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

Bharat Coking Coal Limited
A Mini Ratna Company
(A Subsidiary of Coal India Limited: A Maharatna Company)
Regd. Off. : Koyla Bhawan, Koyla Nagar
Dhanbad - 826005
CIN : U10101JH1972GO1000918
OFFICE OF THE GENERAL MANAGER
WESTERN JHARIA AREA
PO: MOONIDIH, DISTT: DHANBAD (JHARKHAND) - 828129
PHONE NO: 0326 2273483, FAX NO: 0326 2273445, e-mail : gmwj.bccl@coalindia.in

Ref: BCCL/WJA/ENV/2021/ 28(B) **Date:** 29/05/2021

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

Sub:- Submission of six-monthly reports on compliance of Environment Clearance for the period from **Oct'2020 to March'2021** with respect to **Cluster-XII** of Kapuria UG project, M/s Bharat Coking coal Limited.

Ref: EC Order No. – J-11015/184/2012-IA.II (M) Dated:- 10.12.2014.

Dear Sir,

Please find enclosed herewith the six-monthly reports on compliance of Environment Clearance for the period from **Oct'2020 to March'2021** in respect of **Cluster XII of Kapuria UG of M/s Bharat Coking Coal Limited** for your kind perusal and further needful action please. It is also to bring to your kind notice that the project has been delayed due to the delay in physical possession of land. The work has not started yet.

Thanking you,

Encl:- As Above

Yours faithfully,

Project Officer
Kapuria Project

Project Officer
KAPURIA PF
BCCL

CC to:-

1. The Director, 1A Monitoring Cell, Paryavaran Bhawan, CGO Complex, New Delhi – 110003.
2. The Member Secretary, Jharkhand State Pollution Control Board, TA – Division Building, Dhruwa–Ranchi – 834004.
3. HoD (Env.), BCCL, Koyla Bhawan Dhanbad.
4. GM, W.J. Area.
5. Nodal Officer (Env.), WJ Area.

"Copy for uploading on MOEF&CC "parivesh portal" and send e-mail"

ENVIRONMENTAL CLEARANCE COMPLIANCE OF CLUSTER-XII GRANTED VIDE LETTER NO. J-11015/184/2012-IA.II (M) DATED 10.12.2014

(Oct' 20 – March'21)

Sl. No.	A. Specific Conditions by MOEF:	Compliance
i.	**The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC**	Project has not started yet. Land acquisition is under process. This condition shall be complied as the production starts.
ii	**A separate team for subsidence monitoring and surface mitigation measures be constituted and continuous monitoring and mitigation measures be carried out.**	Shall be complied. Project is under construction phase.
iii.	**The validity of the EC is for the life of the Mine or as specified in the EIA Notification, 2006, whichever is earlier.**	Agreed.
iv.	**The coal transportation from the mine to the siding shall be by conveyor belt and' coal transportation from to the washery shall be by rail.**	Shall be complied.
v.	**Piezometers be installed upto the depth of mining to facilitate monitoring of ground water.**	The work of monitoring of ground water is being carried out by CMPDI.
Vi.	**Water sprinkler be used for coal dust suppression along the haul roads.**	Shall be complied.
vii.	**Thick green belt shall be developed around proposed washery within the Cluster-Xll lease area and plantation shall be undertaken along NR-32.**	Shall be complied.
Viii	**Subsidence study shall be taken up with reputed scientific agency as per stipulation of DGMS**	Shall be complied.
ix.	**Various CSR works that will be carried out shall include education, healthcare water supply etc.**	Shall be complied.
x.	**The project should have ecologist/social scientists to monitor the project.**	BCCL is following the roadmap prepared by FRI, Dehradun to restore ecology in the region and conducting the work of ecological restoration in the mined out areas.
xi.	**Coal produced from the mine will be directly loaded into a CHP at the incline top. From the CHP at incline top, coal will be transported to the proposed Kapuria Coal Washery linked to the mine by covered conveyor system of length of 250m. Washed coal from the washer will be transported by conveyor to the railway siding and loaded into the wagons by CHP.**	Shall be complied.

xii.	**The production shall be within the same Mining Lease area**	Shall be complied.
xiii.	**Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads, and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clay soillsuitable material.**	Shall be complied.
xiv.	**If subsidence is found exceeding the permitted limits, then the land owners shall be adequately compensated with mutual agreement of the landowners.**	Shall be complied.
xv.	**Mining shall be carried out as per statuette at a safe distance from river/nalla following within adjacent to the lease boundary at the time of depillaring, protective bunds and garland drains shall be provided so that no water from the surface enters the subsidence area and the shaft.**	Mining shall be done as per DGMS statute.
xvi.	**Sufficient coal pillars shall be left unextracted around the air shaft (within the subsidence influence area) to protect from any damage from subsidence, if any.**	Shall be complied.
xvii.	**Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.**	Shall be complied.
xviii.	**Diversion of Land shall be done with approval of the Competent Authorities.**	Shall be complied.
xix.	**Coal Extraction shall be optimised in areas where agricultural production is continuing. Some pillars shall be left below the agricultural land. No depillaring & coal extraction should be carried out below habitation, H.T. Lines & beneath road, water bodies, railway track.**	It will be done as per the statute and DGMS Guidelines.

xx.	**The mined out land should be used for agriculture purpose.**	Shall be complied
xxi.	**Safety measures and health issues need to be addressed for workers and surrounding villagers.**	Shall be complied. .
xxii.	**Proponent shall implement all the lated safety measures with safety equipment.**	It will be done as per the statute and DGMS guidelines.
xxiii.	**At the time of establishing the CRP, it is proposed to establish mist spray arrangements and also enclosing the ground level bunkers up to the level of gantry**	Shall be complied.
Xxiv.	**An afforestation plan to be prepared for implementation after stabilization of subsidence**	Shall be complied.
Xxv.	**Water spraying arrangements at loading points and mist spray arrangements are to be provided.**	Shall be complied.
xxvi.	**No additional land, manpower and equipment and water shall be used for the expansion project.**	Shall be complied.
xxvii.	**Mine closures activities include sealing of incline mouth dismantling of haulage system, clearing and afforestation of coal stock area, plantation on barren land and old abandoned mine.**	Mine closure plan will be formulated as per the guidelines of ministry of coal GoI.
xxviii.	**3-tier plantation should be developed 2 km stretch of road from the mine using native species**	Shall be complied.
.xxix.	**Garland drains (size, gradient and length) around the safety areas such as mine shaft and low lying areas and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine sites. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.**	It will be done as per EMP.

Xxx.	**Water sprinkling system shall be provided to check fugitive emissions from loading operations, conveyor system, haulage roads, transfer points, etc. Major approach roads shall be black topped and properly maintained.**	Shall be complied.
.Xxxi.	**A progressive afforestation plan shall be prepared and implemented over the mine lease area acquired and shall include areas under green belt development, areas along roads, infrastructure, along ML boundary and township etc., by planting native species in consultation with the local DFO/Agriculture Department,**	Shall be done. EMP and mine closure plan will be followed.
xxxii.	**Regular monitoring of groundwater level and quality 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 in May. Data thus collected shall be submitted to the Ministry of Environment, Forests & Climate Change and to the Central Pollution Control Board quarterly within one month of monitoring.**	It will be complied. At present CMPDI is working to establish a network of piezometer well.
xxxiii.	**Acid Water Treatment Plant, volume of water to be treated and disposal of brine should be provided.**	Shall be provided if acid water treatment is required.
xxxiv.	**High root density tree species shall be selected and planted over areas likely to be affected by subsidence.**	Shall be provided.
xxxv.	**Monitoring of drinking water should be carried out regularly.**	Environmental parameters are being monitored by CMPDI, as per the MoEF&CC standards.
Xxxvi.	**Sewage treatment plant shall be installed in the township. ETP shall also be provided for treating workshop**	Shall be complied.
xxxvii.	**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 I :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 anyone particular season which is consistent in the time series), and the report submitted to MOEF&CC and its Regional office at Bangalore.**	Presently a time series map of vegetation cover in the Jharia coal field is being carried out through CMPDIRanchi using satellite imagery for every 3 years and is being uploaded on the official website of company. Further CMPDI has been requested to prepare time series of land use maps based on satellite imagery of the core zone and buffer zone in the scale 1:5000.

xxxviii	**If the water quality parameters such as F, pH, heavy metals, etc. exceed the prescribed limits, suitable measures by the proponent be taken to ensure that the local communities are provided alternate source of water for their livelihood**	Shall be complied.
xxxix	**Medical camps should be organized in the area for regular check-up of workers/ villagers/population. Detailed prevalent disease pattern in the area should be documented and details of medical facilities provided for the same be made available to the MoEF&CC**	It is being done.
xl.	**Mine discharge water outside the ML shall be monitored, particularly for TDS and treated to conform to prescribed levels before discharge into the natural environment.**	Environmental parameters are being monitored by CMPDI, as per the MoEF&CC standard.
xli.	**The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource, in case water table shows a declining trend. The project authorities shall meet water requirement of nearby villagers) in case the village wells go dry due to dewatering of mine.**	It will be provided and regular monitoring shall be done
xlii.	**Besides carrying out regular periodic health check-up of their workers, 10% of the workers identified from Workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through an agency such as NIOH, Ahmadabad within a period of one year and the results reported to this Ministry and to DGMS.**	It will be complied, however BCCL has engaged NIOH for other cluster of **BCCL to** health checkup for occupational disease and hearing impairment.
xliii.	**The min ing in the existing mines should be phased out after expiry of the current mining lease and after reclamation of mined over area. The operating mines may be analysed and monitored for compliance of conditions, bearing with movement of wildlife and until such time they are closed/phased out.**	Agree, Shall be complied
xliv.	**Project specific CSR for an amount of Rs5/Tonne of coal production, as adjusted as per the annual inflation, should be provided for the CSR activities undertaken and the progress made thereon shall be uploaded annually on the company website. Monitoring of the impacts of activities under CSR shall be carried out periodically.**	It will be done as per the CSR policy of organization.

xlv.	**A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forests & Climate Change 5 years in advance of final mine closure for approval.**	**shall be complied**
xlvi.	**Corporate Environment Responsibility:** **a) The Company shall have a well laid down Environment Policy approved by the Board of Directors.** **b) The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.** **c) The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished.** **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.**	Bharat Coking Coal Ltd is a subsidiary of Coal India Ltd which is having a well laid down Environmental Policy **It is being complied** It already exists within the company. It will be done, if any.
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, Forests & Climate Change.**	**Shall be complied**
ii.	**No change in the calendar plan of production for quantum of mineral coal shall be made.**	Shall be complied when coal production will start.
iii.	**Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM_{10}, $PM_{2.5}$, S02 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,**	**Being complied.** Monitoring is being done by CMPDI. Monitoring report enclosed.

iv.	**Data on ambient air quality (PM_{10}, PM 2.5, S02 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 concerned Regional Office 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**
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.**	**Shall be complied**
vi.	**Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.**	**Shall be complied**
vii.	**Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.**	**Shall be complied**
viii.	**Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analyzed through a laboratory recognized under EPA Rules, 1986.**	Environmental parameters are being monitored as per NAAQS standards. Monitoring stations have been finalized with Jharkhand State Pollution Control Board, Ranchi.
ix.	**Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.**	Shall be complied

x.	**Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.**	Shall be complied
xi.	**A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.**	A full-fledged environment department headed by HoD (Environment) along with a suitable qualified multidisciplinary team with of executive has been established in the headquarters. They are trained in ecological restoration, sustainable development, rainwater harvesting methods etc.
xii.	**The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.**	Shall be complied
xiii.	**http://envfor.nic.in.** **The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution control Board and may also be seen at the website of the Ministry of Environment, Forests & Climate Change at http://envfor.nic.in.**	It is complied
xiv.	**A copy of the environmental clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received wh ile processing the proposal. A copy of the clearance letter shall also be displayed on company's website.**	It is complied
xv.	**A copy of the environmental clearance letter shall be shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Sector and Collector's Office/Tehsildar's Office for 30 days**	It is complied

xvi.	**The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PMIQ, PM_{2S}, S02 and NO_X (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.**	It is being complied **The** monitoring data of environment parameters to be display at project premises shall be complied once the project starts.
xvii.	**The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Office s of CPCB and the SPCB.**	It is being complied
xviii.	**The Regional Office of this Ministry located in the Region shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the officers) of the Regional Office by furnishing the requisite datal information/monitoring reports,**	It is being complied
xix.	**The Environmental statement for each financial year ending 31 March in For -V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended su bsequently, 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 MoEFCC bye-mail.**	It is being complied

	C. Other Conditions by MoEF&CC	
4	**The proponent shall abide by all the commitments and recommendations made in the ETA/EMP report so along during their presentation to the EAC.**	Agreed
5	**The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent**	Shall be implemented
6	**The proponent is required to obtain all necessary clearances/approvals that may be required before the start of the project. The Ministry or any other competent authority may stipulate any further condition for environmental protection**	Agreed
7	**The Ministry or any other competent authority may stipulate any further condition for environmental protection.**	Agreed
8	**The Proponent shall setup an Environment Audit cell with responsibility and accountability to ensure implementation of all the EC Conditions.**	**It will be done**
9	**Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.**	**Agreed**
10	**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 and any other orders passed by the Hon'ble Supreme Court oflndial High Courts and any other Court of Law relating to the subject matter. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil**	**Shall be complied**

	contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.	
11	**Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.**	**Agreed**

Project officer
Kapuria Mine

Project Officer
KAPURIA PROJECT
BCCL

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

(FOR THE MONTH OCTOBER, 2020)

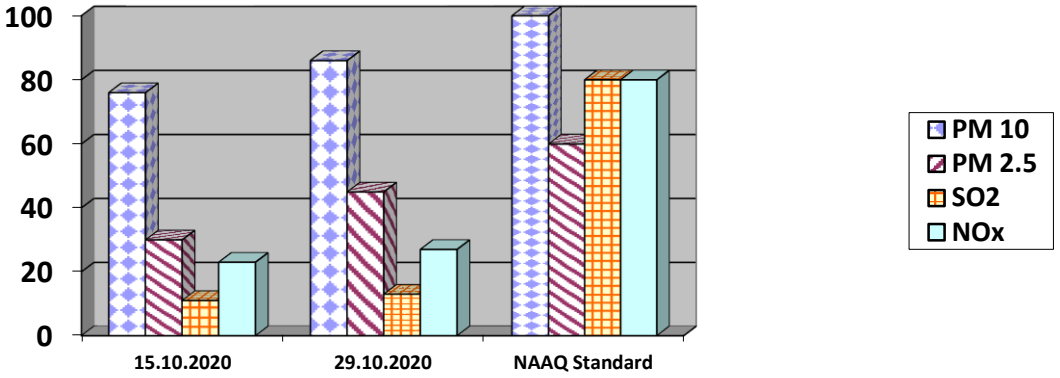
E. C. no. J-11015/184/2012-IA.II (M) dated 10.12.2014.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

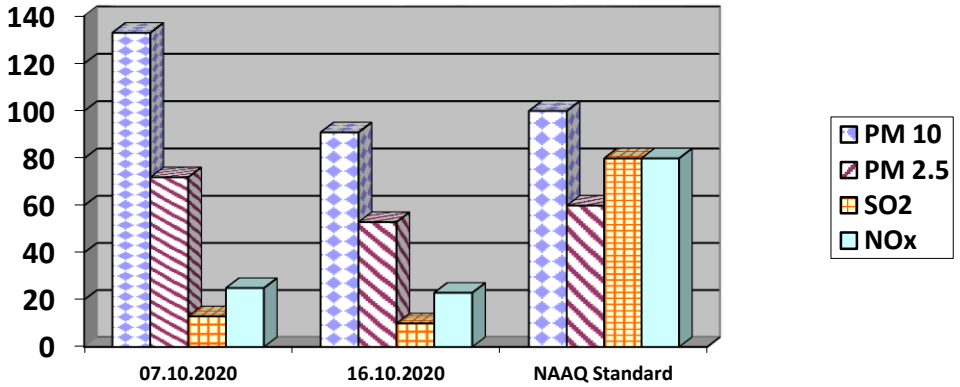
AMBIENT AIR QUALITY DATA

Cluster–XII, Bharat Coking Coal limited Month: **OCT 2020** Year : **2020-21.**

Station Name: A18, Rudhi Basti		Zone: Core		Category: Residential	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	15.10.2020	76	30	11	23
2	29.10.2020	86	45	13	27
	NAAQ Standard	100	60	80	80



Station Name: A6, Block IV		Zone: Buffer		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	07.10.2020	133	72	13	25
2	16.10.2020	91	53	10	23
	NAAQ Standard	100	60	80	80

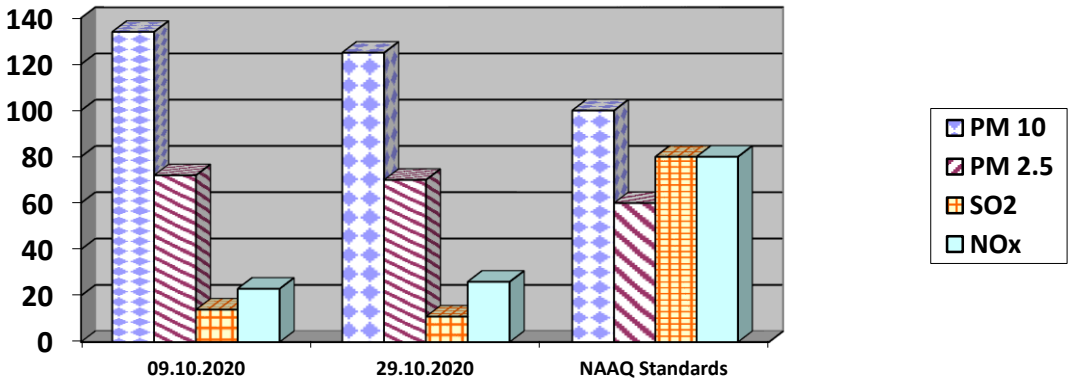


Analysed By
JSA/SA/SSA

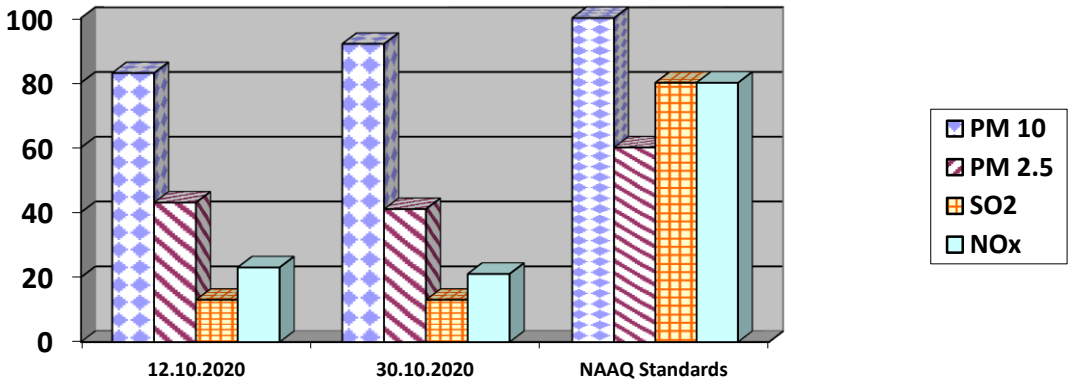
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

Station Name: A17 Moonidih UGP		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	09.10.2020	134	72	14	23
2	29.10.2020	125	70	11	26
	NAAQ Standards	100	60	80	80



Station Name: A19 – Murlidih 20/21		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	12.10.2020	83	43	13	23
2	30.10.2020	92	41	13	21
	NAAQ Standards	100	60	80	80



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

Analysed By
JSA/SA/SSA

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

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites

i) **Rudhi basti (N18)**
ii) **Block IV(N6)**
iii) **Moonidih UGP(N17)**
iv) **Murlidih 20/21 (N19)**

4.2 Methodology of sampling and analysis

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

4.3 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEFCC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of L_{EQ} are presented**.** The observed values at all the monitoring locations are found to be within permissible limits.

NOISE LEVEL DATA

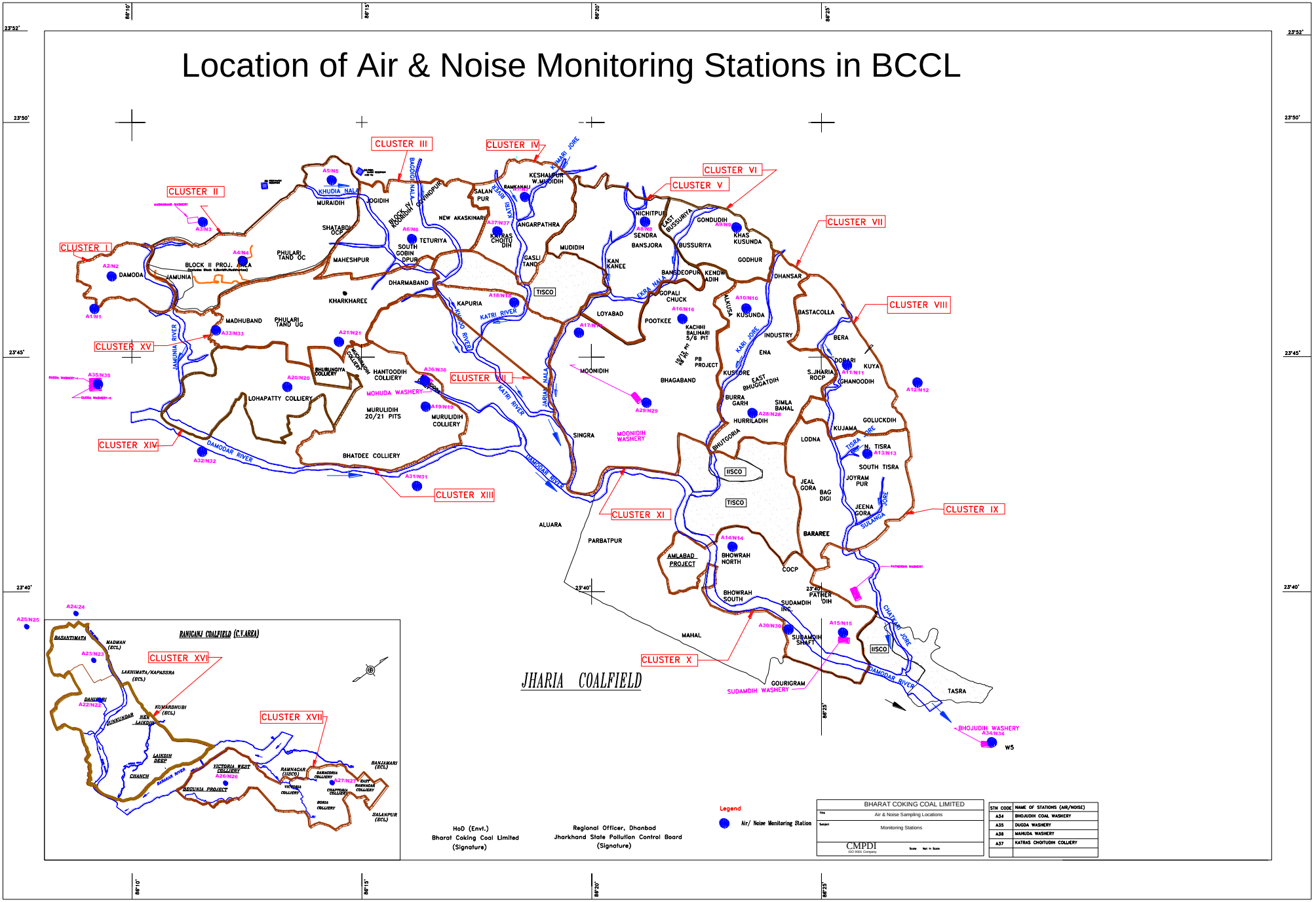
Name of the Project: **Cluster -XII**			Month: **OCT 2020**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)LEQ**	***Permissible Limit of Noise level in dB(A)***
1	Moonidih UGP (N17)	Industrial area	09.10.2020	53.2	*75*
2	Moonidih UGP	Industrial area	29.10.2020	58.2	**75**
3	Rudhi Basti (N18)	Residential area	15.10.2020	52.6	*55*
4	Rudhi Basti	Residential area	29.10.2020	51.9	*55*
5	Murlidih 20/21(N19)	Industrial area	12.10.2020	58.3	*75*
6	Murlidih 20/21(N19)	Industrial area	30.10.2020	59.2	*75*
7	Block IV (N6)	Industrial area	07.10.2020	57.8	*75*
8	Block IV	Industrial area	16.10.2020	58.3	*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,**

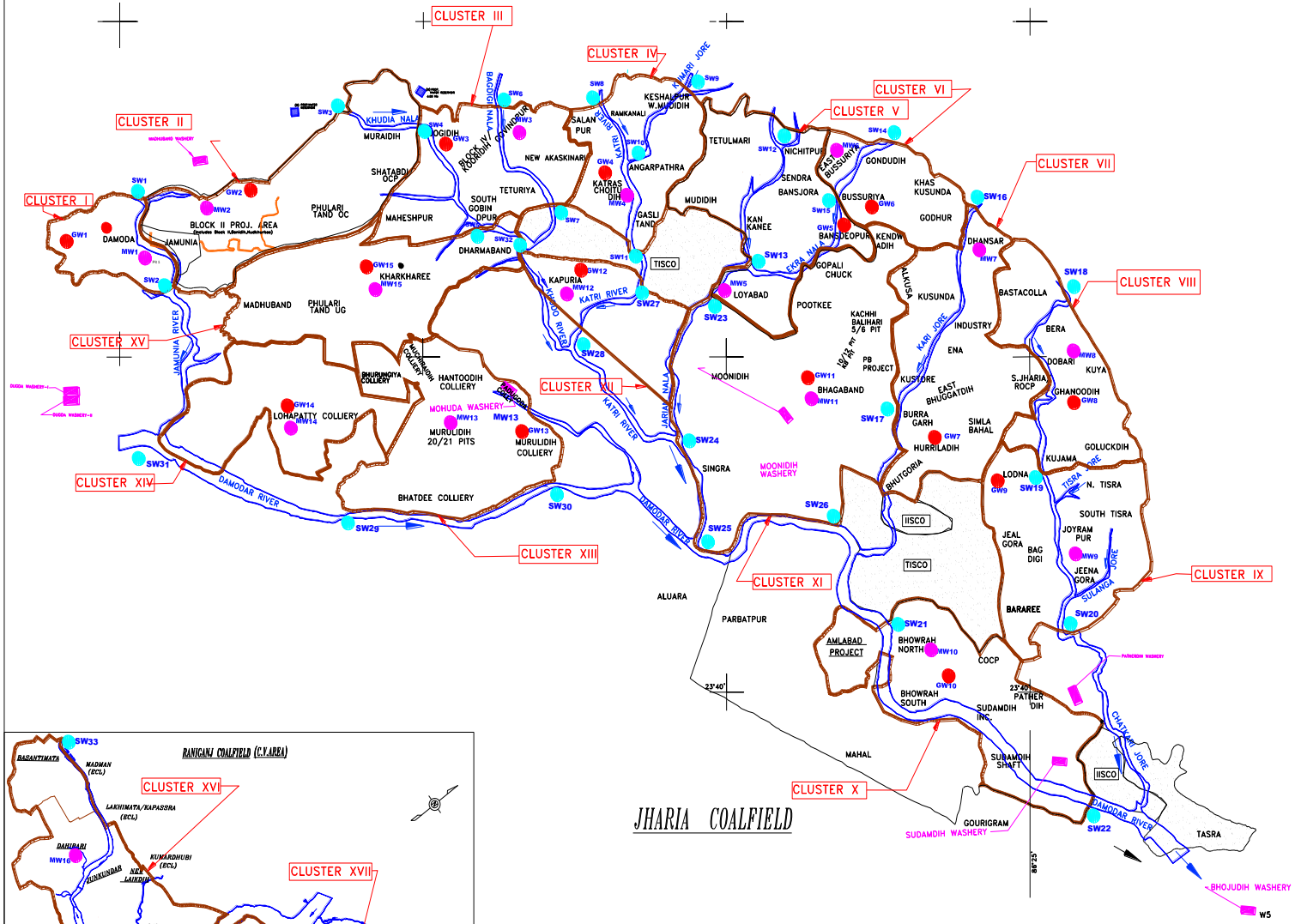
Analysed By
JSA/SA/SSA

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

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad


Location of Air & Noise Monitoring Stations in BCCL
CLUSTER I
CLUSTER II
CLUSTER III
CLUSTER IV
CLUSTER V
CLUSTER VI
CLUSTER VII
CLUSTER VIII
CLUSTER IX
CLUSTER X
CLUSTER XI
CLUSTER XII
CLUSTER XIII
CLUSTER XIV
CLUSTER XV
CLUSTER XVI
CLUSTER XVII
JHARIA COALFIELD
RANIGANJ COALFIELD (CV AREA)
DAMODAR RIVER
KATRI RIVER
JAMUNIA RIVER
KHUDIA NALA
BAGDIGI NALA
KHUDIA RESERVOIR
MAHESHPUR
DHARMABAND
KHARKHAREE
KAPURIA
TISCO
IISCO
MOHUDA WASHERY
MOONIDIH WASHERY
SUDAMDIH WASHERY
BHOJUDIH WASHERY
W5
Legend
Air/ Noise Monitoring Station
HoD (Envt.)
Bharat Coking Coal Limited
(Signature)
Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)
BHARAT COKING COAL LIMITED
Air & Noise Sampling Locations
Monitoring Stations
CMPDI
STN CODE
NAME OF STATIONS (AIR/NOISE)
A34
BHOJUDIH COAL WASHERY
A35
DUGDA WASHERY
A36
MAHUDA WASHERY
A37
KATRAS CHOITUDIH COLLIERY

Water Sampling Locations in BCCL



INDEX

Cluster	Suface Water (U/S, D/S)	Name of River/ Nala / Jore	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghutway Village
II	SW3, SW4	Khudia Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudia Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogidih Village
IV	SW8, SW11, SW9, SW10	Katri River, Kumari Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudidih	GW5	Nichitpur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansjora Borewell
VII	SW16, SW17	Kari Jore	MW7	Dhansar UGP	GW7	Hurriladih
VIII	SW18, SW19	Kashi Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kashi Jore	MW9	Jeenagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband h UGP	GW11	Bhagabandh
XII	SW27, SW28	Katri River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murulidih (20/21)	GW13	Murulidih
XIV	SW31, SW29	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Khudia Nala	MW15	Kharkharee UGP	GW15	Kharkharee
XVI	SW33, SW34	Khudia River	MW16	Dahibari OCP	GW16	Patlabari Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

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

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

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

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

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

(FOR THE MONTH NOVEMBER, 2020)

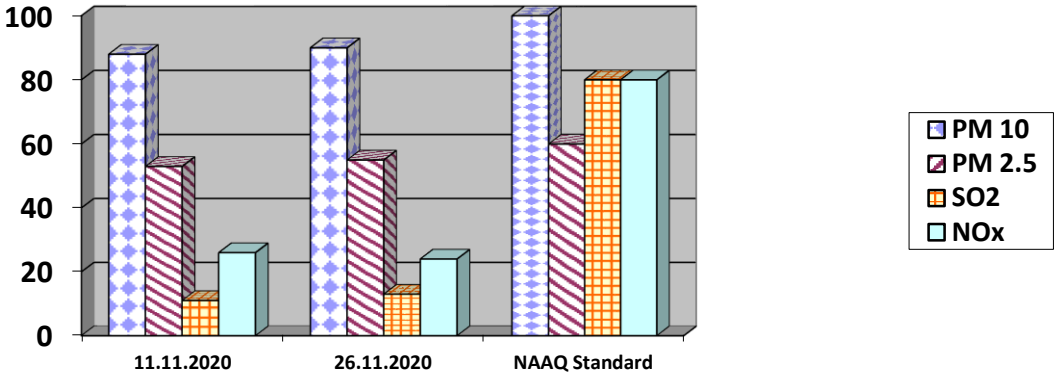
E. C. no. J-11015/184/2012-IA.II (M) dated 10.12.2014.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

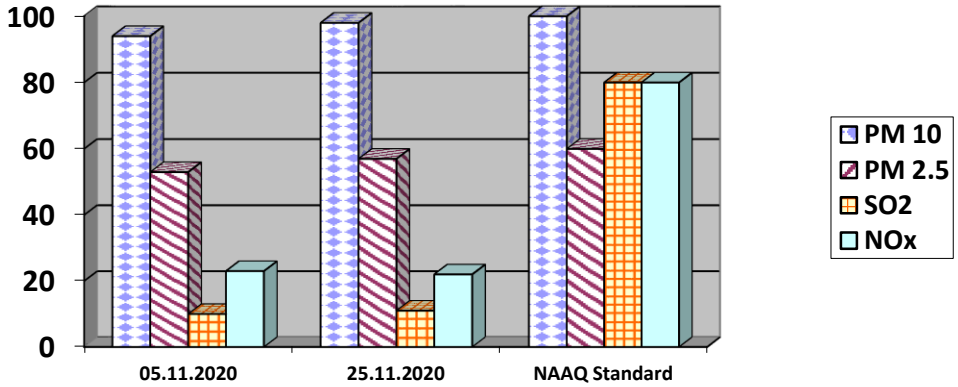
AMBIENT AIR QUALITY DATA

Cluster–XII, Bharat Coking Coal limited Month: **NOV 2020** Year : **2020-21.**

Station Name: A18, Rudhi Basti		Zone: Core		Category: Residential	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	11.11.2020	88	53	11	26
2	26.11.2020	90	55	13	24
	NAAQ Standard	100	60	80	80



Station Name: A6, Block IV		Zone: Buffer		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	05.11.2020	94	53	10	23
2	25.11.2020	98	57	11	22
	NAAQ Standard	100	60	80	80

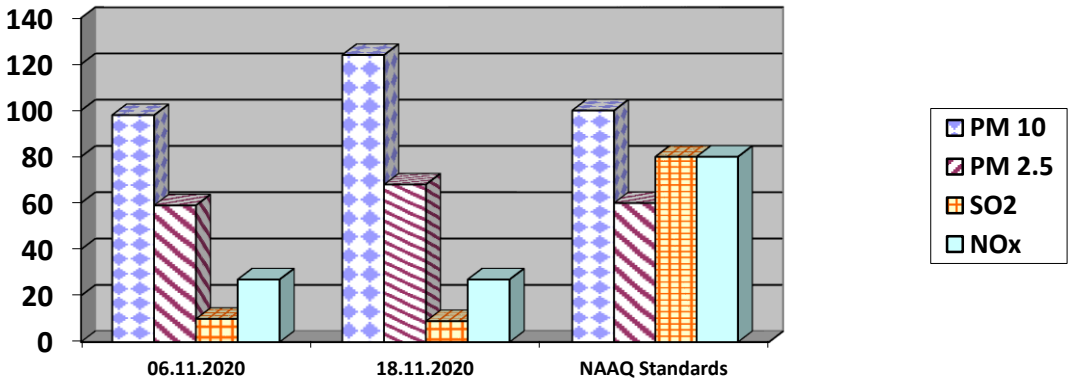


Analysed By
JSA/SA/SSA

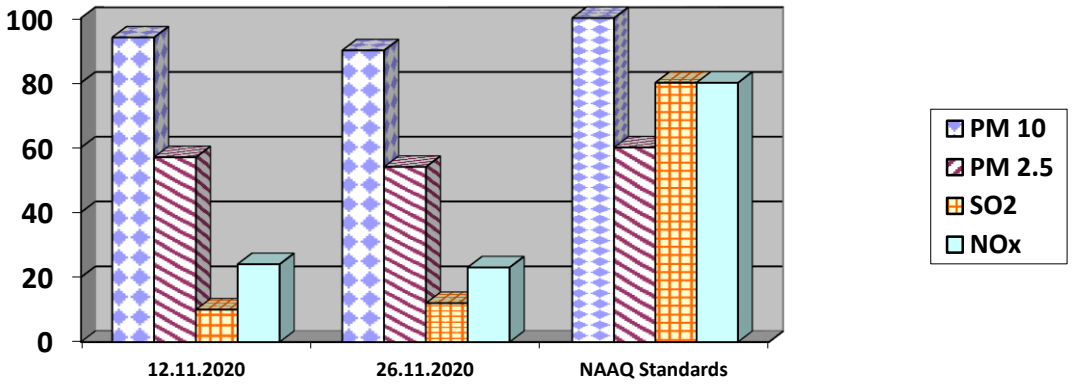
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

Station Name: A17 Moonidih UGP		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	06.11.2020	98	59	10	27
2	18.11.2020	124	68	9	27
	NAAQ Standards	100	60	80	80



Station Name: A19 – Murlidih 20/21		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	12.11.2020	94	57	10	24
2	26.11.2020	90	54	12	23
	NAAQ Standards	100	60	80	80



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

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JSA/SA/SSA

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Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites

i) **Rudhi basti (N18)**
ii) **Block IV(N6)**
iii) **Moonidih UGP(N17)**
iv) **Murlidih 20/21 (N19)**

4.2 Methodology of sampling and analysis

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

4.3 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEFCC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of L_{EQ} are presented**.** The observed values at all the monitoring locations are found to be within permissible limits.

NOISE LEVEL DATA

Name of the Project: **Cluster -XII**			Month: **NOV 2020**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)LEQ**	***Permissible Limit of Noise level in dB(A)***
1	Moonidih UGP (N17)	Industrial area	06.11.2020	53.2	*75*
2	Moonidih UGP	Industrial area	18.11.2020	58.2	**75**
3	Rudhi Basti (N18)	Residential area	11.11.2020	52.6	*55*
4	Rudhi Basti	Residential area	26.11.2020	51.9	*55*
5	Murlidih 20/21(N19)	Industrial area	12.11.2020	58.3	*75*
6	Murlidih 20/21(N19)	Industrial area	26.11.2020	59.2	*75*
7	Block IV (N6)	Industrial area	05.11.2020	57.8	*75*
8	Block IV	Industrial area	25.11.2020	58.3	*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(In-charge) Environment
RI-2, CMPDI, Dhanbad

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

(FOR THE Q.E. DECEMBER 2020)

E. C. no. J-11015/184/2012-IA.II (M) dated 10.12.2014.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

AMBIENT AIR QUALITY DATA

Name of the Company: **Bharat Coking Coal Limited** Year : **2020-21**
Name of the Cluster : **Cluster -XII** PERIOD: **Q. E. DEC- 2020.**

Heavy Metal Analysis report of Ambient Air Quality

SAMPLE	Cadmium(Cd) (µg/m3)	Mercury(Hg) (µg/m3)	Arsenic(As) (ng/m3)	Chromium(Cr) (µg/m3)	Nickel (Ni) (ng/m3)	Lead (Pb) (µg/m3)
Block IV (A6)	<0.001	<0.001	<0.005	<0.01	0.17	0.005
Moonidih UGP (A17)	<0.001	<0.001	<0.005	<0.01	<0.1	0.03
Rudhi basti (A18)	<0.001	<0.001	<0.005	<0.01	<0.1	0.021
Murlidih 20/21 Pit(A19)	<0.001	<0.001	<0.005	<0.01	<0.1	<0.005

Analysed By
JSA/SA/SSA

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Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

CHAPTER – III

WATER QUALITY MONITORING

3.1 Location of sampling sites

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

i) Surface water quality at **U/S of Katri River (SW27)**

ii) Surface water quality at **D/S of Katri River (SW28)**

iii) Drinking Water quality at **Kapuria (DW12)**

3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. Effluent samples were analyzed for 25 parameters on quarterly basis & for 27 parameters on half yearly basis. The drinking and Surface water samples were collected and analyzed for 25 and 17 parameters respectively, on quarterly basis. Thereafter the samples were preserved and analyzed at the Environmental Laboratory at CMPDI RI-II, Dhanbad.

3.3 Results & Interpretations

The results are given in tabular form along with the applicable standards. Results show that most of the parmeters are within the permissible limits.

WATER QUALITY

(SURFACE WATER- ALL PARAMETERS)

Name of the Company: **Bharat Coking Coal Limited** Year : **2020-21**

Name of the Cluster : **Cluster - XII** Period: **Q.E. DEC 2020**

Stations: **Date of Sampling:**

1. Upstream in Katri river SW-27 — 14/12/2020
2. Downstream in Katri river SW-28 — 14/12/2020

Sl. No	Parameter	Sampling Stations				IS: 2296	Detection Limit	BIS Standard & Method
		SW27 14.12.2020	SW28 14.12.2020					
1	Arsenic (as As), mg/l, Max	<0.006	<0.006			0.2	0.006	IS-3025,part 37:1988, R-2019/ APHA 23rd Edition AAS-VGA
2	BOD (3 days 27ºC), mg/l, Max	<2.0	2.2			3.00	2.00	IS 3025 (Part 44) : 1993 Reaffirmed 2019 , 3 day incubation at 27°C
3	Colour	Colourless	Colourless			300	Qualitative	Physical/Qualitative
4	Chlorides (as Cl), mg/l, Max	48	44			600	2.00	IS-3025/32:1988, R-2019 Argentometric
5	Copper (as Cu), mg/l, Max	<0.2	<0.2			1.5	0.2	IS 3025/42 : 1992 R : 2019, AAS-Flame
6	Dissolved Oxygen, min.	6.8	8.2			4	0.10	IS 3025 (Part 38) : 1989, Reaffirmed 2019 Modified Winkler Azide Method
7	Fluoride (as F) mg/l, Max	0.91	0.97			1.5	0.02	APHA, 23RD Edition, Page 4-90 to , 4500 –F- D (SPADNS Method)
8	Hexavalent Chromium, mg/l, Max	0.012	<0.01			0.05	0.01	IS 3025 (Part 52) : 2003,Reaffirmed 2019
9	Iron (as Fe), mg/l, Max	<0.2	<0.2			50	0.2	IS 3025 /53 : 2003,R : 2019 , AAS-Flame Method
10	Lead (as Pb), mg/l, Max	<0.005	<0.005			0.1	0.005	APHA, 23rd Edition, AAS-GTA
11	Nitrate (as NO_3), mg/l, Max	8.40	6.93			50	0.50	APHA, 23rd Edition, P-4-127, 4500 - NO_3^- B , UV-Spectrophotometric Screening Method
12	pH value	8.35	8.22			6.5-8.5	2.5	IS 3025, Part 11 : 1983 R 2017 Electrometric method
13	Phenolic compounds (as C_6H_5OH), mg/l, Max	<0.002	<0.002			0.005	0.002	APHA, 22nd Edition 4-Amino Antipyrine
14	Selenium, mg/l, Max	<0.007	<0.007			0.05	0.007	IS-3025,part 56:2003, R-2019/ APHA 23rd Edition, AAS-VGA
15	Sulphate (as SO_4) mg/l, Max	155	98			400	2.00	APHA –23rd Edition. P-4-199, 4500 SO_4^{2-} E
16	Total Dissolved Solids, mg/l, Max	496	396			1500	25.00	IS 3025, Part 16: 1984 R 2017 Gravimetric method
17	Zinc (as Zn), mg/l, Max	<0.1	<0.1			15	0.1	IS 3025/ 49 : 1994, R : 2019, AAS-Flame

*All values is mg/lit unless specified otherwise

Analysed By
JSA/SA/SSA

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

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

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

(FOR THE MONTH FEBRUARY, 2021)

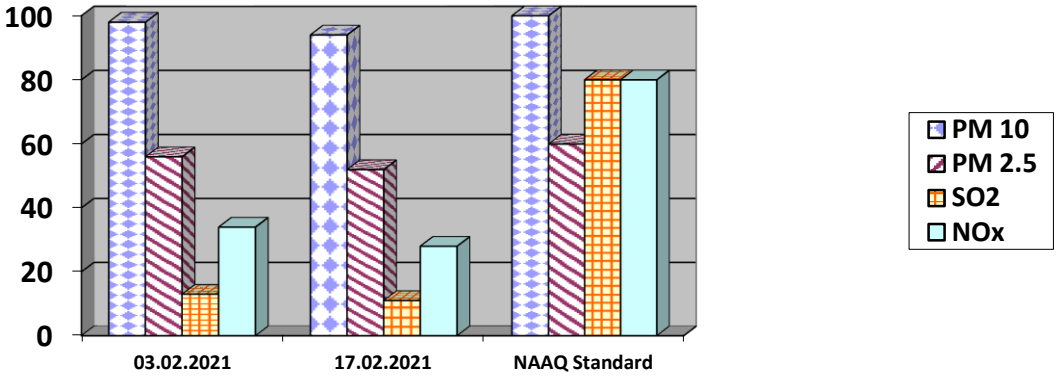
E. C. no. J-11015/184/2012-IA.II (M) dated 10.12.2014.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

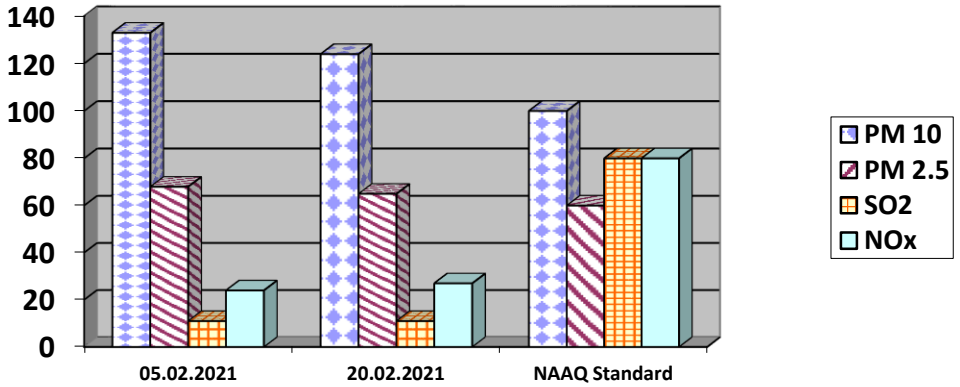
AMBIENT AIR QUALITY DATA

Cluster–XII, Bharat Coking Coal limited Month: **FEB 2021** Year : **2020-21.**

Station Name: A18, Rudhi Basti		Zone: Core		Category: Residential	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	03.02.2021	98	56	13	34
2	17.02.2021	94	52	11	28
	NAAQ Standard	100	60	80	80



Station Name: A6, Block IV		Zone: Buffer		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	05.02.2021	133	68	11	24
2	20.02.2021	124	65	11	27
	NAAQ Standard	100	60	80	80

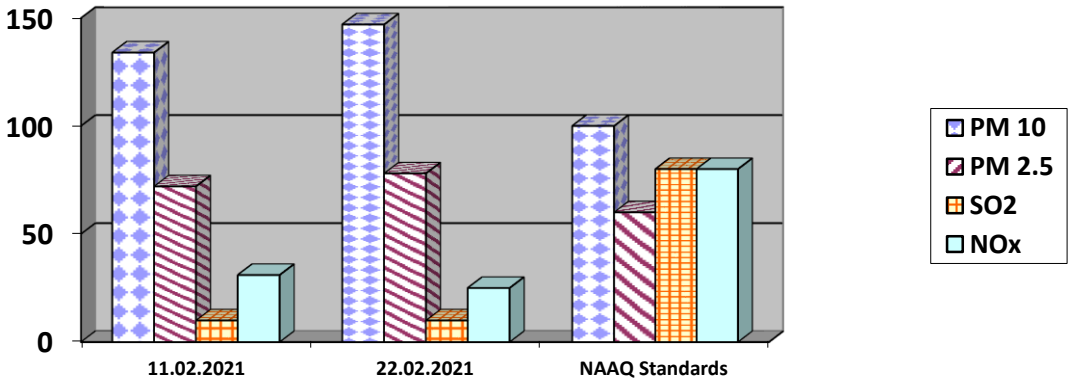


Analysed By
JSA/SA/SSA

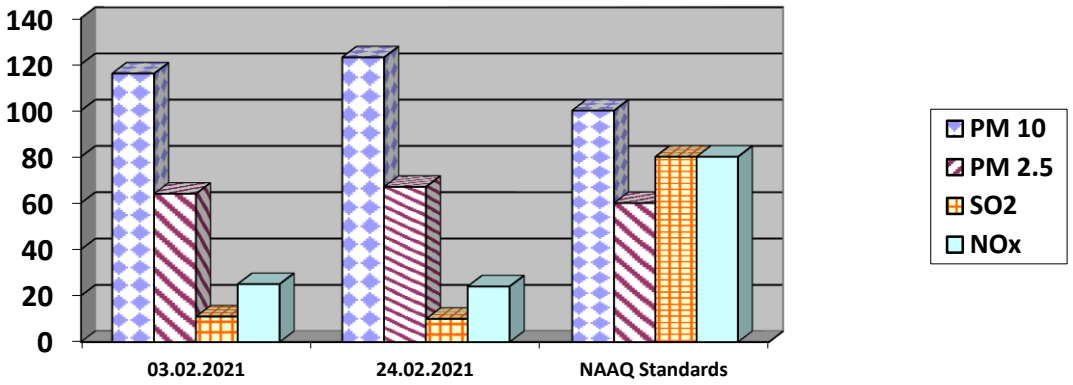
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

Station Name: A17 Moonidih UGP		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	11.02.2021	134	72	10	31
2	22.02.2021	147	78	10	25
	NAAQ Standards	100	60	80	80



Station Name: A19 – Murlidih 20/21		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	03.02.2021	116	64	11	25
2	24.02.2021	123	67	10	24
	NAAQ Standards	100	60	80	80



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

Analysed By
JSA/SA/SSA

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

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites

i) **Rudhi basti (N18)**
ii) **Block IV(N6)**
iii) **Moonidih UGP(N17)**
iv) **Murlidih 20/21 (N19)**

4.2 Methodology of sampling and analysis

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

4.3 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEFCC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of L_{EQ} are presented**.** The observed values at all the monitoring locations are found to be within permissible limits.

NOISE LEVEL DATA

Name of the Project: **Cluster -XII**			Month: **FEB 2021**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)LEQ**	***Permissible Limit of Noise level in dB(A)***
1	Moonidih UGP (N17)	Industrial area	11.02.2021	56.5	*75*
2	Moonidih UGP	Industrial area	22.02.2021	57.7	75
3	Rudhi Basti (N18)	Residential area	03.02.2021	53.2	*55*
4	Rudhi Basti	Residential area	17.02.2021	54.1	*55*
5	Murlidih 20/21(N19)	Industrial area	03.02.2021	53.1	*75*
6	Murlidih 20/21(N19)	Industrial area	24.02.2021	57.9	*75*
7	Block IV (N6)	Industrial area	05.02.2021	58.1	*75*
8	Block IV	Industrial area	20.02.2021	58.9	*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(In-charge) Environment
RI-2, CMPDI, Dhanbad

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

(FOR THE MONTH MARCH, 2021)

E. C. no. J-11015/184/2012-IA.II (M) dated 10.12.2014.

CMPDI
ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CONTENTS

EXECUTIVE SUMMARY

1.0 Introduction

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

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

2.0 Sampling location and rationale

2.1 Ambient air sampling locations

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

2.2 Water sampling stations

The Water sampling stations were selected for mine sump water.

2.3 Noise level monitoring locations

Noise levels vary depending on the various activities in mining areas. The monitoring of noise level in different locations will be helpful to take appropriate mitigating measures. The rationale has been based on the guidelines stipulated by MoEF&CC, consent letter of SPCB, as well as other statutory requirements.

3.0 Methodology of sampling and analysis

3.1 Ambient air quality

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

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

3.2 Water quality

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

3.3 Noise level monitoring

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

4.0 Results and interpretations

4.1 Air quality

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

The following preventive and suppressive mitigative measures can be undertaken to contain the pollution level within prescribed level:-

- Wet drilling and controlled blasting should be practice.
- Explosive used should be optimised to restrict the dust generation.
- Transportation roads should be permanently asphalted free of ruts, potholes etc.
- Water should be sprayed on coal transportation road, service road more frequently and at regular interval.
- Dust from roads should be removed physically or mechanically.
- Greenbelts around industrial sites, service building area besides Avenue plantation along roads should be created.
- Coal dust should be suppressed by using fixed sprinklers.
- Regular maintenance of plant and machinery should be undertaken.

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

4.3 Noise Level

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

INTRODUCTION

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

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

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

1.1 The Cluster XII is in the Central part of the Jharia coalfield. It includes Kapuria UG Mine. The cluster – XII is situated about 30 - 35 kms from Dhanbad Railway Station. The mines of this cluster - XII 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.

1.2 The cluster XII is designed to produce 2.4 Mtpa (normative) and 3.12 Mtpa peak capacity of coal. The average grade of coal W-II to W-IV.

The Project has Environmental Clearance from Ministry of Environment, Forests and Climate Change (MoEF&CC) for a rated capacity of 2.4 MTPA (normative) and 3.12 MTPA peak capacity of coal production vide letter no E.C. no. J-11015/184/2012-IA.II (M) dated 10.12.2014.

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

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

AMBIENT AIR QUALITY MONITORING

2.1 Location of sampling station and their rationale:

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

2.1.1 Ambient Air Quality Sampling Locations

I. CORE ZONE Monitoring Location

i) Rudhi basti (A18): Industrial Area

The location of the sampling station is 23^0 45'26.60" N & $86^0$18'39.90" E.The samplers were placed at a height of approx. 1.5m above ground level at Rudhi basti.

II. BUFFER ZONE Monitoring Location

i) Block IV (A6) : Industrial area

The location of the sampling station is 23^0 47' 54.00" N & $86^0$16' 20.00" E The samplers were placed at a height of approx. 1.5m above ground level at Safety Office.

ii) Moonidih UGP (A17) : Industrial area

The location of the sampling station is 23^0 44' 30.00" N & 86^0 20'56.00" E. The samplers were placed at a height of approx. 1.5m above ground level at project office.

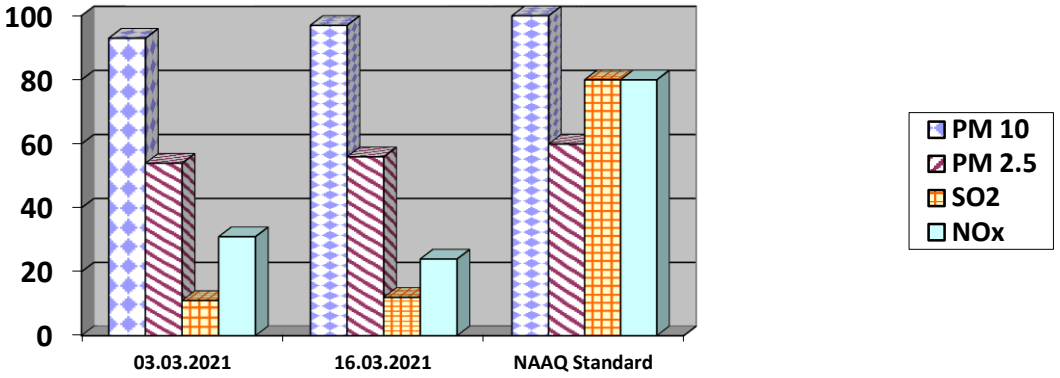
iii) Murlidih 20/21 Pit(A19): **Industrial Area**

The location of the sampling station is 23^0 43' 51.82" N & 86^0 16'21.87" E. The samplers were placed at a height of approx. 1.5m above ground level at project office.

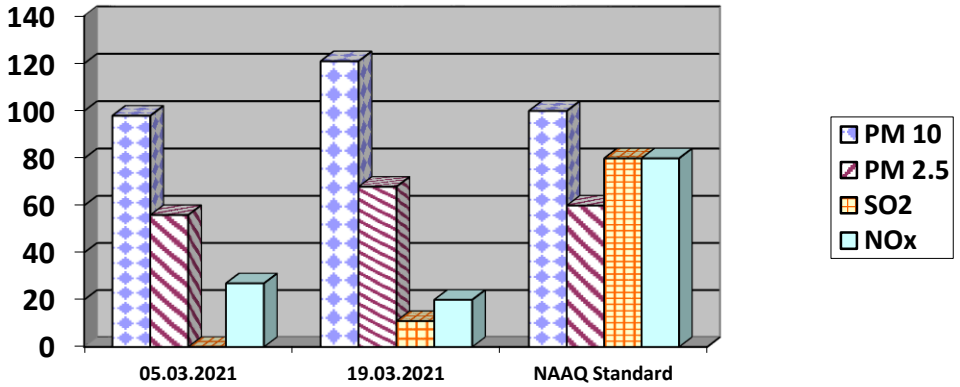
AMBIENT AIR QUALITY DATA

Cluster–XII, Bharat Coking Coal limited Month: **MAR 2021** Year : **2020-21.**

Station Name: A18, Rudhi Basti		Zone: Core		Category: Residential	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	03.03.2021	93	54	11	31
2	16.03.2021	97	56	12	24
	NAAQ Standard	100	60	80	80



Station Name: A6, Block IV		Zone: Buffer		Category: Industrial	
Sl. No.	**Dates of sampling**	**PM 10**	**PM 2.5**	**SO_2**	**NO_X**
1	05.03.2021	98	56	<10	27
2	19.03.2021	121	68	11	20
	NAAQ Standard	100	60	80	80

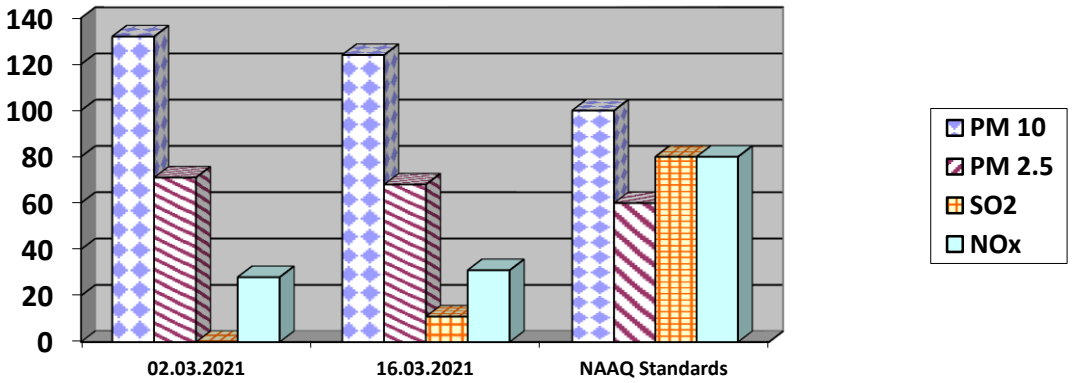


Analysed By
JSA/SA/SSA

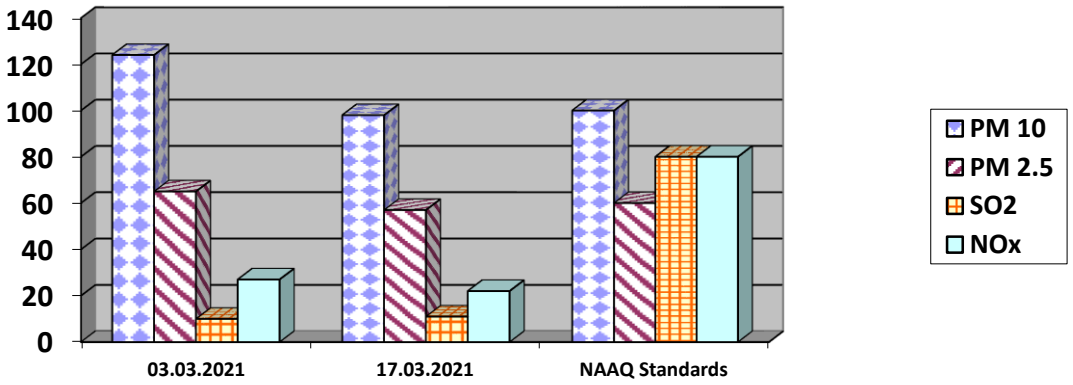
Checked By
Lab In Charge
RI-2, CMPDI, Dhanbad

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

Station Name: A17 Moonidih UGP		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	02.03.2021	132	71	<10	28
2	16.03.2021	124	68	11	31
	NAAQ Standards	100	60	80	80



Station Name: A19 – Murlidih 20/21		Zone: Buffer		Category: Industrial	
Sl. No.	Dates of sampling	PM 10	PM 2.5	SO2	NOx
1	03.03.2021	124	65	10	27
2	17.03.2021	98	57	11	22
	NAAQ Standards	100	60	80	80



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

Analysed By
JSA/SA/SSA

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

Approved By
HOD(In-charge) Environment
RI-2, CMPDI, Dhanbad

NOISE LEVEL QUALITY MONITORING

4.1 Location of sampling sites

i) **Rudhi basti (N18)**
ii) **Block IV(N6)**
iii) **Moonidih UGP(N17)**
iv) **Murlidih 20/21 (N19)**

4.2 Methodology of sampling and analysis

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

4.3 Results & Interpretations

Ambient noise levels were recorded during day time and the observed values were compared with standards prescribed by MoEFCC. The results of Noise levels recorded during day time on fortnightly basis are presented in tabular form along with the applicable standard permissible limits. The observed values in terms of L_{EQ} are presented**.** The observed values at all the monitoring locations are found to be within permissible limits.

NOISE LEVEL DATA

Name of the Project: **Cluster -XII**			Month: **MAR 2021**		
Sl. No.	**Station Name/Code**	**Category of area**	**Date**	**Noise level dB(A)LEQ**	***Permissible Limit of Noise level in dB(A)***
1	Moonidih UGP (N17)	Industrial area	02.03.2021	62.4	*75*
2	Moonidih UGP	Industrial area	16.03.2021	62	75
3	Rudhi Basti (N18)	Residential area	03.03.2021	50.7	*55*
4	Rudhi Basti	Residential area	16.03.2021	53.1	*55*
5	Murlidih 20/21(N19)	Industrial area	03.03.2021	62.4	*75*
6	Murlidih 20/21(N19)	Industrial area	17.03.2021	60.1	*75*
7	Block IV (N6)	Industrial area	05.03.2021	57.6	*75*
8	Block IV	Industrial area	19.03.2021	59.2	*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(In-charge) Environment
RI-2, CMPDI, Dhanbad

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

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

Note:

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

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th FEBRUARY 2009

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

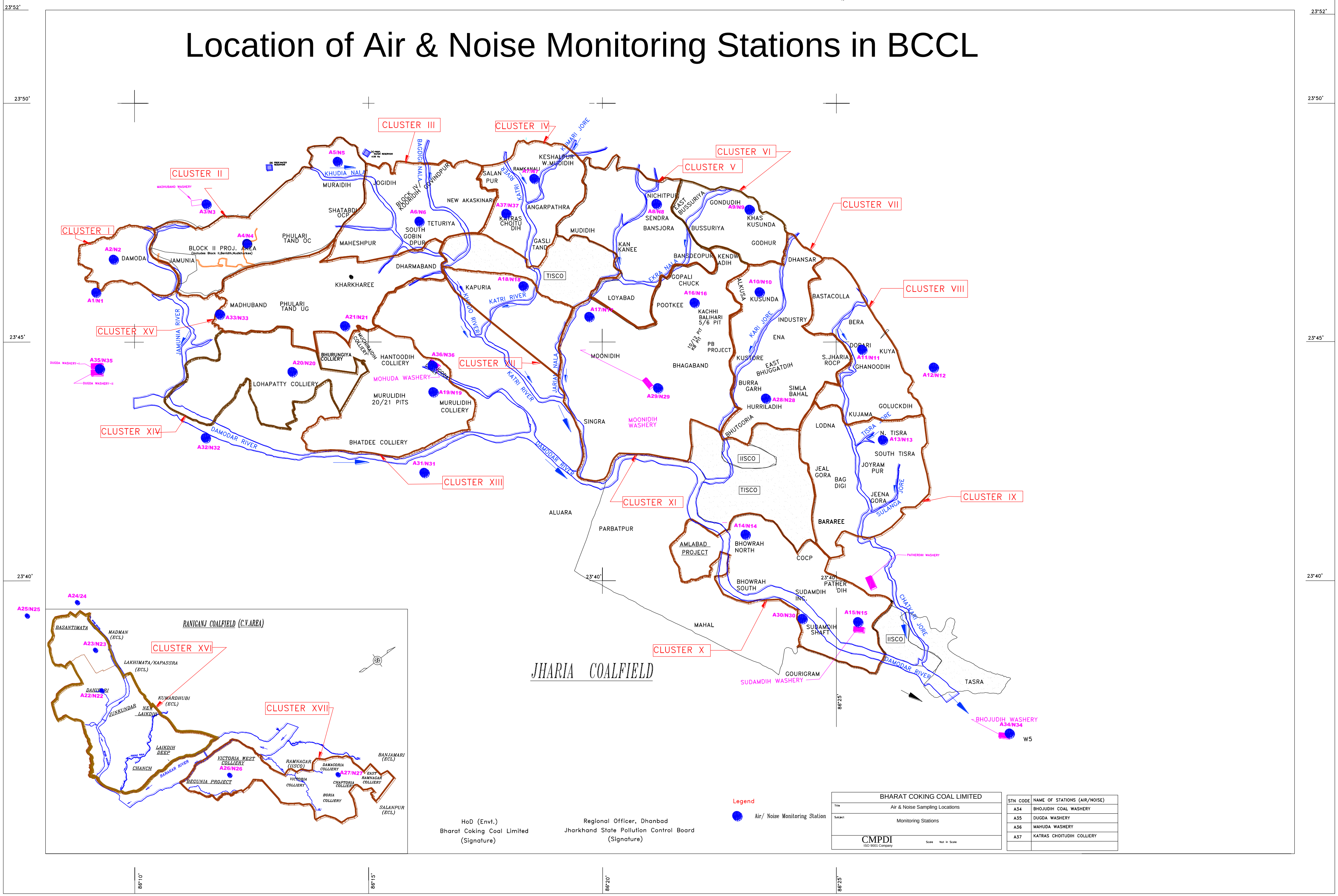
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO_2), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet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

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

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

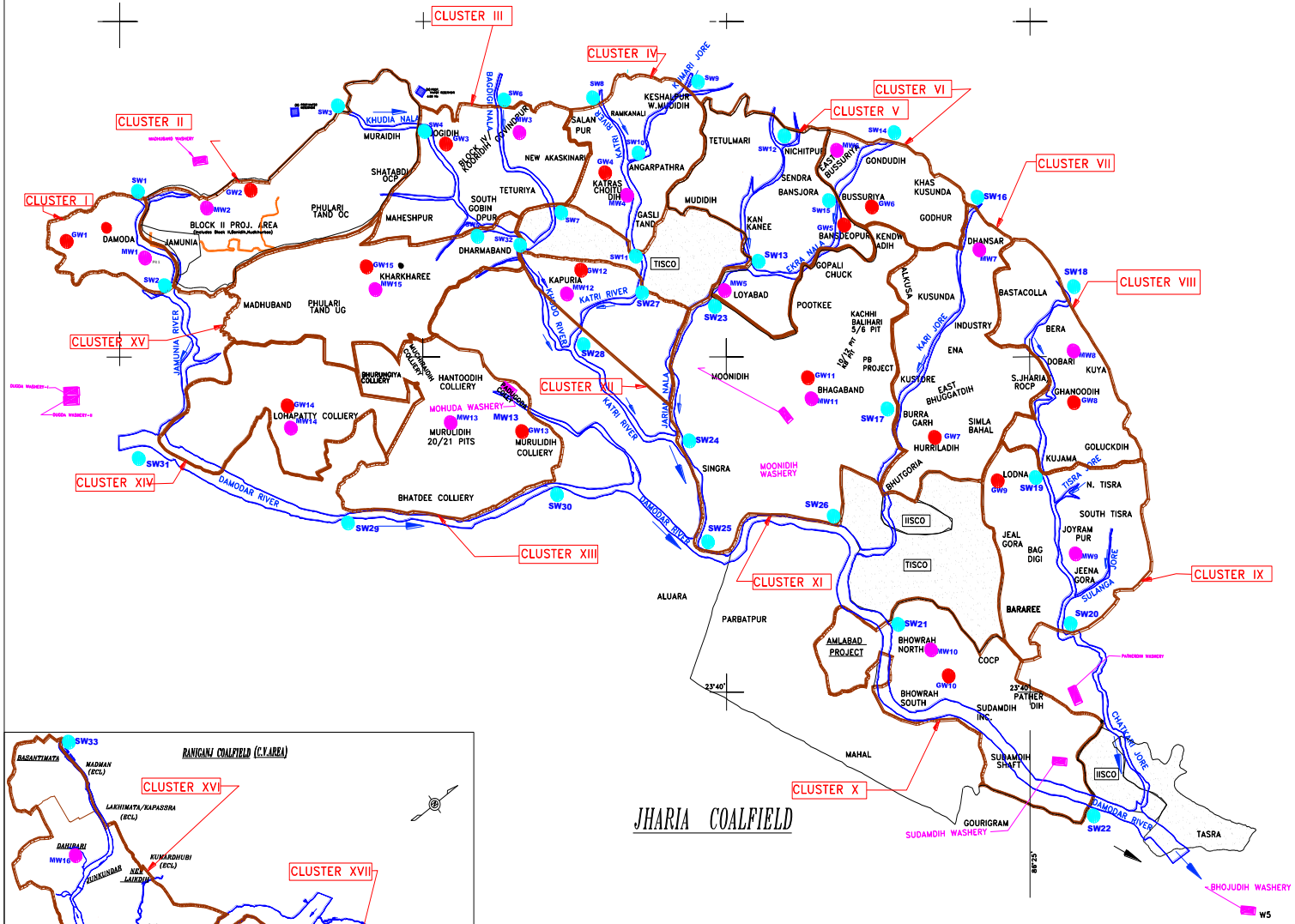
NOTE: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigations.

Location of Air & Noise Monitoring Stations in BCCL


JHARIA COALFIELD
RANIGANJ COALFIELD (C.V.AREA)
CLUSTER I
CLUSTER II
CLUSTER III
CLUSTER IV
CLUSTER V
CLUSTER VI
CLUSTER VII
CLUSTER VIII
CLUSTER IX
CLUSTER X
CLUSTER XI
CLUSTER XII
CLUSTER XIII
CLUSTER XIV
CLUSTER XV
CLUSTER XVI
CLUSTER XVII
DAMODAR RIVER
KATRI RIVER
JAMUNIA RIVER
MOONIDIH WASHERY
SUDAMDIH WASHERY
BHOJUDIH WASHERY
MOHUDA WASHERY
Legend
Air/ Noise Monitoring Station
HoD (Envt.)
Bharat Coking Coal Limited
(Signature)
Regional Officer, Dhanbad
Jharkhand State Pollution Control Board
(Signature)
BHARAT COKING COAL LIMITED
Air & Noise Sampling Locations
Monitoring Stations
CMPDI

STN CODE	NAME OF STATIONS (AIR/NOISE)
A34	BHOJUDIH COAL WASHERY
A35	DUGDA WASHERY
A36	MAHUDA WASHERY
A37	KATRAS CHOITUDIH COLLIERY

Water Sampling Locations in BCCL



INDEX

Cluster	Suface Water (U/S, D/S)	Name of River/ Nala / Jore	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Jamunia River	MW1	Damoda Area	GW1	Ghutway Village
II	SW3, SW4	Khudia Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudia Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogidih Village
IV	SW8, SW11, SW9, SW10	Katri River, Kumari Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudidih	GW5	Nichitpur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansjora Borewell
VII	SW16, SW17	Kari Jore	MW7	Dhansar UGP	GW7	Hurriladih
VIII	SW18, SW19	Kashi Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kashi Jore	MW9	Jeenagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband h UGP	GW11	Bhagabandh
XII	SW27, SW28	Katri River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murulidih (20/21)	GW13	Murulidih
XIV	SW31, SW29	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Khudia Nala	MW15	Kharkharee UGP	GW15	Kharkharee
XVI	SW33, SW34	Khudia River	MW16	Dahibari OCP	GW16	Patlabari Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

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

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

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

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