

भारत कोकिंग कोल लिमिटेड

एक मिनी रत्न कम्पनी

(महारत्न कम्पनी कोल इंडिया का एक उपक्रम)

पंजीकृत कार्यालय : कोयला भवन, कोयला नगर,
धनबाद-826005

सीआइएन : U10101JH1972GO1000918

परियोजना पदाधिकारी का कार्यालय
महुदा ग्रुप

पोस्ट / थाना: महुदा, जिला: धनबाद (झारखण्ड)-828305

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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 PROJECT OFFICER
MAHUDA GROUP**

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"For uploading online on "parivesh portal" of MoEF&CC and sending by email"

Ref: - BCCL/WJA/ENV/2026/ 98

Date:- 29/05/2026

To,
The Regional 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 **October 2025 to March 2026** 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.

Respected Sir,

Please find enclosed herewith the six-monthly reports on compliance of Environment Clearances for the period from **October 2025 to March 2026** in respect of **Cluster XII** of Kapuria UG of M/s Bharat Coking Coal Limited. We hope you will find in order.

Thanking you,

Encl: - As Above

Yours faithfully,

Project Officer

Mahuda Group of Mines

Kapuria Project (Cluster-XII, BCCL)

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

(October 2025 – March 2026)

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	The project has not commenced yet. The tender for Kapuria UG Mine was floated under the MDO mode, and the work has been awarded to the successful bidder. However, the work could not be started due to land-related issues. At present, the matter is under arbitration with the bidder; therefore, the project has not started yet.
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.
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-XII 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.	Shall be complied.
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 continuuing. 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 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 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.
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 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 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 CMPDI Ranchi 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.	Shall be complied.
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.	Project not started yet hence presently there is no mine discharge water.

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 mining 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 analyzed 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.
xlvi.	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 PM₁₀, PM_{2.5}, SO₂ and NO_x 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 (PM₁₀, PM_{2.5}, SO₂ 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. Monitoring report enclosed.
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.
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 while 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 PM ₁₀ , PM _{2.5} , SO ₂ and NO _x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	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 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 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 of India 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 contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.	Shall be complied.
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


 29/5/26
 Project officer
 Kapuria Mine

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

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

(FOR THE MONTH OCTOBER, 2025)

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



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.

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 (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂)

and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM_{2.5} sampler) were used for sampling of PM₁₀, SO₂, & 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 '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 PM₁₀, PM_{2.5}, SO₂ 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 PM₁₀ & 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 PM₁₀, PM_{2.5}, SO₂, NO_x 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° 45' 26.60" N & 86° 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° 47' 54.00" N & 86° 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° 44' 30.00" N & 86° 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° 43' 51.82" N & 86° 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

   CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDI, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in											
Test Report for Ambient Air Samples											
Month & Year		10/2025		Cluster		Cluster XII		ULR No.		TC1432125000002197F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue		05.12.2025	
Project		Rudhi Basti		Sample Ref. No.		REM/BCCL/2025/10		Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		13.10.25		29.10.25		Period of Analysis		13.10.2025		25.11.2025	
Zone of Station:		Core Zone									
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)		NAAQS, 2009		
			A4689	A4768							
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	64	69	90	92	90	92			
2	PM _{2.5}	IS -5182(Part 24):2019	30	31	37	45	37	45			
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	<10	<10	<10	<10			
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	31	25	21	22	21	22			
<i>Environmental Condition : Sunny</i> <i>18* LDL indicates Lower Detection Limit,</i> <i>**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,</i>											
 ANALYSED BY			 REVIEWED BY			 Authorised Signatory					
Note: The results above relate to the samples tested as received. This report cannot be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.											
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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		10/2025	Cluster	Cluster XII				ULR No.	TC1432125000002197F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	05.12.2025
Project		Block IV		Sample Ref. No.	REM/BCCL/2025/10	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		10.10.25		29.10.25	Period of Analysis	10.10.2025	25.11.2025	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009	
			A4676	A4760					
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	75	70	10 µg/m³ - 1000 µg/m³	10 µg/m³	300	100	
2	PM _{2.5}	IS -5182(Part 24):2019	37	35	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60	
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	10	<10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80	
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	33	29	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80	

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

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ANALYSED BY

[Signature]

**(Gaurav Kant)
REVIEWED BY**

[Signature]

**(Kumar vaibhav)
Authorised Signatory**

Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDIL, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		10/2025	Cluster	Cluster XII			ULR No.	TC1432125000002197F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	05.12.2025
Project		Moonidih UGP		Sample Ref. No.	REM/BCCL/2025/10	Sampling Method	CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		13.10.25		21.10.25	Period of Analysis	13.10.2025	25.11.2025	Zone of Station: Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009
			A4685	A4712				
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	86	84	10 µg/m³ - 1000 µg/m³	10 µg/m ³⁰⁵	300	100
2	PM _{2.5}	IS -5182(Part 24):2019	39	36	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	30	23	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80

Environmental Condition : Sunny

* LDL indicates Lower Detection Limit,

**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,

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ANALYSED BY

[Signature]

(Gaurav Kant)
REVIEWED BY

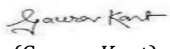
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(Kumar vaibhav)
Authorised Signatory

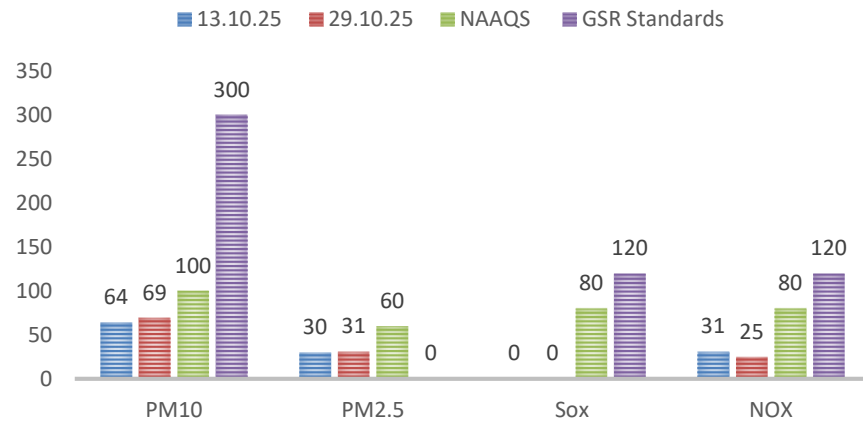
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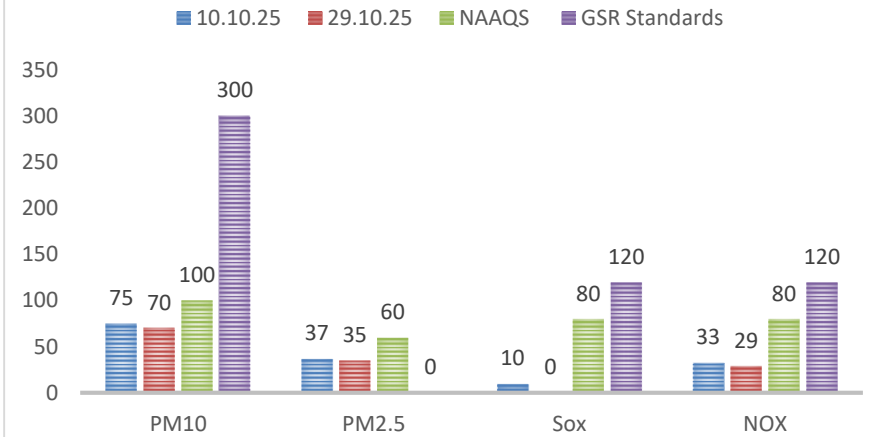
Page -1 of 1

 TC-14321  cmpdi A Mine Rehabilitation Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in										
Test Report for Ambient Air Samples										
Month & Year		10/2025	Cluster		Cluster XII			ULR No.		TC1432125000002197F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue		05.12.2025	
Project		Murlidih 20/21 Pit	Sample Ref. No.		REM/BCCL/2025/10	Sampling Method		CMPDI/RI-II/LPM 13, (IS 5182)		
Date of Sampling		09.10.2025 to 24.10.2025			Period of Analysis		09.10.2025	25.11.2025	Zone of Station: Buffer Zone	
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009		
			A4662	A4742						
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	77	74	10 $\mu\text{g}/\text{m}^3$ - 1000 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	300	100		
2	PM _{2.5}	IS -5182(Part 24):2019	34	33	10 $\mu\text{g}/\text{m}^3$ - 400 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	Not Specified	60		
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	10 $\mu\text{g}/\text{m}^3$ - 1050 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	120	80		
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	20	26	06 $\mu\text{g}/\text{m}^3$ - 420 $\mu\text{g}/\text{m}^3$	06 $\mu\text{g}/\text{m}^3$	120	80		
<i>Environmental Condition : Sunny</i>										
<i>* LDL indicates Lower Detection Limit,</i>										
<i>**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,</i>										
 ANALYSED BY			 REVIEWED BY (Gaurav Kant)			 Authorised Signatory (Kumar vaibhav)				
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.										
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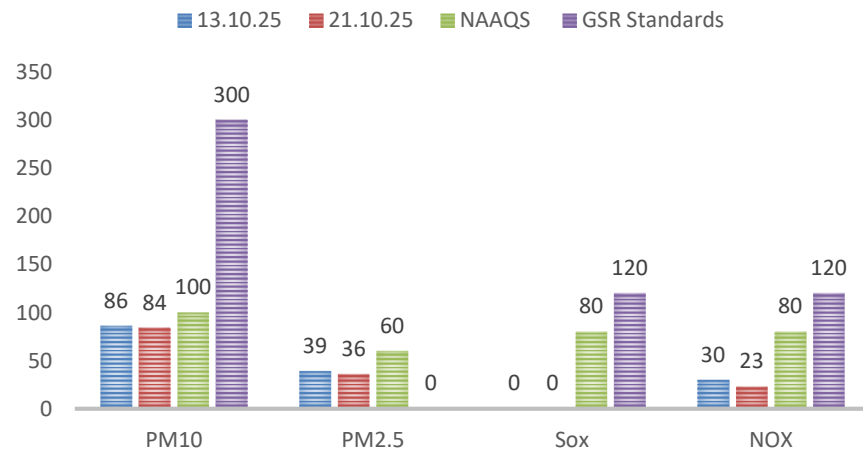
AMBIENT AIR QUALITY AT RUDHI BASTI



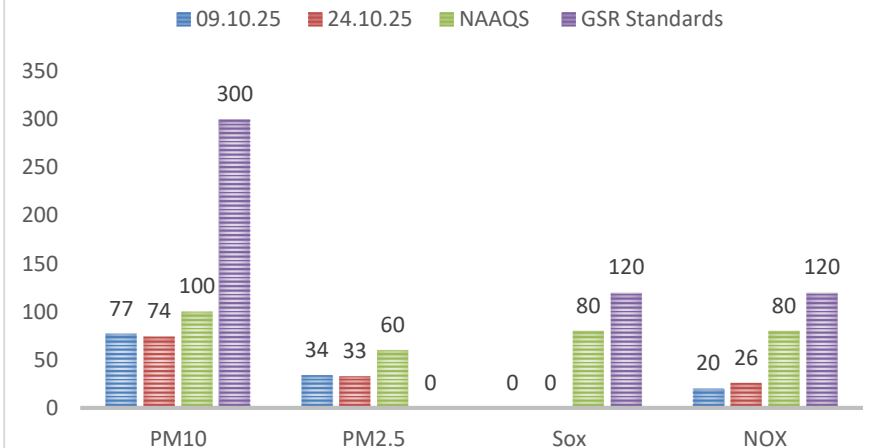
AMBIENT AIR QUALITY AT BLOCK IV



AMBIENT AIR QUALITY AT MOONIDIH UGP



AMBIENT AIR QUALITY AT MURLIDIH 20/21 PIT



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 during day time & night time. Noise levels were measured for the complete day & night time, the Intergration time taken was one hour or 3600 seconds. 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 & night time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day & night 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.



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Noise Level Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Month & Year	10/2025	Cluster	Cluster XII					ULR No.	TC1432125000002231F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	05.12.2025	
Project			Sample Ref. No.		REM/BCCL/2025/10		Sampling Method		CMPDI/RI-II/LPM 22	
Sampling Stations	i	Rudhi Basti			Date of Sampling		13.10.25	29.10.25	Zone Category of Station:	Core Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards		
			First Fortnight	Second Fortnight				Zones	Limits in dB	
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	45.7	46.9	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 Db (A)	Industrial Commercial Residential Silence	75 65 55 50	
2		07:00 - 08:00	49.1	49.3						
3		08:00 - 09:00	50.3	51.6						
4		09:00 – 10:00	46.5	47.2						
5		10:00 - 11:00	51.6	52.1						
6		11:00 - 12:00	55.4	54.6						
7		12:00 - 13:00	53.3	53.7						
8		13:00 - 14:00	54.6	55.2						
9		14:00 - 15:00	56.8	55.9						
10		15:00 - 16:00	59	59.3						
11		16:00 - 17:00	54.3	54.1						
12		17:00 - 18:00	51.7	52.1						
13		18:00 - 19:00	45.7	46.9						
14		19:00 - 20:00	46.3	46.5						
15		20:00 - 21:00	43.8	44.6						
16		21:00 - 22:00	43.7	44.7						
		Leq Day	52.8	53.0						
1	Noise Level dB(A)Leq -Night	22:00-23:00	41.1	42	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB (A)	Industrial Commercial Residential Silence	70 55 45 50	
2		23:00- 00:00	41.2	41.9						
3		00:00- 01:00	40.6	40.7						
4		01:00-02:00	40.6	40.3						
5		02:00-03:00	40.3	40.1						
6		03:00-04:00	40.4	41.7						
7		04:00-05:00	40.5	41.6						
8		05:00-06:00	40.6	41.6						
		Leq Night	40.7	41.3						

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants
ANALYSED BY

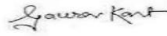
(Gaurav Kant)
 REVIEWED BY

(Kumar vaibhav)
 Authorised Signatory

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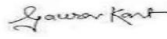
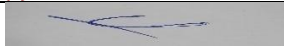
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  CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: cdi@coalindia.in									
Month & Year	10/2025	Cluster	Cluster XII					ULR No.	TC1432125000002231F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	05.12.2025
Project		Sample Ref. No.	REM/BCCL/2025/10			Sampling Method		CMPDI/RI-II/LPM 22	
Sampling Stations	i	Block IV	Date of Sampling	10.10.25	29.10.25	Zone Category of Station:		Buffer Zone	
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
								Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	54.6	53.3	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	58.8	57.7					
3		08:00 - 09:00	60	58.7					
4		09:00 - 10:00	63.2	62.3					
5		10:00 - 11:00	62.7	61.7					
6		11:00 - 12:00	64	63.5					
7		12:00 - 13:00	63.6	62.3					
8		13:00 - 14:00	63.9	64.6					
9		14:00 - 15:00	64.3	63.4					
10		15:00 - 16:00	67.2	65.5					
11		16:00 - 17:00	68	67.8					
12		17:00 - 18:00	68.9	68.7					
13		18:00 - 19:00	67.6	65.5					
14		19:00 - 20:00	67.1	66.5					
15		20:00 - 21:00	60.5	59.6					
16		21:00 - 22:00	53.6	52.1					
		Leq Day	64.7	64.0					
1	Noise Level dB(A)Leq -Night	22:00-23:00	49.2	47.9	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	48.5	46.4					
3		00:00- 01:00	46.7	45.8					
4		01:00-02:00	41.9	42.2					
5		02:00-03:00	41.5	41.7					
6		03:00-04:00	44.4	42.9					
7		04:00-05:00	42.6	42.1					
8		05:00-06:00	42.9	43.9					
		Leq Night	45.7	44.7					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants ANALYSED BY			 (Gaurav Kant) REVIEWED BY			 (Kumar vaibhav) Authorised Signatory			
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
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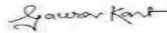
 TC-14321  cmpdi A Min. Rules Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	10/2024	Cluster	Cluster XII					ULR No.	TC1432125000002231F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	05.12.2025
Project			Sample Ref. No.	REM/BCCL/2025/10		Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Moonidih UGP		Date of Sampling	13.10.25	21.10.25	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	51.3	52.1	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	46.9	47.8					
3		08:00 - 09:00	54.6	56.2					
4		09:00 - 10:00	52.7	50.2					
5		10:00 - 11:00	55.8	54.7					
6		11:00 - 12:00	59.2	60					
7		12:00 - 13:00	57.3	57					
8		13:00 - 14:00	59	57.9					
9		14:00 - 15:00	55.1	54.7					
10		15:00 - 16:00	53.3	52.7					
11		16:00 - 17:00	52.9	53.1					
12		17:00 - 18:00	52.5	53.1					
13		18:00 - 19:00	51.6	52.1					
14		19:00 - 20:00	52.3	51.9					
15		20:00 - 21:00	50.8	50.6					
16		21:00 - 22:00	50.3	50.5					
		Leq Day	54.6	54.6					
1	Noise Level dB(A)Leq -Night	22:00-23:00	44.4	44.4	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00-00:00	43.9	44.1					
3		00:00-01:00	43.1	44.1					
4		01:00-02:00	42.3	42.9					
5		02:00-03:00	42.1	42.2					
6		03:00-04:00	42.1	42.3					
7		04:00-05:00	43.5	43.6					
8		05:00-06:00	43.9	44.1					
		Leq Night	43.2	43.5					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	10/2025	Cluster	Cluster XII				ULR No.	TC143212500002231F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	05.12.2025	
Project		Sample Ref. No.	REM/BCCL/2025/10		Sampling Method	CMPDI/RI-II/LPM 22			
Sampling Stations	i	Murlidih(20/21)	Date of Sampling	09.10.25	24.10.25	Zone Category of Station:	Buffer Zone		
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
								Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	49.4	49.3	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	49.5	49.7					
3		08:00 - 09:00	51.6	52.7					
4		09:00 - 10:00	50.9	51.8					
5		10:00 - 11:00	53.8	53.8					
6		11:00 - 12:00	54.3	53.9					
7		12:00 - 13:00	55.8	56.9					
8		13:00 - 14:00	56.2	56.3					
9		14:00 - 15:00	56.7	56.9					
10		15:00 - 16:00	57.8	58.9					
11		16:00 - 17:00	57.6	57.2					
12		17:00 - 18:00	55.2	55.2					
13		18:00 - 19:00	51.8	52.7					
14		19:00 - 20:00	51.5	51.8					
15		20:00 - 21:00	50.5	50.5					
16		21:00 - 22:00	50.3	50.2					
		Leq Day	54.2	54.6					
1	Noise Level dB(A)Leq - Night	22:00-23:00	37.6	37.8	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	37.2	37.7					
3		00:00- 01:00	36.9	37.4					
4		01:00-02:00	36.8	37.3					
5		02:00-03:00	36.7	36.9					
6		03:00-04:00	37.2	36.7					
7		04:00-05:00	37.4	37.2					
8		05:00-06:00	37.6	37.3					
		Leq Night	37.2	37.3					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants ANALYSED BY			 (Gaurav Kant) REVIEWED BY		 (Kumar vaibhav) Authorised Signatory				
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
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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 /min)
	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 clause 2.

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

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

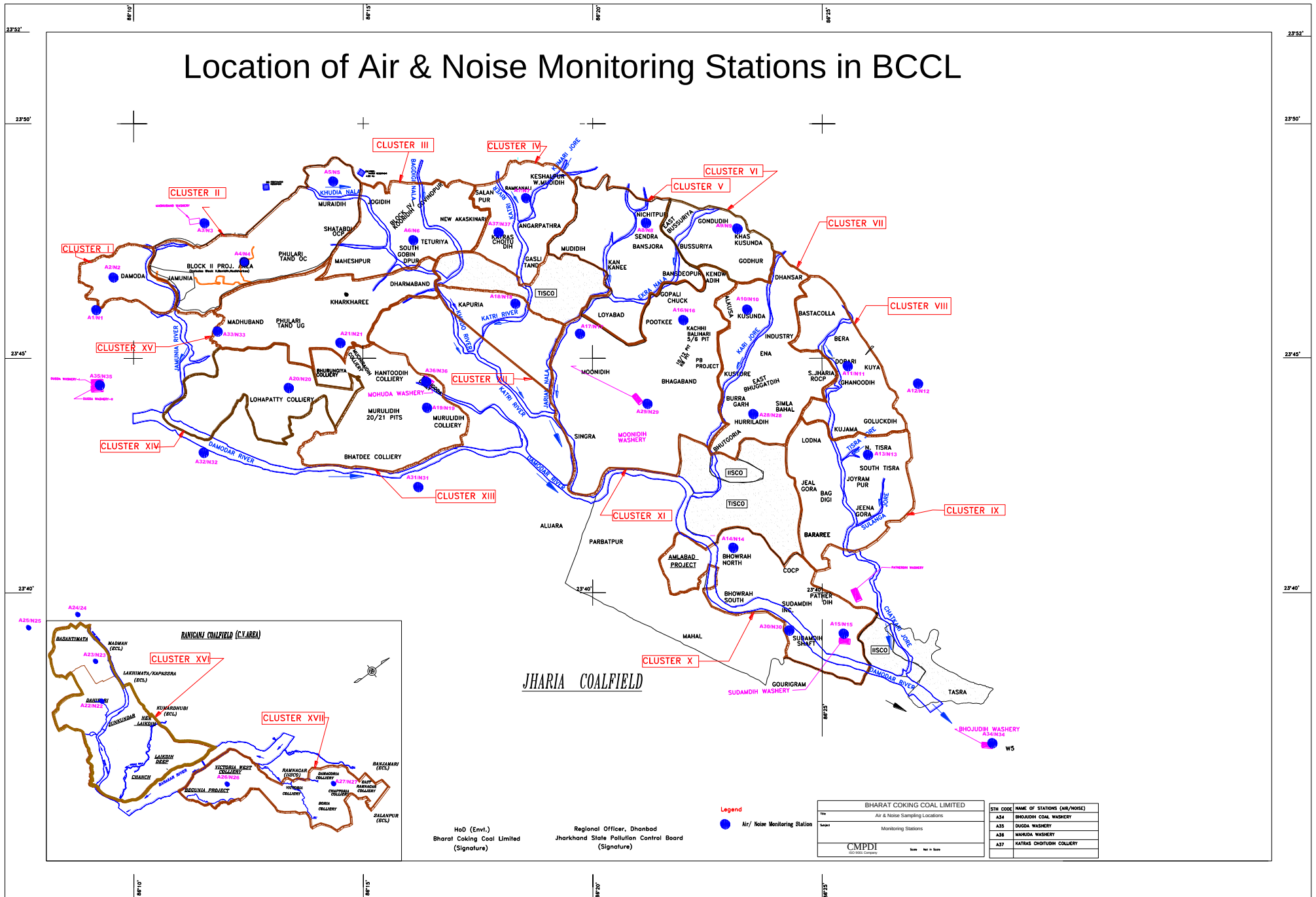
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO₂), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO₂), 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 PM₁₀, 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 (O₃) , 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 (NH₃), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C₆H₆), 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.

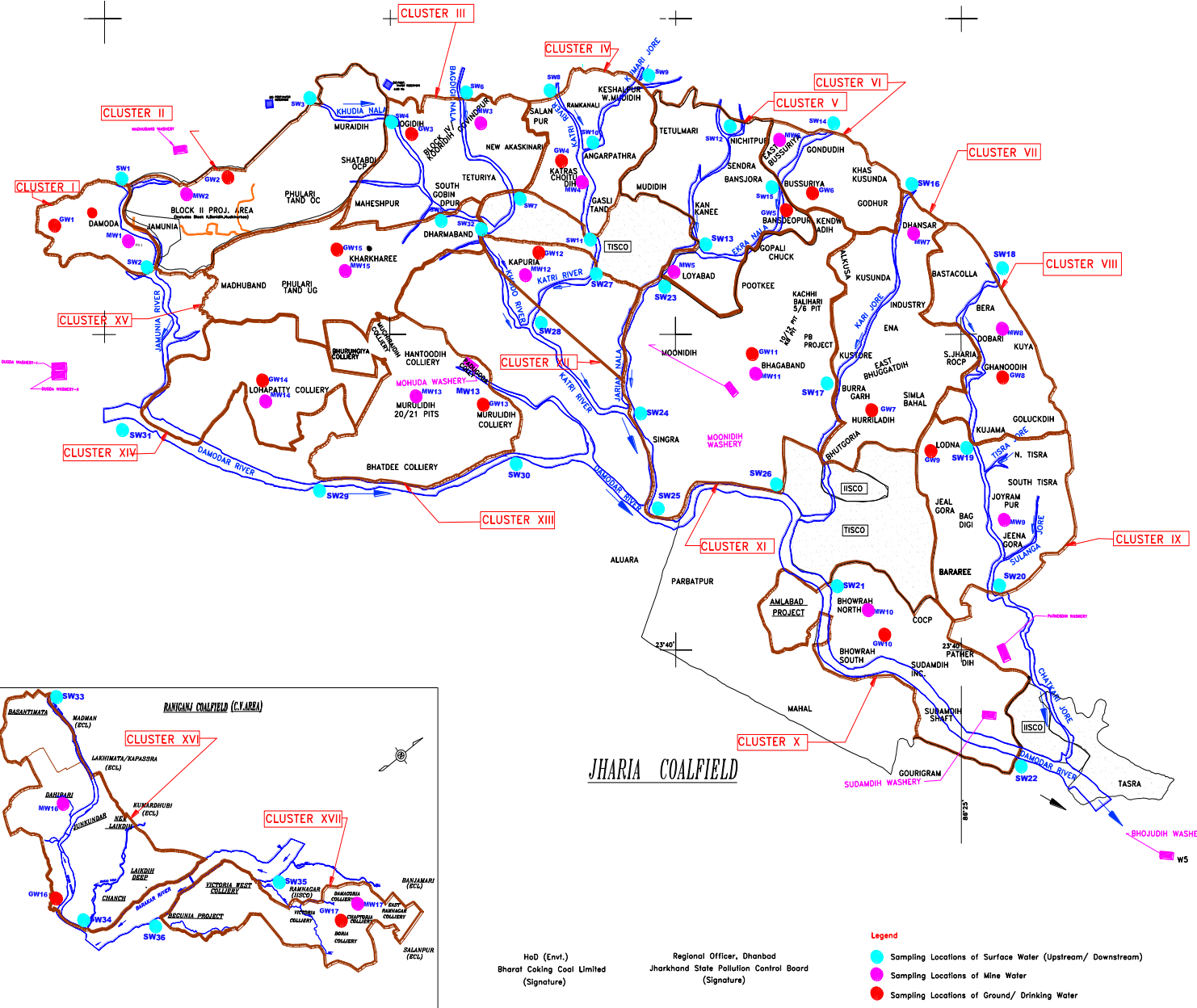
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they JUNE exceed the limits but not on two consecutive days of monitoring.

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

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

Cluster	Surface Water (JUS, DIS)	Name of River/Nala/Jore	Mine/Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Damunia River	MW1	Damoda Area	GW1	Chutkai Village
II	SW3, SW4	Khudra Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudra Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kain River, Kuman Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudih	GW5	Nichtipur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansora Borewell
VII	SW16, SW17	Kain Jore	MW7	Bhansar UGP	GW7	Huriladih
VIII	SW18, SW19	Kain Jore	MW8	Doban UGP	GW8	Ghanudih
IX	SW19, SW20	Kain Jore	MW9	Jewagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband UGP	GW11	Bhagabandh
XII	SW27, SW28	Kain River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Muraidih (20/21)	GW13	Muraidih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW33, SW34	Khudra Nala	MW15	Kharkharree UGP	GW15	Kharkharree
XVI	SW35, SW36	Khudra River	MW16	Dahibani OCP	GW16	Palabani Village
XVII	SW37, SW38	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

Legend

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

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

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

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

CMPDI
COAL MINING PROJECTS DEVELOPMENT INSTITUTE

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

(FOR THE MONTH NOVEMBER, 2025)

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



CMPDI

ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

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4.	CHAPTER-IV	STANDARDS AND PLANS	19-20

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.

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 (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂)

and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM_{2.5} sampler) were used for sampling of PM₁₀, SO₂, & 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 '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 PM₁₀, PM_{2.5}, SO₂ 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 PM₁₀ & 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 PM₁₀, PM_{2.5}, SO₂, NO_x 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° 45' 26.60" N & 86° 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° 47' 54.00" N & 86° 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° 44' 30.00" N & 86° 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° 43' 51.82" N & 86° 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

 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in											
Test Report for Ambient Air Samples											
Month & Year		11/2025		Cluster		Cluster XII		ULR No.		TC14321251200002251F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue		12.01.2025	
Project		Rudhi Basti		Sample Ref. No.		REM/BCCL/2025/11		Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		07.11.25		21.11.25		Period of Analysis		07.11.25		25.12.2025	
Zone of Station:		Core Zone									
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)		NAAQS, 2009		
			A4817	A4895							
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	81	91	90	92	90	92			
2	PM _{2.5}	IS -5182(Part 24):2019	42	45	37	45	37	45			
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	<10	<10	<10	<10			
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	17	20	21	22	21	22			
Environmental Condition : Sunny											
18* LDL indicates Lower Detection Limit,											
**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,											
 ANALYSED BY			 (Gaurav Kant) REVIEWED BY			 (Kumar vaibhav) Authorised Signatory					
Note: The results above relate to the samples tested as received. This report cannot be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.											
---- End of Report ----											
Page -1 of 1											



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		11/2025	Cluster	Cluster XII			ULR No.	TC14321251200002251F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	12.01.2025
Project		Block IV	Sample Ref. No.	REM/BCCL/2025/11	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		07.11.25	21.11.25	Period of Analysis	07.11.25	25.12.2025	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009
			A4816	A4894				
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	86	94	10 µg/m³ - 1000 µg/m³	10 µg/m³	300	100
2	PM _{2.5}	IS -5182(Part 24):2019	45	51	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	35	28	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

[Signature]
ANALYSED BY

[Signature]
 (Gaurav Kant)
REVIEWED BY

[Signature]
 (Kumar vaibhav)
Authorised Signatory

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---- End of Report ----

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

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Test Report for Ambient Air Samples

Month & Year		11/2025	Cluster	Cluster XII			ULR No.	TC14321251200002251F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	12.01.2025
Project		Moonidih UGP		Sample Ref. No.	REM/BCCL/2025/11	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)
Date of Sampling		13.11.25		27.11.25	Period of Analysis	13.11.25	25.12.2025	Zone of Station: Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009
			A4851	A4929				
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	79	85	10 µg/m³ - 1000 µg/m³	10 µg/m ³⁰⁵	300	100
2	PM _{2.5}	IS -5182(Part 24):2019	32	38	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	20	29	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

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ANALYSED BY

[Signature]

(Gaurav Kant)

REVIEWED BY

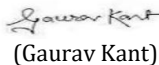
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(Kumar vaibhav)

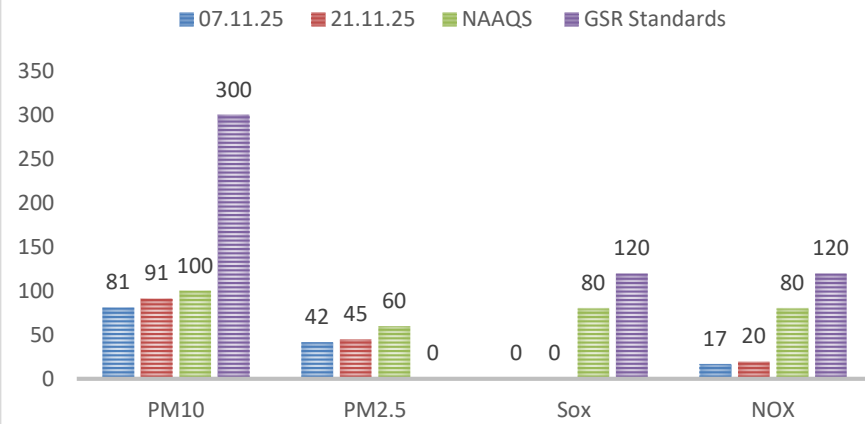
Authorised Signatory

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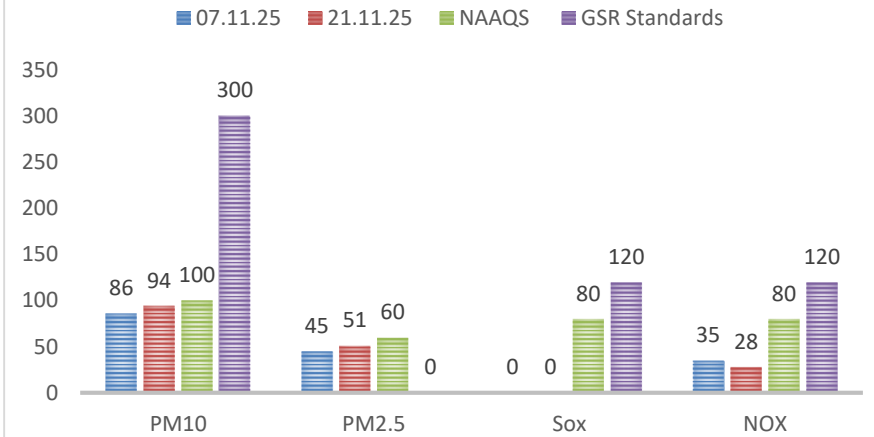
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 TC-14321  cmpdi A Mine Rehabilitation Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in										
Test Report for Ambient Air Samples										
Month & Year		11/2025	Cluster		Cluster XII			ULR No.		TC14321251200002251F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue		12.01.2025	
Project		Murlidih 20/21 Pit	Sample Ref. No.		REM/BCCL/2025/11	Sampling Method		CMPDI/RI-II/LPM 13, (IS 5182)		
Date of Sampling		13.11.25 to 27.11.25			Period of Analysis		13.11.25	25.12.2025	Zone of Station: Buffer Zone	
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September, 2000 (GSR 742 E)	NAAQS, 2009		
			A4803	A4881						
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	81	90	10 $\mu\text{g}/\text{m}^3$ - 1000 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	300	100		
2	PM _{2.5}	IS -5182(Part 24):2019	35	34	10 $\mu\text{g}/\text{m}^3$ - 400 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	Not Specified	60		
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	10	10 $\mu\text{g}/\text{m}^3$ - 1050 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	120	80		
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	33	24	06 $\mu\text{g}/\text{m}^3$ - 420 $\mu\text{g}/\text{m}^3$	06 $\mu\text{g}/\text{m}^3$	120	80		
Environmental Condition : Sunny										
* LDL indicates Lower Detection Limit,										
**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,										
 ANALYSED BY			 (Gaurav Kant) REVIEWED BY			 (Kumar vaibhav) Authorised Signatory				
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---- End of Report ---- Page -1 of 1										

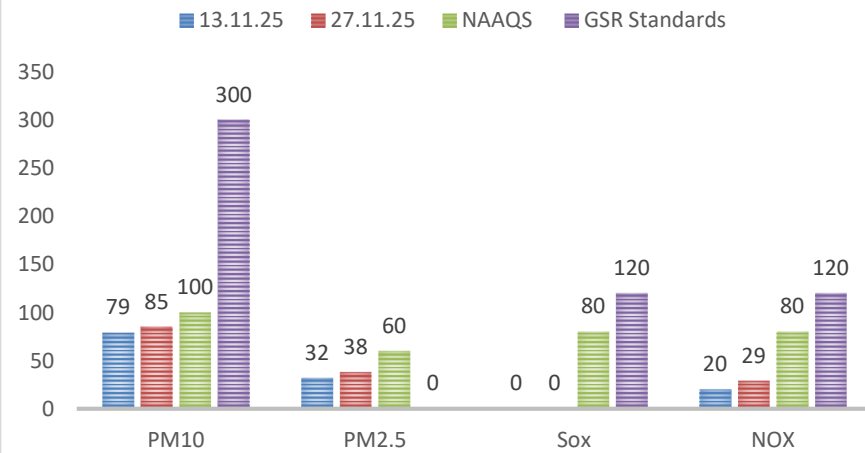
AMBIENT AIR QUALITY AT RUDHI BASTI



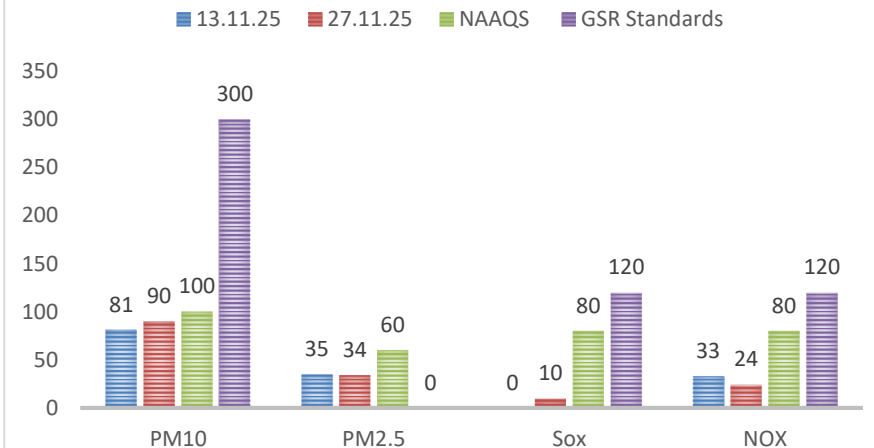
AMBIENT AIR QUALITY AT BLOCK IV



AMBIENT AIR QUALITY AT MOONIDIH UGP



AMBIENT AIR QUALITY AT MURLIDIH 20/21 PIT



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 during day time & night time. Noise levels were measured for the complete day & night time, the Intergration time taken was one hour or 3600 seconds. 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 & night time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day & night 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.



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Noise Level Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Month & Year	11/2025	Cluster	Cluster XII					ULR No.	TC14321254600002285F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	12.01.2025
Project			Sample Ref. No.	REM/BCCL/2025/11			Sampling Method		CMPDI/RI-II/LPM 22
Sampling Stations	i	Rudhi Basti		Date of Sampling		07.11.25	21.11.25	Zone Category of Station:	Core Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	43.9	45.2	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 Db (A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	47.2	47.5					
3		08:00 - 09:00	48.4	49.7					
4		09:00 - 10:00	44.8	45.5					
5		10:00 - 11:00	49.7	50.1					
6		11:00 - 12:00	53.3	52.6					
7		12:00 - 13:00	51.3	51.7					
8		13:00 - 14:00	52.6	53.1					
9		14:00 - 15:00	54.6	53.8					
10		15:00 - 16:00	56.7	57					
11		16:00 - 17:00	52.3	52.1					
12		17:00 - 18:00	49.8	50.1					
13		18:00 - 19:00	43.9	45.2					
14		19:00 - 20:00	44.6	44.8					
15		20:00 - 21:00	42.1	42.9					
16		21:00 - 22:00	42	43					
		Leq Day	50.8	50.9					
1	Noise Level dB(A)Leq -Night	22:00-23:00	40.2	41	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB (A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	40.3	40.9					
3		00:00- 01:00	39.7	39.8					
4		01:00-02:00	39.7	39.3					
5		02:00-03:00	39.3	39.1					
6		03:00-04:00	39.5	40.7					
7		04:00-05:00	39.6	40.6					
8		05:00-06:00	39.7	40.6					
		Leq Night	39.8	40.3					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants
ANALYSED BY

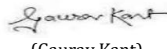
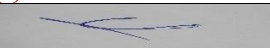
(Gaurav Kant)
REVIEWED BY

(Kumar vaibhav)
Authorised Signatory

Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

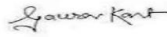
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  CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 Email: cdi7cmadi@coalindia.in									
Month & Year	11/2025	Cluster	Cluster XII				ULR No.	TC14321254600002285F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	12.01.2025	
Project		Sample Ref. No.	REM/BCCL/2025/11			Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Block IV	Date of Sampling	07.11.25	21.11.25	Zone Category of Station:	Buffer Zone		
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	52.6	51.3	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	56.5	55.6					
3		08:00 - 09:00	57.5	56.4					
4		09:00 - 10:00	60.8	59.9					
5		10:00 - 11:00	60.3	59.4					
6		11:00 - 12:00	61.6	61.1					
7		12:00 - 13:00	63.2	59.9					
8		13:00 - 14:00	61.5	62.2					
9		14:00 - 15:00	62.3	61					
10		15:00 - 16:00	64.8	63					
11		16:00 - 17:00	65.4	65.2					
12		17:00 - 18:00	64.2	66.1					
13		18:00 - 19:00	65.1	63					
14		19:00 - 20:00	64.7	64					
15		20:00 - 21:00	55.2	57.4					
16		21:00 - 22:00	51.6	50.1					
		Leq Day	62.1	61.5					
1	Noise Level dB(A)Leq -Night	22:00-23:00	50	46.8	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	47.4	45.3					
3		00:00- 01:00	45.7	44.8					
4		01:00-02:00	40.9	41.2					
5		02:00-03:00	40.6	40.7					
6		03:00-04:00	43.4	42					
7		04:00-05:00	41.7	41.1					
8		05:00-06:00	42	42.9					
		Leq Night	45.3	43.6					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants ANALYSED BY		 (Gaurav Kant) REVIEWED BY		 (Kumar vaibhav) Authorised Signatory					
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	11/2024	Cluster	Cluster XII					ULR No.	TC14321254600002285F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	12.01.2025
Project			Sample Ref. No.	REM/BCCL/2025/11		Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Moonidih UGP		Date of Sampling		Zone Category of Station:		Buffer Zone	
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	43.9	50.1	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	45.2	45.9					
3		08:00 - 09:00	52.6	54.2					
4		09:00 - 10:00	50.7	48.3					
5		10:00 - 11:00	53.7	52.6					
6		11:00 - 12:00	56.9	57.8					
7		12:00 - 13:00	53.2	54.8					
8		13:00 - 14:00	56.7	55.8					
9		14:00 - 15:00	53	52.6					
10		15:00 - 16:00	51.3	50.7					
11		16:00 - 17:00	50.9	51.1					
12		17:00 - 18:00	50.5	51.1					
13		18:00 - 19:00	49.7	50.1					
14		19:00 - 20:00	50.3	50					
15		20:00 - 21:00	48.9	48.7					
16		21:00 - 22:00	48.4	48.6					
		Leq Day	52.2	52.5					
1	Noise Level dB(A)Leq -Night	22:00-23:00	43.4	43.4	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00-00:00	42.9	43					
3		00:00- 01:00	42.2	43					
4		01:00-02:00	40	42					
5		02:00-03:00	41.1	41.2					
6		03:00-04:00	41.1	41.3					
7		04:00-05:00	42.6	42.7					
8		05:00-06:00	42.9	43					
		Leq Night	42.2	42.5					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	11/2025	Cluster	Cluster XII					ULR No.	TC14321254600002285F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	12.01.2025
Project		Sample Ref. No.	REM/BCCL/2025/11			Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Murlidih(20/21)		Date of Sampling				Zone Category of Station:	Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
								Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	47.6	47.5	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	47.7	47.9					
3		08:00 - 09:00	49.7	50.7					
4		09:00 - 10:00	49	49.9					
5		10:00 - 11:00	51.8	51.8					
6		11:00 - 12:00	52.2	51.9					
7		12:00 - 13:00	53.7	54.7					
8		13:00 - 14:00	51.3	54.3					
9		14:00 - 15:00	54.5	54.7					
10		15:00 - 16:00	55.7	56.6					
11		16:00 - 17:00	55.5	55					
12		17:00 - 18:00	53.1	53.1					
13		18:00 - 19:00	48.2	50.7					
14		19:00 - 20:00	49.6	49.9					
15		20:00 - 21:00	48.6	48.6					
16		21:00 - 22:00	47.1	48.3					
		Leq Day	51.9	52.5					
1	Noise Level dB(A)Leq -Night	22:00-23:00	36.7	36.9	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	36.3	36.8					
3		00:00- 01:00	36	36.5					
4		01:00-02:00	36	36.4					
5		02:00-03:00	35.9	36					
6		03:00-04:00	36.3	35.9					
7		04:00-05:00	36.5	36.3					
8		05:00-06:00	36.7	36.4					
		Leq Night	36.3	36.4					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants ANALYSED BY  (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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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 /min)
	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 clause 2.

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

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

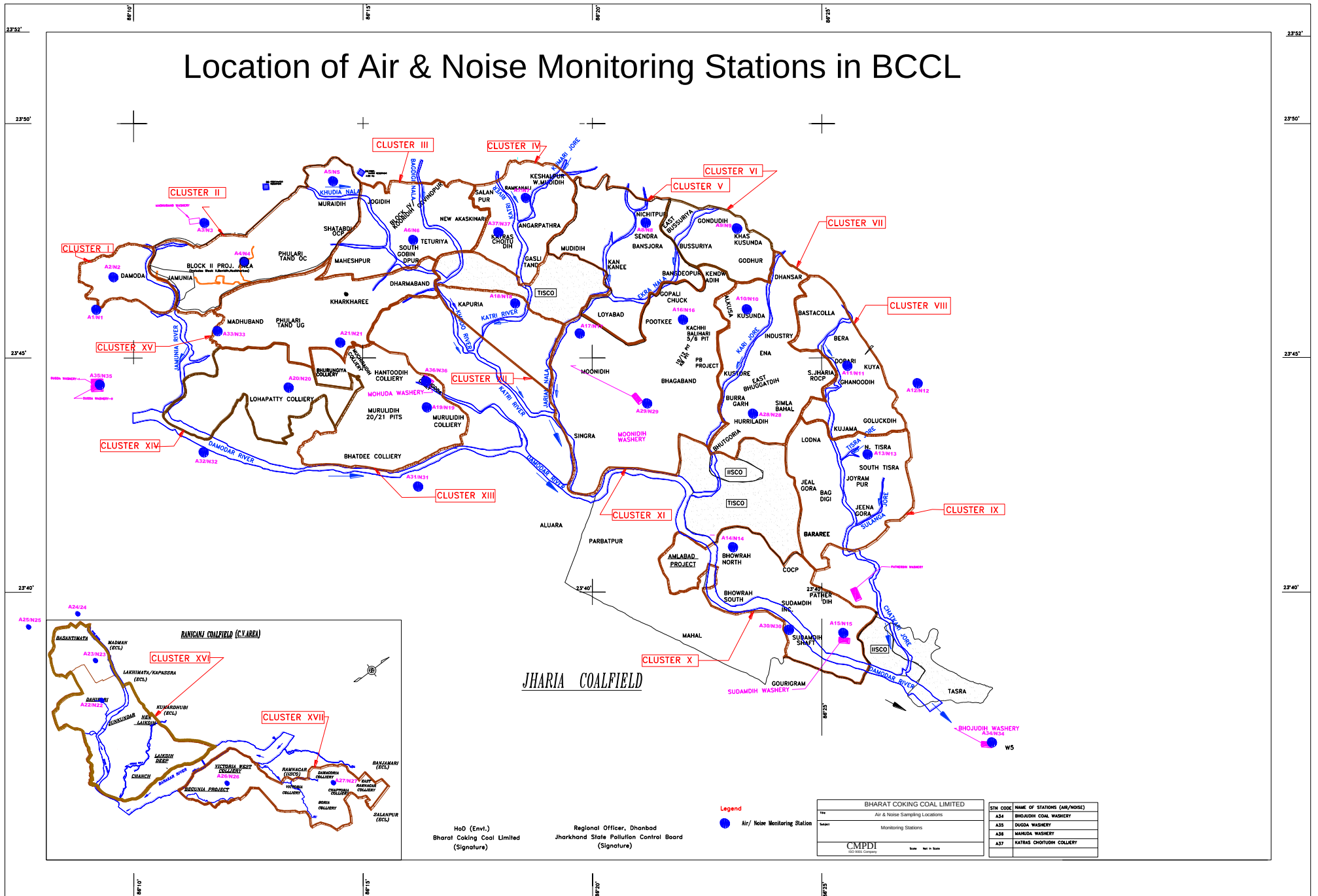
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO₂), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO₂), 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 PM₁₀, 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 (O₃) , 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 (NH₃), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C₆H₆), 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 JUNE exceed the limits but not on two consecutive days of monitoring.

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

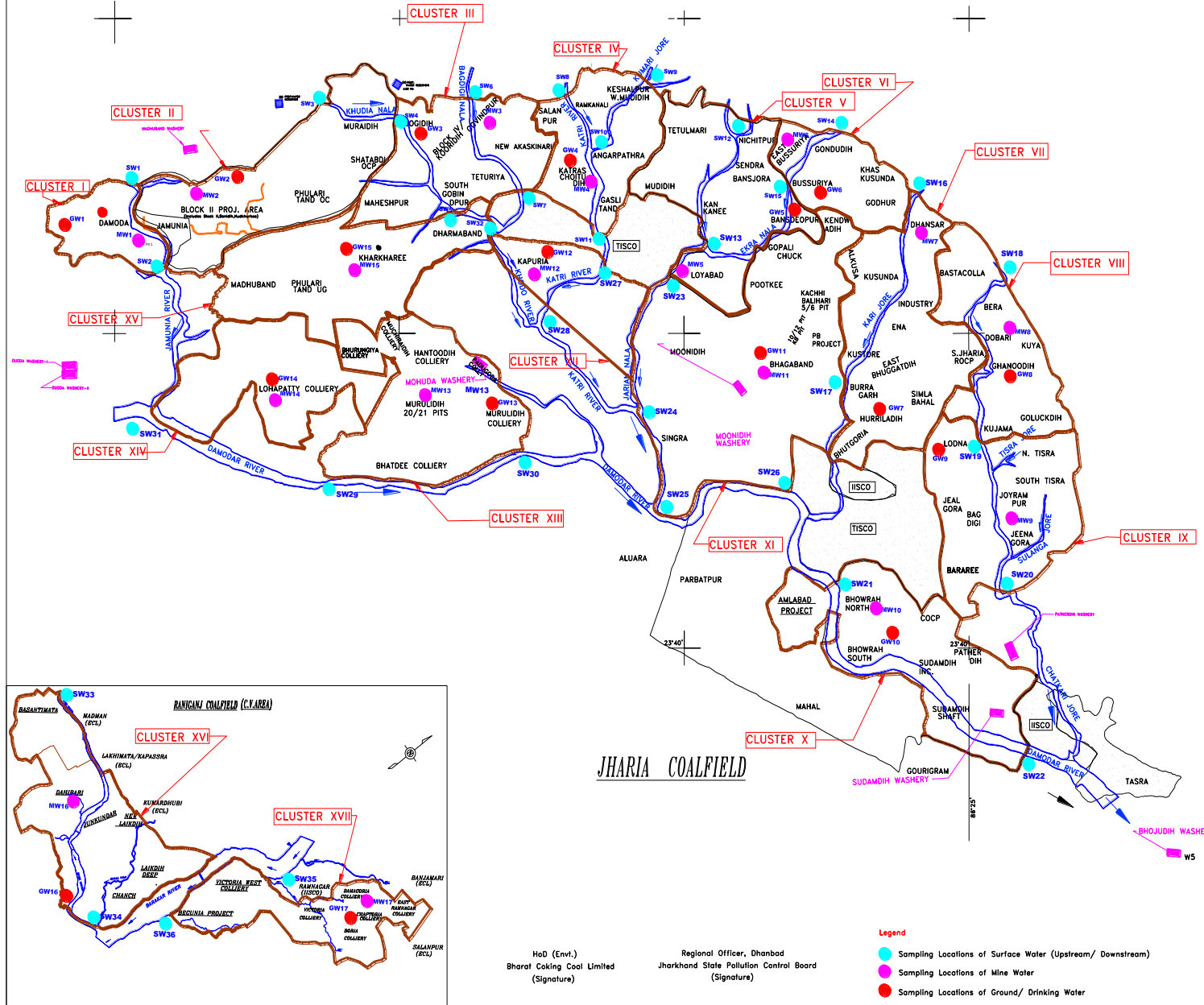
Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL

INDEX

Cluster	Surface Water (JUS, DIS)	Name of River/ Nala / Jore	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Damunia River	MW1	Damoda Area	GW1	Chutkai Village
II	SW3, SW4	Khudia Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudia Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kain River, Kuman Jore	MW4	Chotudih	GW4	Kankaneer 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	Kain Jore	MW7	Bhansar UGP	GW7	Huriladih
VIII	SW18, SW19	Kashi Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kashi Jore	MW9	Jewagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband UGP	GW11	Bhagabandh
XII	SW27, SW28	Kain River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Muridih (20/21)	GW13	Muridih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Kharkhar Nala	MW15	Kharkhar UGP	GW15	Kharkhar
XVI	SW33, SW34	Khudia River	MW16	Dahibani OCP	GW16	Palabani Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria



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

STRICTLY RESTRICTED**FOR COMPANY USE ONLY RESTRICTED**

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

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

(FOR THE MONTH DECEMBER, 2025)

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



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.

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 (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂)

and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM_{2.5} sampler) were used for sampling of PM₁₀, SO₂, & 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 '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 PM₁₀, PM_{2.5}, SO₂ 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 PM₁₀ & 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 PM₁₀, PM_{2.5}, SO₂, NO_x 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° 45' 26.60" N & 86° 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° 47' 54.00" N & 86° 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° 44' 30.00" N & 86° 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° 43' 51.82" N & 86° 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

 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDI, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in											
Test Report for Ambient Air Samples											
Month & Year		12/2025		Cluster		Cluster XII		ULR No.		TC14321266800002307F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue		13.02.2026	
Project		Rudhi Basti		Sample Ref. No.		REM/BCCL/2025/12		Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		01.12.25		16.12.25		Period of Analysis		01.12.25		20.1.2026	
Zone of Station:		Core Zone									
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)		NAAQS, 2009		
			A4788	A4866							
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	76	81	90	92	90	92			
2	PM _{2.5}	IS -5182(Part 24):2019	40	42	37	45	37	45			
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	<10	<10	<10	<10			
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	31	24	21	22	21	22			
<i>Environmental Condition : Sunny</i> <i>18* LDL indicates Lower Detection Limit,</i> <i>**All units are in µg/m³, 24 hourly Average,</i>											
 ANALYSED BY			 REVIEWED BY			 Authorised Signatory					
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Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		12/2025	Cluster	Cluster XII				ULR No.	TC14321266800002307F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	13.02.2026
Project		Block IV		Sample Ref. No.	REM/BCCL/2025/12	Sampling Method	CMPDI/RI-II/LPM 13 , (IS 5182)		
Date of Sampling		11.12.25		25.12.25	Period of Analysis	11.12.25	20.01.2026	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009	
			A4845	A4916					
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	87	96	10 µg/m³ - 1000 µg/m³	10 µg/m³	300	100	
2	PM _{2.5}	IS -5182(Part 24):2019	42	48	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60	
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	10	<10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80	
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	28	36	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80	

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

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ANALYSED BY

[Signature]

(Gaurav Kant)
REVIEWED BY

[Signature]

(Kumar vaibhav)
Authorised Signatory

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Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDIL, RI-II
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Test Report for Ambient Air Samples

Month & Year		12/2025	Cluster	Cluster XII			ULR No.	TC14321266800002307F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	13.02.2026
Project		Moonidih UGP		Sample Ref. No.	REM/BCCL/2025/12	Sampling Method	CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		12.12.25		29.12.25	Period of Analysis	12.12.25	25.01.2026	Zone of Station: Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009
			A4855	A4930				
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	84	81	10 µg/m³ - 1000 µg/m³	10 µg/m³ ³⁰⁵	300	100
2	PM _{2.5}	IS -5182(Part 24):2019	30	36	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	10	<10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	24	34	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80

Environmental Condition : Sunny

* LDL indicates Lower Detection Limit,

**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,

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ANALYSED BY

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 (Gaurav Kant)
REVIEWED BY

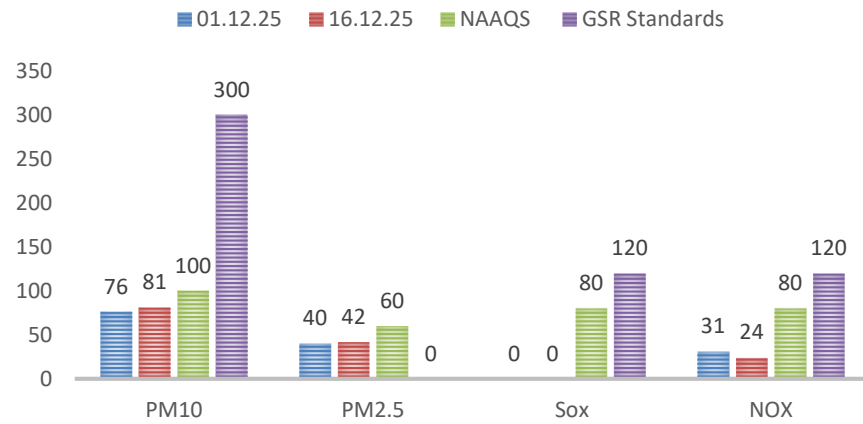
[Signature]
 (Kumar vaibhav)
Authorised Signatory

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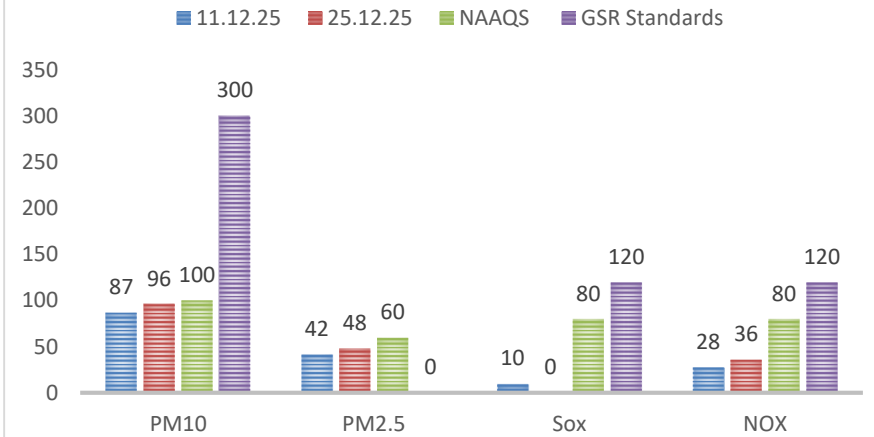
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 TC-14321  cmpdi A Mine Rehabilitation Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in											
Test Report for Ambient Air Samples											
Month & Year		12/2025		Cluster		Cluster XII		ULR No.		TC14321266800002307F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue		13.02.2026	
Project		Murlidih 20/21 Pit		Sample Ref. No.		REM/BCCL/2025/12		Sampling Method		CMPDI/RI-II/LPM 13, (IS 5182)	
Date of Sampling		04.12.25 to 19.12.2025				Period of Analysis		04.12.25		25.01.26	
Zone of Station:						Buffer Zone					
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009			
			A4808	A4886							
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	74	88	10 $\mu\text{g}/\text{m}^3$ - 1000 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	300	100			
2	PM _{2.5}	IS -5182(Part 24):2019	32	31	10 $\mu\text{g}/\text{m}^3$ - 400 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	Not Specified	60			
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	10	10 $\mu\text{g}/\text{m}^3$ - 1050 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	120	80			
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	24	27	06 $\mu\text{g}/\text{m}^3$ - 420 $\mu\text{g}/\text{m}^3$	06 $\mu\text{g}/\text{m}^3$	120	80			
Environmental Condition : Sunny											
* LDL indicates Lower Detection Limit,											
**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,											
 ANALYSED BY			 REVIEWED BY (Gaurav Kant)			 Authorised Signatory (Kumar vaibhav)					
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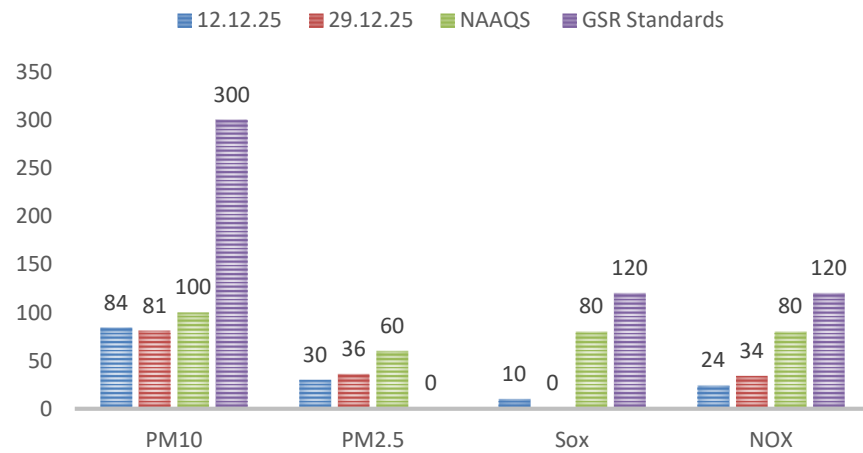
AMBIENT AIR QUALITY AT RUDHI BASTI



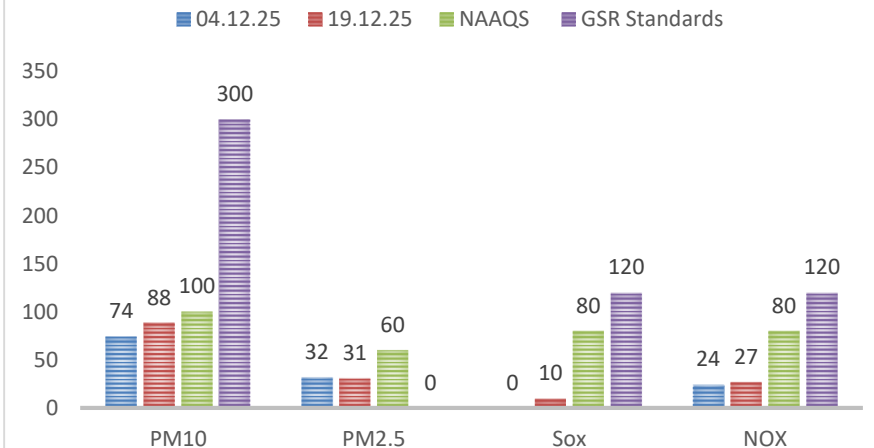
AMBIENT AIR QUALITY AT BLOCK IV



AMBIENT AIR QUALITY AT MOONIDIH UGP



AMBIENT AIR QUALITY AT MURLIDIH 20/21 PIT



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 during day time & night time. Noise levels were measured for the complete day & night time, the Intergration time taken was one hour or 3600 seconds. 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 & night time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day & night 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.



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Noise Level Test Report

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 email: rdri2cmpdi@coalindia.in

Month & Year	12/2025	Cluster	Cluster XII					ULR No.	TC143212610200002341F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	13.02.2026
Project			Sample Ref. No.	REM/BCCL/2025/12		Sampling Method		CMPDI/RI-II/LPM 22	
Sampling Stations	i	Rudhi Basti		Date of Sampling	01.12.25	16.12.25	Zone Category of Station:	Core Zone	
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	33.8	35.4	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 Db (A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	36.9	37.7					
3		08:00 - 09:00	37.2	36.2					
4		09:00 – 10:00	41.3	42					
5		10:00 - 11:00	44.2	44.7					
6		11:00 - 12:00	44.8	44.1					
7		12:00 - 13:00	44.5	44.7					
8		13:00 - 14:00	44.7	44.5					
9		14:00 - 15:00	47.6	46.5					
10		15:00 - 16:00	48.2	47.6					
11		16:00 - 17:00	44.8	45.7					
12		17:00 - 18:00	36.9	36.4					
13		18:00 - 19:00	37.5	35.1					
14		19:00 - 20:00	36.4	35.8					
15		20:00 - 21:00	33.7	33.6					
16		21:00 - 22:00	33.3	33.3					
		Leq Day	42.9	42.7					
1	Noise Level dB(A)Leq -Night	22:00-23:00	40.2	41	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB (A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	40.3	40.9					
3		00:00- 01:00	39.7	39.8					
4		01:00-02.00	39.7	39.3					
5		02.00-03.00	39.3	39.1					
6		03.00-04.00	39.5	40.7					
7		04.00-05.00	39.6	40.6					
8		05:00-06:00	39.7	40.6					
		Leq Night	39.8	40.3					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants
 ANALYSED BY

(Gaurav Kant)
 REVIEWED BY

(Kumar vaibhav)
 Authorised Signatory

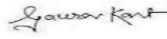
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Month & Year	12/2025	Cluster	Cluster XII					ULR No.	TC143212610200002341F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	13.02.2026
Project		Sample Ref. No.	REM/BCCL/2025/12			Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Block IV	Date of Sampling		11.12.25	25.12.25	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))		Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	52.6	51.3	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	56.6	55.6					
3		08:00 - 09:00	57.4	56.5					
4		09:00 - 10:00	60.8	60					
5		10:00 - 11:00	60.3	59.4					
6		11:00 - 12:00	61.7	61.1					
7		12:00 - 13:00	61.3	60					
8		13:00 - 14:00	61.6	62.2					
9		14:00 - 15:00	61.9	60.9					
10		15:00 - 16:00	64.7	63					
11		16:00 - 17:00	65.5	65.3					
12		17:00 - 18:00	66.3	66.1					
13		18:00 - 19:00	65.1	63					
14		19:00 - 20:00	64.6	64					
15		20:00 - 21:00	58.3	57.3					
16		21:00 - 22:00	57.1	55.9					
		Leq Day	62.3	61.6					
1	Noise Level dB(A)Leq - Night	22:00-23:00	50	46.8	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	47.4	45.3					
3		00:00- 01:00	45.7	44.8					
4		01:00-02:00	40.9	41.2					
5		02:00-03:00	40.6	40.7					
6		03:00-04:00	43.4	42					
7		04:00-05:00	41.7	41.1					
8		05:00-06:00	42	42.9					
		Leq Night	45.3	43.6					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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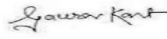
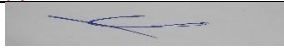
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Month & Year	12/2024	Cluster	Cluster XII					ULR No.	TC143212610200002341F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	13.02.2026
Project		Sample Ref. No.	REM/BCCL/2025/12			Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Moonidih UGP		Date of Sampling	12.12.25	29.12.25	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	49.4	50.2	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	45.1	46					
3		08:00 - 09:00	52.6	54.1					
4		09:00 - 10:00	50.7	48.3					
5		10:00 - 11:00	53.7	52.7					
6		11:00 - 12:00	57	57.7					
7		12:00 - 13:00	55.1	54.8					
8		13:00 - 14:00	56.8	55.8					
9		14:00 - 15:00	53.1	52.7					
10		15:00 - 16:00	51.3	50.7					
11		16:00 - 17:00	50.9	51.1					
12		17:00 - 18:00	50.6	51.1					
13		18:00 - 19:00	49.8	50.2					
14		19:00 - 20:00	50.4	50					
15		20:00 - 21:00	48.8	48.7					
16		21:00 - 22:00	48.4	48.6					
		Leq Day	52.6	52.5					
1	Noise Level dB(A)Leq -Night	22:00-23:00	43.4	43.4	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00-00:00	42.9	43					
3		00:00- 01:00	42.2	43					
4		01:00-02:00	40	42					
5		02:00-03:00	41.1	41.2					
6		03:00-04:00	41.1	41.3					
7		04:00-05:00	42.6	42.7					
8		05:00-06:00	42.9	43					
		Leq Night	42.2	42.5					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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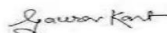
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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	12/2025	Cluster	Cluster XII				ULR No.	TC143212610200002341F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	13.02.2026	
Project			Sample Ref. No.	REM/BCCL/2025/12		Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Murlidih(20/21)		Date of Sampling	04.12.25	19.12.25	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
								Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	47.6	47.5	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	47.7	47.9					
3		08:00 - 09:00	49.8	50.7					
4		09:00 - 10:00	48.9	49.9					
5		10:00 - 11:00	51.7	51.7					
6		11:00 - 12:00	52.2	51.8					
7		12:00 - 13:00	53.7	54.7					
8		13:00 - 14:00	54.1	54.2					
9		14:00 - 15:00	54.5	54.7					
10		15:00 - 16:00	55.7	56.7					
11		16:00 - 17:00	55.5	55					
12		17:00 - 18:00	53.2	53.2					
13		18:00 - 19:00	49.9	50.7					
14		19:00 - 20:00	49.6	49.9					
15		20:00 - 21:00	48.6	48.6					
16		21:00 - 22:00	48.4	48.3					
		Leq Day	52.2	52.5					
1	Noise Level dB(A)Leq -Night	22:00-23:00	36.7	36.9	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	36.3	36.8					
3		00:00- 01:00	36	36.5					
4		01:00-02:00	36	36.4					
5		02:00-03:00	35.9	36					
6		03:00-04:00	36.3	35.9					
7		04:00-05:00	36.5	36.3					
8		05:00-06:00	36.7	36.4					
		Leq Night	36.3	36.4					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants
ANALYSED BY


 (Gaurav Kant)
REVIEWED BY


 (Kumar vaibhav)
Authorised Signatory

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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 /min)
	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 clause 2.

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

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

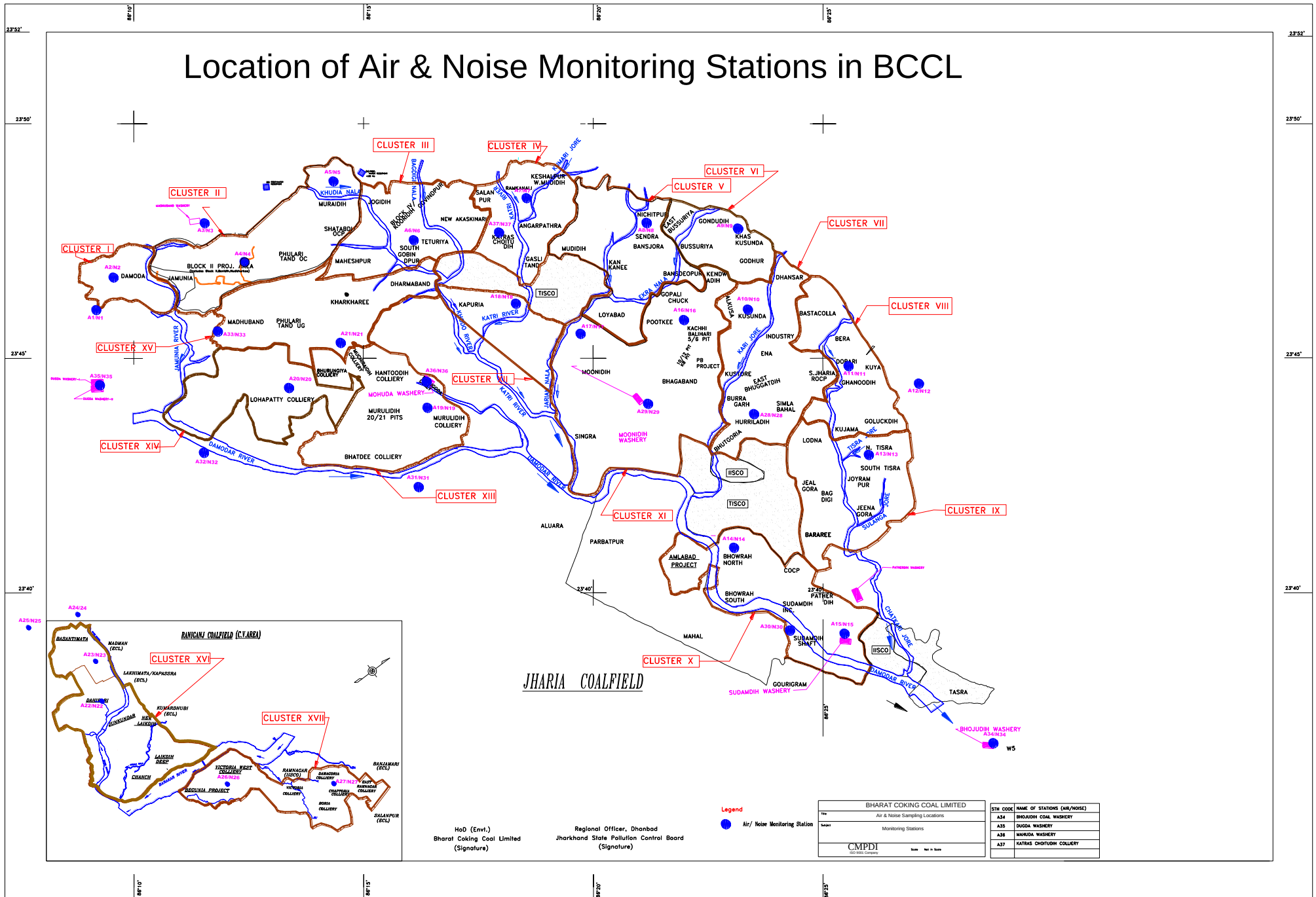
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO₂), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO₂), 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 PM₁₀, 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 (O₃) , 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 (NH₃), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C₆H₆), 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.

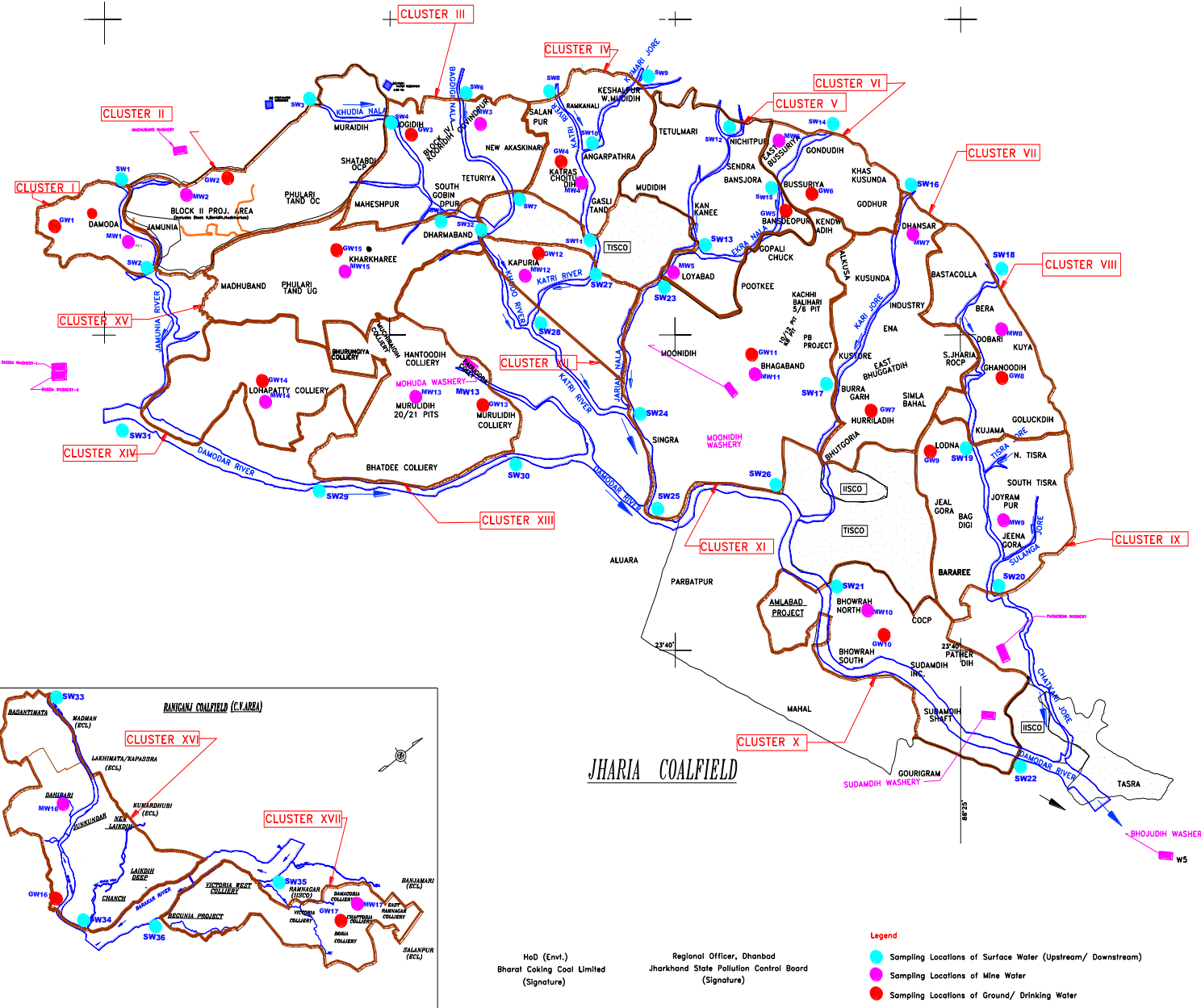
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they JUNE exceed the limits but not on two consecutive days of monitoring.

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

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

Cluster	Surface Water (JUS, DIS)	Name of River/Nala	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Damunia River	MW1	Damoda Area	GW1	Chutkai Village
II	SW3, SW4	Khudra Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudra Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kain River, Kurnai Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudidih	GW5	Nichtipur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansjora Borewell
VII	SW16, SW17	Kain Jore	MW7	Dhanbari UGP	GW7	Humladih
VIII	SW18, SW19	Kain Jore	MW8	Dobani UGP	GW8	Ghanudih
IX	SW19, SW20	Kain Jore	MW9	Jewmagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband UGP	GW11	Bhagabandh
XII	SW27, SW28	Kain River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Muridih (20/21)	GW13	Muridih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW5, SW32	Kharkhar Nala	MW15	Kharkhar UGP	GW15	Kharkhar
XVI	SW33, SW34	Khudra River	MW16	Dahibani OCP	GW16	Palabani Village
XVII	SW35, SW36	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

Legend

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

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

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

Customer: BHARAT COKING COAL LIMITED

Title: WATER SAMPLING LOCATIONS

Subject: MONITORING STATIONS

CMPDI
COAL MINES POLLUTION DEVELOPMENT INSTITUTE

Date: Not to Blank

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

(FOR THE MONTH JANUARY, 2026)

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



CMPDI

ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CONTENTS

SL. NO.	CHAPTER	PARTICULARS	PAGE NO.
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2.	CHAPTER-II	INTRODUCTION	6
3.	CHAPTER-III	RESULTS	7-18
4.	CHAPTER-IV	STANDARDS AND PLANS	19-20

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.

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 (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂)

and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM_{2.5} sampler) were used for sampling of PM₁₀, SO₂, & 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 '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 PM₁₀, PM_{2.5}, SO₂ 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 PM₁₀ & 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 PM₁₀, PM_{2.5}, SO₂, NO_x 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° 45' 26.60" N & 86° 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° 47' 54.00" N & 86° 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° 44' 30.00" N & 86° 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° 43' 51.82" N & 86° 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

  		CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report				CMPDI, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in					
Test Report for Ambient Air Samples											
Month & Year		01/2026		Cluster		Cluster XII		ULR No.		TC143212612100002361F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue		05.03.2026	
Project		Rudhi Basti		Sample Ref. No.		REM/BCCL/2026/01		Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		01.01.26		16.01.26		Period of Analysis		01.01.26		25.02.26	
Zone of Station:		Core Zone									
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)		NAAQS, 2009		
			A5104	A5181							
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	92	97	90	92	90	92			
2	PM _{2.5}	IS -5182(Part 24):2019	47	52	37	45	37	45			
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	10	<10	<10	<10	<10	<10			
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	28	22	21	22	21	22			
<i>Environmental Condition : Sunny</i> <i>18* LDL indicates Lower Detection Limit,</i> <i>**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,</i>											
 ANALYSED BY			 (Gaurav Kant) REVIEWED BY				 (Kumar vaibhav) Authorised Signatory				
Note: The results above relate to the samples tested as received. This report cannot be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.											
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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDIL, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		01/2026	Cluster	Cluster XII				ULR No.	TC143212612100002361F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	05.03.2026
Project		Block IV		Sample Ref. No.	REM/BCCL/2026/01	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		13.01.26		27.01.26	Period of Analysis	13.01.26	25.02.2026	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009	
			A5160	A5232					
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	97	89	10 µg/m³ - 1000 µg/m³	10 µg/m³	300	100	
2	PM _{2.5}	IS -5182(Part 24):2019	52	45	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60	
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	10	<10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80	
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	26	20	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80	

Environmental Condition : Sunny

* LDL indicates Lower Detection Limit,

**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,

[Signature]

ANALYSED BY

[Signature]

(Gaurav Kant)
REVIEWED BY

[Signature]

(Kumar vaibhav)
Authorised Signatory

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---- End of Report ----

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDIL, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		01/2026	Cluster	Cluster XII			ULR No.	TC143212612100002361F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	05.03.2026	
Project		Moonidih UGP		Sample Ref. No.	REM/BCCL/2026/01	Sampling Method	CMPDI/RI-II/LPM 13 , (IS 5182)		
Date of Sampling		14.01.26		29.01.26	Period of Analysis	14.01.26	25.02.2026	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009	
			A5162	A5240					
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	112	120	10 µg/m³ - 1000 µg/m³	10 µg/m ³⁰⁵	300	100	
2	PM _{2.5}	IS -5182(Part 24):2019	66	69	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60	
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	11	13	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80	
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	27	25	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80	

Environmental Condition : Sunny

* LDL indicates Lower Detection Limit,

**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,

[Signature]

ANALYSED BY

[Signature]

(Gaurav Kant)
REVIEWED BY

[Signature]

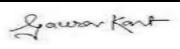
(Kumar vaibhav)
Authorised Signatory

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---- End of Report ----

 TC-14321 CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in											
Test Report for Ambient Air Samples											
Month & Year		01/2026		Cluster		Cluster XII		ULR No.		TC143212612100002361F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue		05.03.2026	
Project		Murlidih 20/21 Pit		Sample Ref. No.		REM/BCCL/2026/01		Sampling Method		CMPDI/RI-II/LPM 13, (IS 5182)	
Date of Sampling		06.01.26		20.01.26		Period of Analysis		06.01.26		25.02.26	
Zone of Station:		Buffer Zone									
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009			
			A5125	A5197							
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	132	127	10 $\mu\text{g}/\text{m}^3$ - 1000 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	300	100			
2	PM _{2.5}	IS -5182(Part 24):2019	67	63	10 $\mu\text{g}/\text{m}^3$ - 400 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	Not Specified	60			
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	10 $\mu\text{g}/\text{m}^3$ - 1050 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	120	80			
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	20	22	06 $\mu\text{g}/\text{m}^3$ - 420 $\mu\text{g}/\text{m}^3$	06 $\mu\text{g}/\text{m}^3$	120	80			

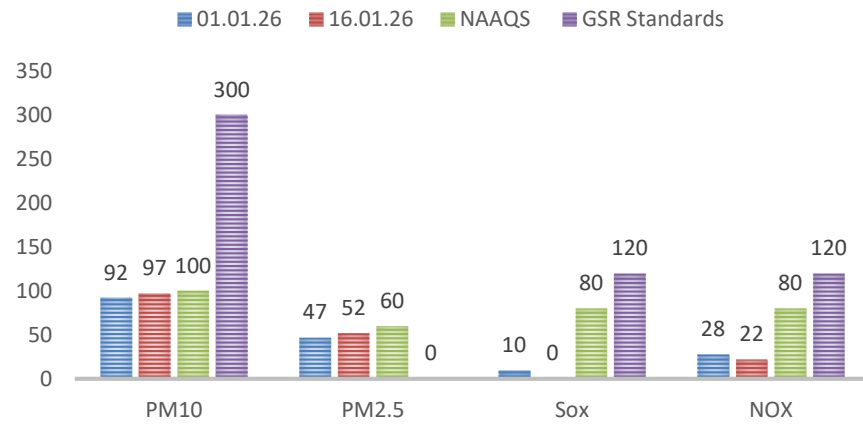
Environmental Condition : Sunny
 * LDL indicates Lower Detection Limit,
 **All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,

 ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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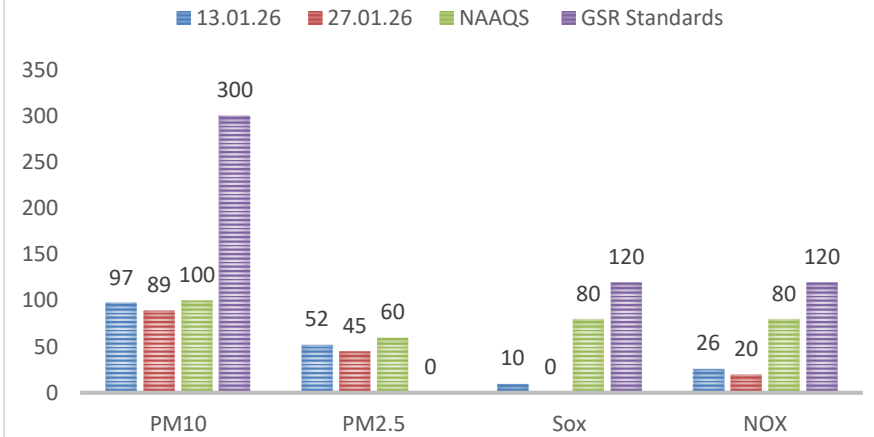
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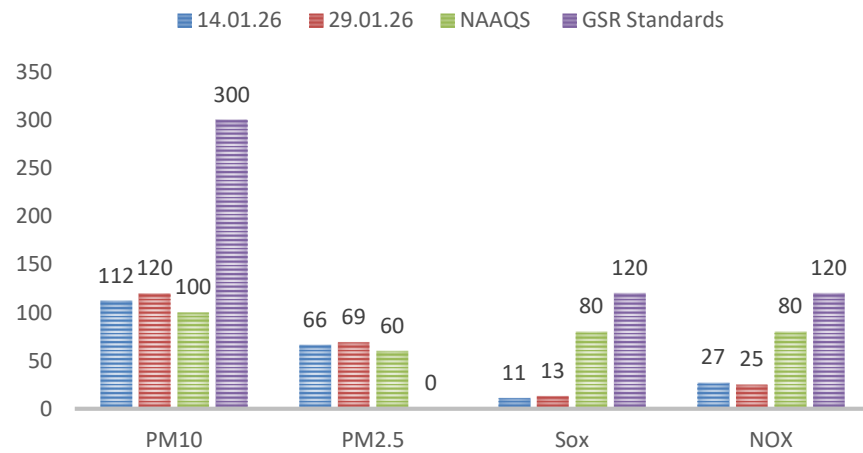
AMBIENT AIR QUALITY AT RUDHI BASTI



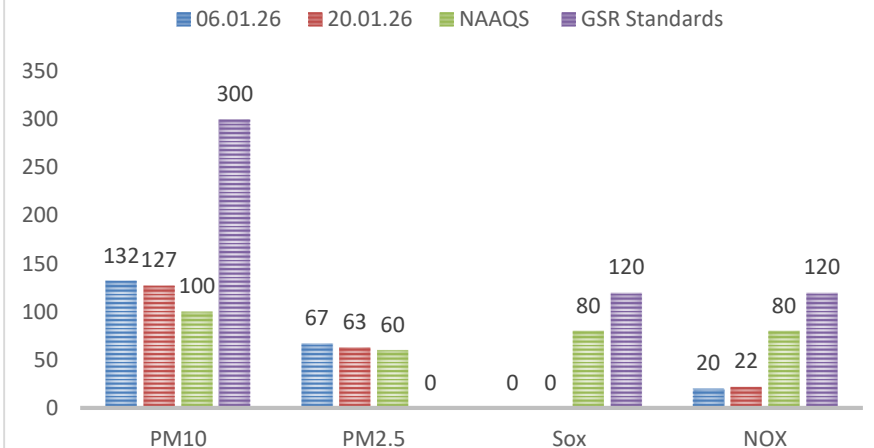
AMBIENT AIR QUALITY AT BLOCK IV



AMBIENT AIR QUALITY AT MOONIDIH UGP



AMBIENT AIR QUALITY AT MURLIDIH 20/21 PIT



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 during day time & night time. Noise levels were measured for the complete day & night time, the Intergration time taken was one hour or 3600 seconds. 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 & night time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day & night 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.



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Noise Level Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Month & Year	01/2026	Cluster	Cluster XII					ULR No.	TC143212615500002395F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	05.03.2026
Project			Sample Ref. No.	REM/BCCL/2026/01		Sampling Method		CMPDI/RI-II/LPM 22	
Sampling Stations	i	Rudhi Basti		Date of Sampling	01.01.26	16.01.26	Zone Category of Station:	Core Zone	
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	45.7	46.9	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 Db (A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	49.1	49.3					
3		08:00 - 09:00	50.3	51.6					
4		09:00 – 10:00	46.5	47.2					
5		10:00 - 11:00	51.6	52.1					
6		11:00 - 12:00	55.4	54.6					
7		12:00 - 13:00	53.3	53.7					
8		13:00 - 14:00	54.6	55.2					
9		14:00 - 15:00	56.8	55.9					
10		15:00 - 16:00	59	59.3					
11		16:00 - 17:00	54.3	54.1					
12		17:00 - 18:00	51.7	52.1					
13		18:00 - 19:00	45.7	46.9					
14		19:00 - 20:00	46.3	46.5					
15		20:00 - 21:00	43.8	44.6					
16		21:00 - 22:00	43.7	44.7					
		Leq Day	52.8	53.0					
1	Noise Level dB(A)Leq -Night	22:00-23:00	43.1	44	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB (A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	43.2	43.9					
3		00:00- 01:00	42.6	42.7					
4		01:00-02:00	42.6	42.2					
5		02:00-03:00	42.2	42					
6		03:00-04:00	42.4	43.7					
7		04:00-05:00	42.5	43.6					
8		05:00-06:00	42.6	43.6					
		Leq Night	42.0	42.6					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants
 ANALYSED BY

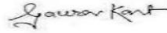
(Gaurav Kant)
 REVIEWED BY

(Kumar vaibhav)
 Authorised Signatory

Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

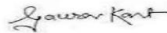
---- End of Report ----

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  CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	01/2026	Cluster	Cluster XII					ULR No.	TC143212615500002395F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	05.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/01			Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Block IV		Date of Sampling	13.01.26	27.01.26	Zone Category of Station:	Buffer Zone	
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	54.6	53.3	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	58.8	57.7					
3		08:00 - 09:00	59.7	58.7					
4		09:00 - 10:00	63.2	62.3					
5		10:00 - 11:00	62.7	61.7					
6		11:00 - 12:00	64	63.5					
7		12:00 - 13:00	63.6	62.3					
8		13:00 - 14:00	63.9	64.6					
9		14:00 - 15:00	64.3	63.4					
10		15:00 - 16:00	67.2	65.5					
11		16:00 - 17:00	68	67.8					
12		17:00 - 18:00	68.9	68.7					
13		18:00 - 19:00	67.6	65.5					
14		19:00 - 20:00	67.1	66.5					
15		20:00 - 21:00	60.5	59.6					
16		21:00 - 22:00	53.6	52.1					
		Leq Day	64.7	64.0					
1	Noise Level dB(A)Leq -Night	22:00-23:00	51.6	50.2	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	50.8	48.6					
3		00:00- 01:00	49	48					
4		01:00-02:00	43.9	44.2					
5		02:00-03:00	43.5	43.7					
6		03:00-04:00	46.6	45					
7		04:00-05:00	44.7	44.1					
8		05:00-06:00	45	46					
		Leq Night	46.5	45.5					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants ANALYSED BY		 (Gaurav Kant) REVIEWED BY			 (Kumar vaibhav) Authorised Signatory				
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
---- End of Report ----									
Page -1 of 1									

Month & Year		12/2024		Cluster		Cluster XII		ULR No.		TC143212615500002395F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)									
Project				Sample Ref. No.		REM/BCCL/2026/01		Sampling Method		CMPDI/RI-II/LPM 22	
Sampling Stations		i		Moonidih UGP		Date of Sampling		14.01.26		29.01.26	
Sl. No.		Parameter		Hour / Time of day		Observed Values (in Leq dB(A))		Method of Analysis		Range Of Testing	
						First Fortnight		Second Fortnight		LDL	
										NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
										Zones	
										Limits in dB	
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	45	48	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50		
2		07:00 - 08:00	46.3	47.8							
3		08:00 - 09:00	50.6	54							
4		09:00 - 10:00	51.2	50.2							
5		10:00 - 11:00	52.4	53							
6		11:00 - 12:00	53.2	54.3							
7		12:00 - 13:00	53	57							
8		13:00 - 14:00	52	56							
9		14:00 - 15:00	53.8	53							
10		15:00 - 16:00	53	52							
11		16:00 - 17:00	50.2	51.1							
12		17:00 - 18:00	49	50							
13		18:00 - 19:00	47	52.1							
14		19:00 - 20:00	45	50.9							
15		20:00 - 21:00	44.2	48.9							
16		21:00 - 22:00	44	49							
		Leq Day	50.6	52.5							
1	Noise Level dB(A)Leq -Night	22:00-23:00	43.6	44	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50		
2		23:00- 00:00	42.1	43.2							
3		00:00- 01:00	44.2	45							
4		01:00-02:00	41.2	43							
5		02:00-03:00	40.1	44.2							
6		03:00-04:00	39	44.3							
7		04:00-05:00	38	40.3							
8		05:00-06:00	37	39							
		Leq Night	40.3	42.6							

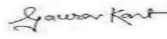
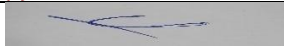
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
ANALYSED BY		

Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

---- End of Report ----

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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	01/2026	Cluster	Cluster XII					ULR No.	TC143212615500002395F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	05.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/01			Sampling Method		CMPDI/RI-II/LPM 22	
Sampling Stations	i	Murlidih(20/21)		Date of Sampling	06.01.26	20.01.26	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	49.4	49.3	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	49.5	49.7					
3		08:00 - 09:00	51.6	52.7					
4		09:00 - 10:00	50.9	51.8					
5		10:00 - 11:00	53.8	53.8					
6		11:00 - 12:00	54.3	53.9					
7		12:00 - 13:00	55.8	56.9					
8		13:00 - 14:00	56.2	56.3					
9		14:00 - 15:00	56.7	56.9					
10		15:00 - 16:00	57.8	58.9					
11		16:00 - 17:00	57.6	57.2					
12		17:00 - 18:00	55.2	55.2					
13		18:00 - 19:00	51.8	52.7					
14		19:00 - 20:00	51.5	51.8					
15		20:00 - 21:00	50.5	50.5					
16		21:00 - 22:00	50.3	50.2					
		Leq Day	54.2	54.6					
1	Noise Level dB(A)Leq -Night	22:00-23:00	39.4	39.6	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	39	39.5					
3		00:00- 01:00	38.7	39.2					
4		01:00-02:00	38.6	39.1					
5		02:00-03:00	38.5	38.7					
6		03:00-04:00	39	38.5					
7		04:00-05:00	39.2	39					
8		05:00-06:00	39.4	39.1					
		Leq Night	38.3	38.4					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants ANALYSED BY		 (Gaurav Kant) REVIEWED BY			 (Kumar vaibhav) Authorised Signatory				
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
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Page -1 of 1									

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 /min)
	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 clause 2.

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

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

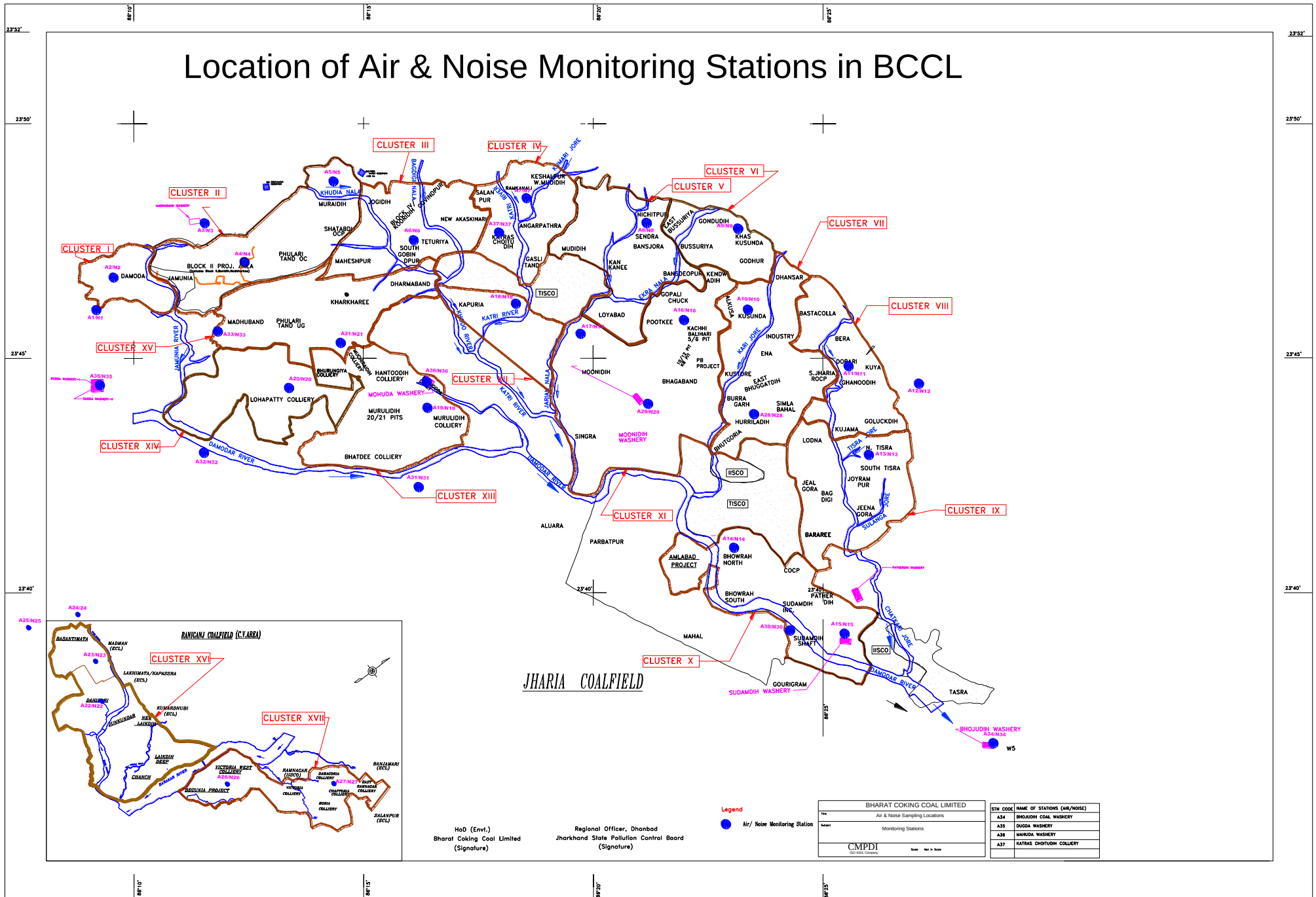
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO₂), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO₂), 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 PM₁₀, 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 (O₃) , 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 (NH₃), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C₆H₆), 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.

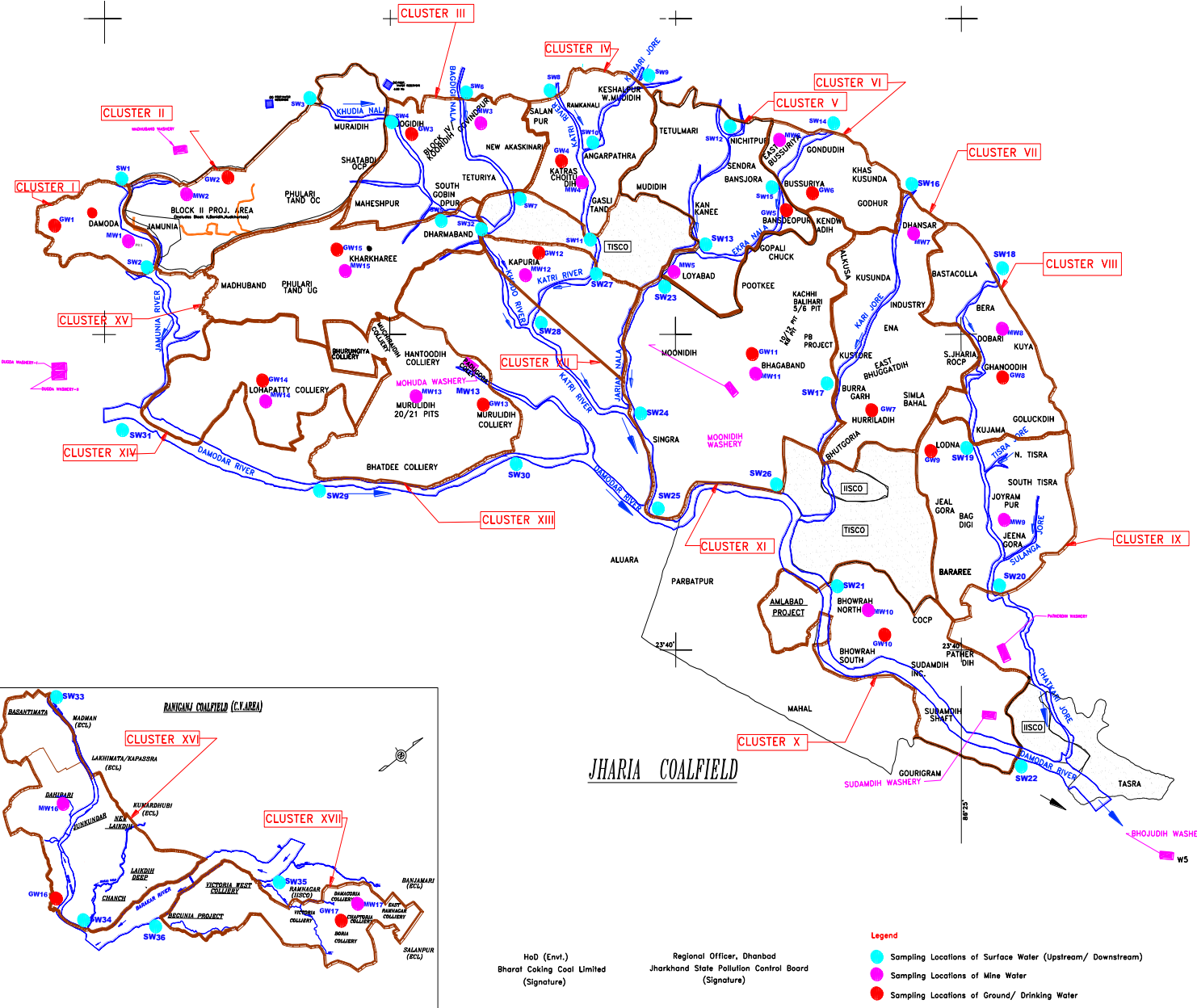
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they JUNE exceed the limits but not on two consecutive days of monitoring.

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

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

Cluster	Surface Water (JUS, DIS)	Name of River/Nala	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Damodar River	MW1	Damodar Area	GW1	Chutkai Village
II	SW3, SW4	Khudra Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudra Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kain River, Kuman Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudih	GW5	Nichtipur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansora Borewell
VII	SW16, SW17	Kain Jore	MW7	Bhansar UGP	GW7	Huriladih
VIII	SW18, SW19	Kain Jore	MW8	Dobari UGP	GW8	Ghanudih
IX	SW19, SW20	Kain Jore	MW9	Jewagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband UGP	GW11	Bhagabandh
XII	SW27, SW28	Kain River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Murudih (20/21)	GW13	Murudih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW33, SW34	Khudra Nala	MW15	Kharkhar UGP	GW15	Kharkhar
XVI	SW35, SW36	Khudra River	MW16	Dahibani OCP	GW16	Palabani Village
XVII	SW37, SW38	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

HoD (Env.)
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
Scale	Not to Scale

CMPDI
COAL MINING PROJECTS DEVELOPMENT INSTITUTE

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

(FOR THE MONTH FEBRUARY, 2026)

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



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.

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 (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂)

and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM_{2.5} sampler) were used for sampling of PM₁₀, SO₂, & 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 '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 PM₁₀, PM_{2.5}, SO₂ 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 PM₁₀ & 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 PM₁₀, PM_{2.5}, SO₂, NO_x 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° 45' 26.60" N & 86° 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° 47' 54.00" N & 86° 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° 44' 30.00" N & 86° 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° 43' 51.82" N & 86° 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



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

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DHANBAD. -826005
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Test Report for Ambient Air Samples

Month & Year		02/2026	Cluster	Cluster XII			ULR No.	TC1432126000002413F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	20.03.2026
Project		Rudhi Basti	Sample Ref. No.	REM/BCCL/2026/02	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		02.02.26	16.02.26	Period of Analysis	02.02.26	10.03.26	Zone of Station:	Core Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009
			A5256	A5334				
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	93	95	90	92	90	92
2	PM _{2.5}	IS -5182(Part 24):2019	49	54	37	45	37	45
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	<10	<10	<10	<10
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	17	21	21	22	21	22

Environmental Condition : Sunny

18* LDL indicates Lower Detection Limit,

****All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,**

ANALYSED BY

Gaurav Kant
(Gaurav Kant)
REVIEWED BY

(Kumar vaibhav)
Authorised Signatory

Note: The results above relate to the samples tested as received. This report cannot be reproduced in part or full without the written permission of the HOD(Env), CMPDI, RI-II.

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Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

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Test Report for Ambient Air Samples

Month & Year		02/2026	Cluster	Cluster XII				ULR No.	TC1432126000002413F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	20.03.2026
Project		Block IV		Sample Ref. No.	REM/BCCL/2026/02	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		12.02.26		26.02.26	Period of Analysis	12.02.26	10.03.26	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009	
			A5316	A5394					
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	109	93	10 µg/m³ - 1000 µg/m³	10 µg/m³	300	100	
2	PM _{2.5}	IS -5182(Part 24):2019	54	46	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60	
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80	
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	15	33	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80	

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

[Signature]

ANALYSED BY

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(Gaurav Kant)
REVIEWED BY

[Signature]

(Kumar vaibhav)
Authorised Signatory

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Ambient Air Quality Test Report

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Test Report for Ambient Air Samples

Month & Year		02/2026	Cluster	Cluster XII			ULR No.	TC1432126000002413F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	20.03.2026
Project		Moonidih UGP		Sample Ref. No.	REM/BCCL/2026/02	Sampling Method	CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		13.02.26		27.02.26	Period of Analysis	13.02.26	10.03.26	Zone of Station: Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009
			A5328	A5406				
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	113	106	10 µg/m³ - 1000 µg/m³	10 µg/m ³⁰⁵	300	100
2	PM _{2.5}	IS -5182(Part 24):2019	58	61	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	11	13	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	32	21	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

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ANALYSED BY

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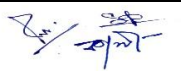
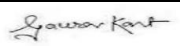
(Gaurav Kant)
REVIEWED BY

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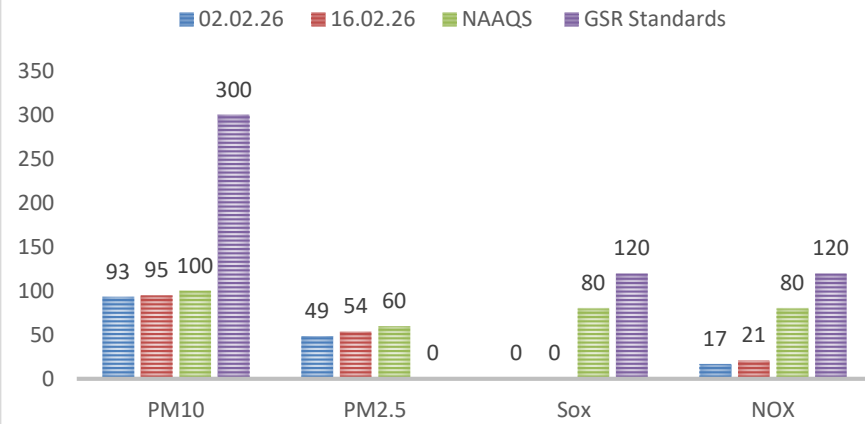
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Authorised Signatory

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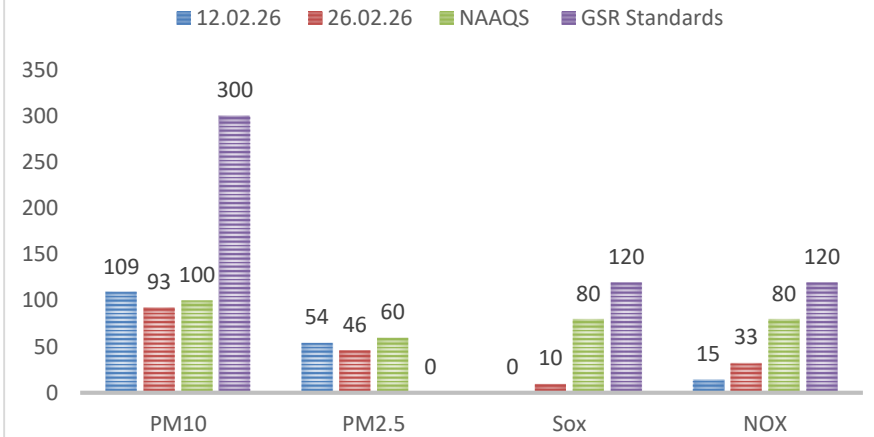
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 TC-14321  cmpdi A Mine Rules Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in										
Test Report for Ambient Air Samples										
Month & Year		02/2026	Cluster		Cluster XII			ULR No.		TC1432126000002413F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue		20.03.2026	
Project		Murlidih 20/21 Pit	Sample Ref. No.		REM/BCCL/2026/02	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)		
Date of Sampling		05.02.26	19.02.26	Period of Analysis		05.02.26	10.03.26	Zone of Station: Buffer Zone		
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009		
			A5276	A5354						
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	140	130	10 $\mu\text{g}/\text{m}^3$ - 1000 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	300	100		
2	PM _{2.5}	IS -5182(Part 24):2019	71	66	10 $\mu\text{g}/\text{m}^3$ - 400 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	Not Specified	60		
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	10	10 $\mu\text{g}/\text{m}^3$ - 1050 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	120	80		
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	12	19	06 $\mu\text{g}/\text{m}^3$ - 420 $\mu\text{g}/\text{m}^3$	06 $\mu\text{g}/\text{m}^3$	120	80		
<i>Environmental Condition : Sunny</i>										
<i>* LDL indicates Lower Detection Limit,</i>										
<i>**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,</i>										
 ANALYSED BY			 (Gaurav Kant) REVIEWED BY			 (Kumar vaibhav) Authorised Signatory				
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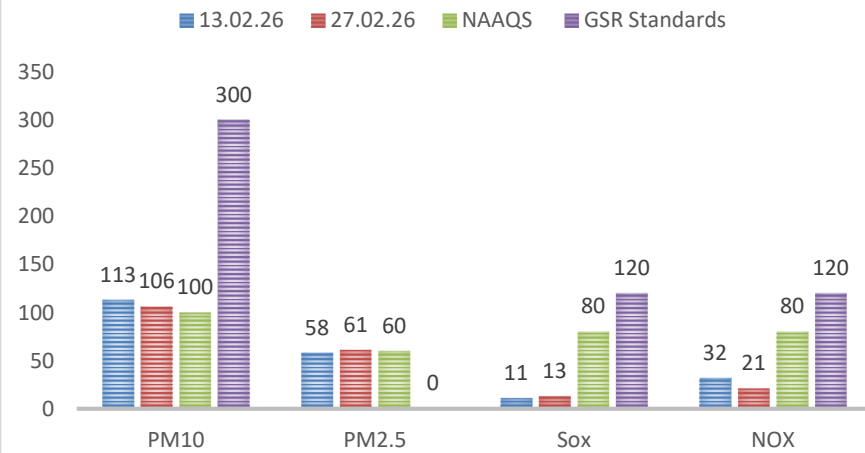
AMBIENT AIR QUALITY AT RUDHI BASTI



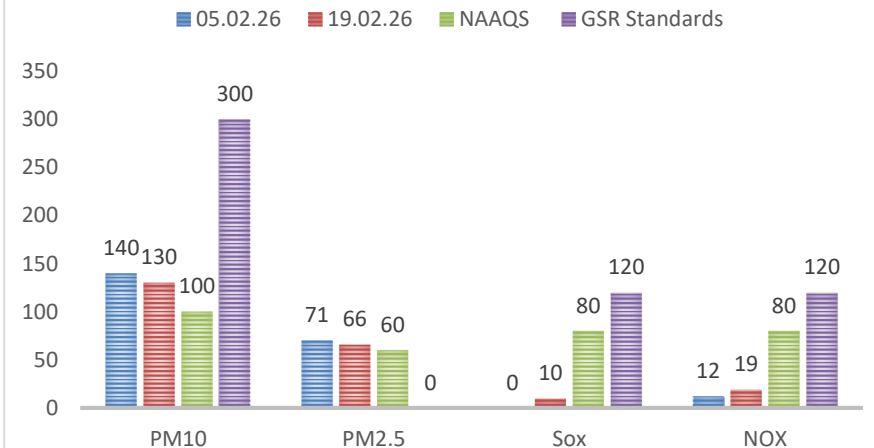
AMBIENT AIR QUALITY AT BLOCK IV



AMBIENT AIR QUALITY AT MOONIDIH UGP



AMBIENT AIR QUALITY AT MURLIDIH 20/21 PIT



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 during day time & night time. Noise levels were measured for the complete day & night time, the Intergration time taken was one hour or 3600 seconds. 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 & night time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day & night 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.



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Noise Level Test Report

CMPDI, RI-II
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Month & Year	02/2026	Cluster	Cluster XII				ULR No.	TC143212600002446F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	20.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/02			Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Rudhi Basti	Date of Sampling	02.02.26	16.02.26	Zone Category of Station:	Core Zone		
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
								Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	42.2	45.6	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 Db (A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	45.3	45.5					
3		08:00 - 09:00	46.4	49.8					
4		09:00 - 10:00	42.9	44.5					
5		10:00 - 11:00	47.7	52.1					
6		11:00 - 12:00	51.2	54.6					
7		12:00 - 13:00	49.2	50.7					
8		13:00 - 14:00	50.4	54.3					
9		14:00 - 15:00	52.4	51.6					
10		15:00 - 16:00	54.4	54.7					
11		16:00 - 17:00	50.1	49.9					
12		17:00 - 18:00	47.8	48.1					
13		18:00 - 19:00	42.2	43.3					
14		19:00 - 20:00	42.7	42.9					
15		20:00 - 21:00	40.4	41.1					
16		21:00 - 22:00	40.3	41.2					
		Leq Day	48.6	50.3					
1	Noise Level dB(A)Leq -Night	22:00-23:00	42	42.8	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB (A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	42.1	42.7					
3		00:00- 01:00	41.5	41.6					
4		01:00-02:00	41.5	41.1					
5		02:00-03:00	41.1	40.9					
6		03:00-04:00	41.3	42.5					
7		04:00-05:00	41.4	42.4					
8		05:00-06:00	41.5	42.4					
		Leq Night	41.6	42.1					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

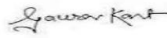
Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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Month & Year	02/2026	Cluster	Cluster XII					ULR No.	TC1432126000002446F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)								Date of Issue	20.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/02			Sampling Method	CMPDI/RI-II/LPM 22			
Sampling Stations	i	Block IV		Date of Sampling	12.02.26	26.02.26	Zone Category of Station:	Buffer Zone		
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards		
								Zones	Limits in dB	
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	50.4	49.2	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50	
2		07:00 - 08:00	54.2	53.3						
3		08:00 - 09:00	55.1	54.2						
4		09:00 - 10:00	58.3	57.5						
5		10:00 - 11:00	57.9	57						
6		11:00 - 12:00	59.1	58.6						
7		12:00 - 13:00	58.7	57.5						
8		13:00 - 14:00	59	59.7						
9		14:00 - 15:00	59.4	58.5						
10		15:00 - 16:00	62.1	55.3						
11		16:00 - 17:00	62.8	62.6						
12		17:00 - 18:00	63.6	63.4						
13		18:00 - 19:00	62.4	58.5						
14		19:00 - 20:00	62	61.4						
15		20:00 - 21:00	55.9	55						
16		21:00 - 22:00	49.5	48.1						
		Leq Day	59.7	58.5						
1	Noise Level dB(A)Leq -Night	22:00-23:00	50.3	49	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50	
2		23:00- 00:00	49.5	47.4						
3		00:00- 01:00	47.8	46.8						
4		01:00-02:00	42.7	43						
5		02:00-03:00	42.3	42.5						
6		03:00-04:00	45.5	43.9						
7		04:00-05:00	43.5	42.9						
8		05:00-06:00	43.9	44.9						
		Leq Night	46.7	45.7						

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

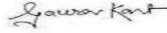
Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDI, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	12/2024	Cluster	Cluster XII					ULR No.	TC1432126000002446F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	20.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/02		Sampling Method		CMPDI/RI-II/LPM 22		
Sampling Stations	i	Moonidih UGP		Date of Sampling	13.02.26	27.02.26	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	49.1	53.4	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	50.2	52.1					
3		08:00 - 09:00	51.1	53.9					
4		09:00 - 10:00	52.3	56.2					
5		10:00 - 11:00	53.1	56.4					
6		11:00 - 12:00	58.3	59.2					
7		12:00 - 13:00	59.1	61.3					
8		13:00 - 14:00	62.3	60.1					
9		14:00 - 15:00	56.1	64.7					
10		15:00 - 16:00	50.1	58.3					
11		16:00 - 17:00	47.2	56.3					
12		17:00 - 18:00	46.1	55.1					
13		18:00 - 19:00	45.2	54.2					
14		19:00 - 20:00	45	52					
15		20:00 - 21:00	44.2	48.2					
16		21:00 - 22:00	43.6	49.3					
		Leq Day	54.6	57.8					
1	Noise Level dB(A)Leq - Night	22:00-23:00	44.1	44.8	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	45.3	46.3					
3		00:00- 01:00	46.4	45.3					
4		01:00-02:00	45.1	46.7					
5		02:00-03:00	42.2	48.2					
6		03:00-04:00	41.8	44.6					
7		04:00-05:00	44.5	45.2					
8		05:00-06:00	44.9	44.9					
		Leq Night	44.5	45.9					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants		 (Gaurav Kant) ANALYSED BY				 (Kumar vaibhav) REVIEWED BY Authorised Signatory			
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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	02/2026	Cluster	Cluster XII					ULR No.	TC1432126000002446F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	20.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/02			Sampling Method		CMPDI/RI-II/LPM 22	
Sampling Stations	i	Murlidih(20/21)		Date of Sampling	05.02.26	19.02.26	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	45.6	45.5	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	48.6	45.9					
3		08:00 - 09:00	51.9	48.6					
4		09:00 - 10:00	50.6	47.9					
5		10:00 - 11:00	52.1	49.7					
6		11:00 - 12:00	54.7	49.7					
7		12:00 - 13:00	51.5	52.5					
8		13:00 - 14:00	55.9	52					
9		14:00 - 15:00	52.3	52.5					
10		15:00 - 16:00	56.7	54.3					
11		16:00 - 17:00	53.2	52.7					
12		17:00 - 18:00	51	51					
13		18:00 - 19:00	47.9	48.6					
14		19:00 - 20:00	47.6	47.9					
15		20:00 - 21:00	46.6	46.6					
16		21:00 - 22:00	46.4	46.3					
		Leq Day	52.0	50.3					
1	Noise Level dB(A)Leq -Night	22:00-23:00	40.7	38.6	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	39.8	38.5					
3		00:00- 01:00	42.6	38.2					
4		01:00-02:00	41.8	38.1					
5		02:00-03:00	39.7	37.7					
6		03:00-04:00	38	37.5					
7		04:00-05:00	38.2	38					
8		05:00-06:00	38.4	38.1					
		Leq Night	40.2	38.1					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants ANALYSED BY		 (Gaurav Kant) REVIEWED BY		 (Kumar vaibhav) Authorised Signatory					
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
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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 /min)
	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 clause 2.

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

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

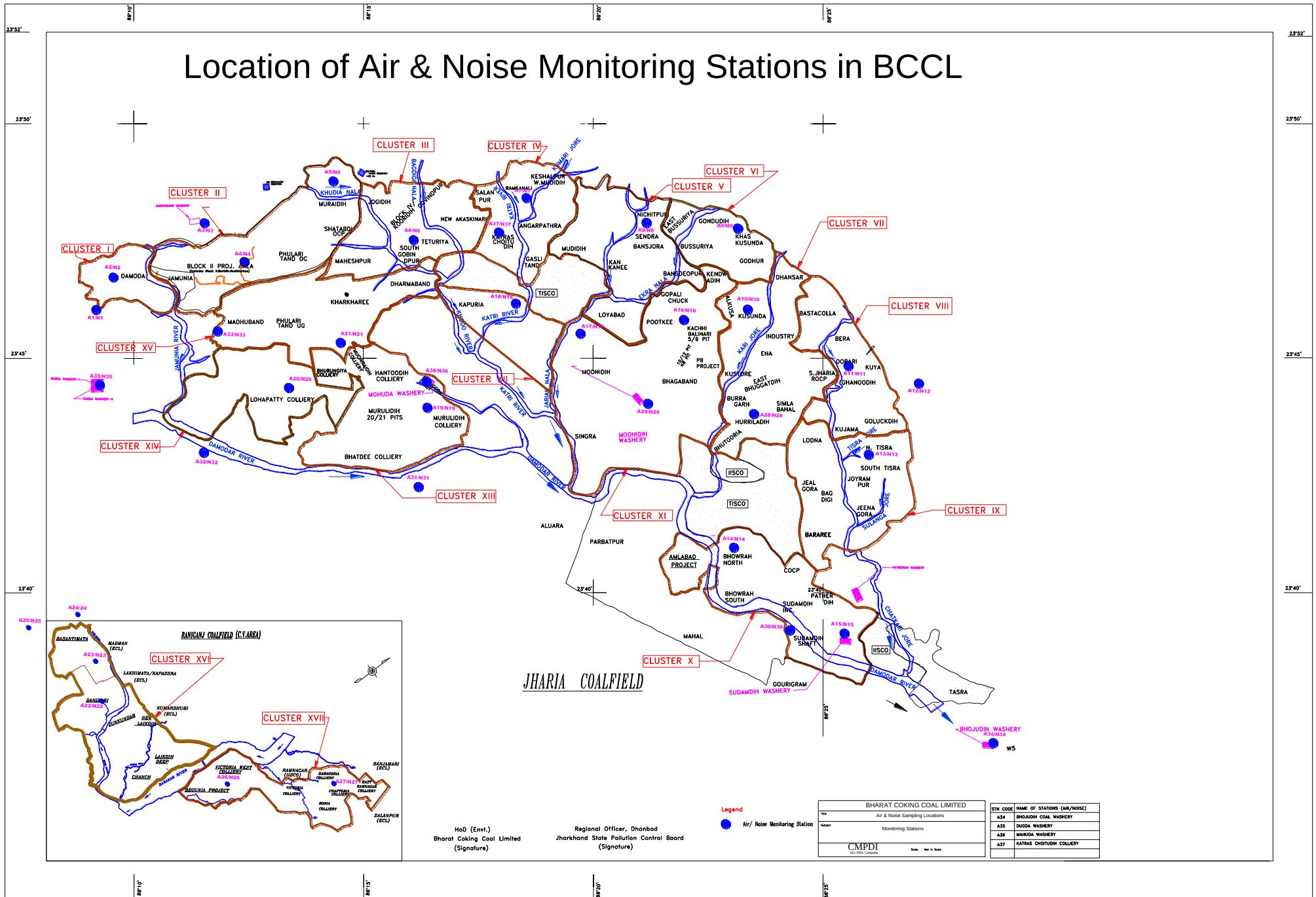
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO₂), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO₂), 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 PM₁₀, 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 (O₃) , 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 (NH₃), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C₆H₆), 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.

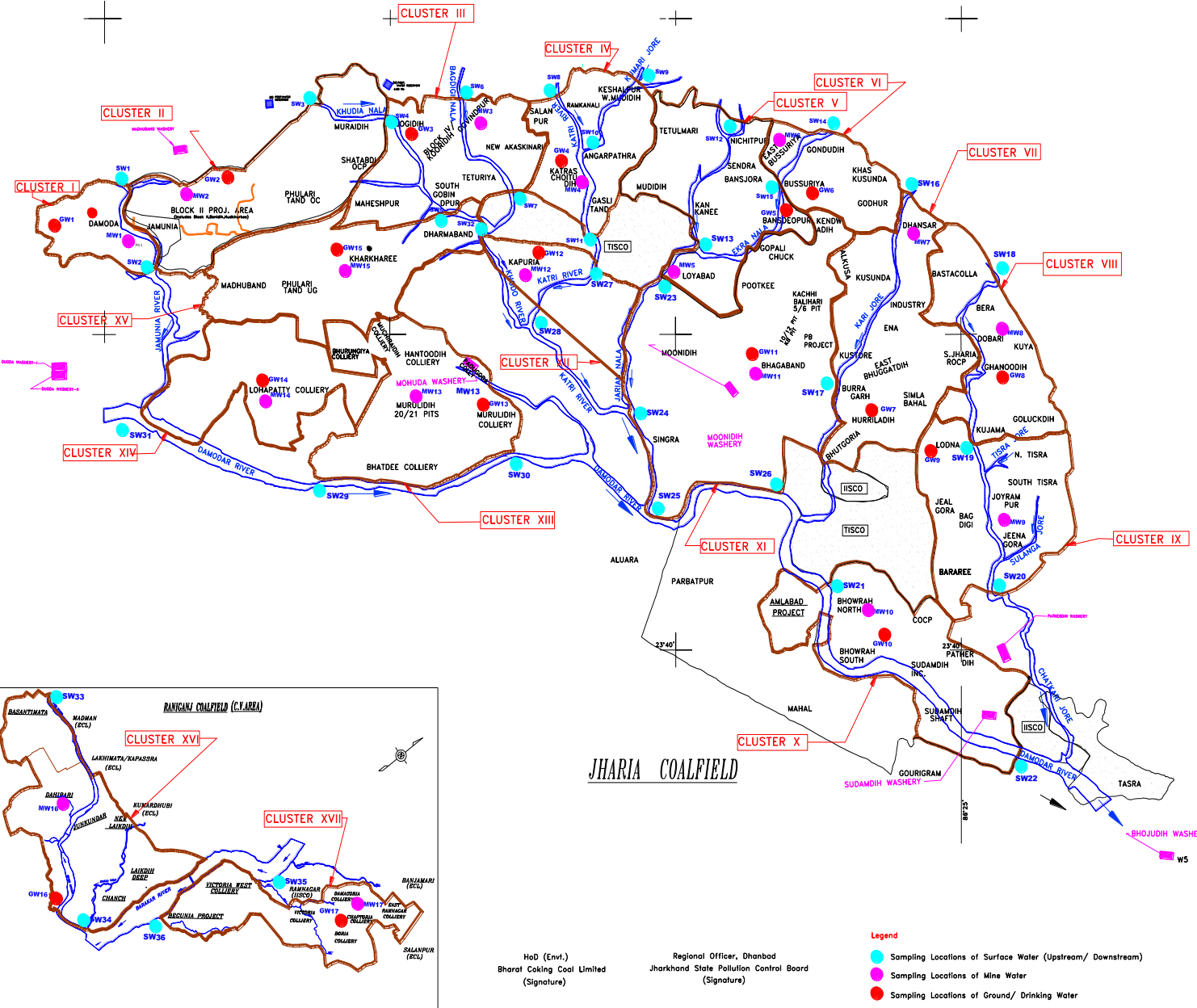
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they JUNE exceed the limits but not on two consecutive days of monitoring.

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

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

Cluster	Surface Water (JUS, DIS)	Name of River/Nala/Jore	Mine/Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Damunia River	MW1	Damoda Area	GW1	Chutkai Village
II	SW3, SW4	Khudra Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudra Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kain River, Kuman Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudih	GW5	Nichtipur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansora Borewell
VII	SW16, SW17	Kain Jore	MW7	Bhansar UGP	GW7	Huriladih
VIII	SW18, SW19	Kain Jore	MW8	Doban UGP	GW8	Ghanudih
IX	SW19, SW20	Kain Jore	MW9	Jewagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband UGP	GW11	Bhagaband
XII	SW27, SW28	Kain River	MW12	Kapuria	GW12	Kapuria
XIII	SW29, SW30	Damodar River	MW13	Muridih (20/21)	GW13	Muridih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW33, SW34	Khudra Nala	MW15	Kharkhar UGP	GW15	Kharkhar
XVI	SW35, SW36	Khudra River	MW16	Dahiban OCP	GW16	Palabani Village
XVII	SW37, SW38	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

Legend

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

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

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

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

CMPDI
COAL MINING PROJECTS DEVELOPMENT INSTITUTE

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

(FOR THE MONTH FEBRUARY, 2026)

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



CMPDI

ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

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4.	CHAPTER-IV	STANDARDS AND PLANS	19-20

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.

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 (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂)

and Nitrogen Oxides (NO_x). Respirable Dust Samplers (RDS) and Fine Dust Sampler (PM_{2.5} sampler) were used for sampling of PM₁₀, SO₂, & 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 '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 PM₁₀, PM_{2.5}, SO₂ 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 PM₁₀ & 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 PM₁₀, PM_{2.5}, SO₂, NO_x 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° 45' 26.60" N & 86° 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° 47' 54.00" N & 86° 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° 44' 30.00" N & 86° 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° 43' 51.82" N & 86° 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



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDIL, RI-II
KOYLA BHAWAN COMPLEX
DHANBAD. -826005
Phone:0326-223-850
email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		02/2026	Cluster	Cluster XII			ULR No.	TC1432126000002413F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	20.03.2026
Project		Rudhi Basti	Sample Ref. No.	REM/BCCL/2026/02	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		02.02.26	16.02.26	Period of Analysis	02.02.26	10.03.26	Zone of Station:	Core Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009
			A5256	A5334				
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	93	95	90	92	90	92
2	PM _{2.5}	IS -5182(Part 24):2019	49	54	37	45	37	45
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	<10	<10	<10	<10	<10
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	17	21	21	22	21	22

Environmental Condition : Sunny

18* LDL indicates Lower Detection Limit,

****All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,**

ANALYSED BY

(Gaurav Kant)
REVIEWED BY

(Kumar vaibhav)
Authorised Signatory

Note: The results above relate to the samples tested as received. This report cannot be reproduced in part or full without the written permission of the HOD(Env), CMPDI, RI-II.

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		02/2026	Cluster	Cluster XII			ULR No.	TC1432126000002413F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	20.03.2026	
Project		Block IV		Sample Ref. No.	REM/BCCL/2026/02	Sampling Method		CMPDI/RI-II/LPM 13 , (IS 5182)	
Date of Sampling		12.02.26		26.02.26	Period of Analysis	12.02.26	10.03.26	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009	
			A5316	A5394					
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	109	93	10 µg/m³ - 1000 µg/m³	10 µg/m³	300	100	
2	PM _{2.5}	IS -5182(Part 24):2019	54	46	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60	
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	10	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80	
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	15	33	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80	

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

[Signature]

ANALYSED BY

[Signature]

(Gaurav Kant)
REVIEWED BY

[Signature]

(Kumar vaibhav)
Authorised Signatory

Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env), CMPDI, RI-II.

---- End of Report ----

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Air Quality Test Report

CMPDIL, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Test Report for Ambient Air Samples

Month & Year		02/2026	Cluster	Cluster XII			ULR No.	TC1432126000002413F	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue	20.03.2026	
Project		Moonidih UGP		Sample Ref. No.	REM/BCCL/2026/02	Sampling Method	CMPDI/RI-II/LPM 13 , (IS 5182)		
Date of Sampling		13.02.26		27.02.26	Period of Analysis	13.02.26	10.03.26	Zone of Station:	Buffer Zone
Sl. No.	Parameter	Method of Analysis	Observed Values (in µg/m³)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009	
			A5328	A5406					
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	113	106	10 µg/m³ - 1000 µg/m³	10 µg/m ³⁰⁵	300	100	
2	PM _{2.5}	IS -5182(Part 24):2019	58	61	10 µg/m³ - 400 µg/m³	10 µg/m³	Not Specified	60	
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	11	13	10 µg/m³ - 1050 µg/m³	10 µg/m³	120	80	
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	32	21	06 µg/m³ - 420 µg/m³	06 µg/m³	120	80	

Environmental Condition : Sunny

** LDL indicates Lower Detection Limit,*

***All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,*

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ANALYSED BY

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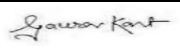
(Gaurav Kant)
REVIEWED BY

[Signature]

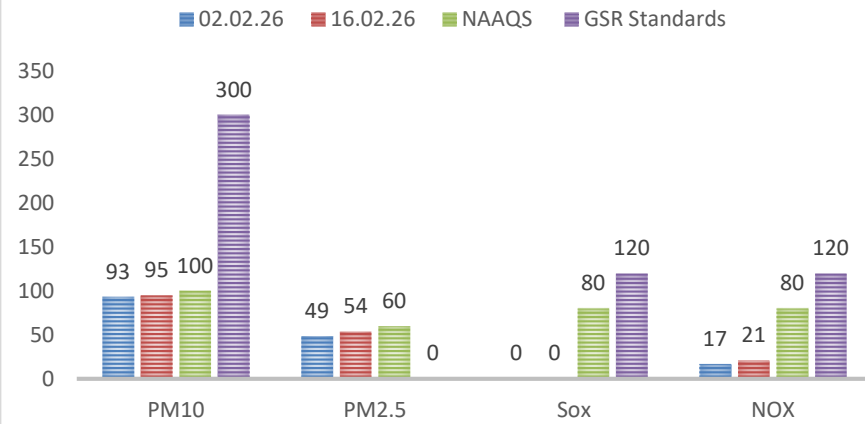
(Kumar vaibhav)
Authorised Signatory

Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

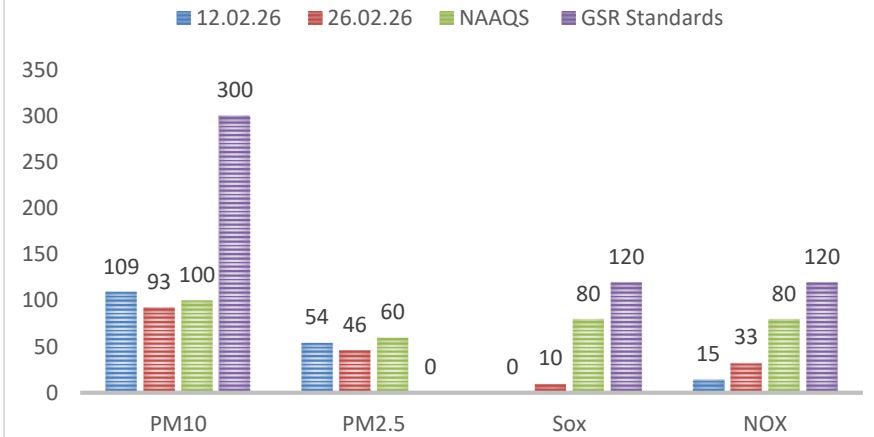
---- End of Report ----

 TC-14321  cmpdi A Mine Rules Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Air Quality Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in										
Test Report for Ambient Air Samples										
Month & Year		02/2026	Cluster		Cluster XII			ULR No.		TC1432126000002413F
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)					Date of Issue		20.03.2026	
Project		Murlidih 20/21 Pit	Sample Ref. No.		REM/BCCL/2026/02	Sampling Method		CMPDI/RI-II/LPM 13, (IS 5182)		
Date of Sampling		05.02.26	19.02.26	Period of Analysis		05.02.26	10.03.26	Zone of Station: Buffer Zone		
Sl. No.	Parameter	Method of Analysis	Observed Values (in $\mu\text{g}/\text{m}^3$)		Range Of Testing	LDL	MoEF Standards Notification dated 25th September,2000 (GSR 742 E)	NAAQS, 2009		
			A5276	A5354						
1	PM ₁₀	IS -5182(Part 23):2006, R-2017	140	130	10 $\mu\text{g}/\text{m}^3$ - 1000 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	300	100		
2	PM _{2.5}	IS -5182(Part 24):2019	71	66	10 $\mu\text{g}/\text{m}^3$ - 400 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	Not Specified	60		
3	SO ₂	IS-5182(Part-2): 2001 , R-2017	<10	10	10 $\mu\text{g}/\text{m}^3$ - 1050 $\mu\text{g}/\text{m}^3$	10 $\mu\text{g}/\text{m}^3$	120	80		
4	NO ₂	IS-5182 (Part-6): 2006 , R-2017	12	19	06 $\mu\text{g}/\text{m}^3$ - 420 $\mu\text{g}/\text{m}^3$	06 $\mu\text{g}/\text{m}^3$	120	80		
<i>Environmental Condition : Sunny</i>										
<i>* LDL indicates Lower Detection Limit,</i>										
<i>**All units are in $\mu\text{g}/\text{m}^3$, 24 hourly Average,</i>										
 ANALYSED BY			 REVIEWED BY (Gaurav Kant)			 Authorised Signatory (Kumar vaibhav)				
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.										
---- End of Report ----										
Page -1 of 1										

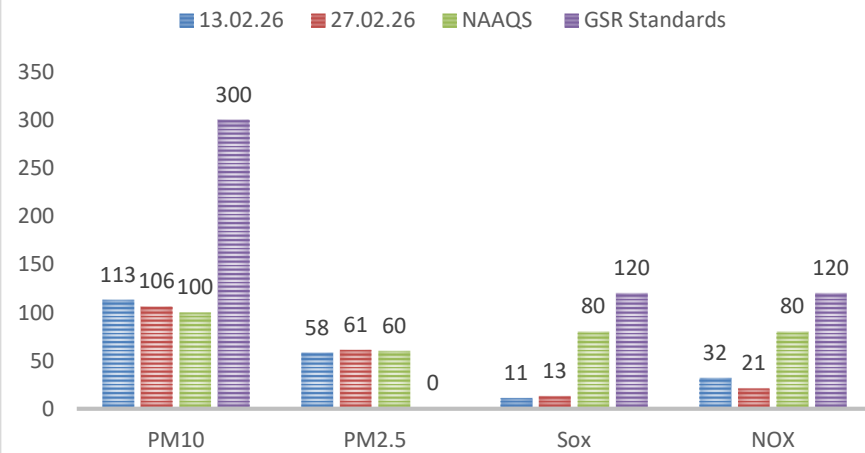
AMBIENT AIR QUALITY AT RUDHI BASTI



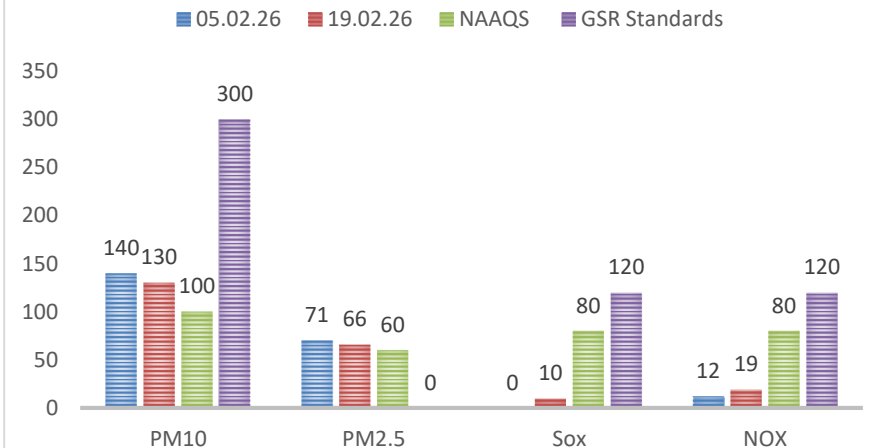
AMBIENT AIR QUALITY AT BLOCK IV



AMBIENT AIR QUALITY AT MOONIDIH UGP



AMBIENT AIR QUALITY AT MURLIDIH 20/21 PIT



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 during day time & night time. Noise levels were measured for the complete day & night time, the Intergration time taken was one hour or 3600 seconds. 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 & night time and the observed values were compared with standards prescribed by MoEF&CC. The results of Noise levels recorded during day & night 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.



CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
Ambient Noise Level Test Report

CMPDI, RI-II
 KOYLA BHAWAN COMPLEX
 DHANBAD. -826005
 Phone:0326-223-850
 email: rdri2cmpdi@coalindia.in

Month & Year	02/2026	Cluster	Cluster XII				ULR No.	TC143212600002446F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	20.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/02			Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Rudhi Basti	Date of Sampling	02.02.26	16.02.26	Zone Category of Station:	Core Zone		
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
								Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	42.2	45.6	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 Db (A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	45.3	45.5					
3		08:00 - 09:00	46.4	49.8					
4		09:00 - 10:00	42.9	44.5					
5		10:00 - 11:00	47.7	52.1					
6		11:00 - 12:00	51.2	54.6					
7		12:00 - 13:00	49.2	50.7					
8		13:00 - 14:00	50.4	54.3					
9		14:00 - 15:00	52.4	51.6					
10		15:00 - 16:00	54.4	54.7					
11		16:00 - 17:00	50.1	49.9					
12		17:00 - 18:00	47.8	48.1					
13		18:00 - 19:00	42.2	43.3					
14		19:00 - 20:00	42.7	42.9					
15		20:00 - 21:00	40.4	41.1					
16		21:00 - 22:00	40.3	41.2					
		Leq Day	48.6	50.3					
1	Noise Level dB(A)Leq -Night	22:00-23:00	42	42.8	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB (A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	42.1	42.7					
3		00:00- 01:00	41.5	41.6					
4		01:00-02:00	41.5	41.1					
5		02:00-03:00	41.1	40.9					
6		03:00-04:00	41.3	42.5					
7		04:00-05:00	41.4	42.4					
8		05:00-06:00	41.5	42.4					
		Leq Night	41.6	42.1					

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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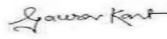
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.

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  CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in										
Month & Year	02/2026	Cluster	Cluster XII					ULR No.	TC1432126000002446F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)								Date of Issue	20.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/02			Sampling Method	CMPDI/RI-II/LPM 22			
Sampling Stations	i	Block IV	Date of Sampling		12.02.26	26.02.26	Zone Category of Station:	Buffer Zone		
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A)) First Fortnight	Observed Values (in Leq dB(A)) Second Fortnight	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards		
								Zones	Limits in dB	
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	50.4	49.2	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50	
2		07:00 - 08:00	54.2	53.3						
3		08:00 - 09:00	55.1	54.2						
4		09:00 - 10:00	58.3	57.5						
5		10:00 - 11:00	57.9	57						
6		11:00 - 12:00	59.1	58.6						
7		12:00 - 13:00	58.7	57.5						
8		13:00 - 14:00	59	59.7						
9		14:00 - 15:00	59.4	58.5						
10		15:00 - 16:00	62.1	55.3						
11		16:00 - 17:00	62.8	62.6						
12		17:00 - 18:00	63.6	63.4						
13		18:00 - 19:00	62.4	58.5						
14		19:00 - 20:00	62	61.4						
15		20:00 - 21:00	55.9	55						
16		21:00 - 22:00	49.5	48.1						
		Leq Day	59.7	58.5						
1	Noise Level dB(A)Leq -Night	22:00-23:00	50.3	49	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50	
2		23:00- 00:00	49.5	47.4						
3		00:00- 01:00	47.8	46.8						
4		01:00-02:00	42.7	43						
5		02:00-03:00	42.3	42.5						
6		03:00-04:00	45.5	43.9						
7		04:00-05:00	43.5	42.9						
8		05:00-06:00	43.9	44.9						
		Leq Night	46.7	45.7						

**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit

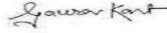
Sampling Assistants ANALYSED BY	 (Gaurav Kant) REVIEWED BY	 (Kumar vaibhav) Authorised Signatory
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 TC-14321  cmpdi A Mini Ratna Company CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report CMPDI, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in									
Month & Year	12/2024	Cluster	Cluster XII					ULR No.	TC1432126000002446F
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)							Date of Issue	20.03.2026
Project		Sample Ref. No.	REM/BCCL/2026/02		Sampling Method		CMPDI/RI-II/LPM 22		
Sampling Stations	i	Moonidih UGP		Date of Sampling	13.02.26	27.02.26	Zone Category of Station:		Buffer Zone
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	49.1	53.4	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	50.2	52.1					
3		08:00 - 09:00	51.1	53.9					
4		09:00 - 10:00	52.3	56.2					
5		10:00 - 11:00	53.1	56.4					
6		11:00 - 12:00	58.3	59.2					
7		12:00 - 13:00	59.1	61.3					
8		13:00 - 14:00	62.3	60.1					
9		14:00 - 15:00	56.1	64.7					
10		15:00 - 16:00	50.1	58.3					
11		16:00 - 17:00	47.2	56.3					
12		17:00 - 18:00	46.1	55.1					
13		18:00 - 19:00	45.2	54.2					
14		19:00 - 20:00	45	52					
15		20:00 - 21:00	44.2	48.2					
16		21:00 - 22:00	43.6	49.3					
		Leq Day	54.6	57.8					
1	Noise Level dB(A)Leq - Night	22:00-23:00	44.1	44.8	CPCB, Protocol for Ambient Level Noise Monitoring - 2015	35 dB-135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	45.3	46.3					
3		00:00- 01:00	46.4	45.3					
4		01:00-02:00	45.1	46.7					
5		02:00-03:00	42.2	48.2					
6		03:00-04:00	41.8	44.6					
7		04:00-05:00	44.5	45.2					
8		05:00-06:00	44.9	44.9					
		Leq Night	44.5	45.9					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants		 (Gaurav Kant) ANALYSED BY				 (Kumar vaibhav) REVIEWED BY Authorised Signatory			
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
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 		CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED Environment Laboratory, Regional Institute-II Ambient Noise Level Test Report				CMPDIL, RI-II KOYLA BHAWAN COMPLEX DHANBAD. -826005 Phone:0326-223-850 email: rdri2cmpdi@coalindia.in			
Month & Year	02/2026	Cluster	Cluster XII				ULR No.	TC1432126000002446F	
Customer	Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	20.03.2026	
Project			Sample Ref. No.	REM/BCCL/2026/02		Sampling Method	CMPDI/RI-II/LPM 22		
Sampling Stations	i	Murlidih(20/21)		Date of Sampling	05.02.26	19.02.26	Zone Category of Station:	Buffer Zone	
Sl. No.	Parameter	Hour / Time of day	Observed Values (in Leq dB(A))	Observed Values (in Leq dB(A))	Method of Analysis	Range Of Testing	LDL	NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 Standards	
			First Fortnight	Second Fortnight				Zones	Limits in dB
1	Noise Level dB(A)Leq - Day	06:00 - 07:00	45.6	45.5	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	75 65 55 50
2		07:00 - 08:00	48.6	45.9					
3		08:00 - 09:00	51.9	48.6					
4		09:00 - 10:00	50.6	47.9					
5		10:00 - 11:00	52.1	49.7					
6		11:00 - 12:00	54.7	49.7					
7		12:00 - 13:00	51.5	52.5					
8		13:00 - 14:00	55.9	52					
9		14:00 - 15:00	52.3	52.5					
10		15:00 - 16:00	56.7	54.3					
11		16:00 - 17:00	53.2	52.7					
12		17:00 - 18:00	51	51					
13		18:00 - 19:00	47.9	48.6					
14		19:00 - 20:00	47.6	47.9					
15		20:00 - 21:00	46.6	46.6					
16		21:00 - 22:00	46.4	46.3					
		Leq Day	52.0	50.3					
1	Noise Level dB(A)Leq -Night	22:00-23:00	40.7	38.6	CPCB, Protocol for Ambient Level Noise Monitoring -2015	35 dB- 135 dB	35 dB(A)	Industrial Commercial Residential Silence	70 55 45 50
2		23:00- 00:00	39.8	38.5					
3		00:00- 01:00	42.6	38.2					
4		01:00-02:00	41.8	38.1					
5		02:00-03:00	39.7	37.7					
6		03:00-04:00	38	37.5					
7		04:00-05:00	38.2	38					
8		05:00-06:00	38.4	38.1					
		Leq Night	40.2	38.1					
**All noise measurements are integrated for a 01 hour period, All units in dB(A) *LDL indicates Lower Detection Limit									
Sampling Assistants ANALYSED BY		 (Gaurav Kant) REVIEWED BY		 (Kumar vaibhav) Authorised Signatory					
Note: The results above relate to the samples tested as received. This report can not be reproduced in part or full without the written permission of the HOD(Env) , CMPDI, RI-II.									
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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 /min)
	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 clause 2.

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

New Delhi the 18th November 2009

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

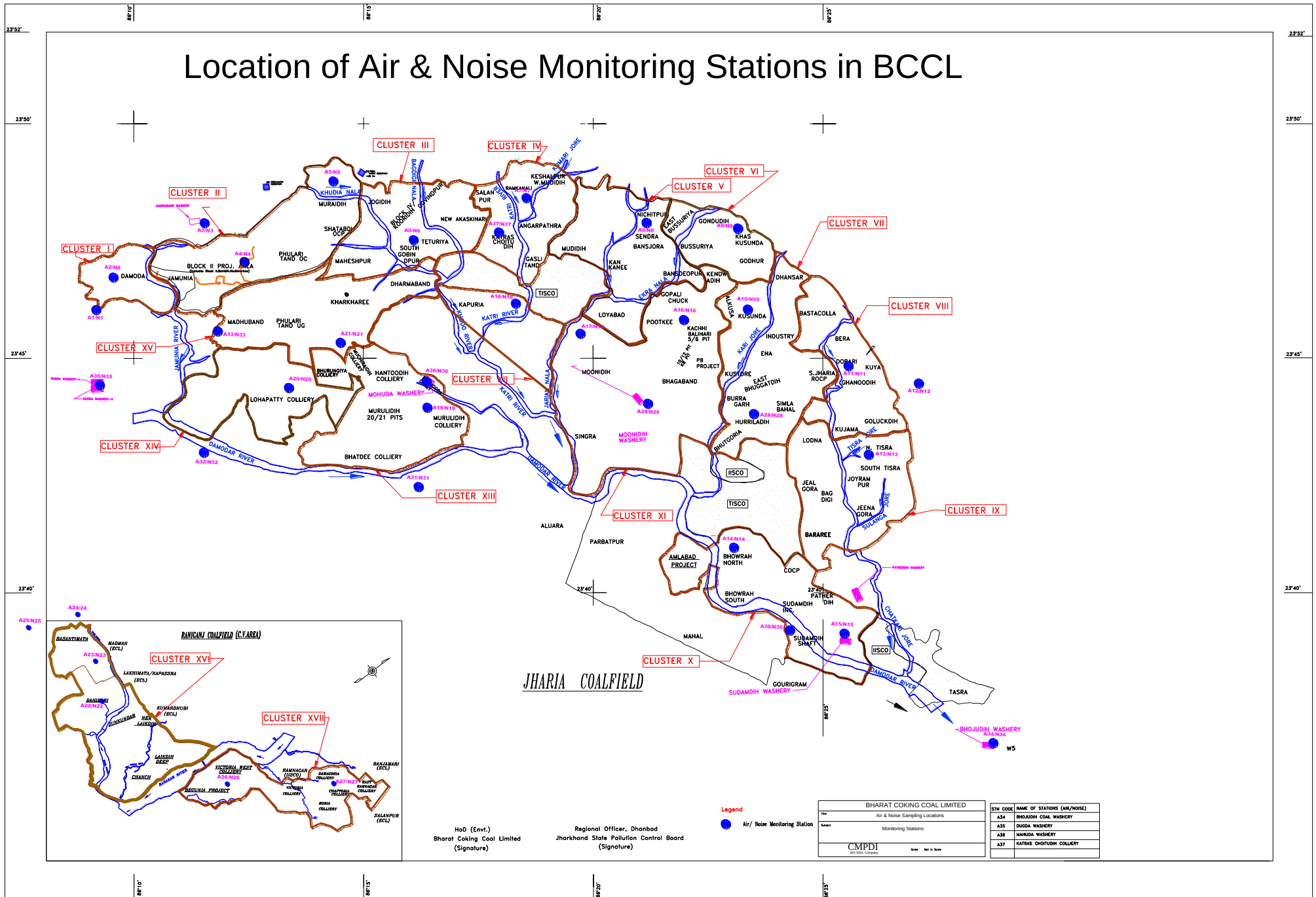
Pollutant	Time Weighted Average	Concentration in Ambient Air		Methods of Measurement
		Industrial, Residential, Rural and other Areas	Ecologically Sensitive Area (Notified by Central Government)	
Sulphur Dioxide (SO₂), µg/m³	Annual * 24 Hours **	50 80	20 80	-Improved West and Gaeke Method -Ultraviolet Fluorescence
Nitrogendioxide (NO₂), 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 PM₁₀, 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 (O₃) , 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 (NH₃), µg/m³	Annual * 24 Hours **	100 400	100 400	-Chemiluminescence -Indophenol blue method
Benzene (C₆H₆), 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.

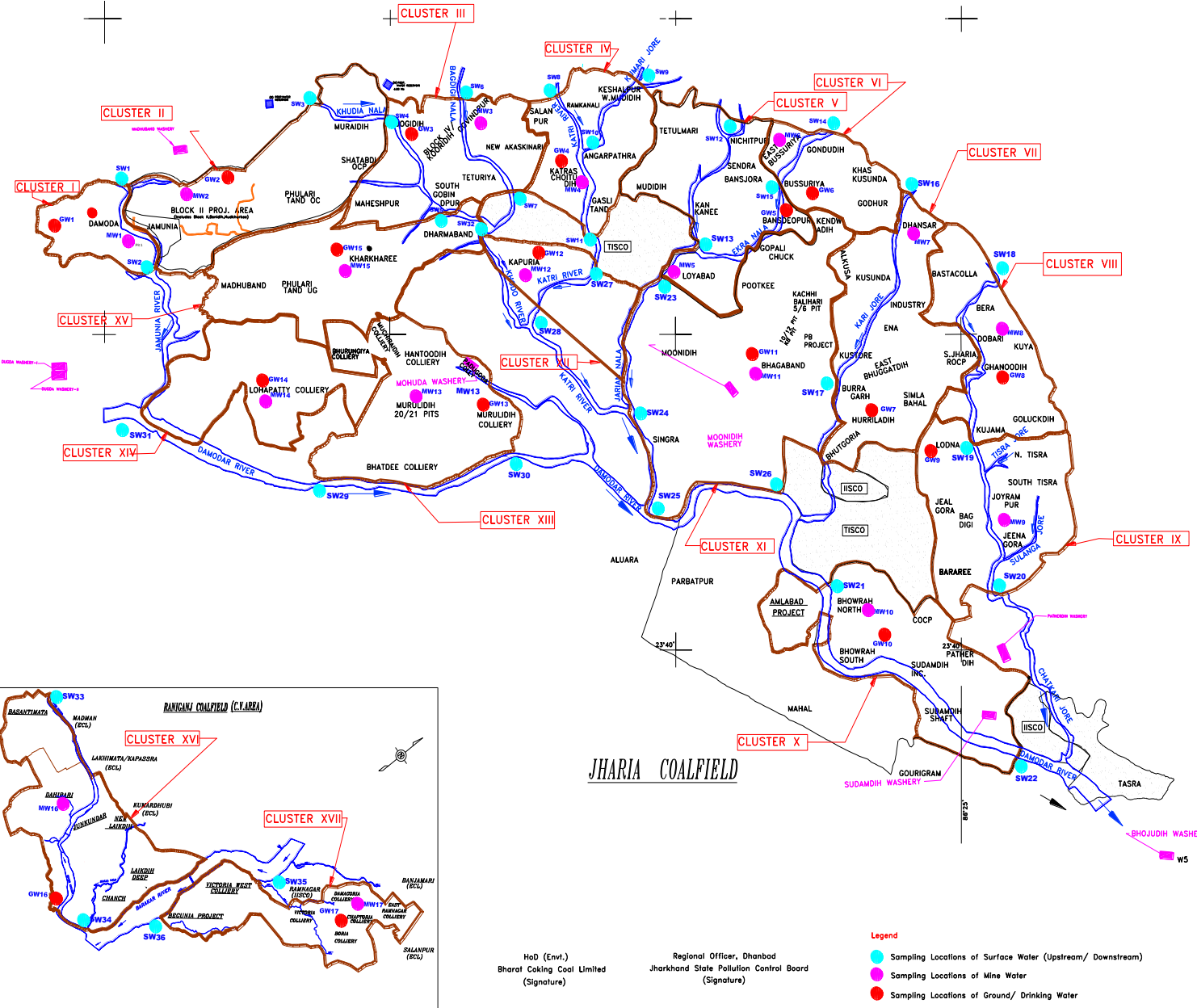
** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they JUNE exceed the limits but not on two consecutive days of monitoring.

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

Location of Air & Noise Monitoring Stations in BCCL



Water Sampling Locations in BCCL



INDEX

Cluster	Surface Water (JUS, DIS)	Name of River/Nala	Mine/ Effluent Water	Sampling Location	Ground Water	Sampling Location
I	SW1, SW2	Damodar River	MW1	Damoda Area	GW1	Chutkai Village
II	SW3, SW4	Khudra Nala	MW2	Block II OCP	GW2	Joyrampur Village
III	SW4, SW5, SW6, SW7	Khudra Nala, Bagdigi Nala	MW3	Govindpur Colliery	GW3	Jogdih Village
IV	SW8, SW11, SW9, SW10	Kain River, Kuman Jore	MW4	Chotudih	GW4	Kankanee Village
V	SW12, SW13, SW15	Jarian Nala, Ekra Nala	MW5	Mudih	GW5	Nichtipur
VI	SW14, SW15	Ekra Nala	MW6	East Bassuria UGP	GW6	Bansora Borewell
VII	SW16, SW17	Kain Jore	MW7	Bhansar UGP	GW7	Huriladih
VIII	SW18, SW19	Kain Jore	MW8	Doban UGP	GW8	Ghanudih
IX	SW19, SW20	Kain Jore	MW9	Jewagora	GW9	Lodna
X	SW21, SW22	Damodar River	MW10	Bhowrah North	GW10	Bhowrah South
XI	SW23, SW24, SW25, SW26	Jarian Nala, Damodar River	MW11	Bhagaband UGP	GW11	Bhagabandh
XII	SW27, SW28	Kain River	MW12	Kapura	GW12	Kapura
XIII	SW29, SW30	Damodar River	MW13	Muridih (20/21)	GW13	Muridih
XIV	SW31, SW32	Damodar River	MW14	Lohapatti	GW14	Lohapatti
XV	SW33, SW34	Khudra Nala	MW15	Kharkhar UGP	GW15	Kharkhar
XVI	SW35, SW36	Khudra River	MW16	Dahiban OCP	GW16	Palaban Village
XVII	SW37, SW38	Barakar River	MW17	Damagoria Colliery	GW17	Chaptoria

HoD (Env.)
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
Scale	Not to Scale

CMPDI
COAL MINES POLLUTION DEVELOPMENT INSTITUTE

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WATER QUALITY REPORT OF BHARAT COKING COAL LIMITED CLUSTER – XII

(FOR THE Q.E. MARCH 2026)
E. C. no. J-11015/184/2012-IA.II (M) dated 10.12.2014.



CMPDI

ISO 9001 Company
Regional Institute-II
Dhanbad, Jharkhand

CLUSTER - XII

(FOR THE Q.E. MARCH 2026)

CONTENTS

SL. NO.	CHAPTER	PARTICULARS
1.		EXECUTIVE SUMMARY
2.	CHAPTER - I	INTRODUCTION
3.	CHAPTER-II	WATER SAMPLING & ANALYSIS
4.	Plate: Plate NO. - I	SURFACE PLAN SHOWING WATER MONITORING LOCATIONS

EXECUTIVE SUMMARY

1.0 Introduction

The purpose of environmental monitoring is to assess the quality of various attributes that affect the environment around us. In accordance with the quality of these attributes appropriate strategy is to be developed to control the pollution level within the permissible limits. One of these major attributes is water.

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 Water sampling stations

The Water sampling stations were selected for Ground water supply, well/ Hand pump water & also surface water samples.

3.0 Methodology of sampling and analysis

3.1 Water quality

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

4.0 Results and interpretations

4.1 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 (Ground water) and IS: 2296 (Surface water), are within permissible limits.

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 guidelines stipulated by the Ministry of Environment, Forests and Climate Change (MoEF&CC), Govt. of India.

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) has 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 a 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 the 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 the 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.**

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CHAPTER – II

WATER QUALITY MONITORING

2.1 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) Ground Water quality at **Kapuria (GW12)**

2.2 Methodology of sampling and analysis

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

2.3 Results & Interpretations

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



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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
SURFACE WATER ANALYSIS TEST REPORT

CMPDI, RI-II
KOYLA BHAWAN COMPLEX
DHANBAD. -826005
Phone: 0326-223-850
email: rdri2.cmpdi@coalindia.in

Month & Year		QUARTER ENDING MARCH 2026		Name of Cluster		XII		ULR No.	TC1432126000002553P TC1432126000002554P	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	16.05.2026	
Project		Sample Ref. No.				REM/BCCL/25-26/SW /		Sampling Method	(IS 3025 , Part-1) CMPDI/RI-II/LPM 13	
Sampling Stations		(i)	Upstream in Katri River(SW27)			Date of Sampling		31.03.2026	Period of Analysis	
		(ii)	Downstream in Katri River(SW28)			Date of Sampling		31.03.2026	31.03.2026 TO 14.05.2026	
Sl. No.	Parameter	Method of Analysis		Observed Values		IS : 2296 INLAND SURFACE WATER [1982] Class 'C	Range of Testing	LDL		
				(i)	(ii)					
1	BOD (3 days 27°C), mg/l	IS 3025 (Part 44) : 1993, R-2019 , 3 day incubation at 27°C		<2.0	<2.0	3	2.00-100.00	2		
2	Colour,Hazen Units	APHA 24th edition , 2120-B-:2023		2	2	10	1-500.0	1		
3	Chlorides, mg/l	IS-3025(Part 32):1988, R-2019 Argentometric Method		65	60	600	2.0-1500.0	5		
4	Copper, mg/l	IS 3025 (Part 42) : 1992 R : 2019, AAS-Flame Method		<0.2	<0.2	1.5	0.2-10.0	0.2		
5	Dissolved Oxygen, mg/L	IS 3025 (Part 38) : 1989, R:2003 Winkler Azide Method		5.4	5.7	4	1.0-10.0	0.1		
6	Fluoride, mg/l	APHA, 24th edition, SPADNS Method		0.45	0.49	1.5	0.2-2.00	0.2		
7	Hexavalent Chromium, mg/l	APHA 24th edition, 1,5-Diphenylcarbohydrazide Method IS 3025 (Part 52) : 2003,R-2019		<0.01	<0.01	0.05	0.01-1.4	0.01		
8	Iron, mg/l	IS 3025 (Part 53):2003,R:2019, AAS-Flame Method		<0.2	<0.2	50	0.2-10	0.2		
9	Nitrate, mg/l	APHA, 24th edition, UV-Spectrophotometric Method		12.39	14.05	50	0.5-45.0	0.5		
10	pH value	IS 3025, (Part 11) : 1983 R-2023 Electrometric (Ph Meter) method		7.68	7.80	6.5-8.5	1.0-14.0	2		
11	Sulphate, mg/l	APHA –24th edition,4500- S, Turbidity Method		47	53	400	10.0-400.0	10		
12	Total Dissolved Solids, mg/l	IS 3025, (Part 16): 1984 R-2023 Gravimetric method		497	484	1500	25.0-10000.0	25		
13	Zinc, mg/l	IS 3025(Part 49) : 1994, R : 2019, AAS-Flame Method		<0.1	<0.1	15	0.10 – 10.0	0.1		

****Grab sampling carried out for water samples. *LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit**

*****All units in mg/L unless specified otherwise Sample Collected in 5 Ltr Jerrycan, Color as observed is transparent**

[Signature]
Analysed by

[Signature]
(Gaurav Kant)

[Signature]
(Kumar Vaibhav)

Analysed by

REVIEWED BY

Authorised Signatory

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
SURFACE WATER ANALYSIS REPORT

Month & Year		QUARTER ENDING MARCH 2026		Name of Cluster		XII			
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)						Date of Issue	16.05.2026
Project		Sample Ref. No.			REM/BCCL/25-26/SW /		Sampling Method	(IS 3025 , Part-1) CMPDI/RI-II/LPM 13	
Sampling Stations		(i)	Upstream in Katri River(SW27)		Date of Sampling		31.03.2026	Period of Analysis	
		(ii)	Downstream in Katri River(SW28)		Date of Sampling		31.03.2026	31.03.2026 TO 14.05.2026	
Sl. No.	Paramete r	Method of Analysis		Observed Values		IS : 2296 INLAND SURFACE WATER [1982] Class 'C	Range of Testing	LDL	
				(i)	(ii)				
1	Arsenic (as As), mg/l, Max	IS-3025,Part 37:1988, R-2019/ APHA 24th edition AAS-VGA		<0.006	<0.006	0.2	0.006-10	0.006	
2	Lead (as Pb), mg/l, Max	APHA, 24th edition, AAS-GTA		<0.005	<0.005	0.1	0.005-10	0.005	
3	Phenolic compounds (as C6H5OH), mg/l, Max	APHA, 24th Edition 4-Amino Antipyrine		<0.002	<0.002	0.005	0.002-10	0.002	
4	Selenium, mg/l, Max	IS-3025 ,Part 56:2003, R-2019/ APHA 24th edition, AAS-VGA		<0.007	<0.007	0.05	0.007-10	0.007	

***Grab sampling carried out for water samples. *LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit*

****All units in mg/L unless specified otherwise **Sample Collected in 5 Ltr Jerricane , Color as observed is transparent***

[Signature]

[Signature]
(Gaurav Kant)

[Signature]
(Kumar Vaibhav)

Analysed by

REVIEWED BY

Authorised Signatory

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---- End of Report ----

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CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED
Environment Laboratory, Regional Institute-II
GROUND WATER ANALYSIS TEST REPORT

CMPDIL, RI-II
KOYLA BHAWAN COMPLEX
DHANBAD. -826005
Phone:0326-223-850
email: rdri2cmpdi@coalindia.in

Month & Year		QUARTER ENDING MARCH 2026		Name of Cluster		CLUSTERXII				ULR No.	TC1432126000002521P	
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)								Date of Issue	16.05.2026	
Project		Kapuria			Sample Ref. No.	REM/BCCL/25-26/GW/		Samplin g Method	CMPDI/RI-II/LPM 13,(IS 3025:Part -1)			
Sampling Stations		GW12		Date of Sampling		09.02.2026						
					Period of Analysis			09.02.2026		TO	14.05.2026	
Sl. No.	Parameter	Method of Analysis			Observed Values					IS 10500: 2012		
					GW12 G0230	Range Of Testing	LDL	Acceptable Limit (Max)*	Permissible Limit in the Absence of Alternate Source (Max)			
1	Colour, Hazen unit	APHA, 24th edition ,2120-c-Spectrophotometric Single Wavelength Method ,2023			2	1-500.0	1	5		15		
2	Calcium, mg/l	IS 3025, (Part 40): 1991 R:2019,AAS-Flame Method & EDTA Method			120	2.0-800.0	2	75		200		
3	Chlorides, mg/l	IS-3025(Part 32):1988, R-2019 , Argentometric Method			124	2.0-1500.0	5	250		1000		
4	Fluoride, mg/l	APHA, 24th Edition, SPADNS Method			0.45	0.2-2.00	0.2	1		1.5		
5	Iron, mg/l	IS 3025 (Part 53) : 2003, R : 2019 , AAS-Flame Method			<2.0	0.2-10	0.2	1		No relaxation		
6	Magnesium	APHA 24th edition, 3500-Mg B: Calculation Method			38	6.0-700	6	30		100		
7	Nitrate , mg/l	APHA, 24th edition, UV-Spectrophotometric Method			8.45	0.5-45.0	0.5	45		No relaxation		
8	Odour	APHA, 24th Edition, , 2150-C			Agreeable	Qualitative	Qualitati ve	Agreeable		Agreeable		
9	pH value	IS 3025, Part 11 : 1983 R 2023 Electrometric(pH Meter) Method			7.95	1-14	0.1	6.5-8.5		No relaxation		
10	Sulphate, mg/l	APHA -24th edition, 4500 S , Turbidity Method			103	10.0-400.0	10	200		400		
11	Taste	APHA,24th edition, 2160-C			Acceptable	Qualitative	Qualitati ve	Acceptable		Agreeable		
12	Total Alkalinity (c _a co ₃), mg/l, Max	IS 3025, Part 23: 1986 R 2019 Titration Method			200	4.0-2000.0	4	200		600		
13	Total Dissolved Solids, mg/l	IS 3025, Part 16: 1984 R 2023 Gravimetric method			761	25.0-5000.0	25	500		2000		
14	Total Hardness, mg/l	IS 3025, (Part 21): 2019 EDTA Method			456	4.0-2000.0	4	200		600		
15	Turbidity, NTU	IS 3025, (Part 10):1984, R-2023 Nephelometric/Turbiditimetric Method			2.5	1-800	0.1	1		5		
16	Zinc, mg/l	IS 3025(Part 49) : 1994,R:2019, AAS-Flame Method			<0.1	0.10 - 10.0	0.1	5		15		

***All units in mg/L unless specified otherwise,

**Grab sampling carried out for water samples. *LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit,

(Gaurav Kant)
REVIEWED BY

(Kumar Vaibhav)

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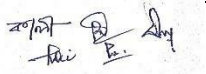
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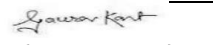
CMPDIL, RI-II
KOYLA BHAWAN COMPLEX
DHANBAD. -826005
Phone:0326-223-850
email: rdri2cmpdi@coalindia.in

Month & Year		QUARTER ENDING MARCH 2026		Name of Cluster		CLUSTER XII								
Customer		Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in)								Date of Issue		16.05.2026		
Project		Kapuria			Sample Ref. No.		REM/BCCL/25-26/GW/		Sampling Method		CMPDI/RI-II/LPM 13,(IS 3025:Part -1)			
Sampling Stations		GW12		Date of Sampling		09.02.2026		Sample Collected in 5 Ltr Jerricane , Color as observed is transparent						
						Period of Analysis		09.02.2026		TO		14.05.2026		
Sl. No.	Parameter		Method of Analysis		Observed Values						IS 10500: 2012			
					GW12 G0230		Range Of Testing		LDL		Acceptable Limit (Max)*		Permissible Limit in the Absence of Alternate Source (Max)	
1	Boron (as B), mg/l, Max		APHA, 24th edition ,Carminc		<0.2		0.2-10		0.2		0.5		1	
2	Copper (as Cu), mg/l, Max		IS 3025 Part 42 : 1992 R : 2019, AAS-Flame APHA, 24th edition, AAS-GTA		<0.01		0.01-10.0		0.01		0.05		1.5	
3	Free Residual Chlorine, mg/l, Min		APHA, 24th Edition, , 4500-Cl- B. (Iodometric Method-I)		<0.04		0.04-5		0.04		0.2		1	
4	Lead (as Pb), mg/l, Max		IS:3025(Part 47):1994 (Reaffirmed 2019) APHA, 24th edition, AAS-GTA		<0.005		0.005-10		0.005		0.01		No relaxation	
5	Phenolic compounds (as C6H5OH), mg/l, Max		APHA, 24thEdition,4-Amino Autipyrine		<0.001		0.001-10		0.001		0.002		0.002	
6	Selenium, mg/l, Max		APHA 24th edition IS-3025,part 56:2003, R-2019/, AAS-VGA		<0.007		0.007-10		0.007		0.01		No relaxation	
7	Total Arsenic (as As), mg/l, Max		IS-3025,part 37:1988, R-2019/ APHA 24th edition AAS-VGA		<0.006		0.006-10		0.006		0.01		0.05	
8	Total Chromium (as Cr), mg/l, Max		IS-3025 Part 52:2003, R:2019,AAS-Flame APHA, 24th edition, AAS-GTA		<0.01		0.01-10.0		0.01		0.05		No relaxation	
9	Nickel as Ni, mg/l Max		IS 3025 Part 54 : 2003,R : 2019, AAS-Flame APHA, 24th edition, AAS-GTA		<0.005		0.005-10		0.005		0.02		No relaxation	
10	Manganese as Mn, mg/l, Max		APHA, 24 TH Edition:2023 AAS-GTA Method		<0.02		0.02-10.0		0.02		0.1		0.3	

***All units in mg/L unless specified otherwise,

**Grab sampling carried out for water samples. *LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit,


Gaurav Kant


(Gaurav Kant)
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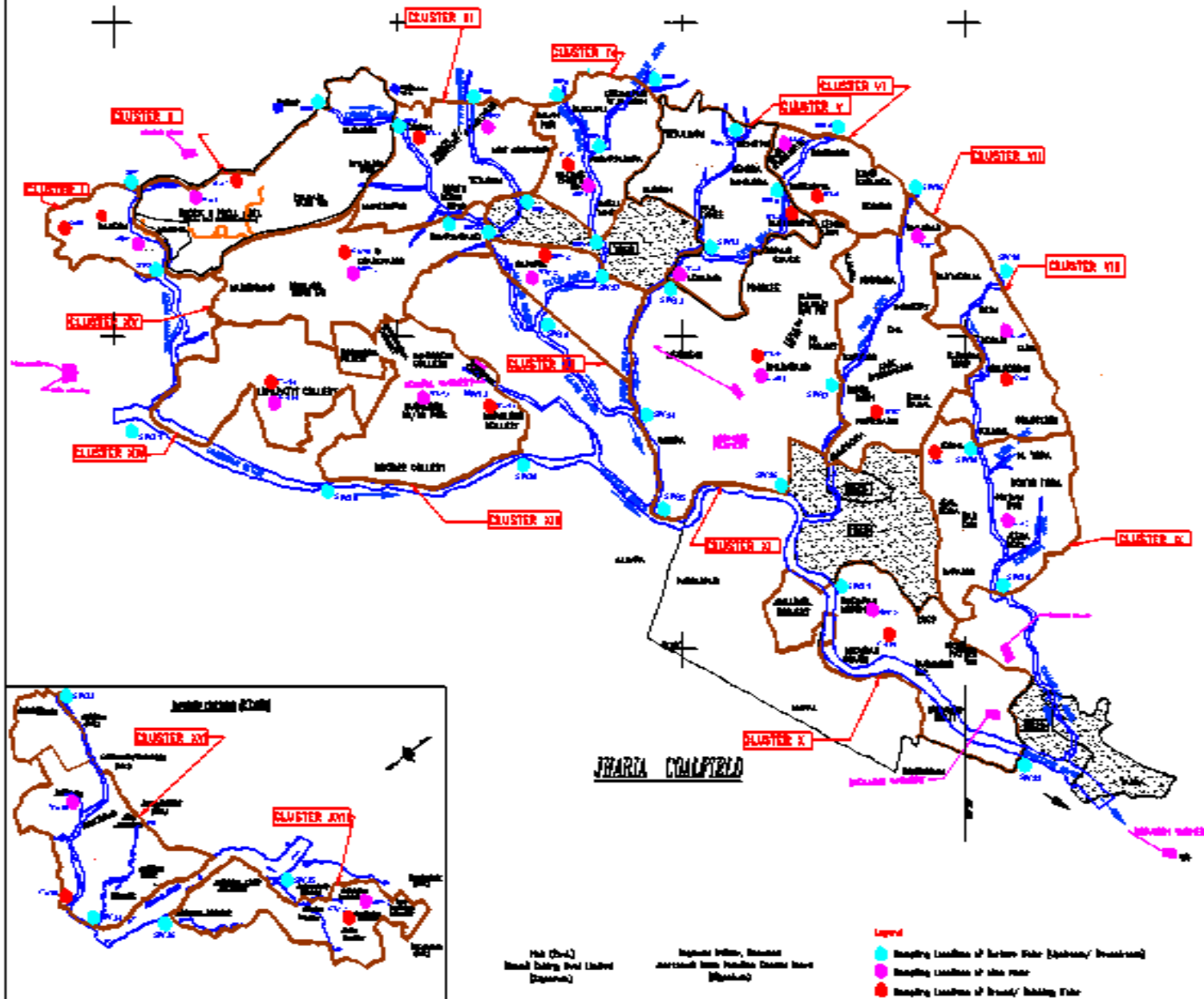

(Kumar Vaibhav)

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Water Sampling Locations in BCCL

[illegible]

NAME	BRUNNEN KOPF GMBH & CO. KG
STREET	1. WILHELM-STRASSE - 35101 Kassel
POSTAL CODE	35101 Kassel
TELEPHONE	0561 806-1