandated to be submitted by the Project proponent for the concerned State Pollution Control Board as prescribed under the Environmental (Protection) Rules, 1986 as amended subsequently, shall also be uploaded on the company's website along with the status of compliances of EC conditions and shall be sent to the respective Regional Officers of the MOEF by e-mail.</b>	Already complied
8	<b>The Ministry or any other competent authority may stipulate any further condition for environmental protection.</b>	Agreed
9	<b>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.</b>	Agreed
10	<b>The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention &amp; Control of Pollution) Act, 1974, the Air (Prevention &amp; 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</b>	Agreed

	mining operations.	
11	The Environmental Clearance is subject to the outcome of the Writ Petition filed by M/S Bharat Coking Coal Limited (BCCL) in response to the closure orders issued by the Jharkhand State Pollution Control Board which is pending in the Jharkhand High Court.	Agreed

  
 25.11.2017

Project officer, Lohapatti colliery

Project Officer  
 Lohapatti Colliery  
 W.J. Area (B.C.C.L)

## **ANNEXURE- I**

### A. Production from April'17 to Sept'17 of Cluster XIV mines

Month		April'17	May'17	June'17	July'17	Aug'17	Sept'17	Total (tonne)
Cluster XIV	Lohapatti UG Mine	971	815	740	645	630	570	4371
	Lohapatti OC Mine	Nil						Nil
	Total (in tonne)							4371

ANNEXURE - V

7

Ph: 0326-2204933



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

Letter No.....2650

Dated .....6/7/13.....

From,

Regional Officer,  
Dhanbad

To,

HOD (Env.),  
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,

  
617113  
(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.

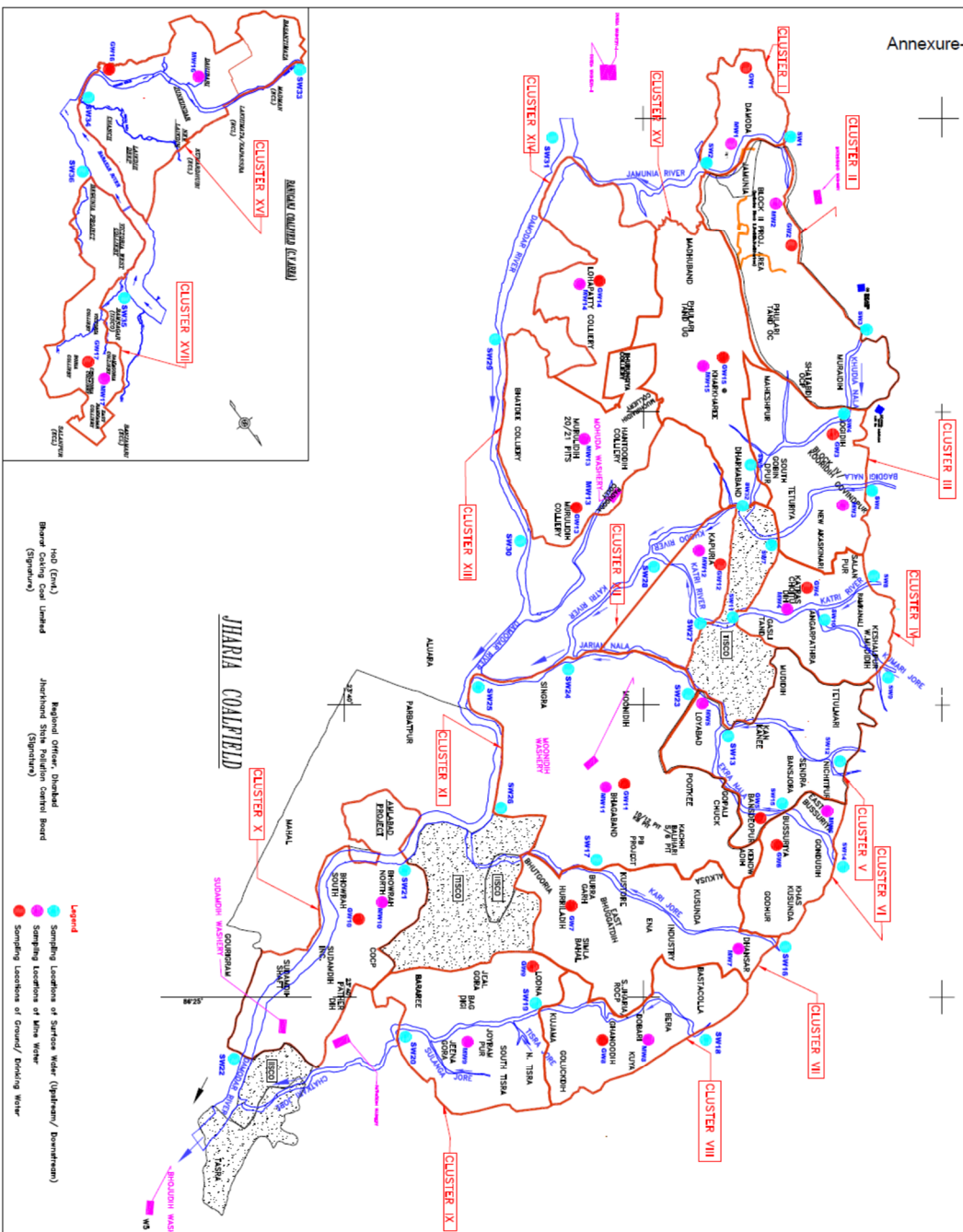
Encl-A/a.

(Dinesh Pd. Singh)  
Regional Officer.



# Water Sampling Locations in BCCL

Annexure-03



MD (CMA)  
Bharat Coking Coal Limited  
(Signature)

Regional Officer, District  
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

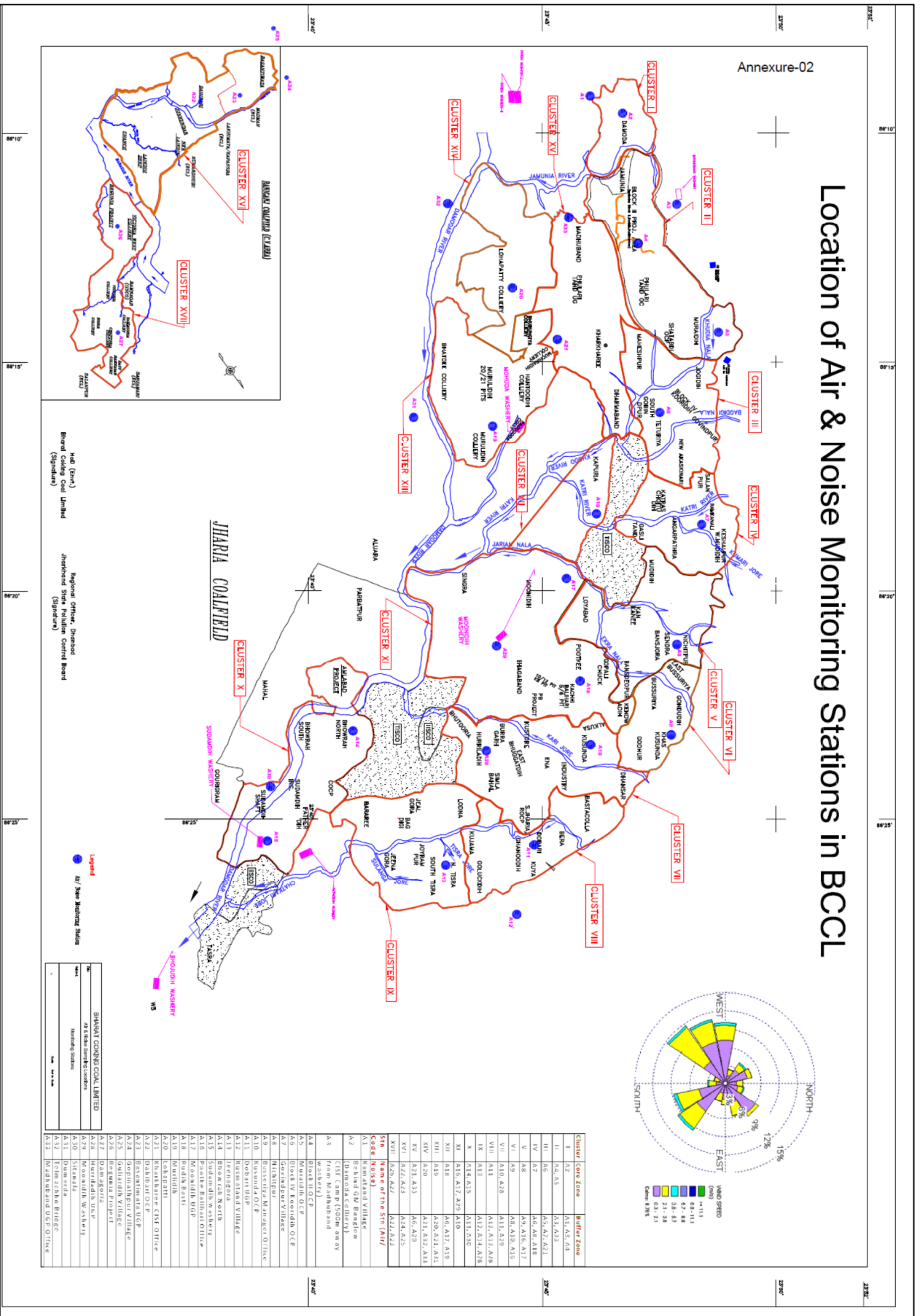
## INDEX

Cluster	Water Source	Name of the Sampling Location	Ground Water Sampling Location
I	SW1, SW2	SW1, SW2	SW1, SW2
II	SW1, SW2	SW1, SW2	SW1, SW2
III	SW1, SW2	SW1, SW2	SW1, SW2
IV	SW1, SW2	SW1, SW2	SW1, SW2
V	SW1, SW2	SW1, SW2	SW1, SW2
VI	SW1, SW2	SW1, SW2	SW1, SW2
VII	SW1, SW2	SW1, SW2	SW1, SW2
VIII	SW1, SW2	SW1, SW2	SW1, SW2
IX	SW1, SW2	SW1, SW2	SW1, SW2
X	SW1, SW2	SW1, SW2	SW1, SW2
XI	SW1, SW2	SW1, SW2	SW1, SW2
XII	SW1, SW2	SW1, SW2	SW1, SW2
XIII	SW1, SW2	SW1, SW2	SW1, SW2
XIV	SW1, SW2	SW1, SW2	SW1, SW2
XV	SW1, SW2	SW1, SW2	SW1, SW2
XVI	SW1, SW2	SW1, SW2	SW1, SW2
XVII	SW1, SW2	SW1, SW2	SW1, SW2

MD (CMA)	Bharat Coking Coal Limited
MD (CMA)	Bharat Coking Coal Limited
MD (CMA)	Bharat Coking Coal Limited

# Location of Air & Noise Monitoring Stations in BCCL

Annexure-02







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## GROUNDWATER LEVEL & QUALITY REPORT

### FOR CLUSTER OF MINES, BCCL

(Assessment year - 2015)

[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 – 2016

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

## Annexure – V

## GROUNDWATER QUALITY DATA (DUG WELLS)

Parameter in (mg/l) except pH	Cluster IX	Cluster X	Cluster XI	Cluster XIII	Cluster XIV	Cluster XV	Cluster XVI	IS: 10500 – 1991 Norms
Colour	Colourless	Colourless	Colourless	Colourless	Colourless	Colourless	Colourless	5/25
Odour	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless	Unobjectionable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity	<5NTU	<5NTU	<5NTU	<5NTU	<5NTU	<5NTU	<5NTU	5/10
pH	7.29	7.31	6.10	7.32	7.00	7.66	6.07	6.5-8.5
Alkalinity as CaCO <sub>3</sub>	264	288	48	268	68	396	140	200/600
T. Hardness	380	596	144	376	152	396	220	300/600
Iron as Fe	0.04096	0.04415	0.03194	0.02876	0.02163	0.02538	0.03357	0.30/1.0
Chloride (Cl)	68	348	92	44	48	64	92	250/1000
R. Chloride	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.2 Min
TDS	954	907	351	387	339	522	354	500/2000
Calcium	296	488	72	296	96	140	168	75/200
Copper	0.00392	0.00758	0.00233	0.00234	0.00152	0.00188	0.00365	0.05/1.50
Manganese	0.00242	0.07291	0.11526	0.00362	0.00239	0.00335	0.00629	0.10/0.30
Sulphate	56.44	95.99	40.37	46.96	51.50	48.61	153.26	200/400
Lead	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	0.05
Zinc	0.04465	0.04826	0.29754	0.02631	0.03197	0.02145	0.08467	5/15
Chromium	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.05
MPN count/100 ml	17	11	4	< 2	< 2	< 2	2	-
Phenolic Compounds	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001/0.002
Cadmium	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	< 0.0015	0.01

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

## ANNEXURE-IV



### **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**  
Keyla Bhawan, Dhanbad-826 005

**ANNEXURE-VI**

**A. Training from Oct'16 to March'17**

<b>No of employees (Departmental &amp; Contractual) received training in Cluster XIV (Oct'16 to March'17)</b>	
<b>Types of Training</b>	<b>Numbers</b>
Basic Training	0
Refresher Training	43



<p>भारत कोकिंग कोल लिमिटेड एक मिनीरत्न कंपनी (कोल इंडिया लिमिटेड का एक अंग) पंजीकृत कार्यालय कोयला भवन, कोयला नगर, (धनबाद) झारखंड 826005 CIN:U10101JH1972GOI000918 Tele: 0326 2230174 FAX: 0326 2230176 ईमेल : <a href="mailto:cgmsafety@bccl.gov.in">cgmsafety@bccl.gov.in</a></p>		<p>Bharat Coking Coal Limited A Miniratna Company (A subsidiary of Coal India Ltd) Office of GM I/C(S&amp;R) Koyla Bhawan, Koyla Nagar, Dhanbad, Jharkhand-826005 CIN:U10101JH1972GOI000918 Tele: 0326 2230174 FAX: 0326 2230176 Email: <a href="mailto:cgmsafety@bccl.gov.in">cgmsafety@bccl.gov.in</a></p>
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पत्र संख्या भाकोकोलि/उप महाप्रबंधक(एस&आर)/I/C/संचिका-MP/17 323

दिनांक:-07.04.2017

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

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

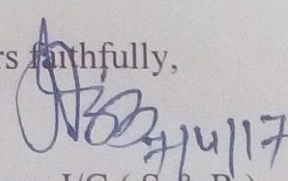
Dear Sir,

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

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

Thanking you,

Yours faithfully,

  
General Manager I/C ( S & R )

Cc to :

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





**cmpdi**  
A Mini-Ratna Company

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड  
(कोल इण्डिया लिमिटेड की अनुषंगी कम्पनी / भारत सरकार का एक लोक उपक्रम)  
गोन्दवाना प्लेस, काँके रोड, राँची - 834 031, झारखंड (भारत)

Central Mine Planning & Design Institute Limited  
(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)  
Gondwana Place, Kanke Road, Ranchi - 834 031, Jharkhand (INDIA)  
Corporate Identity Number (CIN): U14292JH1975GOI001223

पत्रांक: पर्यावरण /15/Lab-16 / **E-48671**

दिनांक: 31.03.2017

सेवा में,

उप महाप्रबन्धक (पर्यावरण)

बी .सी .सी .एल.

कोयला भवन

धनबाद-826005

**विषय: Study to analyze the Extent of Reduction of Pollution Load every year by reducing coal transportation by Road (Job No.-094214112).**

(BCCL/Dy.GM(Env.)/F-/14/713 dated 21/23.08.2014)

महोदय,

Please find attached soft copies of the report on "Study to analyze the Extent of reduction of pollution load every year by reducing coal transportation by Road" for the following **4 (Four) clusters**:

Sl. No.	Name of the Cluster	Peak Production (MTY)
1.	Cluster -IV	3.706
2.	Cluster -XIII	0.234
3.	Cluster -XIV	0.526
4.	Cluster -XVI	1.963

The above reports have been prepared based on the data provided by BCCL and meeting held in the first week of November 2016 at BCCL (HQ) Dhanbad.

You are requested to provide the data for those clusters for which it has not been submitted yet.

सधन्यवाद,

संलग्नक: यथोक्त

भवदीय

*[Signature]*  
महाप्रबन्धक(पर्यावरण)

प्रतिलिपि:

1. क्षेत्रीय निदेशक, आर.आई -II, कोयला भवन, धनबाद- For Kind information.

फोन नम्बर / Phone No. : +91 651 2230483;

फैक्स नम्बर / Fax No.: +91 651 2231447वेब साईट / Website

Address: www.cmpdi.co.in, Email-gmenv.cmpdi@coalindia.in



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

**CLUSTER XIV GROUP OF MINES**

**(Lohapatti UG Mine & Lohapatti OC Mine)**

Normative Production : 0405 MTPA  
Peak Production : 0.526 MTPA  
Lease Hold Area : 1577.22 Ha

**Bharat Coking Coal Limited**

(March, 2017)

**Prepared by**

**Environment Division**

**Central Mine Planning & Design Institute Limited**

**CMPDI (HQ)**

**Gondwana Place**

**Kanke Road, Ranchi-834008**

## **CONTENTS**

<b>CHAPTER NO.</b>	<b>TITLE</b>	<b>PAGE No.</b>
I	INTRODUCTION	1-6
II	FUGITIVE DUST GENERATION DUE TO MOVEMENT OF COAL	7-12



## **Chapter – I**

### **Introduction**

#### **1.1 Genesis:**

MOEF provided Environmental Clearance to the various mines of the Cluster vide letter no. J- 11015/10/ 2010 -IA.II(M) dated 6 June 13.

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

#### **1.2 Methodology:**

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

#### **1.3 General Information about the Cluster:**

##### **1.3.1 Brief Description:**

Cluster-XIV consists of two mines namely, Loahapatti opencast (a proposed mine) and Lohapatti underground mine (an operating unit) in the Western Jharia Area of the Bharat Coking Coal Limited in the Dhanbad District of Jharkhand state. BCCL is the proponent of the cluster and it is under the administrative control of Coal India Limited. Coal India Limited is a Public Sector Undertaking of Government of India and functioning under the Ministry of Coal, Govt. of India.

BCCL is the proponent of the cluster and it is under the administrative control of Coal India Limited.

### 1.3.2 Nature and Size of the Cluster:

Cluster-XIV consists of two mines namely, Loahapatti opencast (a proposed mine) and Lohapatti underground mine (an operating unit) in the Western Jharia Area of the Bharat Coking Coal Limited in the Dhanbad District of Jharkhand state.

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

**Table 1.1: Details of the Mines of Cluster –XIV**

Sl .No.	Name of Mine	Production Capacity (MTY)		Lease Hold Area (Ha)
		Normative	Peak	
1	Lohapatti UG Mine	0.03	0.039	1577.22
2	Lohapatti OC Mine	0.375	0.487	
	Total	0.405	0.526	1577.22

### 1.3.3 Impact of Fire Control on Ambient Air Quality:

Due to unscientific mining prior to nationalization there are unstable sites identified in the BCCL. Out of 595 unstable sites identified in the Master Plan , 8 sites consisting of 713 no. of houses/families are affected .The affected families will be rehabilitated in adjacent non coal bearing area.

### 1.3.4 Impact of Resettlement on Ambient Air Quality:

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

## 1.4 Meteorological Data

A meteorological data generated during 1<sup>st</sup> January 16 to 31<sup>st</sup> March 2016 has been presented in this report .The micro meteorological set up was established at

the roof of BCCL Dugda Guest house and parameters like temperature, relative humidity, wind speed and directions, cloud cover and rainfall were recorded. The data were collected on hourly basis during the entire study period.

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

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

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

**Table 1.2: SEASONAL WIND DISTRIBUTION**

Period: 01<sup>st</sup> JAN.'2016 – 31<sup>st</sup>MAR.'2016

Wind Direction	Wind Velocity (m/s) & Duration (%)				
	< 0.5	0.6 -1.5	1.6 -3.5	>3.5	Total
N		1.61	0.78	0.00	2.38
NNE		0.83	0.37	0.00	1.19
NE		3.17	1.47	0.05	4.67

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

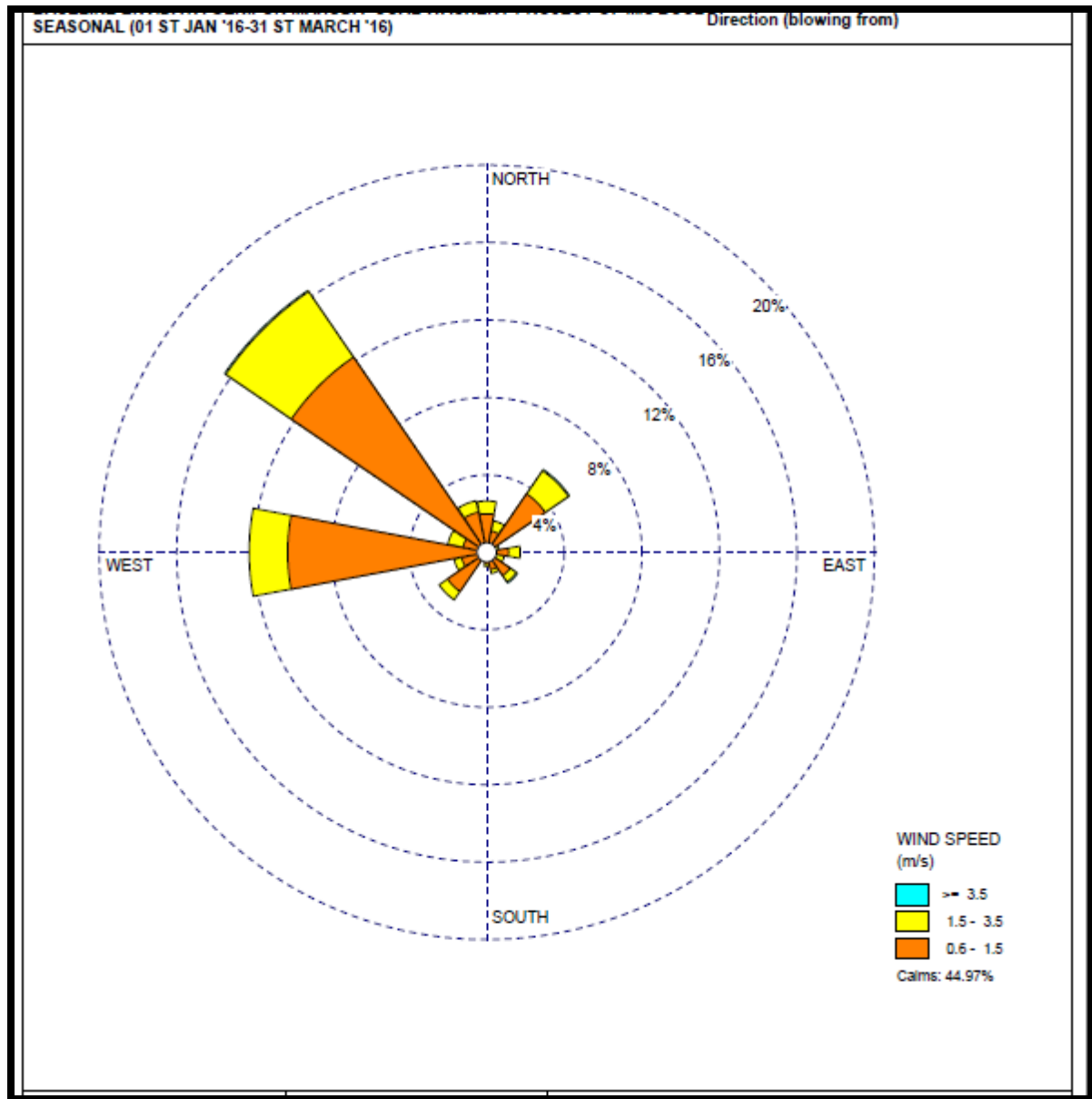


Figure No.-1.1 Wind Rose diagram for the period 1<sup>st</sup> Jan to 31<sup>st</sup> March 2016

## Chapter – II

### **Fugitive Dust Generation Due To Movement of Coal**

#### **2.1 Introduction**

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

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

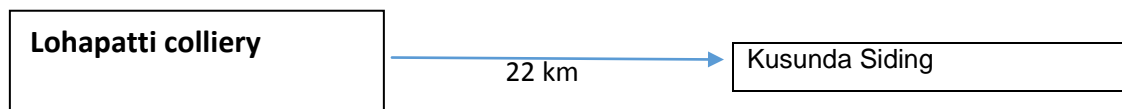
1. Speed and Weight of the moving vehicles.
2. Silt Content of the Road Dust (Particles less than 200 mesh size is considered as silt)
3. Silt loading of the road dust ( $\text{Kg/m}^2$ ).
4. Moisture Content of the dust lying on the road surface.
5. Ambient Temperature, Humidity & wind velocity.

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

#### **2.2 Movement of Coal**

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

### 2.2.1 Lohapatti Colliery :



**Table: 2.1 Dust Generation (Kg/day)**

Name of the Mine	Year	Location	Distance from Face to Siding (Km)	Coal Transferred	Daily Coal Production (Te/Day)	Capacity of the Dumper	Vehicle Kilometer Travelled	Emission Rate for PM 10 ( kg/VKT)	Pollution Load * Dust Generated Per Day (Kg/day)	Dust generated Kg/per tonne
Lahapatti Colliery	13-14	Kusunda Siding	22.00	67962	206.00	20.00	453.20	0.53	240.196	
		<b>Total for 13-14</b>			<b>206.00</b>				<b>240.196</b>	1.17
	14-15	Kusunda Siding	22.00	835	3.00	20.00	6.60	0.53	3.498	
		<b>Total for 14-15</b>			<b>3.00</b>				<b>3.498</b>	1.17
	15-16	Kusunda Siding	22.00	1481	4.00	20.00	8.80	0.53	4.664	
		<b>Total for 15-16</b>			<b>4.00</b>				<b>4.664</b>	1.17

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

## **2.3 Optimum Coal Transportation scheme in the Present Scenario:**

### **Phase – I (for 10 + 05 Years)**

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

## **2.4 Conceptual Plan of Proposed Integrated Coal Transportation Network for the Cluster:**

### **Phase – II (after 15 Years):**

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

During 2015-16, the combined daily coal production of the Cluster was 1481 tones resulting in 1727 kg of daily fugitive dust generation. The dust (PM-10) generation rate at present is 1.17 kg/te

As a result of replacement of existing road transportation of coal by Conveyor to railway siding will result in reduction of fugitive dust generation to the extent of 185853 kg/day for daily coal production of 159394 tonnes (0.526 MTY) during Phase –II.



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

Cluster	Mines in Operation in Phase - II	Production Capacity (MTY)	Proposed Transport Infrastructure in Phase – II
XIV	Lohapatti colliery	0.526	<b>Coal transport by Conveyor to Railway Siding</b>
	Total	0.536 MTY = 159394 tonnes /Day	

## **2.5 Conclusion:**

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

### **Phase – I :( 2013-14 to 2028 -29) :**

1. During Phase – I, business as usual(BAU) scenario will prevail and the existing road cum rail transport network system will be used for coal dispatch to the consumers. During 2015-16, the combined daily coal production of the Cluster was 1481 tones resulting in 1727 kg of daily fugitive dust generation. The dust (PM-10) generation rate at present is 1.17 kg/te.
2. The generation of fugitive dust due to transportation of coal by road can be further reduced by enforcing covering of loaded trucks, periodical removal of loose materials lying on the road surface and black topping of coal transportation roads.
3. Avenue plantation, effective wetting of the road surface and proper maintenance of roads will further result in mitigation of the impact of road generated dust on ambient air quality.
4. Better road condition, by the use of Mechanical Sweeper or vacuum cleaner dust generation may be minimized.

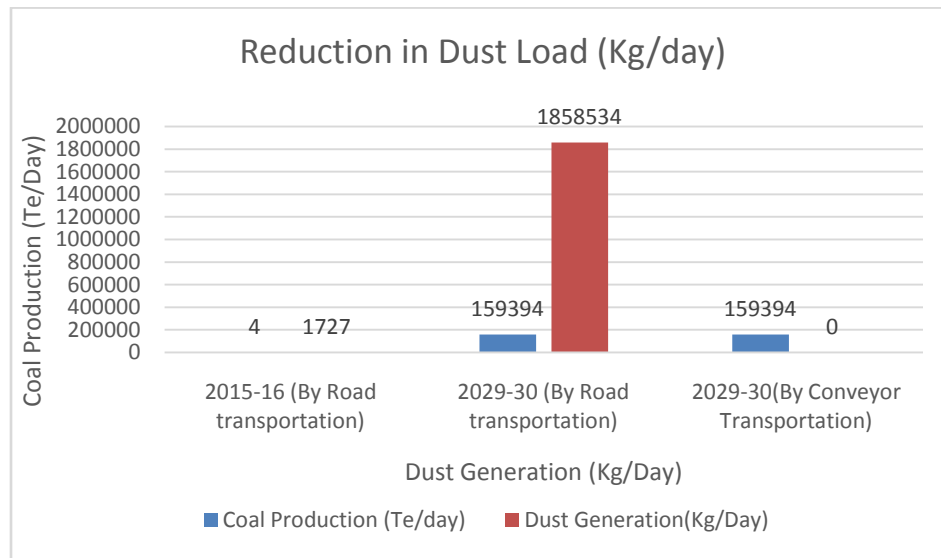
## **Phase – II :( From 2029-30 Onwards):**

As a result of replacement of existing road transportation of coal by Conveyor to railway siding will result in reduction of fugitive dust generation to the extent of 185853 kg/day for daily coal production of 159394 tonnes (0.526 MTY) during Phase –II.

1. During Phase –II, dust load will further reduce due to quenching of mine fire and domestic coal consumption after resettlement of general population dwelling within the command area of cluster, as a result of implementation of Jharia Action Plan. It will result in significant improvement in ambient air quality.
2. **Coal Production Vs. Dust Generation due to Road Transportation is presented below:**

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

Year	Coal Production (Te/day)	Dust Generation(Kg/Day)
2015-16 (By Road transportation)	4	1727
2029-30 (Considering peak production and all the coal transported through Road)	159394	1858534
2029-30(By Conveyor Transportation)	159394	0



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

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



*Submitted to*  
**Bharat Coking Coal Ltd (BCCL)**  
Dhanbad

**March 2017**

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

**March-2017**

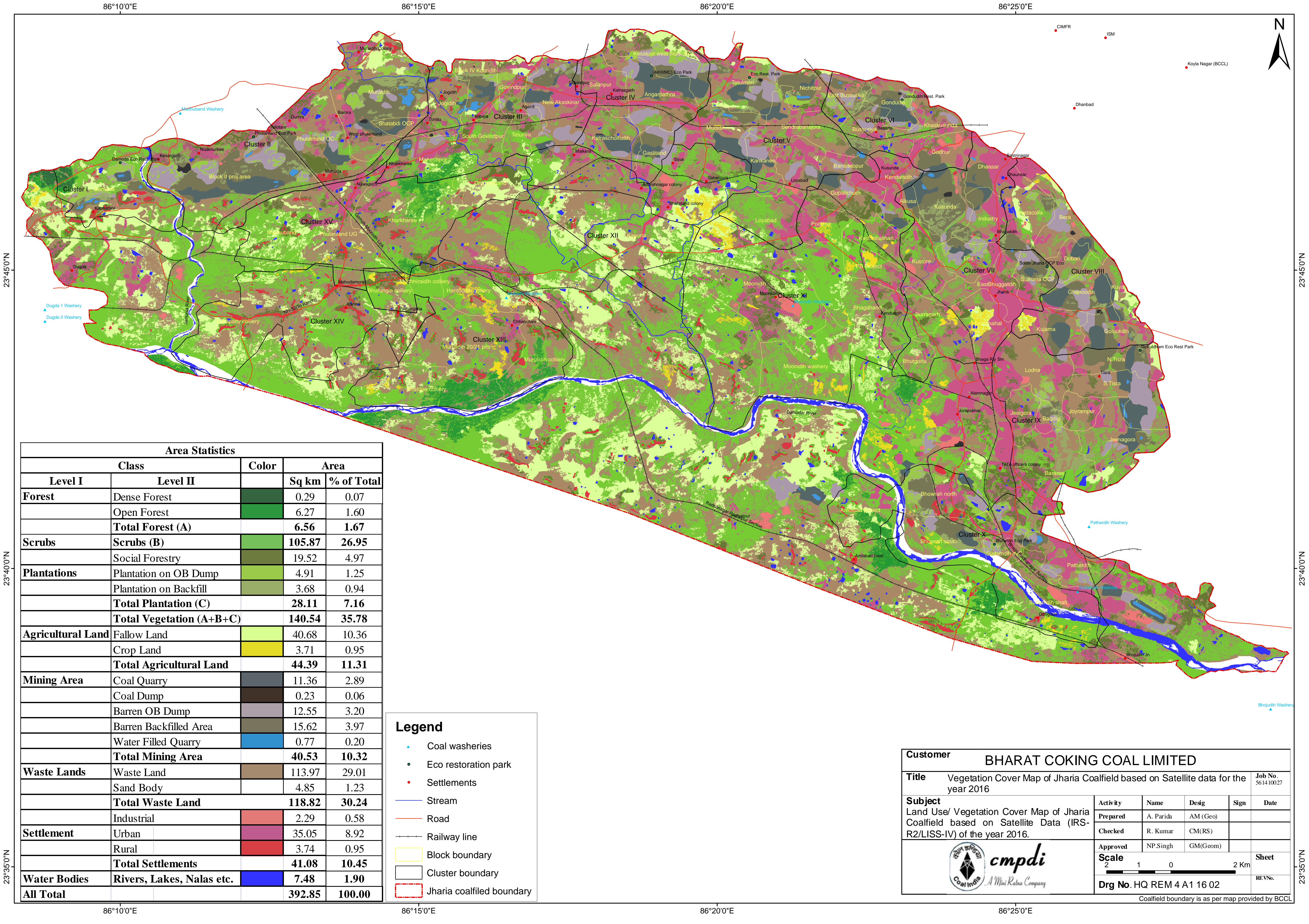


**Remote Sensing Cell  
Geomatics Division  
CMPDI, Ranchi**

**Document Control Sheet**

(1) Job No.	RSC/561410027
(2) Publication Date	March 2017
(3) Number of Pages	49
(4) Number of Figures	6
(5) Number of Tables	10
(6) Number of Plates	17
(7) Title of Report	Vegetation cover mapping of Jharia Coalfield based on satellite data for the year 2016.
(8) Aim of the Report	To prepare Land use and vegetation cover map of Jharia Coalfield on 1:50000 scale based on satellite data for monitoring the impact of coal mining on land use pattern and vegetation cover & also to prepare cluster wise Land use/ Cover maps falling under Jharia Coalfield.
(9) Executing Unit	Remote Sensing Cell,  Geomatics Division  Central Mine Planning & Design Institute Limited, Gondwana Place, Kanke Road, Ranchi 834008
(10) User Agency	Coal India Ltd.(CIL) / Bharat Coking Coal Ltd.(BCCL)
(11) Authors	Ms Ayesha Parida, Assistant Manager (Remote Sensing)
(12) Security Restriction	Restricted Circulation
(13) No. of Copies	5
(14) Distribution Statement	Official





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

Legend

▲

Coal washeries

●

Eco restoration park

●

Settlements

—

Stream

—

Road

—+—+—

Railway line

□

Block boundary

□

Cluster boundary

□

Jharia coalfield boundary

Customer

BHARAT COKING COAL LIMITED

Title

Vegetation Cover Map of Jharia Coalfield based on Satellite data for the year 2016

Job No.  
561410027

Subject

Land Use/ Vegetation Cover Map of Jharia Coalfield based on Satellite Data (IRS-R2/LISS-IV) of the year 2016.

Activity

Name

Desig

Sign

Date

Prepared

A. Parida

AM (Geo)

Checked

R. Kumar

CM(RS)

Approved

NP.Singh

GM(Geom)

Scale

2102 Km

Sheet

Drg No. HQ REM 4 A1 16 02

REVNo.

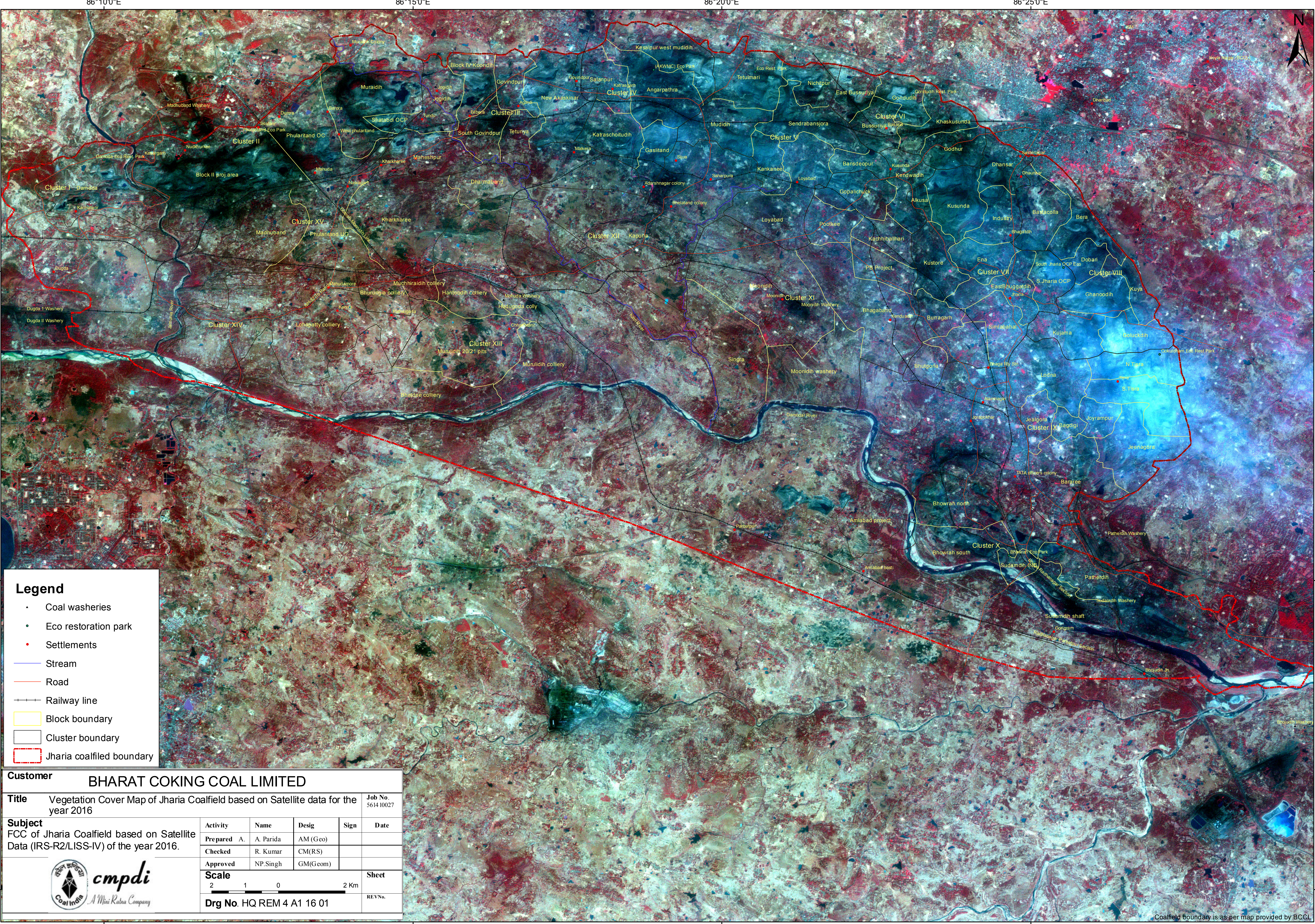
Coal India

cmpdi

A Mini Ratna Company

Coalfield boundary is as per map provided by BCCL





Legend

• Coal washeries

• Eco restoration park

• Settlements

Stream


Road

Railway line

Block boundary

Cluster boundary

Jharia coalfield boundary

Customer							BHARAT COKING COAL LIMITED				
Title		Vegetation Cover Map of Jharia Coalfield based on Satellite data for the year 2016						Job No.		5614 10027	
Subject FCC of Jharia Coalfield based on Satellite Data (IRS-R2/LISS-IV) of the year 2016.		Activity		Name		Desig		Sign		Date	
		Prepared		A. A. Parida		AM (Geo)					
		Checked		R. Kumar		CM(RS)					
		Approved		NP.Singh		GM(Geom)					
				Scale							
2                      1                      0                      2 Km											
Drg No. HQ REM 4 A1 16 01								REVNo.			



Coalfield boundary is as per map provided by BCCL



**ANNEXURE-V**



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

Ph: 0326-2204933

(7)

Letter No.... 2650

Dated .... 6/8/13 .....

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,

  
6/8/13  
( Dinesh Prasad Singh )  
Regional Officer.

Memo.....

Dhanbad, dated.....

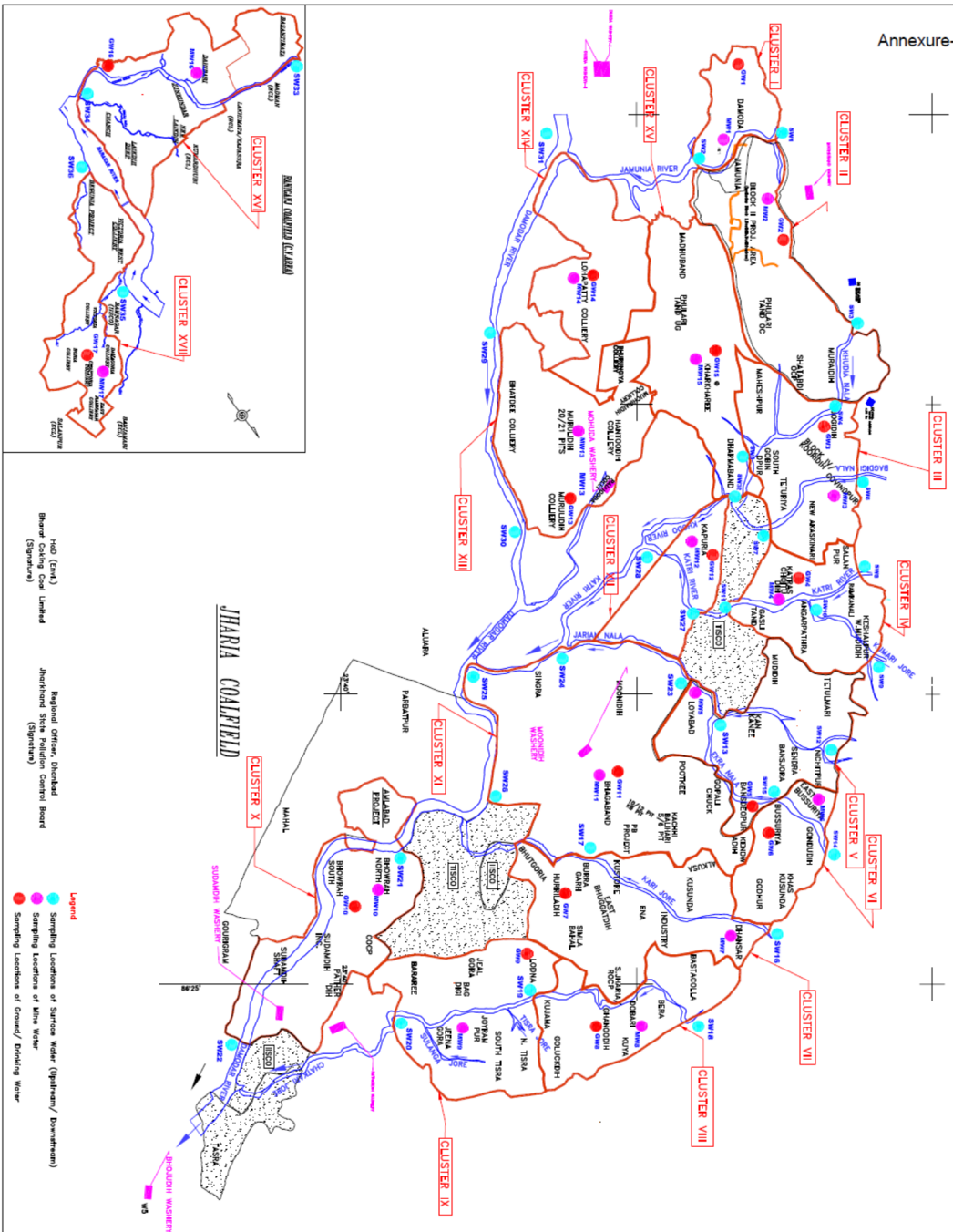
Copy to: The Member Secretary, Jharkhand State Pollution Control Board for information & enclose a copy of the map for necessary action.

Encl-A/a.

(Dinesh Pd. Singh)  
Regional Officer.

# Water Sampling Locations in BCCL

Annexure-03



Legend

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

Map (Scale)

Barak Colliery Coal Limited

Jharkhand State Pollution Control Board

(Signature)

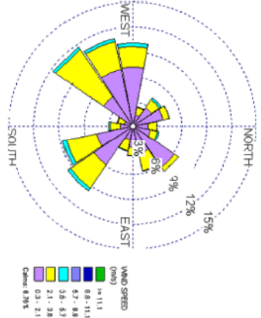
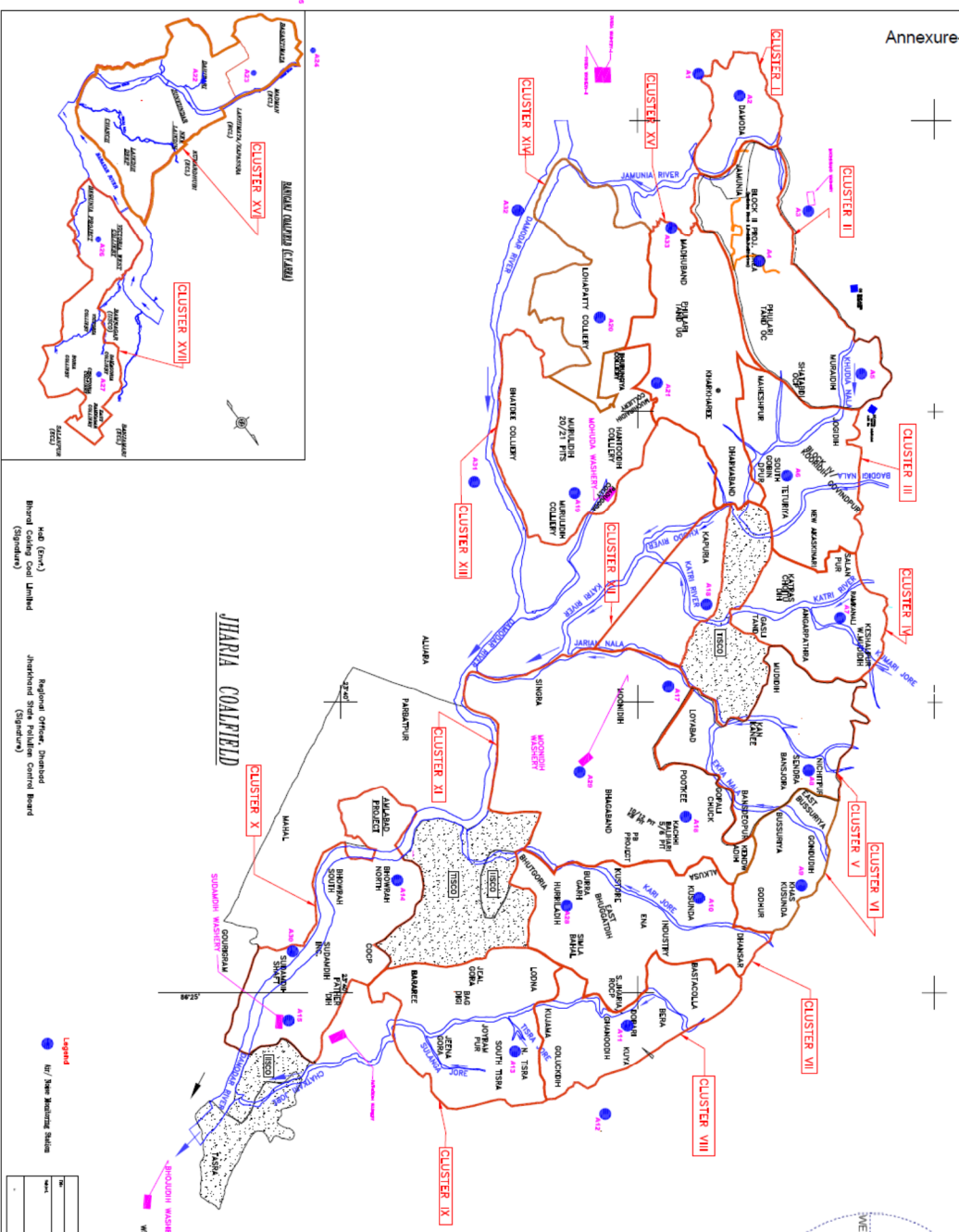
(Signature)

INDEX

Cluster	Water Body	Name of Colliery	Sampling Location	Water Body	Sampling Location
I	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
II	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
III	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
IV	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
V	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
VI	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
VII	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
VIII	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
IX	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
X	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
XI	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
XII	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
XIII	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
XIV	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
XV	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
XVI	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery
XVII	SW1, SW2	Barak Colliery	Barak Colliery	Barak Colliery	Barak Colliery

# Location of Air & Noise Monitoring Stations in BCCL

Annexure-02



Cluster	Core Zone	Buffer Zone
I	A1, A2, A3	A1, A2, A3
II	A4, A5	A4, A5, A6
III	A7, A8	A7, A8, A9
IV	A10, A11	A10, A11, A12
V	A13, A14	A13, A14, A15
VI	A16, A17	A16, A17, A18
VII	A19, A20	A19, A20, A21
VIII	A22, A23	A22, A23, A24
IX	A25, A26	A25, A26, A27
X	A28, A29	A28, A29, A30
XI	A31, A32	A31, A32, A33
XII	A34, A35	A34, A35, A36
XIII	A37, A38	A37, A38, A39
XIV	A40, A41	A40, A41, A42
XV	A43, A44	A43, A44, A45
XVI	A46, A47	A46, A47, A48
XVII	A49, A50	A49, A50, A51

Map (Scale) : 1:50,000  
 Prepared by : Jharia Colliery Field  
 Checked by : Jharia Colliery Field  
 Approved by : Jharia Colliery Field

**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 – XIV**

**(FOR THE Q.E. JUNE, 2017)**

**E. C. no. J-11015/10/2010-IA.II (M) dated 06.06.2013.**

**October, 2017**



**CMPDI**

ISO 9001 Company  
**Regional Institute-II**  
**Dhanbad, Jharkhand**

**CLUSTER - XIV**  
**(FOR THE Q.E. JUNE, 2017)**

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**October, 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 23°37' N to 23°52' N latitudes and 86°09' E to 86°30' E longitude occupying an area of 450 Sq.km. BCCL has awarded Environmental monitoring work of Jharia Coalfield (JCF) to Central Mine Planning & Design Institute Limited (CMPDIL). The environmental monitoring has been carried out as per the conditions laid down by the MoEFCC while granting environmental clearance of project, consent letter issued by the respective SPCB, and other statutory requirements.

### 2.0 Sampling location and rationale

#### 2.1 Ambient air sampling locations

The ambient air quality monitoring stations were selected to represent core, buffer zone area. The rationale has been based on the guidelines stipulated by 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, washray and in residential area.

### 3.0 Methodology of sampling and analysis

#### 3.1 Ambient air quality

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM<sub>10</sub>), Fine Particulate Matter (PM<sub>2.5</sub>), Sulphur Di-oxide (SO<sub>2</sub>) and Nitrogen Oxides (NO<sub>x</sub>). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM<sub>2.5</sub> sampler) were used for sampling of PM<sub>10</sub>, SO<sub>2</sub>, & NO<sub>x</sub> and Fine Dust Sampler (PM<sub>2.5</sub> sampler) were used for sampling of PM<sub>2.5</sub> at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI, RI-II, Dhanbad.



---

### **3.2 Water quality**

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

### **3.3 Noise level monitoring**

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

## **4.0 Results and interpretations**

### **4.1 Air quality**

It has been seen from the analysis results that the 24 hours average concentration parameters like PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> 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<sub>10</sub> & PM<sub>2.5</sub> 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 within permissible limits.

### **4.3 Noise Level**

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

---

## CHAPTER - I

### INTRODUCTION

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

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

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

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

- 1.1 The Cluster-XIV is in the Western part of the Jharia coalfield and situated in the Western Jharia area of BCCL. It includes 1 Mine (viz. Lohapatti (UG & OC). The Cluster – XIV is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – XIV 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 Damodar River.
- 1.2 The Cluster-XIV is designed to produce 0.405 MTPA (normative) and 0.526 MTPA (peak) capacity of coal.

The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEF&CC) for a rated capacity 0.405 MTPA (normative) and 0.526 MTPA (peak) capacity of coal production vide letter no. J-11015/10/2010-IA.II (M) dated 06<sup>th</sup> June, 2013.

Ministry of Environment, Forest and Climate Change while granting environmental clearance has given one of the General conditions that “ Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.” And other conditions regarding water / effluent and noise level monitoring.

---

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

.....

## CHAPTER-II

### AMBIENT AIR QUALITY MONITORING

#### 2.1 Location of sampling station and their rationale:

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

##### 2.1.1 Ambient Air Quality Sampling Locations

##### I. CORE ZONE Monitoring Location

##### i) Lohapatti (A20): Industrial Area

The location of the sampling station is 23°44'18.93" N & 086°13'37.75"E. The sampler was placed at a height of approx. 1.5m above ground level at Project Office. The station was selected to represent the impact of mining activities of Western Jharia area, Coal washery, poor roads condition, heavy public traffic, burning of coal by the surrounding habitants.

##### II. BUFFER ZONE Monitoring Location

##### i) Kharkharee CISF Office (A21): Industrial Area

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

##### ii) Telmachho Bridge (A32): Industrial Area

The location was selected for studying the impact of the mining activity on the Telmachho Bridge area as it lies in the buffer zone for the Cluster XIV.

##### iii) Madhuband UGP Office (A33): Industrial Area

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

#### 2.2 Methodology of sampling and analysis

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM<sub>10</sub>), Particulate Matter (PM<sub>2.5</sub>), Sulphur di-oxide (SO<sub>2</sub>) and Nitrogen oxides (NO<sub>x</sub>). Respirable Dust Samplers (RDS) & fine particulates for PM<sub>2.5</sub> sampler were used for sampling PM<sub>10</sub> & PM<sub>2.5</sub> respectively at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analysed in Environmental Laboratory of CMPDI, RI-II, Dhanbad.

#### 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<sub>10</sub>**

In **core zone** under **Industrial area** varies from 169 to 110  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 93 to 171  $\mu\text{m}^3$

#### **Particulate Matter PM<sub>2.5</sub>**

In **core zone** under **Industrial area** varies from 34 to 78  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 41 to 98  $\mu\text{m}^3$

#### **Sulphur Dioxide:**

In **core zone** under **Industrial area** varies from 10 to 14  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 10 to 15  $\mu\text{m}^3$

#### **Oxides of Nitrogen:**

In **core zone** under **Industrial area** varies from 28 to 36  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 21 to 30  $\mu\text{m}^3$

## AMBIENT AIR QUALITY DATA

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

Name of the Cluster : **Cluster – XIV**

Station Code/Name: **(a) A20 Lohapatti**

Year : **2017-18.**

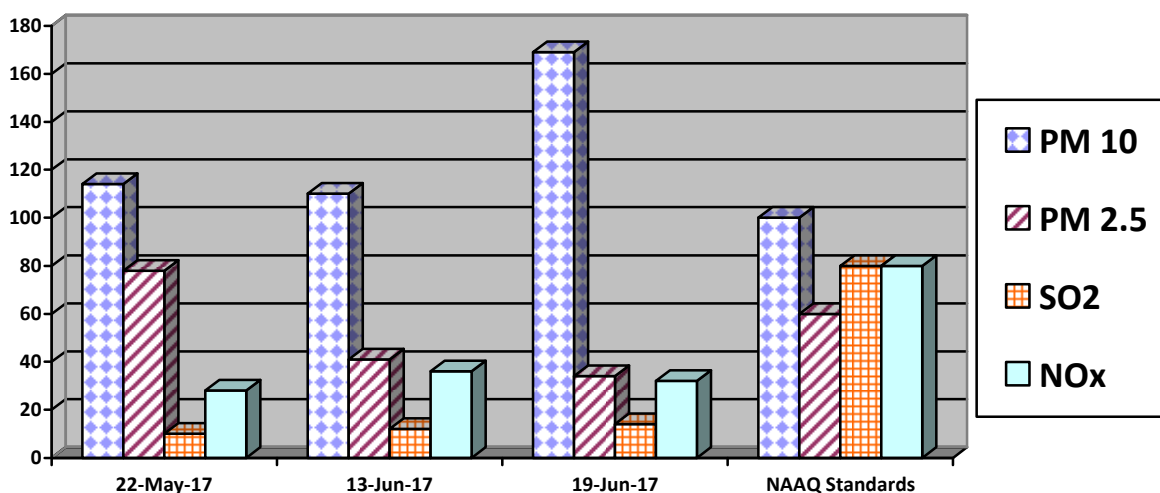
Q.E.: **June 2017**

Category:  
**Industrial<sup>1</sup>.**

ZONE: **Core**

**(a). Station Code/Name: A20- Lohapatti Category: Industrial.**

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO <sub>2</sub>	NO <sub>x</sub>
2	22 - May - 17	114	78	<10.0	28
3	13 - June -17	110	41	12	36
4	19 - June -17	169	34	14	32
NAAQ Standards		100	60	80	80

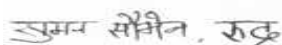


### Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)
Concentration(µg/m <sup>3</sup> )	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

**Note:**

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

  
 Analysed By  
 JSA/SA/SSA

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

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

## AMBIENT AIR QUALITY DATA

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

Year : **2015-16.**

Name of the Cluster : **Cluster – XIV**

Q.E.: **June 2016**

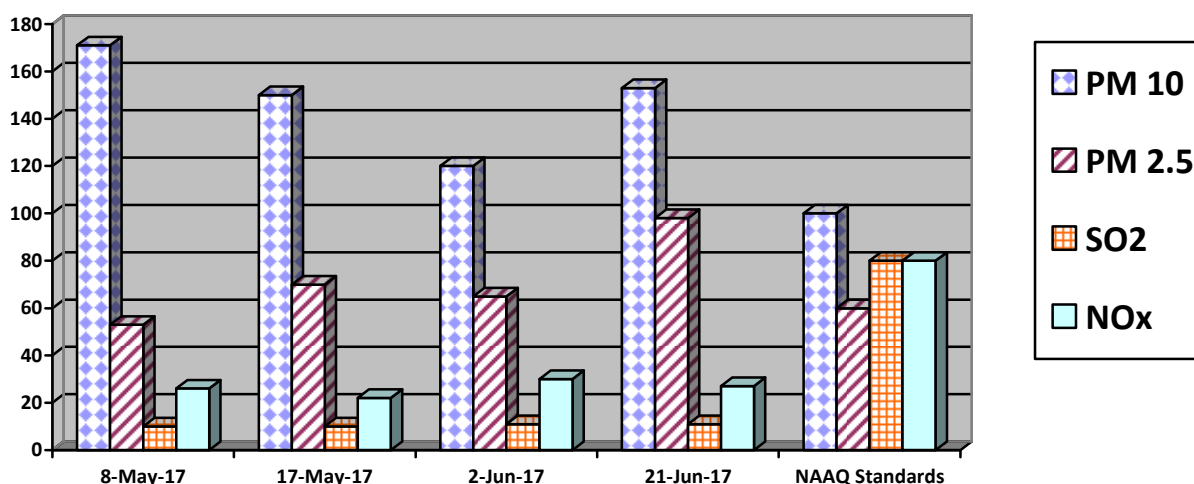
**Station Code/Name:** (a) A21 Kharkharee CISF Office  
(b) A32 Telmachho Bridge  
(c) A33 Madhuband UGP Office

**Category:**  
**Industrial<sup>2</sup>.**

**ZONE: BUFFER**

**(a). Station Code/Name: A21 – Kharkharee CISF Office, Category: Industrial.**

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO <sub>2</sub>	NO <sub>x</sub>
1	08 - May -17	171	53	<10.0	26
2	17- May -17	150	70	<10.0	22
3	02 - Jun - 17	120	65	11	30
4	21 - Jun - 17	153	98	11	27
	NAAQ Standards	100	60	80	80



### Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Led (Pb)
Concentration(µg/m <sup>3</sup> )	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

**Note:**

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

Analysed By  
JSA/SA/SSA

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

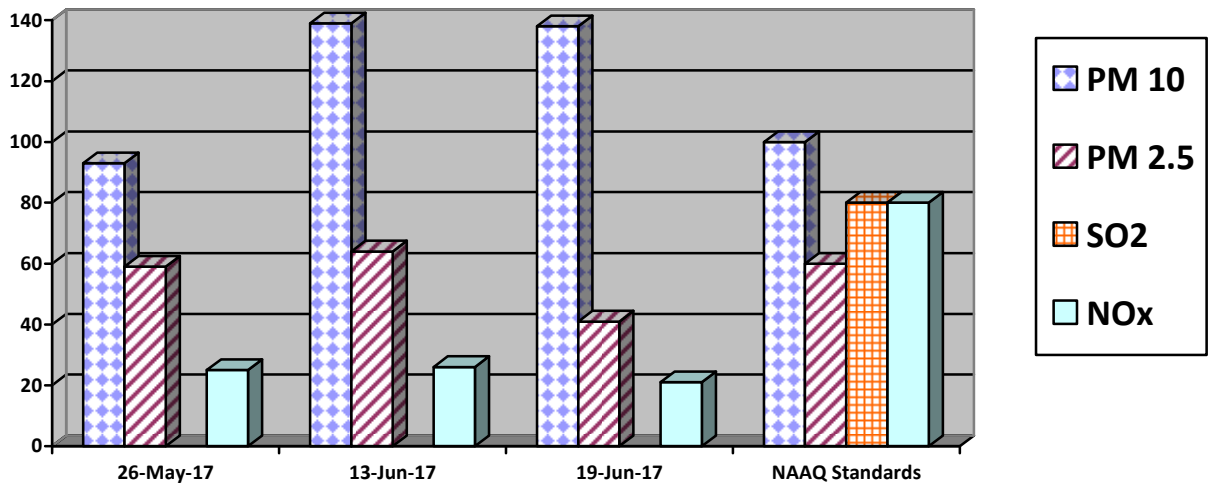
Approved By  
HOD(Mining/Environment)  
RI-2, CMPDI, Dhanbad

CLUSTER XIV, BCCL ENVIRONMENTAL MONITORING REPORT



## (b). Station Code/Name: A32 – Telmachho Bridge, Category: Industrial.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO <sub>2</sub>	NO <sub>x</sub>
1	26- May - 17	93	59	<10.0	25
2	13 - Jun - 17	139	64	<10.0	26
3	19 - Jun - 17	138	41	<10.0	21
	NAAQ Standards	100	60	80	80

**Trace Metal analysis report of Ambient Air Quality**

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Led (Pb)
Concentration( $\mu\text{g}/\text{m}^3$ )	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

**Note:**

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

सुमन सैनी, रुद्र

Analysed By  
JSA/SA/SSA

U

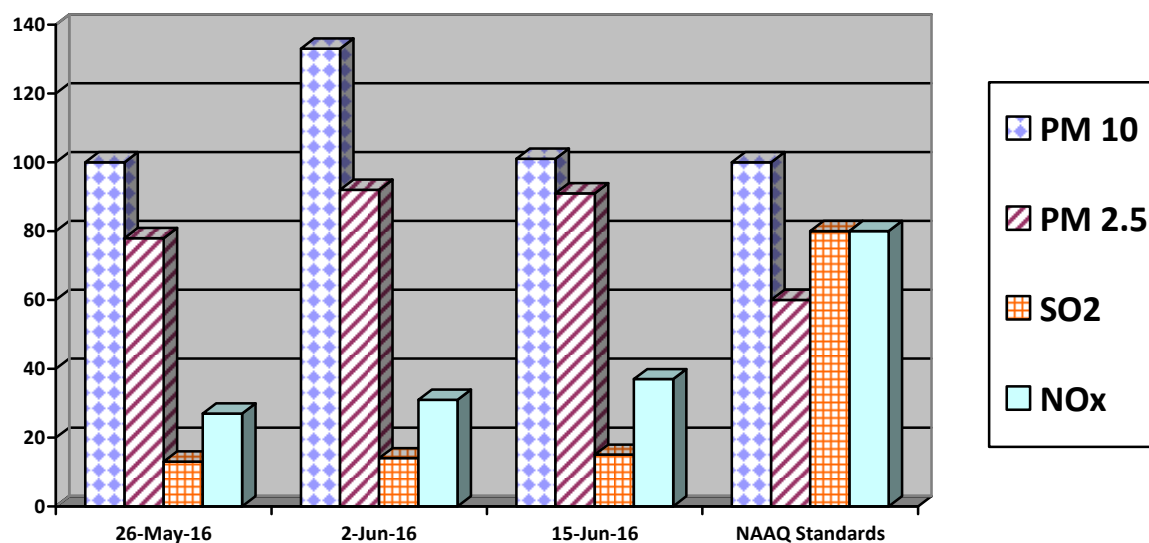
Checked By  
Lab In Charge  
RI-2, CMPDI, Dhanbad

21/06/19

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

(c). Station Code/Name: A33- Madhuband UGP Office, Category: Industrial<sup>3</sup>.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO <sub>2</sub>	NO <sub>x</sub>
1	26 - May -16	100	78	13	27
2	02- Jun - 16	133	92	14	31
3	15 - Jun - 16	101	91	15	37
	NAAQ Standards	100	60	80	80



### Trace Metal analysis report of Ambient Air Quality

Parameters	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Mercury (Hg)	Nickel (Ni)	Led (Pb)
Concentration( $\mu\text{g}/\text{m}^3$ )	<0.005	<0.001	<0.01	<0.001	<0.1	<0.005

#### Note:

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

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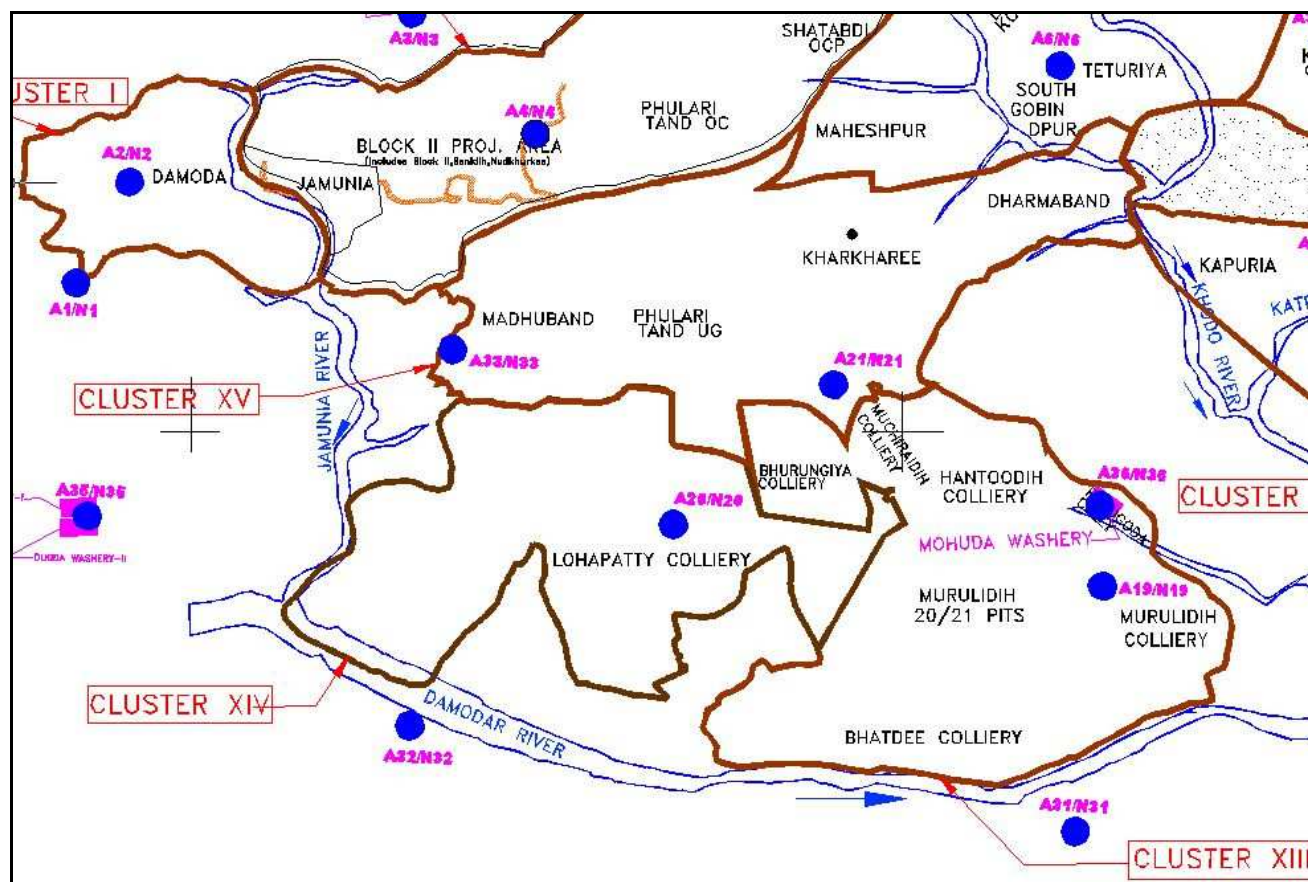
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21/6/19

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## Ambient Air Monitoring Stations in Cluster- XIV in Core & Buffer Zones



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

Category	Pollutant	Time weighted average	Concentration in Ambient Air	Method of Measurement
1	2	3	4	5
<b>III</b> Coal mines located in the coal fields of <ul style="list-style-type: none"> <li>• Jharia</li> <li>• Raniganj</li> <li>• Bokaro</li> </ul>	Suspended Particulate Matter (SPM)	Annual Average *  24 hours **	500 $\mu\text{g}/\text{m}^3$  700 $\mu\text{g}/\text{m}^3$	- High Volume Sampling (Average flow rate not less than 1.1 $\text{m}^3/\text{minute}$ )
	Respirable Particulate Matter (size less than 10 $\mu\text{m}$ ) (RPM)	Annual Average *  24 hours **	250 $\mu\text{g}/\text{m}^3$  300 $\mu\text{g}/\text{m}^3$	Respirable Particulate Matter sampling and analysis
	Sulphur Dioxide ( $\text{SO}_2$ )	Annual Average *  24 hours **	80 $\mu\text{g}/\text{m}^3$  120 $\mu\text{g}/\text{m}^3$	1.Improved west and Gaeke method 2.Ultraviolet fluorescene
	Oxide of Nitrogen as $\text{NO}_2$	Annual Average *  24 hours **	80 $\mu\text{g}/\text{m}^3$  120 $\mu\text{g}/\text{m}^3$	1. Jacob & Hochheiser Modified (Na-Arsenic) Method 2. Gas phase Chemilumine-scence

**Note:**

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

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

## NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18<sup>th</sup> November 2009

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

Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
<b>Sulphur Dioxide (SO<sub>2</sub>), µg/m<sup>3</sup></b>	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
<b>Nitrogen dioxide (NO<sub>2</sub>), µg/m<sup>3</sup></b>	Annual * 24 Hours **	40 80	30 80	-Jacob & Hochheiser modified (NaOH-NaAsO <sub>2</sub> ) Method -Gas Phase Chemiluminescence
<b>Particulate Matter (Size less than 10µm) or PM<sub>10</sub>, µg/m<sup>3</sup></b>	Annual * 24 Hours **	60 100	60 100	-Gravimetric -TEOM -Beta attenuation
<b>Particulate Matter (Size less than 2.5µm) or PM<sub>2.5</sub>, µg/m<sup>3</sup></b>	Annual * 24 Hours **	40 60	40 60	-Gravimetric -TEOM -Beta attenuation
<b>Ozone (O<sub>3</sub>), µg/m<sup>3</sup></b>	8 Hours * 1 Hour **	100 180	100 180	-UV Photometric -Chemiluminescence -Chemical Method
<b>Lead (Pb), µg/m<sup>3</sup></b>	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper -ED-XRF using Teflon filter
<b>Carbon Monoxide (CO), mg/m<sup>3</sup></b>	8 Hours ** 1 Hour **	02 04	02 04	-Non dispersive Infrared (NDIR) Spectroscopy
<b>Ammonia (NH<sub>3</sub>), µg/m<sup>3</sup></b>	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
<b>Benzene (C<sub>6</sub>H<sub>6</sub>), µg/m<sup>3</sup></b>	Annual *	05	05	-Gas Chromatography (GC) based continuous analyzer -Adsorption and desorption followed by GC analysis
<b>Benzo(a)Pyrene (BaP) Particulate phase only, ng/m<sup>3</sup></b>	Annual *	01	01	-Solvent extraction followed by HPLC/GC analysis
<b>Arsenic (As), ng/m<sup>3</sup></b>	Annual *	06	06	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper
<b>Nickel (Ni), ng/m<sup>3</sup></b>	Annual *	20	20	-AAS/ICP Method after sampling on EPM 2000 or equivalent filter paper

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

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

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

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## CHAPTER – III

### WATER QUALITY MONITORING

#### 3.1 Location of sampling sites

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

- i) **Mine Discharge of Lohapatti (MW14)**  
A sampling point is fixed to assess the effluent quality of Mine discharge.
- ii) Ground Water quality at **Lohapatti (GW14)**
- iii) Surface Water quality at **U/S of Damodar River (SW31)**
- iv) Surface Water quality at **D/S of Damodar River (SW29)**

#### 3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. The effluent samples were collected and analysed for four parameters on fortnightly basis. The drinking and Surface water samples were collected and analysed for 24 and 17 parameters respectively, on quarterly basis. Thereafter the samples were preserved and analysed at the Environmental Laboratory at CMPDI (HQ), Ranchi.

#### 3.3 Results & Interpretations

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



## WATER QUALITY DATA

### (EFFLUENT WATER FOUR PARAMETERS)

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

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

Month: **May, 2017.**

Name of the Stations & Code :

**1. MW14- Mine Discharge of Lohapatti**

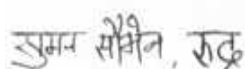
#### First Fortnight

Sl. No.	Parameters	MW14 (Mine Discharge )	As per MOEF General Standards for schedule VI
		13.05.2017	
1	Total Suspended Solids	60	100 (Max)
2	pH	8.60	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	24	250 (Max)

#### Second Fortnight

Sl. No.	Parameters	MW14 (Mine Discharge )	As per MOEF General Standards for schedule VI
		16.05.2017	
1	Total Suspended Solids	44	100 (Max)
2	pH	8.93	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	34	250 (Max)

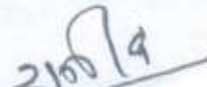
All values are expressed in mg/lit unless specified



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## WATER QUALITY DATA

### (EFFLUENT WATER FOUR PARAMETERS)

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

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

Month: **June, 2017.**

Name of the Stations & Code :

**1. MW14- Mine Discharge of Lohapatti**


#### First Fortnight

Sl. No.	Parameters	MW14 (Mine Discharge )	As per MOEF General Standards for schedule VI
		04.06.2017	
1	Total Suspended Solids	32	100 (Max)
2	pH	8.87	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	40	250 (Max)

#### Second Fortnight

Sl. No.	Parameters	MW14 (Mine Discharge )	As per MOEF General Standards for schedule VI
		20.06.2017	
1	Total Suspended Solids	28	100 (Max)
2	pH	7.88	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	36	250 (Max)

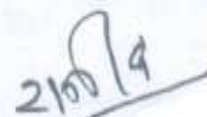
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## **WATER QUALITY**

### **(MINE EFFLUENT- ALL PARAMETERS)**

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

Name of the Cluster : **Cluster -XIV**

PERIOD: **Q. E. JUNE- 2017.**

Area : **Barora**

Project: **Barora**

Cluster **XIV**

Stations:

1. Mine Water Discharge Lohapatti MW-14

Date of Sampling:  
26/06/2017

Sl.No.	Parameter	Sampling Stations			Detection Limit	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		MW-14	2	3			
1	Ammonical Nitrogen, mg/l, Max	0.06			0.02	50.0	IS 3025/34:1988, R : 2009, Nessler's
2	Arsenic (as As), mg/l, Max	<0.002			0.002	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
3	B.O.D (3 days 27°C), mg/l, Max	<2.00			2.00	30.0	IS 3025 /44:1993,R:2003 3 day incubation at 27°C
4	COD, mg/l, Max	36			4.00	250.0	APHA, 22 <sup>nd</sup> Edition, Closed Reflux, Titrimetric
5	Colour	colourless			Qualitative	Qualitative	Physical/Qualitative
6	Copper (as Cu), mg/l, Max	<0.03			0.03	3.0	IS 3025/42: 1992 R : 2009, AAS-Flame
7	Dissolved Phosphate, mg/l, Max	<0.3			0.30	5.0	APHA, 22 <sup>nd</sup> Edition Molybdovanadate
8	Fluoride (as F) mg/l, Max	1.58			0.02	2.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
9	Free Ammonia, mg/l, Max	<0.01			0.01	5.0	IS:3025/34:1988, Nessler's
10	Hexavalent Chromium, mg/l, Max	<0.01			0.01	0.1	APHA, 22 <sup>nd</sup> Edition, Diphenylcarbohydrazide
11	Iron (as Fe), mg/l, Max	0.3			0.06	3.0	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
12	Lead (as Pb), mg/l, Max	<0.005			0.005	0.1	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
13	Manganese(as Mn), mg/l, Max	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
14	Nickel (as Ni), mg/l, Max	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
15	Nitrate Nitrogen, mg/l, Max	0.4			0.50	10.0	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
16	Oil & Grease, mg/l, Max	<2.00			2.00	10.0	IS 3025/39:1991, R : 2003, Partition Gravimetric
17	Odour	Agreeable			Agreeable	Qualitative	IS-3015/5:1983/R:2012/Qualitative
18	pH value	7.88			2.5	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
19	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH),mg/l, Max	<0.002			0.002	1.0	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
20	Selenium (as Se), mg/l, Max	<0.002			0.002	0.05	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
21	Sulphide (as SO <sub>3</sub> ), mg/l, Max	<0.005			0.005	2.0	APHA, 22 <sup>nd</sup> Edition Methylene Blue
22	Temperature (°C )	31.9			Shall not exceed 5° C above the receiving temp.		IS-3025/09:1984, Thermometric
23	Total Chromium (as Cr), mg/l, Max	<0.06			0.04	2.0	IS-3025/52:2003, AAS-Flame
24	Total Kjeldahl Nitrogen, mg/l, Max	1.0			1.00	100.0	IS:3025/34:1988, Nessler's
25	Total Residual Chlorine, mg/l, Max	<0.02			0.02	1.0	APHA, 22 <sup>nd</sup> Edition, DPD
26	Total Suspended Solids, mg/l, Max	28			10.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
27	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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\*All values are expressed in mg/lit unless specified.

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

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

**Coal Limited**

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

Period: **Q. E. June, 2017.**

Area : **Lohapatti**

Project:  
**Lohapatti**

**Cluster XIV**

Stations:

1. Upstream of Damodar river SW-31
2. Downstream of Damodar river SW-29

Date of Sampling:  
27/05/2017  
01/06/2017

Sl. No	Parameter	Sampling Stations				Detection Limit	IS:2296 – 1982 (Inland surface water) Class C	BIS Standard & Method
		SW-29	SW-31	3	4			
1	Arsenic (as As), mg/l, Max	<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	2.4	2.2			2.00	300	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour ( Hazen Unit)	colourless	colourless			Qualitative	300	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	18	16			2.00	600	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03			0.03	1.5	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	5.1	5.6			0.10	4	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	0.73	0.62			0.02	1.5	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01			0.01	0.05	APHA, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	0.085	0.078			0.06	50	IS 3025 /53 : 2003, R : 2009, AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	0.059			0.005	0.1	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	6.55	6.21			0.50	50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	pH value	7.64	7.55			2.5	6.5-8.5	IS-3025/11:1983, R-1996, Electrometric
13	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.002	<0.002			0.002	0.0005	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002			0.002	0.05	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	45	42			2.00	400	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	447	395			25.00	1500	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	1.006	0.053			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame

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## **WATER QUALITY**

### **(GROUND WATER- ALL PARAMETERS)**

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

**Coal Limited**

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

Period: **Q. E. June, 2017.**

Area : **Lohapatti**

Project: **Lohapatti** Cluster **XIV**

**Stations:**

1. Ground Water from Lohapatti Village GW-14

**Date of Sampling:**  
27/05/2017

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-14	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 <sup>nd</sup> Edition ,Carmine
2	Colour,in Hazen Units	1			1	5	APHA, 22 <sup>nd</sup> Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	54			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	52			2.00	250	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
6	Fluoride (as F) mg/l, Max	0.49			0.02	1.0	APHA, 22 <sup>nd</sup> Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.06			0.02	0.2	APHA, 22 <sup>nd</sup> Edition, DPD
8	Iron (as Fe), mg/l, Max	0.136			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	0.745			0.005	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
10	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006, AAS-Flame
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	1.69			0.5	45	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	Odour	Agreeable			Qualitative	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
13	pH value	7.52			0.20	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
14	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH), mg/l, Max	<0.001			0.001	0.001	APHA, 22 <sup>nd</sup> Edition,4-Amino Autipyrine
15	Selenium (as Se), mg/l, Max	<0.002			0.002	0.01	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
16	Sulphate (as SO <sub>4</sub> ) mg/l, Max	40			2.00	200	APHA, 22 <sup>nd</sup> Edition. Turbidity
17	Taste	Acceptable			Qualitative	Acceptable	APHA, 22 <sup>nd</sup> Edition. Taste
18	Total Alkalinity (CaCO <sub>3</sub> ), mg/l, Max	180			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	0.152			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	722			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO <sub>3</sub> ), mg/l, Max	184			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	2			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.071			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
25	Nickel (as Ni), mg/l, Max	0.043			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

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

All values are expressed in mg/lit unless specified

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## CHAPTER - IV

### NOISE LEVEL QUALITY MONITORING

#### 4.1 Location of sampling sites and their rationale

i) **Lohapatti (N20)**

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

ii) **Kharkharee CISF Office (N21)**

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

iii) **Madhuband UGP Office (N33)**

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

iv) **Telmachho Bridge (N32)**

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

#### 4.2 Methodology of sampling and analysis

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

#### 4.3 Results & Interpretations

Ambient noise levels were recorded during day 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 LEQ 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** Year : **2017-18.**

**Coal Limited**

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

Month: **May, 2017.**

Name of the Stations & Code :

1. Lohapatti (N20)
2. Kharkharee CISF Office(N21)
3. Telmachho Bridge (N32)
4. Madhuband UGP Office (N33)<sup>1</sup>

### (a) First Fortnight

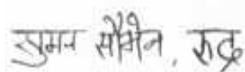
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Kharkharee CISF Office (N21)	Industrial area	08.05.2017	62.4	75

### (b) Second Fortnight

Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Lohapatti (N20)	Industrial area	22.05.2017	60.4	75
2	Kharkharee CISF Office (N21)	Industrial area	17.05.2017	60.1	75
3	Telmachho Bridge (N32)	Industrial area	26.05.2017	55.8	75
4	Madhuband UGP Office (N33)	Industrial area	26.05.2017	62.6	75

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

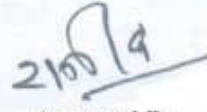
\* Day Time: 6.00 AM to 10.00 PM.



Analysed By  
JSA/SA/SSA



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



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

## NOISE LEVEL DATA

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

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

Month: **June, 2017.**

Name of the Stations & Code :

1. **Lohapatti (N20)**
2. **Kharkharee CISF Office(N21)**
3. **Telmachho Bridge (N32)**
4. **Madhuband UGP Office (N33)<sup>2</sup>**

### (a) First Fortnight

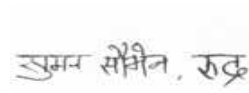
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Lohapatti (N20)	Industrial area	13.06.2017	58.2	75
2	Kharkharee CISF Office (N21)	Industrial area	02.06.2017	62.5	75
3	Telmachho Bridge (N32)	Industrial area	13.06.2017	56.4	-
4	Madhuband UGP Office (N33)	Industrial area	02.06.2017	55.7	75

### (b) Second Fortnight

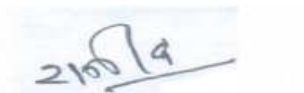
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Lohapatti (N20)	Industrial area	19.06.2017	62.6	75
2	Kharkharee CISF Office (N21)	Industrial area	21.06.2017	62.9	75
3	Telmachho Bridge (N32)	Industrial area	19.06.2017	61.8	75
4	Madhuband UGP Office (N33)	Industrial area	15.06.2017	56.5	75

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

\* Day Time: 6.00 AM to 10.00 PM.

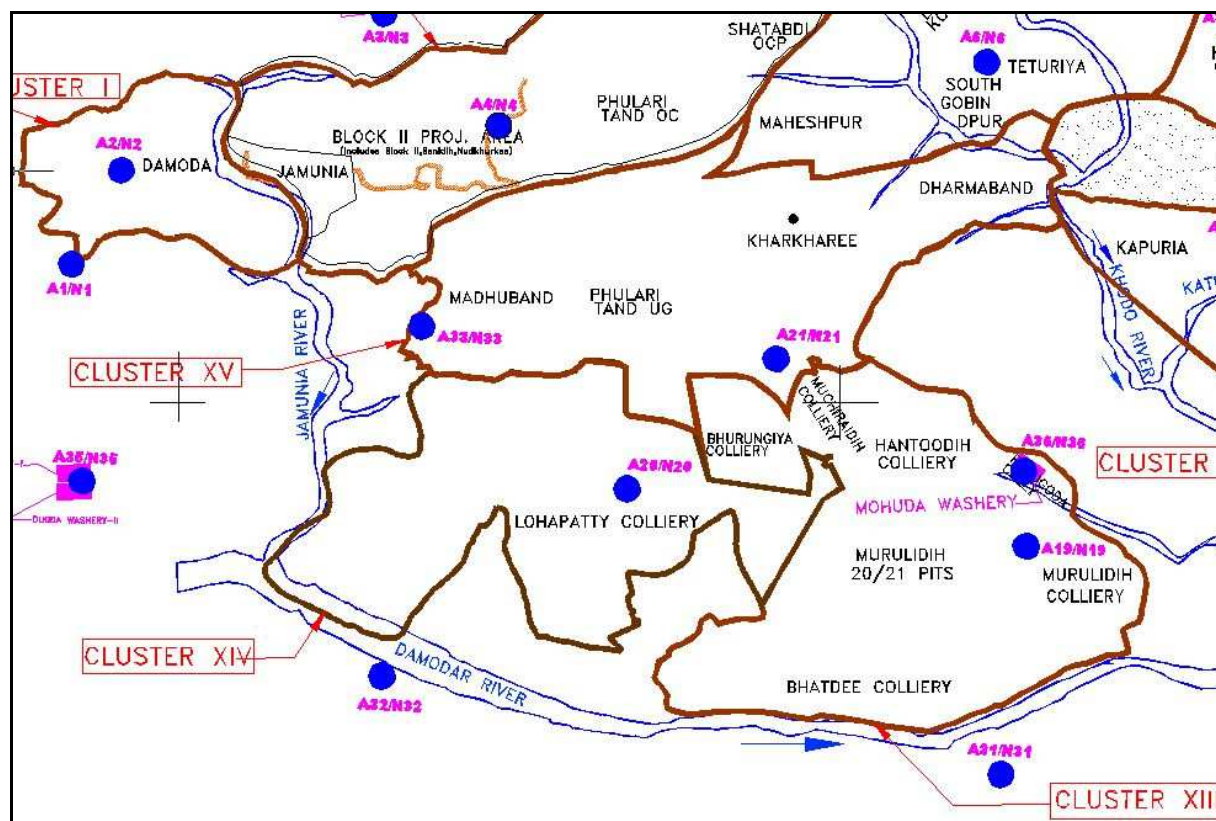
  
Analysed By  
JSA/SA/SSA

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

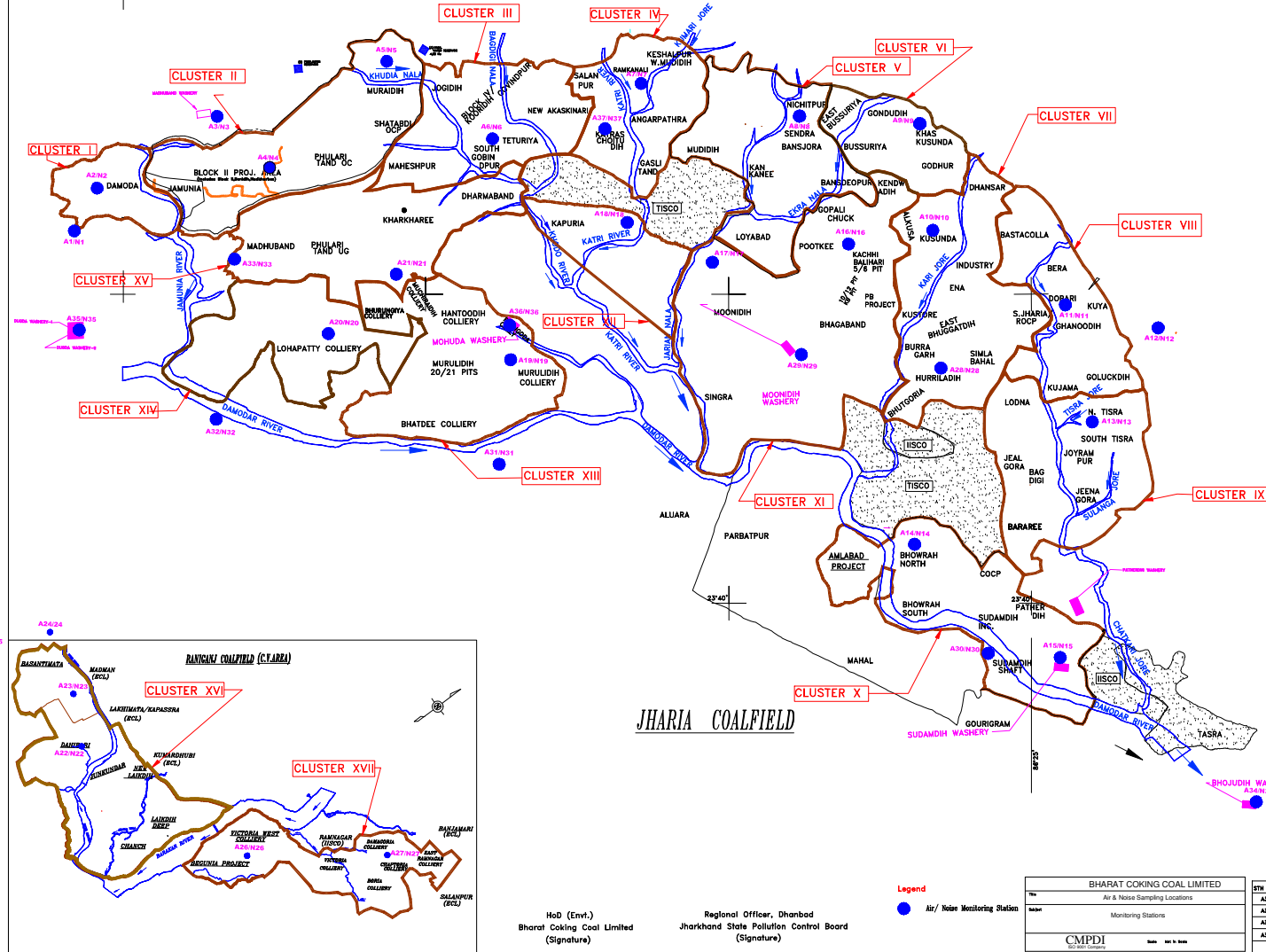
  
Approved By  
HOD(Mining/Environment)  
RI-2, CMPDI, Dhanbad



### Noise Level Monitoring Location of Cluster XIV



# Location of Air & Noise Monitoring Stations in BCCL



# Water Sampling Locations in BCCL

## INDEX

Cluster	Surface Water (U.S. DS)	Name of River/ Nala/ Jore	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghulway 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	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kain River, Kurnai Jore	MW4	Chotudih	GW4	Kankane Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudidih	GW5	Nichitpur
VI	SW14, SW15	Ekra Nala	MW6	East Basauria UGP	GW6	Bansjora Borewell
VII	SW16, SW17	Kari Jore	MW7	Dhanbar UGP	GW7	Humidih
VIII	SW18, SW19	Kashi Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kashi Jore	MW9	Jeenagora	GW9	Lodha
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband I UGP	GW11	Bhagabandh
XII	SW27, SW28	Kain River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Muridih (20/21)	GW13	Muridih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW35, SW32	Khudia Nala	MW15	Khanhane UGP	GW15	Khanhane
XVI	SW33, SW3	Khudia River	MW16	Dahbari OCP	GW16	Patalbani Village
XVII	SW35, SW3	Barakar River	MW17	Damagora Colliery	GW17	Chaptoria

