

**ENVIRONMENTAL CLEARANCE COMPLIANCE OF**  
**CLUSTER-XIII (GRANTED VIDE LETTER NO.J-**  
**11015/11/2010-IA.II (M) DATED 06.06.2013**

**(April' 16 – Sept'16)**

Sl. No.	A. Specific Conditions by MOEF:	Compliance
i.	No mining shall be undertaken in/under the forestland until prior forestry clearance has been obtained under the provisions of FC Act 1980.	Stage-I forest clearance of 6.41 ha of forest land of proposed Murulidih O/C mine has been issued by MOEF vide letter no.5-JHC188/2010-BHU dated 5.3.13. All the conditions of the above letters are compiled including the total online payment of Rs 8155592.17/- was done to MoEF through RTGS/NEFT. Awaited for Stage-II forest clearance for the same.
ii	The EC is granted to Murulidih 20/21 Pits U/G of 0.18 MTPA and a peak production of 2.34 MTPA in an ML area of 571. 32 ha.	Agreed
iii.	The maximum production in the cluster shall not exceed beyond that for which environmental clearance has been granted for the cluster XIII as per given below:	Being implemented. Annexure I
iv.	The measure identified in the environmental plan for cluster – XIII group of mine and the condition given in this environmental clearance letter shall be dovetailed to the implementation of Jharia Action Plan.	Agreed.
v.	As there is no fire in cluster XIII but the measure should be adopted proponent to control spread of neighboring fire to this cluster XIII. The proponent shall prepare time series maps of Jharia Coal field through NRSA to monitor & 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.	Already Complied.
Vi.	Underground mining should be taken up after completion of reclamation of O/C mine area after two years.	Agreed.
vii.	No mining shall be undertaken where underground fires continue. Measure shall be taken to prevent/check such fire including in old OB dump.	Agreed.

Viii	<b>There shall be no external OB dumps. 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.
ix.	<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 XIII shall be drawn up &amp; implemented.</b>	Being implemented. Mine closure plan is approved.
x.	<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>	Agreed  Being complied.
xi.	<b>Mining shall be carried out as per statute 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 extend feasible and the embankment proposed along water body shall be strengthened with stone pitching.</b>	Complied and will be complied as per statute.
xii.	<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>	There is no opencast project in cluster XIII at present.
xiii.	<b>Thick green belt shall be developed along undisturbed areas, mine boundary and in mine reclamation. During post mining stage, a total of 91.75 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>	It is being complied.  Existing site for eco-restoration of 4.2 ha area over reclaimed area is developed and maintained at Murulidih (about 2500 plants per ha). Another eco-restoration of 1.5 ha area over OB dump at Murulidih is also maintained. Third site of 1.8 Ha. of land taken this year at Murulidih for eco-restoration where 1500 no. (Approx) of sapling has been planted and maintained.
Ha	<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.
xv.	<b>Specific mitigative measures identified for the Jharia Coalfields in the Environmental Action Plan prepared for Dhanbad as a critically</b>	Implemented.

	<b>polluted are and relevant for Cluster XIII shall be implemented.</b>	
xvi.	<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, fly ash from TPPs, silica from natural dust, etc.) and a Source Apportionment Study should be got carried out for the entire Jharia Coalfields. Mineralogical composition study should be undertaken on the composition of the suspended particulate matter (PM10 and PM2.5) in Jharia Coalfields and also quantified. These studies would help ascertain source and extent of the air pollution, based on which appropriate mitigative measures could be taken.</b>	A e-tender for award of work of Source Apportionment and Mineralogical composition study was floated twice. As no bidder qualified the tender was cancelled. A MoU has been signed with NEERI/ICFRE to carry out such studies. Institutes have been requested for the same.
xvii.	<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>	Agreed. Being implemented.
xviii.	<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 piezometers. 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>	Sample has been collected for analysis by CMPDIL, DHANBAD. Permission to dewater ground water for mining industry is applied to Member Secretary, CGWA, and New Delhi for the same. <b>Annexure- III</b>
xix.	<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>	Agreed. Being implemented. CMPDIL, Dhanbad is monitoring the same. <b>Annexure-VI</b>

xx.	<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 from where effluent discharge is found.
xxi.	<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>	Being implemented. Subsidence study is being conducted by ISM Dhanbad before the start of panel. Extraction done in Non Effective Width Method so that there is no subsidence on the surface.
xxii.	<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. Subsidence monitoring is being done.
xxiii.	<b>High root density tree species shall be selected and planted over areas likely to be affected by subsidence.</b>	It is being complied. Subsidence monitoring is being done.
Xxiv.	<b>Depression due to subsidence resulting in water accumulating within low lying areas shall be filled up or drained out by cutting drains.</b>	Complied.
Xxv.	<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 statute.
xxvi.	<b>No depillaring operation shall be carried out below the township/colony.</b>	Depillaring operation are being carried out after getting written permission from DGMS which is statutory binding.
xxvii.	<b>The transportation plan for conveyor – cum – rail for cluster XIII should be dovetailed with Jharia Action Plan. Road transportation of coal during phase I should be by mechanically covered trucks, which should be introduced at the earliest. The plan for conveyor – cum – rail for cluster XIV should be dovetailed with Jharia Action Plan. The road transportation of coal during phase I should be by mechanically covered trucks.</b>	Agreed. Transportation trucks /dumpers are already covered by Tarpaulin during transport.



xxviii.	<b>A study should be initiated to analyze extent of reduction in pollution load every year by reducing road transport.</b>	Being implemented. Data has been provided to CMPDIL for analyze and report preparation.
.xxix.	<b>R &amp; R of 2187 nos. of PAF's involved. They should be rehabilitated at cost of Rs. 11199.89 lakhs as per the approved Jharia Action Plan.</b>	PAF's /PAP's involved is being rehabilitated as per cost specified as per Jharia Action Plan.

Xxx.	<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>	Agreed. Will be submitted soon.
.Xxxi.	<b>A detailed CSR action plan shall be prepared for cluster XIII 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 XIII 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>	Agreed. Being implemented.
xxxii.	<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>	Agreed. Being prepared.

xxxiii.	<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>	Agreed .Required Habitat Restoration Plan of the mine area is being maintained. Mine closer plan is approved.
xxxiv.	<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 (12 nos.) which includes Environment, Mining, Excavation, Civil, Survey ,Electrical & mechanical, Forestry disciplines executives and technicians (4 nos.) has been established in Headquarters. They are also trained in ecological restoration, sustainable development, rainwater Harvesting methods etc. At the project level, one Executive in each area has also been nominated as Project Nodal Officer (Environment) and is also entrusted with the responsibility of compliance and observance of the environmental Acts/ Laws including environment protection measures .The activities are monitored on regular basis at Area and at 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.
xxxv.	<b>Implementation of final mine closure plan for cluster XIII, subject to obtaining prior approval of the DGMS in regard to Mines Safety issues.</b>	Will be implemented.
Xxxvi.	<b>Corporate Environment Responsibility:</b>	<b>Annexure IV</b>
a)	<b>The Company shall have a well laid down Environment Policy approved by the Board of Directors.</b>	Agreed. We have the same.
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>	Already prescribed.
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>	Already complied.

d)	To have proper checks and balances, the company shall have a well laid down system of Reporting of non-compliances/violations of environmental norms to the Board of Directors of the company and/or shareholders or stakeholders at large.	Being followed.
Sl. No	B. General Conditions Conditions by MOEF:	Compliance
i.	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.	Being complied.
ii.	No change in the calendar plan of production for quantum of mineral coal shall be made.	Being Followed.
iii.	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM10, PM 2.5, SO 2 and NOx monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	The fixing up of locations of monitoring stations in the Jharia Coalfields has been taken up with the Jharkhand State Pollution Control Board. The work of monitoring of ambient environment is being done through Central Mine Planning and Design Institute (CMPDI) having laboratory recognized under the EP Rules. <b>Annexure-VI</b>
iv.	Data on ambient air quality (PM 10, PM 2.5, SO 2 and NO x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognized under the EPA rules, 1986 shall be furnished as part of compliance report.	Being complied. Monitoring done by CMPDIL.
v.	Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with Ear plugs/muffs.	Being Complied.

vi.	<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 31st 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 Central Mine Planning and Design Institute RI-II (CMPDI), Dhanbad which is having laboratory recognized under the EP Rules. There is no effluent discharge from workshop due to one small u/g mine running. However there is arrangement for treatment of effluent discharge to prescribed standards. 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 analyzed through a laboratory recognized under EPA Rules, Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analyzed through a laboratory recognized under EPA Rules, 1986.</b>	It is being complied. Monitoring is done by CMPDIL. <b>Annexure-VI</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. <b>Annexure-V</b>
x.	<b>Occupational health surveillance program me 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 (12 nos.) which includes Environment, Mining, Excavation, Civil, Survey ,Electrical & mechanical, Forestry disciplines executives And technicians (4 nos.) have 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 Regional Office at Bhubaneswar.</b>	It is being initiated to comply the same. Agreed to report the same.

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">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<sub>2</sub> and NO<sub>x</sub> (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.</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. Being and shall be complied.
xix.	<b>The Environmental statement for each financial year ending 31 March in For –V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed Under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF by E-mail.</b>	Being complied. Agreed.
7	<b>The Ministry or any other competent authority may stipulate any further condition(s) for environmental protection.</b>	Agreed

8	Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract the provisions of the Environment (Protection) Act, 1986.	Agreed
9	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rules. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.	Agreed
10	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

Project officer  
Lohapatti colliery

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

Project officer  
20/21 Pits Murulidih colliery

PROJECT OFFICER  
Murulidih 20/21 Pits Colliery  
W. J. Area

## **ANNEXURE- I**

### A. Production from April'15 to Sept'16 of Cluster XIII mines

Month		April' 16	May' 16	June' 16	July' 16	Aug' 16	Sep' 16	Total (Million ton)
Cluster XIII	Murulidih 20/21 pits	0	0	0	0	0	0	0
	Bhurungiya colliery	Nil						Nil
	Muchraidih colliery							
	Hantoodih Colliery							
	Padugora colliery							
	Murulidih colliery							
	Bhatdee colliery							
	Total (in Million ton)							0
	Remarks: - Murulidih 20/21 pits colliery temporarily closed for production from December-2015.							



**ANNEXURE-II**



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

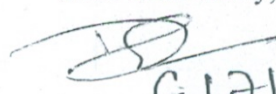
**Sub: Fixing up monitoring station/Sampling location of Air, Water & Noise.**

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,

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

Memo.....

Dhanbad, dated.....

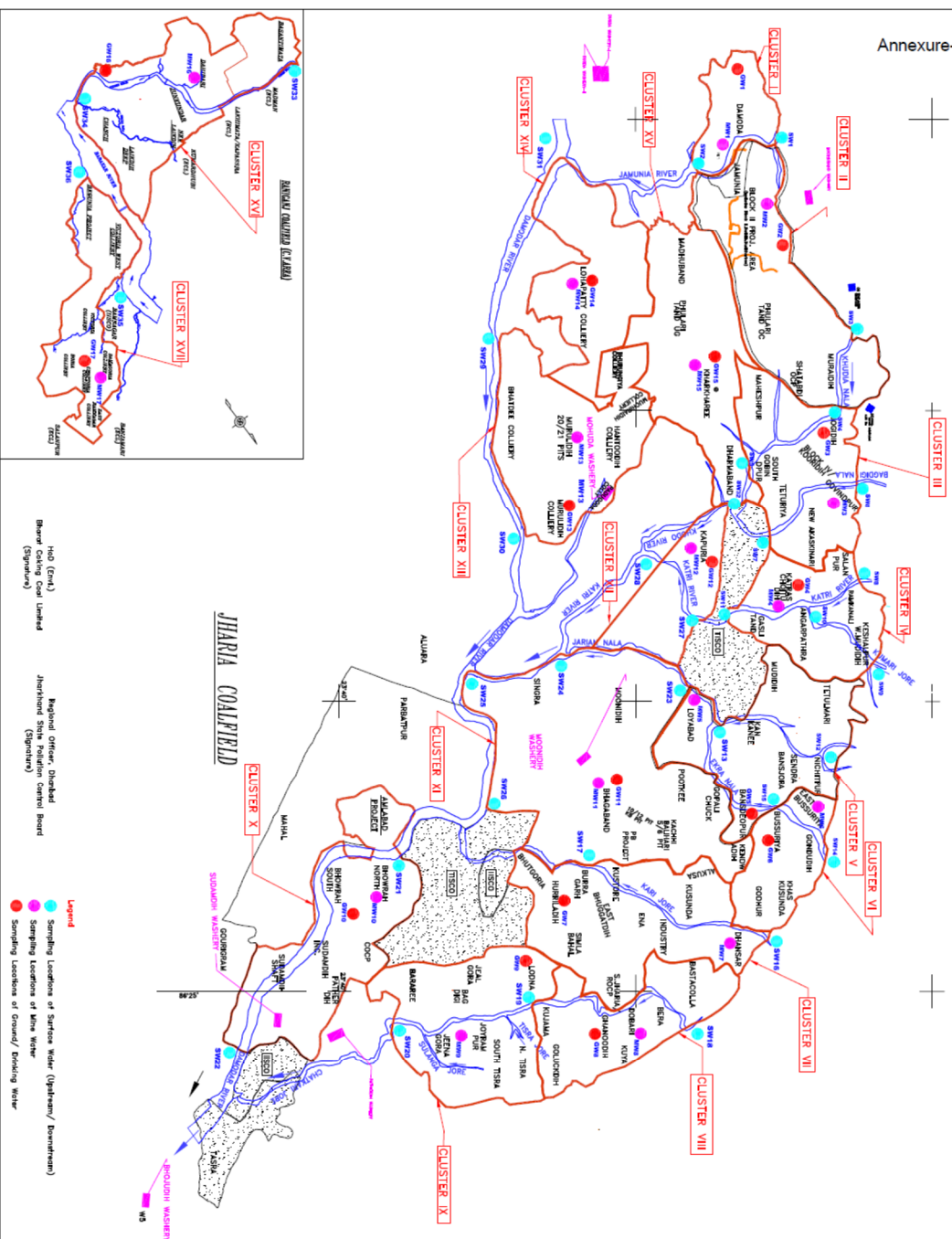
Copy to: The Member Secretary, Jharkhand State Pollution Control Board for information & enclose a copy of the map for necessary action.

Encl-A/a.

(Dinesh Pd. Singh)  
Regional Officer.

# Water Sampling Locations in BCCL

Annexure-03



THD (Ecm.)  
Bharat Coking Coal Limited  
(Signature)

Regional Officer, Disposal  
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

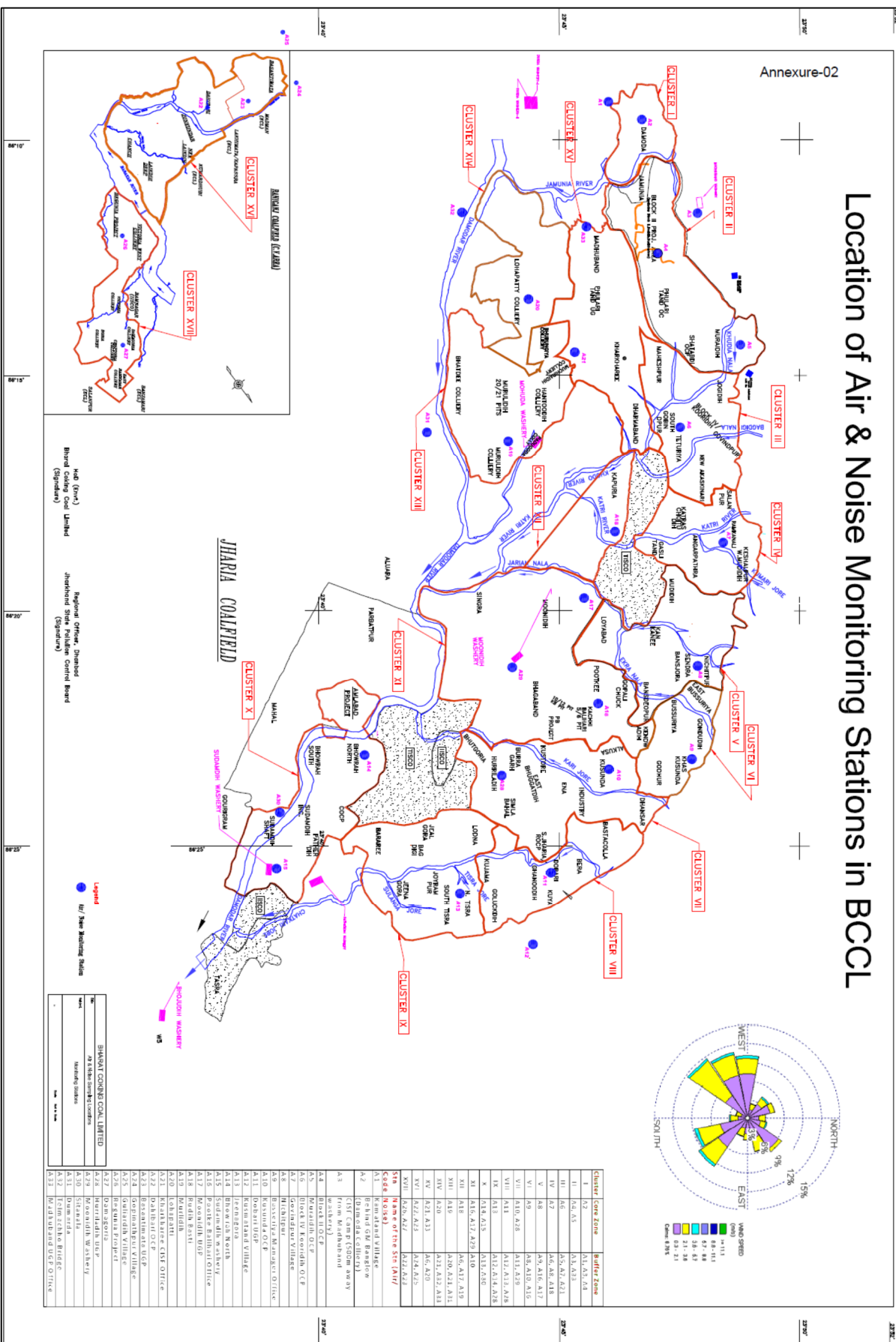
Cluster/Station Number	Name of Cluster/Station	Sampling Location	Water Type	Sampling Frequency
I	SW1, SW2	Jamshedpur	Surface Water	Quarterly
II	SW3, SW4	Barsoi	Surface Water	Quarterly
III	SW5, SW6	Barsoi	Surface Water	Quarterly
IV	SW7, SW8	Barsoi	Surface Water	Quarterly
V	SW9, SW10	Barsoi	Surface Water	Quarterly
VI	SW11, SW12	Barsoi	Surface Water	Quarterly
VII	SW13, SW14	Barsoi	Surface Water	Quarterly
VIII	SW15, SW16	Barsoi	Surface Water	Quarterly
IX	SW17, SW18	Barsoi	Surface Water	Quarterly
X	SW19, SW20	Barsoi	Surface Water	Quarterly
XI	SW21, SW22	Barsoi	Surface Water	Quarterly
XII	SW23, SW24	Barsoi	Surface Water	Quarterly
XIII	SW25, SW26	Barsoi	Surface Water	Quarterly
XIV	SW27, SW28	Barsoi	Surface Water	Quarterly
XV	SW29, SW30	Barsoi	Surface Water	Quarterly
XVI	SW31, SW32	Barsoi	Surface Water	Quarterly
XVII	SW33, SW34	Barsoi	Surface Water	Quarterly

By: BHARAT COOKING COAL LIMITED

For: WITH SANITARY LOCATION

Date: 10/08/2018

## Annexure-02







STRICTLY RESTRICTED  
FOR COMPANY USE ONLY

RESTRICTED

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

## GROUNDWATER LEVEL & QUALITY REPORT

FOR CLUSTER OF MINES, BCCL

(Assessment year - 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-V**

**A. Training from April'16 to September'16**

<b>No of employees (Departmental &amp; Contractual) received training in Cluster XIII (April'16 to September'16)</b>	
<b>Types of Training</b>	<b>Numbers</b>
Basic Training	0
Refresher Training	93

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**ENVIRONMENTAL MONITORING REPORT  
OF  
BHARAT COKING COAL LIMITED,  
CLUSTER – XIII**

**(FOR THE Q.E. JUNE, 2016)**

**E. C. no. J-11015/11/2010-IA.II (M) dated 06.06.2013.**

**September, 2016**



**CMPDI**

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



# CLUSTER - XIII

(FOR THE Q.E. June, 2016)

## CONTENTS

SL. NO.	CHAPTER	PARTICULARS	PAGE NO.
1.		EXECUTIVE SUMMARY	1-2
2.	CHAPTER - I	INTRODUCTION	3-4
3.	CHAPTER-II	AMBIENT AIR SAMPLING & ANALYSIS	5-14
4.	CHAPTER-III	WATER SAMPLING & ANALYSIS	15-21
5.	CHAPTER-IV	NOISE SAMPLING & ANALYSIS	22-26
6.	<b>Figures:</b> Plate NO. - I	SURFACE PLAN SHOWING AIR/NOISE MONITORING STATIONS	27
	Plate NO. - II	SURFACE PLAN SHOWING WATER MONITORING LOCATIONS	28

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**ENVIRONMENTAL MONITORING REPORT  
OF  
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CLUSTER – XIII**

**(FOR THE Q.E. JUNE, 2016)**

**E. C. no. J-11015/11/2010-IA.II (M) dated 06.06.2013-**

**September, 2016**



**CMPDI**

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

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## EXECUTIVE SUMMARY

### 1.0 Introduction

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

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

### 2.0 Sampling location and rationale

#### 2.1 Ambient air sampling locations

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

#### 2.2 Water sampling stations

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

#### 2.3 Noise level monitoring locations

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

### 3.0 Methodology of sampling and analysis

#### 3.1 Ambient air quality

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM<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-I, Asansol.

---

### **3.2 Water quality**

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

### **3.3 Noise level monitoring**

Noise level measurements in form of '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 SPM, 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, Forests and Climate Change (MoEF&CC), Govt. of India.

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

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

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

- 1.1 The Cluster-XIII is in the Northern part of the Jharia coalfield. It includes a group of 7 Mines (viz. Murlidih, Bhurungiya, Mucharadih, Hantoodih, Padugora, Murlidih 20/21 Pits & Bhatdee. The Cluster – XIII is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – XIII 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 Katri River & Damodar River.
- 1.2 The Cluster-XIII is designed to produce 0.18 MTPA (normative) and 2.34 MTPA (peak) capacity of coal.

The Project has Environmental Clearance from Ministry of Environment, Forests and Climate Change (MoEF&CC) for a rated capacity 0.18 MTPA (normative) and 2.34 MTPA (peak) capacity of coal production vide letter no. J-11015/11/2010-IA.II (M) dated 06<sup>th</sup> June, 2013.

Ministry of Environment, Forests and Climate Change while granting environmental clearance has given one of the General conditions that “ Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for PM<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.

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

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## 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) Murlidih (A19): Industrial Area

The location of the sampling station is 23°44'1.96" N & 86°16'41.75"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) Lohapatti (A20)

The location of the sampling station is 23°44'18.93" N 86°13'37.75"E. The sampler was placed at a height of approx. 1.5m above ground level at Safety Office. The station was selected to represent the impact of mining activities of Western Jharia area, poor roads condition, heavy public traffic, burning of coal by the surrounding habitants.

##### ii) Kharkharee CISF Office (A21)

The location of the sampling station is 23°44'14.99" N 86°14'43.02"E. The sampler was placed at a height of approx. 1.5m above ground level at Project Office.

##### iii) Dumarda (A31)

The location was selected for studying the impact of the mining activity on the Dumarda village as it lies in the buffer zone for the Cluster XIII.

#### 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 analyzed in Environmental Laboratory of CMPDI, RI-I, Asansol.

#### 2.3 Results & Interpretations

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

### 2.3.1 Ambient air quality

#### **Particulate Matter PM<sub>10</sub>**

In **core zone** under **Industrial area** varies from 73 to 86  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 68 to 88  $\mu\text{m}^3$

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

In **core zone** under **Industrial area** varies from 36 to 42  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 31 to 42  $\mu\text{m}^3$

#### **Sulphur Dioxide:**

In **core zone** under **Industrial area** varies from 10 to 12  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 10 to 12  $\mu\text{m}^3$

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

In **core zone** under **Industrial area** varies from 20 to 29  $\mu\text{m}^3$

In **buffer zone** in **Industrial area** varies from 20 to 28  $\mu\text{m}^3$



## AMBIENT AIR QUALITY DATA

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

Year : **2015-16.**

Name of the Cluster : **Cluster – XIII**

Q.E.: **June 2016**

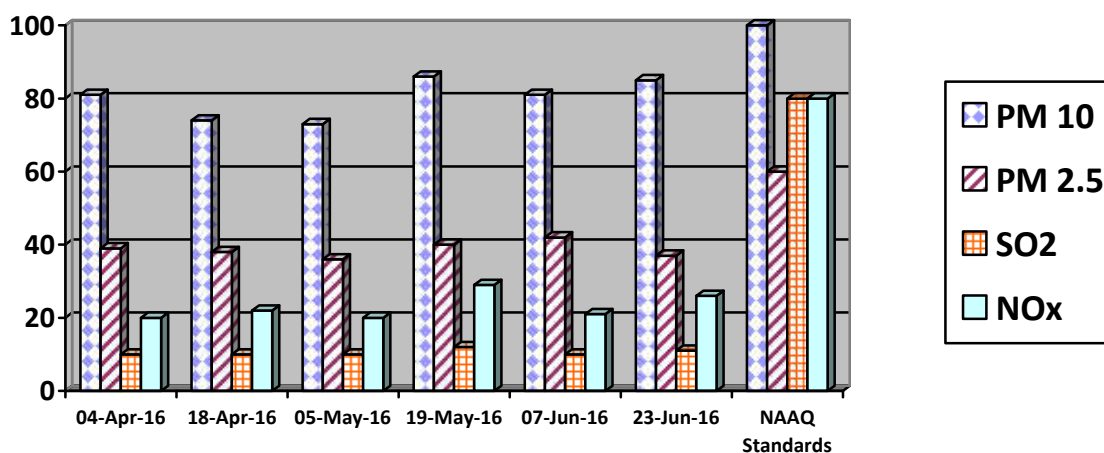
**Station Code/Name: (a) A19 Murlidih**

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

**ZONE: Core**


**(a). Station Code/Name: A19-Murlidih Category: Industrial.**

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO <sub>2</sub>	NO <sub>x</sub>
1	04 - Apr -16	81	39	<10.0	20
2	18 - Apr - 16	74	38	<10.0	22
3	05 - May -16	73	36	<10.0	20
4	19 - May -16	86	40	12	29
5	07 - Jun - 16	81	42	<10.0	21
6	23 - Jun - 16	85	37	11	26
NAAQ Standards		100	60	80	80



**Note:**

- All values are expressed in microgram per cubic meter.

<sup>1</sup> Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

## AMBIENT AIR QUALITY DATA

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

Year : **2015-16.**

Name of the Cluster : **Cluster – XIII**

Q.E.: **June 2016**

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

**Category:**

(b) **A21 Kharkharee CISF Office**

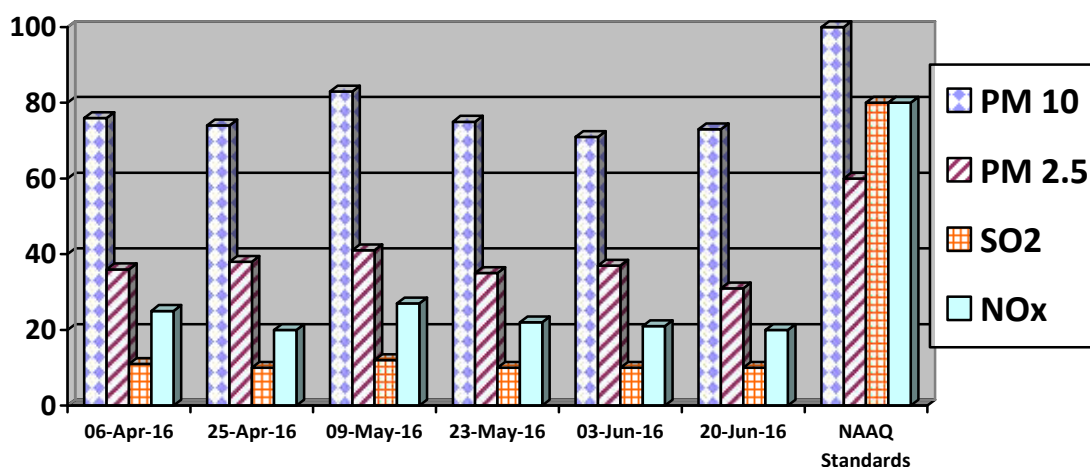
**Industrial<sup>2</sup>.**

(c) **A31 Dumarda**

**ZONE: BUFFER**


**(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>
1	06 - Apr -16	76	36	11	25
2	25 - Apr - 16	74	38	<10.0	20
3	09 - May -16	83	41	12	27
4	23 - May -16	75	35	<10.0	22
5	03 - Jun - 16	71	37	<10.0	21
6	20 - Jun - 16	73	31	<10.0	20
	NAAQ Standards	100	60	80	80



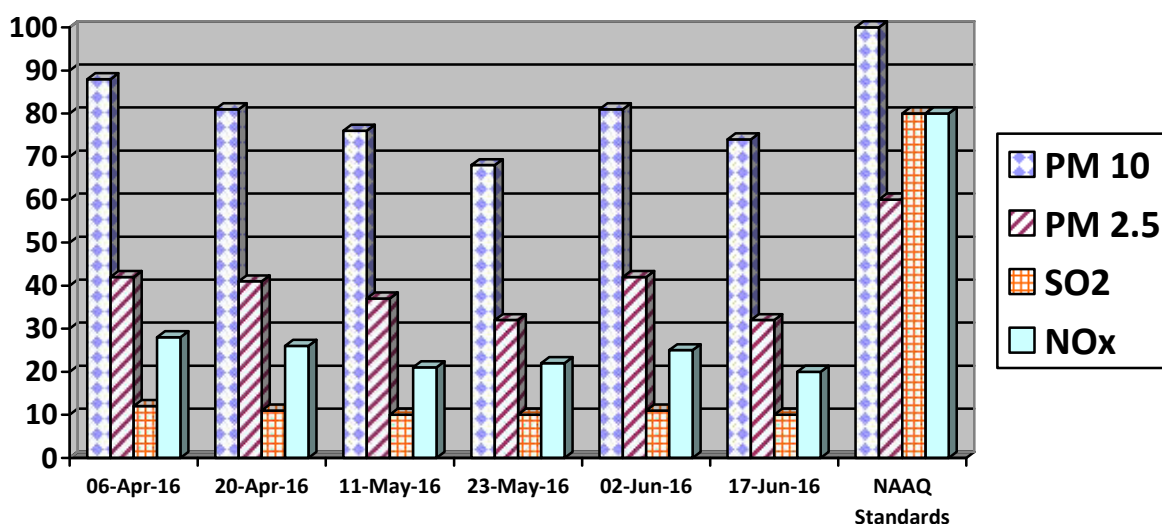
**Note:**

- All values are expressed in microgram per cubic meter.

<sup>2</sup> Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310


(b). Station Code/Name: A21 – Kharkharee CISF 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	06 - Apr -16	88	42	12	28
2	20 - Apr - 16	81	41	11	26
3	11 - May -16	76	37	<10.0	21
4	23 - May -16	68	32	<10.0	22
5	02 - Jun - 16	81	42	11	25
6	17 - Jun - 16	74	32	<10.0	20
	NAAQ Standards	100	60	80	80



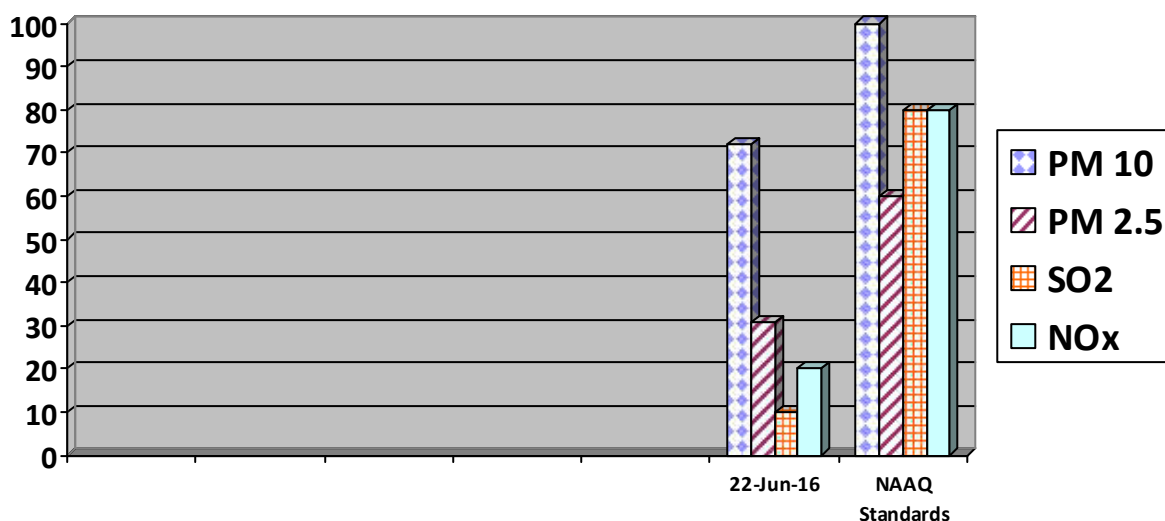
**Note:**

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

<sup>3</sup> Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310


(c). Station Code/Name: A31-Dumarda, Category: Industrial<sup>4</sup>.

Sl. No.	Dates of sampling	PM 10	PM 2.5	SO <sub>2</sub>	NO <sub>x</sub>
1					
2					
3					
4					
5					
6	22 - Jun - 16	72	31	<10.0	20
	NAAQ Standards	100	60	80	80

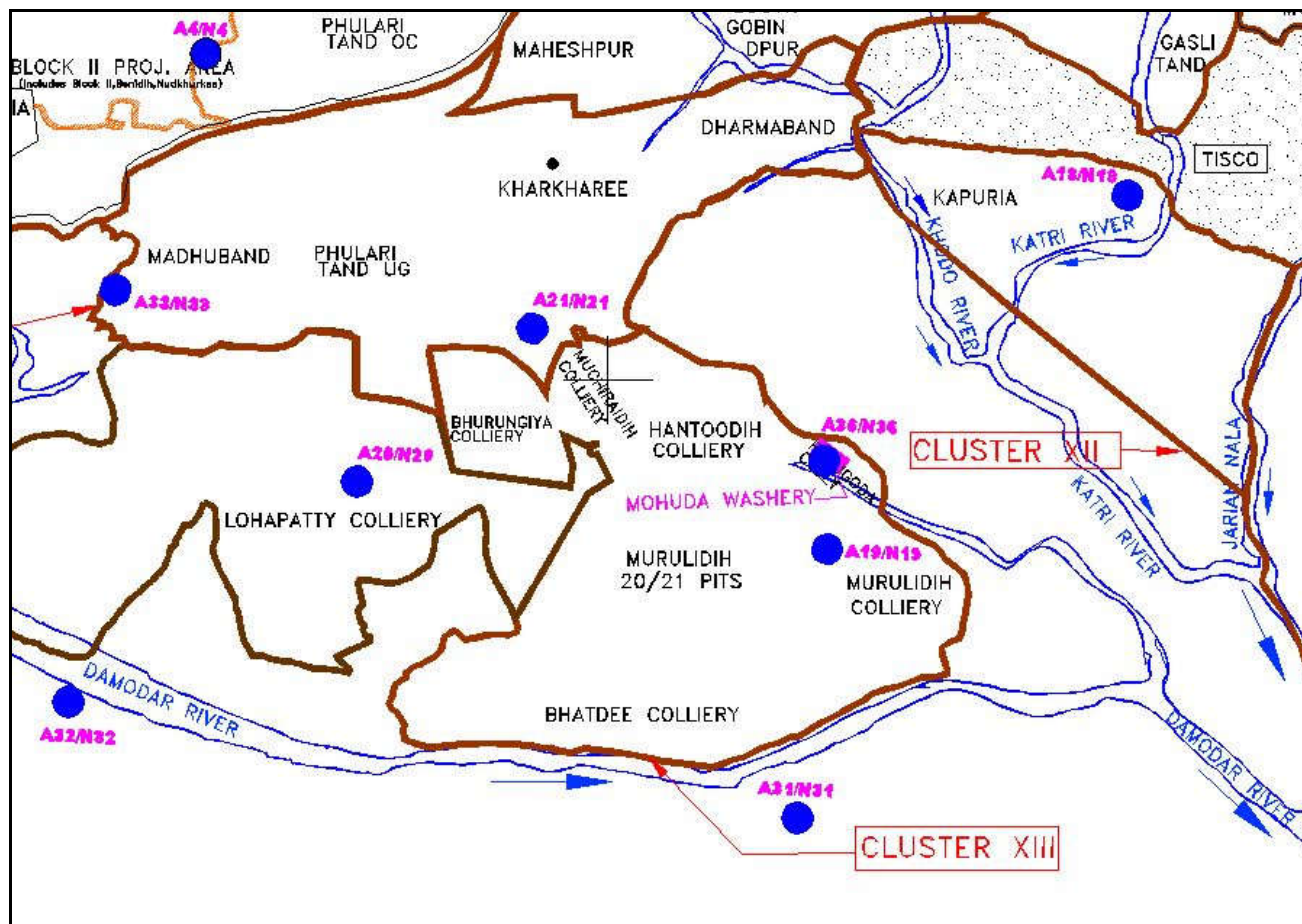


**Note:**

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

<sup>4</sup> Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

## Ambient Air Monitoring Stations in Cluster- XIII 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 Chemiluminescence

**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 Murlidih 20/21 (MW13)**

A sampling point is fixed to assess the effluent quality of Mine discharge. This location is selected to monitor effluent discharge in to Kari jore.

ii) **Drinking Water quality at Murlidih 20/21 (DW13)**

iii) **Surface Water quality at U/S of Damodar River (SW29)**

iv) **Surface Water quality at D/S of Damodar River (SW30)**

#### 3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. The effluent samples were collected and analyzed for four parameters on fortnightly basis. The drinking and Surface water samples were collected & thereafter the samples were preserved and analyzed for 25 and 17 parameters respectively, on quarterly basis 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 : **2015-16.**

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

Month: **April, 2016.**

Name of the Stations & Code :

**1. MW13- Mine Discharge of Murlidih 20/21**

#### First Fortnight

Sl. No.	Parameters	MW13 (Mine Discharge )	As per MOEF&CC General Standards for schedule VI
		06.04.2016	
1	Total Suspended Solids	44	100 (Max)
2	pH	8.19	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	36	250 (Max)

#### Second Fortnight

Sl. No.	Parameters	MW13 (Mine Discharge )	As per MOEF&CC General Standards for schedule VI
		18.04.2016	
1	Total Suspended Solids	38	100 (Max)
2	pH	8.51	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	28	250 (Max)

All values are expressed in mg/lit unless specified.

1. 27/5/16  
2. 16/02/11  
Analysed By

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

## WATER QUALITY DATA

### (EFFLUENT WATER FOUR PARAMETERS)

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

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

Month: **May 2016.**

Name of the Stations & Code :

**1. MW13- Mine Discharge of Murlidih 20/21**

#### First Fortnight

Sl. No.	Parameters	MW13 (Mine Discharge )	As per MOEF&CC General Standards for schedule VI
		13.05.2016	
1	Total Suspended Solids	48	100 (Max)
2	pH	8.13	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	36	250 (Max)

#### Second Fortnight

Sl. No.	Parameters	MW13 (Mine Discharge )	As per MOEF&CC General Standards for schedule VI
		23.05.2016	
1	Total Suspended Solids	44	100 (Max)
2	pH	8.30	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	36	250 (Max)

All values are expressed in mg/lit unless specified.

1. *[Signature]*  
2. *[Signature]*  
Analysed By

*[Signature]*  
Dy. Technical Manager  
Env. Lab, CMPDI(HQ)  
(Authorized Signatory)

## WATER QUALITY DATA

### (EFFLUENT WATER FOUR PARAMETERS)

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

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

Month: **June, 2016.**

Name of the Stations & Code :

**1. MW13- Mine Discharge of Murlidih 20/21**

#### First Fortnight

Sl. No.	Parameters	MW13 (Mine Discharge )	As per MOEF&CC General Standards for schedule VI
		04.06.2016	
1	Total Suspended Solids	54	100 (Max)
2	pH	8.34	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	36	250 (Max)

#### Second Fortnight

Sl. No.	Parameters	MW13 (Mine Discharge )	As per MOEF&CC General Standards for schedule VI
		23.06.2016	
1	Total Suspended Solids	42	100 (Max)
2	pH	7.9	5.5 - 9.0
3	Oil & Grease	<2.0	10 (Max)
4	COD	28	250 (Max)

All values are expressed in mg/lit unless specified.

1. *[Signature]*  
2. *[Signature]*  
Analysed By

*[Signature]*  
Dy. Technical Manager  
Env. Lab, CMPDI(HQ)  
(Authorized Signatory)

## **WATER QUALITY**

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

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

**Coal Limited**

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

Period: **Q. E. June, 2016.**

Area : **Murulidih (20/21)**

Project: **Murulidih Cluster XIII**  
(20/21)

**Stations:**

1. Upstream of Damodar River SW-29
2. Downstream of Damodar River SW-30

**Date of Sampling:**  
15/03/2016

Sl. No	Parameter	Sampling Stations				Detection Limit	BIS Standard & Method
		SW-29	SW-30	3	4		
1	Arsenic (as As), mg/l, Max	<0.002	<0.002			0.002	IS 3025/37:1988 R : 2003, AAS-VGA
2	BOD (3 days 27°C), mg/l, Max	2.8	3.0			2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
3	Colour ( Hazen Unit)	colourless	colourless			Qualitative	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	60	72			2.00	IS-3025/32:1988, R-2007, Argentometric
5	Copper (as Cu), mg/l, Max	<0.03	<0.03			0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
6	Dissolved Oxygen, min.	6.2	5.6			0.10	IS 3025/38:1989, R : 2003, Winkler Azide
7	Fluoride (as F) mg/l, Max	1.15	1.20			0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
8	Hexavalent Chromium, mg/l, Max	<0.01	<0.01			0.01	APHA, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
9	Iron (as Fe), mg/l, Max	<0.06	<0.06			0.06	IS 3025 /53 : 2003, R : 2009, AAS-Flame
10	Lead (as Pb), mg/l, Max	<0.005	<0.005			0.005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
11	Nitrate (as NO <sub>3</sub> ), mg/l, Max	8.86	11.96			0.50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
12	pH value	8.27	7.30			2.5	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	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
14	Selenium (as Se), mg/l, Max	<0.002	<0.002			0.002	APHA, 22 <sup>nd</sup> Edition AAS-GTA
15	Sulphate (as SO <sub>4</sub> ) mg/l, Max	59	75			2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
16	Total Dissolved Solids, mg/l, Max	342	398			25.00	IS 3025 /16:1984 R : 2006, Gravimetric
17	Zinc (as Zn), mg/l, Max	<0.01	0.01			0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame

1. 27/3/16  
2. 16/03/16  
Analysed By

26/3/16  
Dy. Technical Manager  
Env. Lab, CMPDI(HQ)  
(Authorized Signatory)

All values are expressed in mg/lit unless specified.

## **WATER QUALITY**

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

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

Name of the Project: **Cluster - XIII**      Period: **Q. E.June, 2016.**

Area : **Murulidih (20/21)**      Project: **Murulidih Cluster XIII (20/21)**

**Stations:**

1. Drinking Water from Murulidih DW-13

**Date of Sampling:**  
23/05/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		DW-13	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 <sup>nd</sup> Edition ,Carmin
2	Colour,in Hazen Units	3			1	5	APHA, 22 <sup>nd</sup> Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	107			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	100			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	0.38			0.02	1.0	APHA, 22 <sup>nd</sup> Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.07			0.02	0.2	APHA, 22 <sup>nd</sup> Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 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	3			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	7.85			2.5	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			0.002	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	29			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	396			4.00	200	IS-3025/23:1986, Titration
19	Total Arsenic (as As), mg/l, Max	<0.002			0.002	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
20	Total Chromium (as Cr), mg/l, Max	<0.04			0.04	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	810			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO <sub>3</sub> ), mg/l, Max	532			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	6			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.48			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

1. 27/5/16  
2. 26/5/16  
Analysed By

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

All values are expressed in mg/lit unless specified.

## **WATER QUALITY**

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

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

Name of the Project: **Cluster - XIII** Period: **Q. E. June, 2016.**

Area : **Murulidih (20/21)** Project: **Murulidih Cluster XIII (20/21)**

**Stations:**

1. Ground Water from Machhayara, Beside NH-32 GW-13

**Date of Sampling:**  
20/05/2016

Sl. No	Parameter	Sampling Stations			Detection Limit	IS:10500 Drinking Water Standards	Standard / Test Method
		GW-13	2	3			
1	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA, 22 <sup>nd</sup> Edition ,Carmin
2	Colour, in Hazen Units	1			1	5	APHA, 22 <sup>nd</sup> Edition ,Pt.-Co. Method
3	Calcium (as Ca), mg/l, Max	88			1.60	75	IS-3025/40:1991, EDTA
4	Chloride (as Cl), mg/l, Max	38			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	0.65			0.02	1.0	APHA, 22 <sup>nd</sup> Edition , SPADNS
7	Free Residual Chlorine, mg/l, Min	0.03			0.02	0.2	APHA, 22 <sup>nd</sup> Edition, DPD
8	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
9	Lead (as Pb), mg/l, Max	<0.005			0.005	0.01	APHA, 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	4			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	8.31			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	90			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	504			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	<0.06			0.05	0.05	IS-3025/52:2003, AAS-Flame
21	Total Dissolved Solids, mg/l, Max	480			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
22	Total Hardness (CaCO <sub>3</sub> ), mg/l, Max	328			4.00	200	IS-3025/21:1983, R-2002, EDTA
23	Turbidity, NTU, Max	4			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
24	Zinc (as Zn), mg/l, Max	0.01			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame

1. 27/5/16  
2. 26/5/16  
Analysed By

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

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) **Murlidih (N19)**

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) **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.

iii) **Kharkharee CISF Office (N21)**

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

iv) **Dumarda (N31)**

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

#### 4.2 Methodology of sampling and analysis

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

#### 4.3 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEF&CC.

The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of L<sub>EQ</sub> are presented.

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



## NOISE LEVEL DATA

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

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

Month: **April, 2016.**

Name of the Stations & Code :

1. **Murlidih (N19)**
2. **Lohapatti (N20)**
3. **Kharkharee CISF Office(N21)**
4. **Dumarda (N31)<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	Murlidih (N19)	Industrial area	04.04.2016	61.2	75
2	Lohapatti (N20)	Industrial area	06.04.2016	60.8	75
3	Kharkharee CISF Office (N21)	Industrial area	06.04.2016	56.7	75
4	Dumarda (N31)	Industrial area	-	-	-

### (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	Murlidih (N19)	Industrial area	18.04.2016	54.7	75
2	Lohapatti (N20)	Industrial area	25.04.2016	53.7	75
3	Kharkharee CISF Office (N21)	Industrial area	20.04.2016	58.2	75
4	Dumarda (N31)	Industrial area	-	-	-

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

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

<sup>1</sup> Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed.....  .....Dated 19.07.2016. Job No. 110310

## NOISE LEVEL DATA

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

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

Month: **May, 2016.**

Name of the Stations & Code :

1. **Murlidih (N19)**
2. **Lohapatti (N20)**
3. **Kharkharee CISF Office(N21)**
4. **Dumarda (N31)<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	Murlidih (N19)	Industrial area	05.05.2016	58.6	75
2	Lohapatti (N20)	Industrial area	09.05.2016	64.8	75
3	Kharkharee CISF Office (N21)	Industrial area	11.05.2016	58.7	75
4	Dumarda (N31)	Industrial area	-	-	-

### 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	Murlidih (N19)	Industrial area	19.05.2016	56.8	75
2	Lohapatti (N20)	Industrial area	23.05.2016	61.8	75
3	Kharkharee CISF Office (N21)	Industrial area	23.05.2016	56.2	75
4	Dumarda (N31)	Industrial area	-	-	-

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

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

<sup>2</sup> Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed.....  .....Dated 19.07.2016. Job No. 110310

## NOISE LEVEL DATA

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

Year : **2015-16.**

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

Month: **June, 2016.**

Name of the Stations & Code :

1. **Murlidih (N19)**
2. **Lohapatti (N20)**
3. **Kharkharee CISF office(N21)**
4. **Dumarda (N31)<sup>3</sup>**

### a. First Fortnight data


Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Murlidih (N19)	Industrial area	07.06.2016	62.7	75
2	Lohapatti (N20)	Industrial area	03.06.2016	55.2	75
3	Kharkharee CISF Office (N21)	Industrial area	02.06.2016	58.3	75
4	Dumarda (N31)	Industrial area	-	-	-

### b. Second Fortnight data

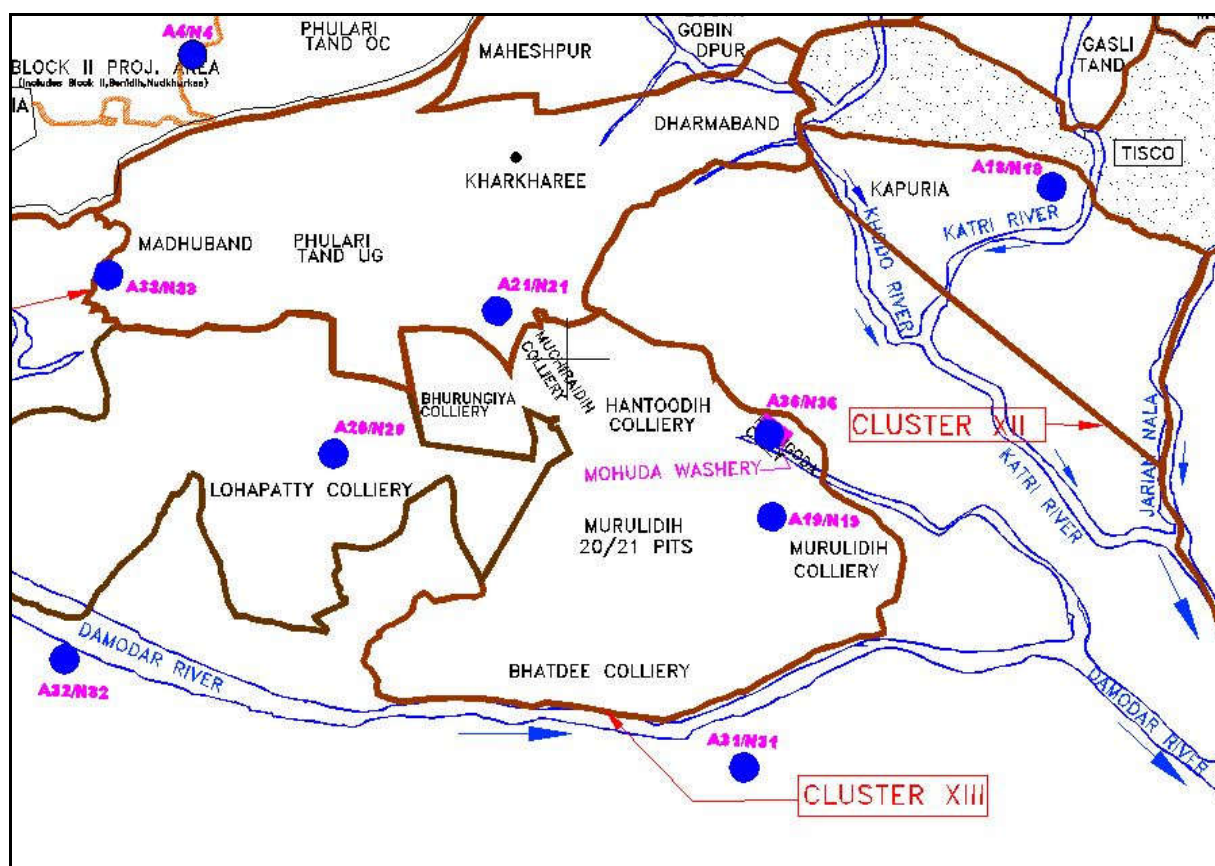
Sl. No.	Station Name/Code	Category of area	Date	Noise level dB(A)LEQ	*Permissible Limit of Noise level in dB(A)
1	Murlidih (N19)	Industrial area	23.06.2016	55.4	75
2	Lohapatti (N20)	Industrial area	20.06.2016	63.6	75
3	Kharkharee CISF Office (N21)	Industrial area	17.06.2016	61.3	75
4	Dumarda (N31)	Industrial area	22.06.2016	56.4	75

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

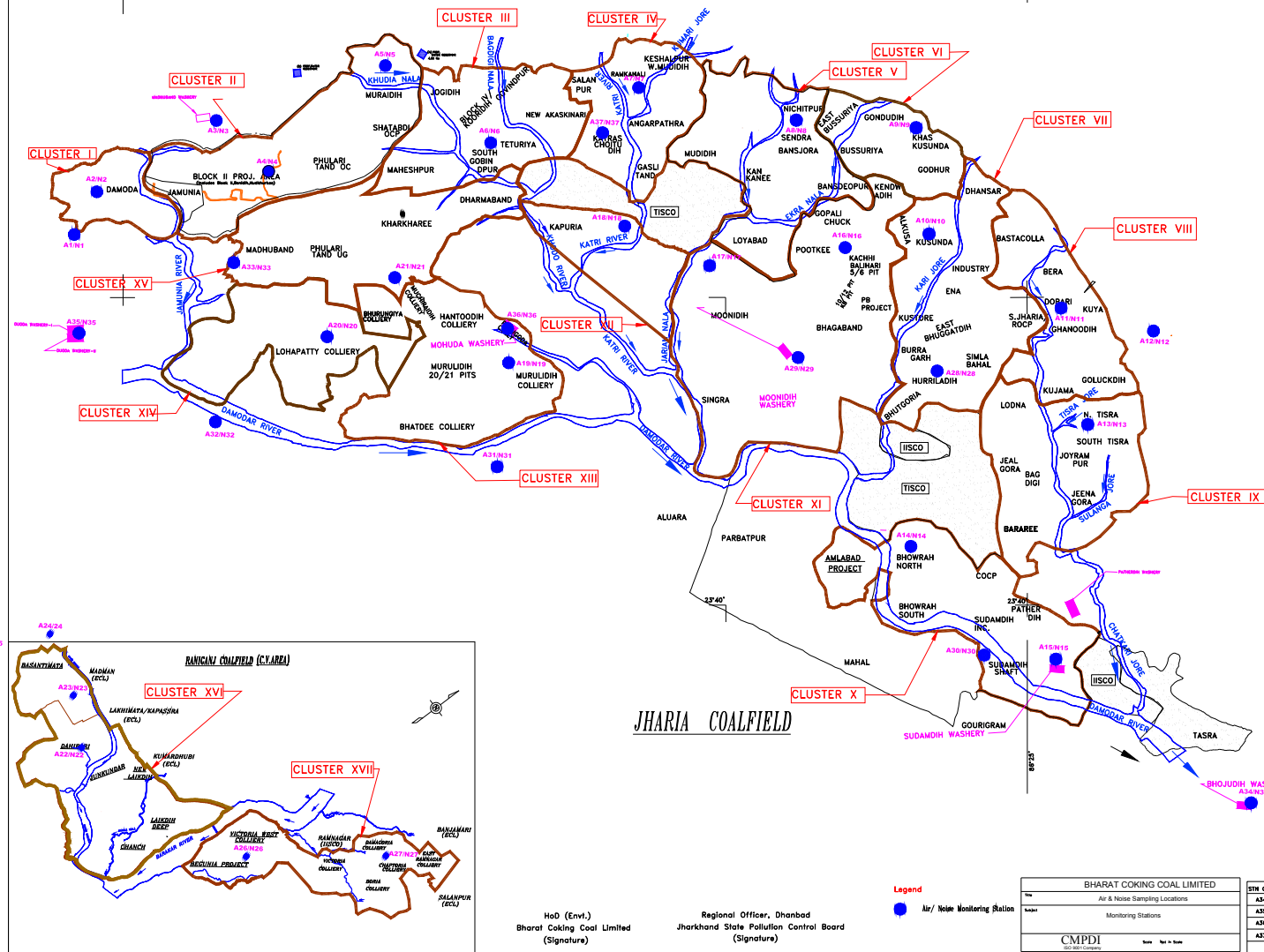
*\* Day Time: 6.00 AM to 10.00 PM, +Night Time: 10.00 PM to 6.00 AM.*

<sup>3</sup> Report released by Shri Indranil De, Manager (Env), CMPDI, RI-1, Asansol, Signed..........Dated 19.07.2016. Job No. 110310

### Noise Level Monitoring Locations of Cluster XIII



# Location of Air & Noise Monitoring Stations in BCCL



# Water Sampling Locations in BCCL

## INDEX

Cluster	Surface Water (U/S, D/S)	Name of River/Na. / Jore	Mined Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghutway Village
II	SW3, SW4	Khudia Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudia Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kan River, Kurnai Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudidih	GW5	Nichitpur
VI	SW14, SW15	Ekra Nala	MW6	East Basunia UGP	GW6	Bansjora Borewell
VII	SW16, SW17	Kari Jore	MW7	Dhansar UGP	GW7	Humladih
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	Showrah North	GW10	Showrah South
XI	SW23, SW24, SW25, SW26	Kan River, Damodar River	MW11	Bhagaband In UGP	GW11	Bhagabandh
XII	SW27, SW28	Kan River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Muridih (2021)	GW13	Muridih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW35, SW32	Khudia Nala	MW15	Kharkharree UGP	GW15	Kharkharree
XVI	SW33, SW33	Khudia River	MW16	Dahibari OCP	GW16	Pallabari Village
XVII	SW35, SW35	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

