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

**(FOR THE MONTH JULY, 2024)**

**E. C. no. J-11015/238/2010-IA.II (M) dated 12.10.2018.**



## **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 (PM<sub>10</sub>), Fine Particulate Matter (PM<sub>2.5</sub>), Sulphur Di-oxide (SO<sub>2</sub>) and Nitrogen Oxides (NO<sub>x</sub>). Respirable Dust Samplers (RDS) and Fine Dust

Sampler (PM<sub>2.5</sub> sampler) were used for sampling of PM<sub>10</sub>, SO<sub>2</sub>, & NO<sub>x</sub> and Fine Dust Sampler (PM<sub>2.5</sub> sampler) were used for sampling of PM<sub>2.5</sub> at 24 hours interval once in a fortnight and the same for the gaseous pollutants. The samples were analyzed in Environmental Laboratory of CMPDI, RI-II, Dhanbad.

### **3.2 Water quality**

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

### **3.3 Noise level monitoring**

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

## **4.0 Results and interpretations**

### **4.1 Air quality**

It has been seen from the analysis results that the 24 hours average concentration parameters like PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> are mostly within the permissible limits in all sampling locations as per MoEF&CC Gazette Notification No. GSR 742(E) dt 25.09.2000 Standards for Coal Mines and National Ambient Air Quality Standard -2009. Sometimes the concentration of PM<sub>10</sub>& PM<sub>2.5</sub> exceeds the limits due to heavy public traffic, poor road condition, coke oven plants, burning of coal by surrounding habitants, brick making, municipal waste dumps and industries like Steel Plant, thermal Plants including their fly ash etc.

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 Standards for Coal Mines, were within permissible limits.

#### **4.3 Noise Level**

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

## 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-VII is in the Eastern part of the Jharia coalfield. It includes a group of 10 Mines (viz. Amalgamated Dhansar industrial colliery, Alkusa UG, Kusunda OC , Ena OC, ,Amalgamated East Bhuggatdih Simlabahal UG , South Jharia/Rajapur OC, Burragarh UG, , Hurriladih UG, Bhutgoria UG and Kustore UG mines. The Cluster – VII is situated about 25 - 30 kms from Dhanbad Railway Station. The mines of this Cluster – VII are operating since pre nationalization period (prior to 1972-73). It is connected by both Railway and Road. The Kari Jore flows in the mid part of the cluster area.
- 1.2 The Project has Environmental Clearance from Ministry of Environment, Forest and Climate Change (MoEF&CC) for a rated capacity 6.227 MTPA (normative) and 8.161 MTPA (peak) capacity of coal production vide letter no. J-11015/238/2010-IA.II (M) dated 6<sup>th</sup> February, 2013, later amended for a peak capacity 11.42MTPA vide letter no. J-11015/238/2010-IA.II (M) Pt. dated 20<sup>th</sup> August, 2020

Ministry of Environment, Forest and Climate Change while granting environmental clearance has given one of the General conditions that “ Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets, 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)*

#### Ambient Air Quality Sampling Locations

##### I. CORE ZONE Monitoring Location

**i) Kusunda / Dhansar OCP (A10) : Industrial Area** The location of the sampling station is 23°46' 49.07" N & 86° 24' 15.71" E. The sampler was placed at 1.5 m above the ground level of Safety Office.

**ii) Hurriladih UGP (A28)** The location of the sampling station is 23°44' 4.18" N & 86° 24. 6.21 E. The sampler was placed at 1.5 m above the ground level of Safety Office.

##### II. BUFFER ZONE Monitoring Location

**i) Dobari UGP (A11):Industrial Area** The location of the sampling station is 23°45'50.00" N & 86°26' 1.00" E. The sampler was placed at 1.5 m above the ground level of Safety Office.

**ii) Moonidih Washery (A29) : Industrial Area** The location of the sampling station is 23°44'26.00" N & 86°21'16.00"E. The sampler was placed at 1.5 m above the ground level of Project office.

# AMBIENT AIR QUALITY DATA



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

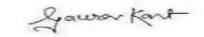
CMPDIL, RI-II  
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## Test Report for Ambient Air Samples

| Month & Year     |                   | 07/2024                                                                                                                                                          | Cluster                        | Cluster VII        |                       |                          | ULR No.                                                                        | TC1012224000001048F |           |
|------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------|-----------------------|--------------------------|--------------------------------------------------------------------------------|---------------------|-----------|
| Customer         |                   | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: <a href="mailto:gmenv.bccl@coalindia.in">gmenv.bccl@coalindia.in</a> ) |                                |                    |                       |                          | Date of Issue                                                                  | 23.09.2024          |           |
| Project          |                   | Kusunda OCP                                                                                                                                                      |                                | Sample Ref. No.    | REM/BCCL/2024/07      | Sampling Method          | CMPDI/RI-II/LPM 11 , ( IS 5182)                                                |                     |           |
| Date of Sampling |                   | 05.07.2024                                                                                                                                                       |                                | 22.07.2024         | Period of Analysis    | 05.07.2024 to 20.09.2024 |                                                                                | Zone of Station:    | Core Zone |
| Sl. No.          | Parameter         | Method Analysis of                                                                                                                                               | Observed Values<br>( in µg/m³) |                    | Range Of Testing      | LDL                      | MoEF Standards Notification dated 25 <sup>th</sup> September,2000 (GSR 742 E ) | NAAQS, 2009         |           |
|                  |                   |                                                                                                                                                                  | 1 <sup>st</sup> FN             | 2 <sup>nd</sup> FN |                       |                          |                                                                                |                     |           |
| S1               | PM <sub>10</sub>  | IS -5182(Part 23):2006, R-2017                                                                                                                                   | 91                             | 98                 | 10 µg/m³ - 1000 µg/m³ | 10 µg/m³                 | 300                                                                            | 100                 |           |
| 2                | PM <sub>2.5</sub> | IS -5182(Part 24):2019                                                                                                                                           | 49                             | 54                 | 10 µg/m³ - 400 µg/m³  | 10 µg/m³                 | Not Specified                                                                  | 60                  |           |
| 3                | SO <sub>2</sub>   | IS-5182(Part-2): 2001 , R-2017                                                                                                                                   | 12                             | 10                 | 10 µg/m³ - 1050 µg/m³ | 10 µg/m³                 | 120                                                                            | 80                  |           |
| 4                | NO <sub>2</sub>   | IS-5182 (Part-6): 2006 , R-2017                                                                                                                                  | 30                             | 29                 | 06 µg/m³ - 420 µg/m³  | 06 µg/m³                 | 120                                                                            | 80                  |           |

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

  
**ANALYSED BY**

  
 (Gaurav Kant)  
**REVIEWED BY**

  
 (Amit Raj Mishra)  
**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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**Test Report for Ambient Air Samples**

|                  |                   |                                                                                                                    |                                |                 |                       |                          |                                                                    |                     |           |
|------------------|-------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------|-----------------------|--------------------------|--------------------------------------------------------------------|---------------------|-----------|
| Month & Year     |                   | 07/2024                                                                                                            | Cluster                        | Cluster VII     |                       |                          | ULR No.                                                            | TC1012224000001048F |           |
| Customer         |                   | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |                                |                 |                       |                          | Date of Issue                                                      | 23.09.2024          |           |
| Project          |                   | Hurriladih UGP                                                                                                     |                                | Sample Ref. No. | REM/BCCL/2024/07      | Sampling Method          | CMPDI/RI-II/LPM 11, ( IS 5182)                                     |                     |           |
| Date of Sampling |                   | 11.07.2024                                                                                                         |                                | 24.07.2024      | Period of Analysis    | 11.07.2024 to 20.09.2024 |                                                                    | Zone of Station:    | Core Zone |
| Sl. No.          | Parameter         | Method of Analysis                                                                                                 | Observed Values<br>( in µg/m³) |                 | Range Of Testing      | LDL                      | MoEF Standards Notification dated 25th September,2000 (GSR 742 E ) | NAAQS, 2009         |           |
|                  |                   |                                                                                                                    | 1st FN                         | 2nd FN          |                       |                          |                                                                    |                     |           |
| 1                | PM <sub>10</sub>  | IS -5182(Part 23):2006, R-2017                                                                                     | 113                            | 88              | 10 µg/m³ - 1000 µg/m³ | 10 µg/m³                 | 300                                                                | 100                 |           |
| 2                | PM <sub>2.5</sub> | IS -5182(Part 24):2019                                                                                             | 69                             | 52              | 10 µg/m³ - 400 µg/m³  | 10 µg/m³                 | Not Specified                                                      | 60                  |           |
| 3                | SO <sub>2</sub>   | IS-5182(Part-2): 2001 , R-2017                                                                                     | <10                            | <10             | 10 µg/m³ - 1050 µg/m³ | 10 µg/m³                 | 120                                                                | 80                  |           |
| 4                | NO <sub>2</sub>   | IS-5182 (Part-6): 2006 , R-2017                                                                                    | 26                             | 25              | 06 µg/m³ - 420 µg/m³  | 06 µg/m³                 | 120                                                                | 80                  |           |

\* LDL indicates Lower Detection Limit,

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

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(Gaurav Kant)

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**Authorised Signatory**

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**Test Report for Ambient Air Samples**

| Month & Year     |                   | 07/2024                                                                                                            | Cluster | Cluster VII                    |                    |                          | ULR No.  | TC1012224000001048F                                                |             |
|------------------|-------------------|--------------------------------------------------------------------------------------------------------------------|---------|--------------------------------|--------------------|--------------------------|----------|--------------------------------------------------------------------|-------------|
| Customer         |                   | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |         |                                |                    |                          |          | Date of Issue                                                      | 23.09.2024  |
| Project          |                   | Dobari UGP                                                                                                         |         | Sample Ref. No.                | REM/BCCL/2024/07   | Sampling Method          |          | CMPDI/RI-II/LPM 11 , ( IS 5182)                                    |             |
| Date of Sampling |                   | 05.07.2024                                                                                                         |         | 22.07.2024                     | Period of Analysis | 05.07.2024 to 20.09.2024 |          | Zone of Station:                                                   | Buffer Zone |
| Sl. No.          | Parameter         | Method Analysis                                                                                                    | of      | Observed Values<br>( in µg/m³) |                    | Range Of Testing         | LDL      | MoEF Standards Notification dated 25th September,2000 (GSR 742 E ) | NAAQS, 2009 |
|                  |                   |                                                                                                                    |         | 1st FN                         | 2nd FN             |                          |          |                                                                    |             |
| 1                | PM <sub>10</sub>  | IS -5182(Part 23):2006, R-2017                                                                                     |         | 94                             | 99                 | 10 µg/m³ - 1000 µg/m³    | 10 µg/m³ | 300                                                                | 100         |
| 2                | PM <sub>2.5</sub> | IS -5182(Part 24):2019                                                                                             |         | 42                             | 48                 | 10 µg/m³ - 400 µg/m³     | 10 µg/m³ | Not Specified                                                      | 60          |
| 3                | SO <sub>2</sub>   | IS-5182(Part-2): 2001 , R-2017                                                                                     |         | <10                            | 10                 | 10 µg/m³ - 1050 µg/m³    | 10 µg/m³ | 120                                                                | 80          |
| 4                | NO <sub>2</sub>   | IS-5182 (Part-6): 2006 , R-2017                                                                                    |         | 25                             | 27                 | 06 µg/m³ - 420 µg/m³     | 06 µg/m³ | 120                                                                | 80          |

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

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**(Gaurav Kant)**  
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*[Signature]*

**(Amit Raj Mishra)**  
**Authorised Signatory**

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**Test Report for Ambient Air Samples**

|                  |                   |                                                                                                                    |                                |                 |                       |                          |                                                                             |                                 |                     |
|------------------|-------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------|-----------------------|--------------------------|-----------------------------------------------------------------------------|---------------------------------|---------------------|
| Month & Year     |                   | 07/2024                                                                                                            | Cluster                        | Cluster VII     |                       |                          |                                                                             | ULR No.                         | TC1012224000001048F |
| Customer         |                   | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |                                |                 |                       |                          |                                                                             | Date of Issue                   | 23.09.2024          |
| Project          |                   | Moonidih Washery                                                                                                   |                                | Sample Ref. No. | REM/BCCL/2024/07      | Sampling Method          |                                                                             | CMPDI/RI-II/LPM 11 , ( IS 5182) |                     |
| Date of Sampling |                   | 12.07.2024                                                                                                         |                                | 23.07.2024      | Period of Analysis    | 12.07.2024 to 20.09.2024 |                                                                             | Zone of Station:                | Buffer Zone         |
| Sl. No.          | Parameter         | Method of Analysis                                                                                                 | Observed Values<br>( in µg/m³) |                 | Range Of Testing      | LDL                      | MoEF Standards<br>Notification dated 25th<br>September,2000 (GSR<br>742 E ) | NAAQS, 2009                     |                     |
|                  |                   |                                                                                                                    | 1st FN                         | 2nd FN          |                       |                          |                                                                             |                                 |                     |
| 1                | PM <sub>10</sub>  | IS -5182(Part 23):2006, R-2017                                                                                     | 99                             | 96              | 10 µg/m³ - 1000 µg/m³ | 10 µg/m³                 | 300                                                                         | 100                             |                     |
| 2                | PM <sub>2.5</sub> | IS -5182(Part 24):2019                                                                                             | 56                             | 46              | 10 µg/m³ - 400 µg/m³  | 10 µg/m³                 | Not Specified                                                               | 60                              |                     |
| 3                | SO <sub>2</sub>   | IS-5182(Part-2): 2001 , R-2017                                                                                     | <10                            | 10              | 10 µg/m³ - 1050 µg/m³ | 10 µg/m³                 | 120                                                                         | 80                              |                     |
| 4                | NO <sub>2</sub>   | IS-5182 (Part-6): 2006 , R-2017                                                                                    | 29                             | 28              | 06 µg/m³ - 420 µg/m³  | 06 µg/m³                 | 120                                                                         | 80                              |                     |

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

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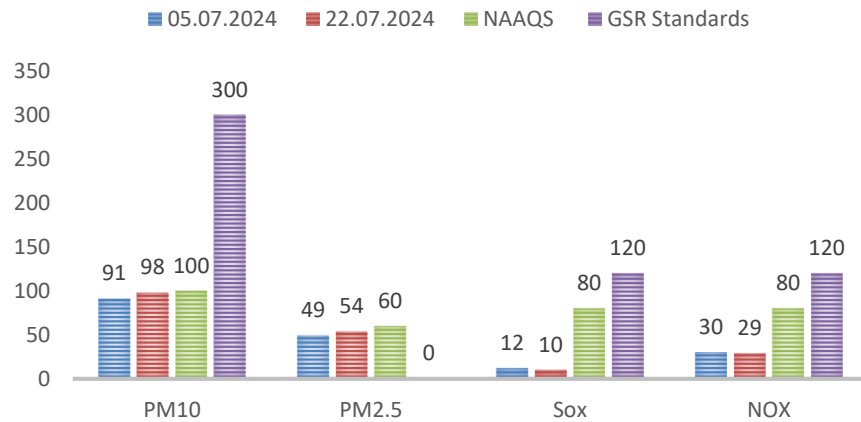
(Amit Raj Mishra)  
**Authorised Signatory**

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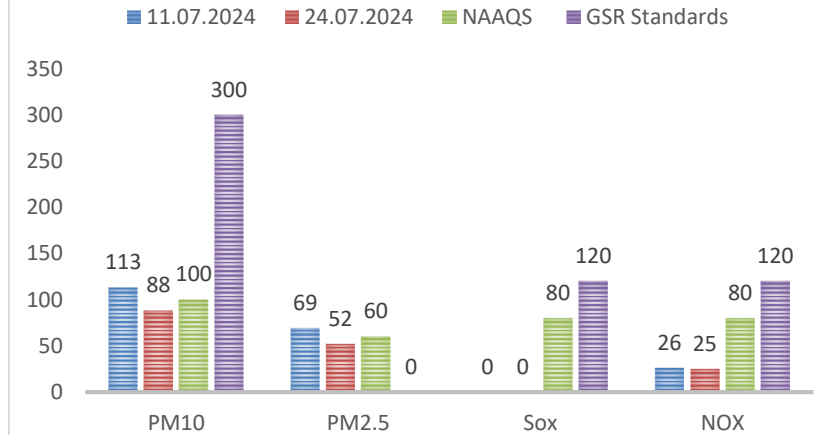
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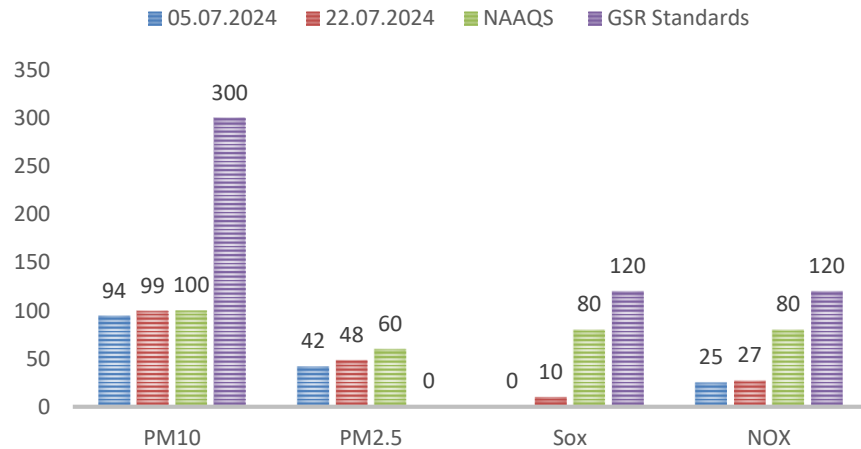
## AMBIENT AIR QUALITY AT KUSUNDA OCP



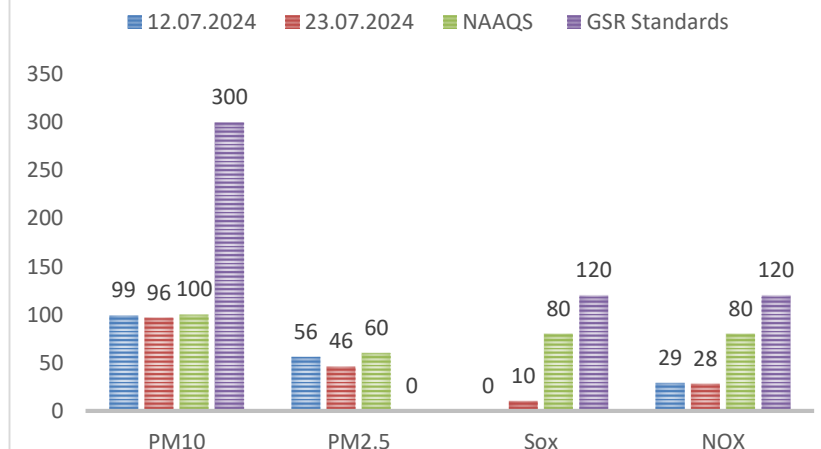
## AMBIENT AIR QUALITY AT HURRILADIH UGP



## AMBIENT AIR QUALITY AT DOBARI UGP



## AMBIENT AIR QUALITY AT MOONIDIH WASHERY



## **WATER QUALITY MONITORING**

### **3.1 Location of sampling sites**

(Refer **Plate No. – II**)

#### **i) Mine Discharge of Dhansar OCP (MW7)**

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

### **3.2 Methodology of sampling and analysis**

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

### **3.3 Results & Interpretations**

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



**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**  
**Environment Laboratory, Regional Institute-II**  
**MINE EFFLUENT TEST REPORT**

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### Test Report for Mine Effluent samples

|                   |                                                                                                                    |                                                         |                                                                          |                  |                                                                                                                                        |                                     |                          |  |
|-------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|--|
| Month & Year      | 07/2024                                                                                                            | Cluster                                                 | Cluster VII                                                              |                  | ULR No.                                                                                                                                |                                     | TC1012224000001066F      |  |
| Customer          | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |                                                         |                                                                          |                  |                                                                                                                                        | Date of Issue                       | 23.09.2024               |  |
| Project           | Dhansar OCP                                                                                                        | Sampling Ref. No.                                       | REM/BCCL/2024/07                                                         |                  | Sampling Method                                                                                                                        | IS 3025 (Part-1) CMPDI/RI-II/LPM 13 |                          |  |
| Sampling Stations | (i)                                                                                                                | Dhansar OCP                                             | Sample Collected in 2.5 Ltr Jerricane , Color as observed is transparent |                  |                                                                                                                                        | Period of Analysis                  | 08.07.2024 to 06.08.2024 |  |
|                   |                                                                                                                    |                                                         | Date of Sampling                                                         |                  | 08.07.2024                                                                                                                             | 22.07.2024                          |                          |  |
| Sl. No.           | Parameter                                                                                                          | Method of Analysis                                      | Observed Values                                                          |                  | STANDARDS FOR COAL MINES<br>(Stipulated by Ministry of Environment and Forests (MoEF), Vide Notification No. GSR 742€, Dt: 25.09.2000) | LDL                                 |                          |  |
|                   |                                                                                                                    |                                                         | First Fortnight                                                          | Second Fortnight |                                                                                                                                        |                                     |                          |  |
| 1                 | Total Suspended Solids                                                                                             | IS 3025/17:1984, R :2017, Gravimetric                   | 38                                                                       | 41               | 100 (Max)                                                                                                                              | 10                                  |                          |  |
| 2                 | pH                                                                                                                 | IS-3025/11:1983, R-2017, Electrometric                  | 7.89                                                                     | 7.92             | 5.5 – 9.0                                                                                                                              | 0.2                                 |                          |  |
| 3                 | Oil & Grease                                                                                                       | IS 3025/39:1991, R : 2019, Partition Gravimetric        | <2.0                                                                     | <2.0             | 10 (Max)                                                                                                                               | 2                                   |                          |  |
| 4                 | COD                                                                                                                | APHA 23 <sup>rd</sup> Edition 5220 C Titrimetric Method | 36                                                                       | 36               | 250 (Max)                                                                                                                              | 4                                   |                          |  |

\*\*All units in mg/L unless specified otherwise. \*LDL indicates Lower Detection Limit & BDL indicates Below Detection Limit,

\*\*Grab sampling carried out for water samples.

**ANALYSED BY**

(Kumar Vaibhav)  
**REVIEWED BY**

(Amit Raj Mishra)  
**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.

.2024---- End of Report ----

## **NOISE LEVEL QUALITY MONITORING**

### **4.1 Location of sampling sites**

- i) **Kusunda / Dhansar OCP (N10)**
- ii) **Huriladih UGP (N28)**
- iii) **Dobari UGP (N11)**
- iv) **Moonidih Washery (N29)**

### **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**

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

| Month & Year      | 07/2024                                                                                                            | Cluster            | Cluster VII                      |                                  |                                                          |                  |                           | ULR No.                                                        | TC1012224000001082F  |
|-------------------|--------------------------------------------------------------------------------------------------------------------|--------------------|----------------------------------|----------------------------------|----------------------------------------------------------|------------------|---------------------------|----------------------------------------------------------------|----------------------|
| Customer          | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |                    |                                  |                                  |                                                          |                  |                           | Date of Issue                                                  | 23.09.2024           |
| Project           |                                                                                                                    |                    | Sample Ref. No.                  | REM/BCCL/2024/07                 |                                                          | Sampling Method  |                           | CMPDI/RI-II/LPM 22                                             |                      |
| Sampling Stations | i                                                                                                                  | Kusunda OCP        |                                  | Date of Sampling                 | 05.07.2024                                               | 22.07.2024       | 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      | 52.5                             | 52.8                             | CPCB, Protocol for Ambient Level Noise Monitoring - 2015 | 35 dB-135 dB     | 35 dB(A)                  | Industrial<br>Commercial<br>Residential<br>Silence             | 75<br>65<br>55<br>50 |
| 2                 |                                                                                                                    | 07:00 - 08:00      | 56.1                             | 53.1                             |                                                          |                  |                           |                                                                |                      |
| 3                 |                                                                                                                    | 08:00 - 09:00      | 59.5                             | 55.4                             |                                                          |                  |                           |                                                                |                      |
| 4                 |                                                                                                                    | 09:00 – 10:00      | 65.2                             | 63.3                             |                                                          |                  |                           |                                                                |                      |
| 5                 |                                                                                                                    | 10:00 - 11:00      | 67.5                             | 66.2                             |                                                          |                  |                           |                                                                |                      |
| 6                 |                                                                                                                    | 11:00 - 12:00      | 66                               | 64.6                             |                                                          |                  |                           |                                                                |                      |
| 7                 |                                                                                                                    | 12:00 - 13:00      | 69.2                             | 67.7                             |                                                          |                  |                           |                                                                |                      |
| 8                 |                                                                                                                    | 13:00 - 14:00      | 69.7                             | 68.3                             |                                                          |                  |                           |                                                                |                      |
| 9                 |                                                                                                                    | 14:00 - 15:00      | 69.7                             | 63.1                             |                                                          |                  |                           |                                                                |                      |
| 10                |                                                                                                                    | 15:00 - 16:00      | 62.7                             | 62                               |                                                          |                  |                           |                                                                |                      |
| 11                |                                                                                                                    | 16:00 - 17:00      | 62.9                             | 69.4                             |                                                          |                  |                           |                                                                |                      |
| 12                |                                                                                                                    | 17:00 - 18:00      | 62.4                             | 61                               |                                                          |                  |                           |                                                                |                      |
| 13                |                                                                                                                    | 18:00 - 19:00      | 59.7                             | 59                               |                                                          |                  |                           |                                                                |                      |
| 14                |                                                                                                                    | 19:00 - 20:00      | 59.9                             | 59                               |                                                          |                  |                           |                                                                |                      |
| 15                |                                                                                                                    | 20:00 - 21:00      | 59.3                             | 58.3                             |                                                          |                  |                           |                                                                |                      |
| 16                |                                                                                                                    | 21:00 - 22:00      | 59.7                             | 58.4                             |                                                          |                  |                           |                                                                |                      |
|                   |                                                                                                                    | Leq DAY            | 65.0                             | 63.9                             |                                                          |                  |                           |                                                                |                      |
| 1                 | Noise Level dB(A)Leq -Night                                                                                        | 22:00-23:00        | 52.8                             | 38.7                             | CPCB, Protocol for Ambient Level Noise Monitoring - 2015 | 35 dB-135 dB     | 35 dB(A)                  | Industrial<br>Commercial<br>Residential<br>Silence             | 70<br>55<br>45<br>50 |
| 2                 |                                                                                                                    | 23:00- 00:00       | 46.7                             | 34.8                             |                                                          |                  |                           |                                                                |                      |
| 3                 |                                                                                                                    | 00:00- 01:00       | 45.8                             | 34.4                             |                                                          |                  |                           |                                                                |                      |
| 4                 |                                                                                                                    | 01.00-02.00        | 42.1                             | 34.3                             |                                                          |                  |                           |                                                                |                      |
| 5                 |                                                                                                                    | 02.00-03.00        | 40.7                             | 34                               |                                                          |                  |                           |                                                                |                      |
| 6                 |                                                                                                                    | 03.00-04.00        | 42.3                             | 37.3                             |                                                          |                  |                           |                                                                |                      |
| 7                 |                                                                                                                    | 04.00-05.00        | 43.2                             | 37                               |                                                          |                  |                           |                                                                |                      |
| 8                 |                                                                                                                    | 05:00-06:00        | 42.8                             | 36.8                             |                                                          |                  |                           |                                                                |                      |
|                   |                                                                                                                    | Leq NIGHT          | 42.7                             | 34.7                             |                                                          |                  |                           |                                                                |                      |

\*LDL indicates Lower Detection Limit

\*\*All noise measurements are integrated for a 01 hour period, All units in dB(A)

|                     |  |                                                                                                       |  |  |  |                                                                                                            |  |
|---------------------|--|-------------------------------------------------------------------------------------------------------|--|--|--|------------------------------------------------------------------------------------------------------------|--|
| Sampling Assistants |  | <br>(Gaurav Kant) |  |  |  | <br>(Amit Raj Mishra) |  |
| ANALYSED BY         |  | 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.

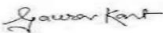
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**CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED**  
**Environment Laboratory, Regional Institute-II**  
**Ambient Noise Level Test Report**

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

| Month & Year                                                                     | 07/2024                                                                                                            | Cluster                                                                                               | Cluster VII                         |                                     |                                                                      |                  |                           | ULR No.                                                        | TC1012224000001082F                                                                                        |            |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|----------------------------------------------------------------------|------------------|---------------------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------|
| Customer                                                                         | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |                                                                                                       |                                     |                                     |                                                                      |                  |                           |                                                                | Date of Issue                                                                                              | 23.09.2024 |
| Project                                                                          |                                                                                                                    | Sample Ref. No.                                                                                       | REM/BCCL/2024/07                    |                                     |                                                                      | Sampling Method  |                           | CMPDI/RI-II/LPM 22                                             |                                                                                                            |            |
| Sampling Stations                                                                | i                                                                                                                  | Huriladih UGP                                                                                         |                                     | Date of Sampling                    | 11.07.2024                                                           | 24.07.2024       | Zone Category of Station: |                                                                | Core Zone                                                                                                  |            |
| Sl. No.                                                                          | Parameter                                                                                                          | Hour / Time of day                                                                                    | Observed Values<br>( in Leq dB(A) ) | Observed Values<br>( 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<br>- Day                                                                                      | 06:00 - 07:00                                                                                         | 49.8                                | 48.6                                | CPCB, Protocol<br>for Ambient<br>Level Noise<br>Monitoring -<br>2015 | 35 dB-135 dB     | 35 dB(A)                  | Industrial<br>Commercial<br>Residential<br>Silence             | 75<br>65<br>55<br>50                                                                                       |            |
| 2                                                                                |                                                                                                                    | 07:00 - 08:00                                                                                         | 53.4                                | 52.2                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 3                                                                                |                                                                                                                    | 08:00 - 09:00                                                                                         | 55.7                                | 55.7                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 4                                                                                |                                                                                                                    | 09:00 - 10:00                                                                                         | 61.6                                | 62                                  |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 5                                                                                |                                                                                                                    | 10:00 - 11:00                                                                                         | 62.9                                | 63.8                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 6                                                                                |                                                                                                                    | 11:00 - 12:00                                                                                         | 61.7                                | 62                                  |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 7                                                                                |                                                                                                                    | 12:00 - 13:00                                                                                         | 64.6                                | 63.6                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 8                                                                                |                                                                                                                    | 13:00 - 14:00                                                                                         | 54.7                                | 55.5                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 9                                                                                |                                                                                                                    | 14:00 - 15:00                                                                                         | 45.9                                | 46.4                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 10                                                                               |                                                                                                                    | 15:00 - 16:00                                                                                         | 45.9                                | 45.7                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 11                                                                               |                                                                                                                    | 16:00 - 17:00                                                                                         | 46.5                                | 46.6                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 12                                                                               |                                                                                                                    | 17:00 - 18:00                                                                                         | 39.1                                | 40.7                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 13                                                                               |                                                                                                                    | 18:00 - 19:00                                                                                         | 48.1                                | 47.3                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 14                                                                               |                                                                                                                    | 19:00 - 20:00                                                                                         | 45.7                                | 45.1                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 15                                                                               |                                                                                                                    | 20:00 - 21:00                                                                                         | 47.1                                | 48.6                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 16                                                                               |                                                                                                                    | 21:00 - 22:00                                                                                         | 48.5                                | 48.2                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
|                                                                                  |                                                                                                                    | <b>Leq DAY</b>                                                                                        | 57.5                                | 57.6                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 1                                                                                | Noise Level dB(A)Leq<br>-Night                                                                                     | 22:00-23:00                                                                                           | 42.6                                | 41.9                                | CPCB, Protocol<br>for Ambient<br>Level Noise<br>Monitoring -<br>2015 | 35 dB-135 dB     | 35 dB(A)                  | Industrial<br>Commercial<br>Residential<br>Silence             | 70<br>55<br>45<br>50                                                                                       |            |
| 2                                                                                |                                                                                                                    | 23:00- 00:00                                                                                          | 38.1                                | 37.8                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 3                                                                                |                                                                                                                    | 00:00- 01:00                                                                                          | 37.5                                | 37.6                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 4                                                                                |                                                                                                                    | 01:00-02:00                                                                                           | 37.4                                | 37.9                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 5                                                                                |                                                                                                                    | 02:00-03:00                                                                                           | 37.7                                | 38.2                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 6                                                                                |                                                                                                                    | 03:00-04:00                                                                                           | 38.8                                | 41.6                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 7                                                                                |                                                                                                                    | 04:00-05:00                                                                                           | 38.9                                | 38.1                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| 8                                                                                |                                                                                                                    | 05:00-06:00                                                                                           | 38.5                                | 37.7                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
|                                                                                  |                                                                                                                    | <b>Leq NIGHT</b>                                                                                      | 36.9                                | 37.5                                |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| *LDL indicates Lower Detection Limit                                             |                                                                                                                    |                                                                                                       |                                     |                                     |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| **All noise measurements are integrated for a 01 hour period, All units in dB(A) |                                                                                                                    |                                                                                                       |                                     |                                     |                                                                      |                  |                           |                                                                |                                                                                                            |            |
|                                                                                  |                                                                                                                    |                                                                                                       |                                     |                                     |                                                                      |                  |                           |                                                                |                                                                                                            |            |
| Sampling Assistants                                                              |                                                                                                                    | <br>(Gaurav Kant) |                                     |                                     |                                                                      |                  |                           |                                                                | <br>(Amit Raj Mishra) |            |
| <b>ANALYSED BY</b>                                                               |                                                                                                                    | <b>REVIEWED BY</b>                                                                                    |                                     |                                     |                                                                      |                  |                           |                                                                | <b>Authorised Signatory</b>                                                                                |            |

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.

JOB NO. 200316028

Cluster – VII, BCCL Environmental Monitoring Report

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**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      | 07/2024                                                                                                            | Cluster            | Cluster VII                    |                                |                                                          |                           | ULR No.            | TC1012224000001082F                                            |                      |
|-------------------|--------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------|--------------------------------|----------------------------------------------------------|---------------------------|--------------------|----------------------------------------------------------------|----------------------|
| Customer          | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |                    |                                |                                |                                                          |                           |                    | Date of Issue                                                  | 23.09.2024           |
| Project           |                                                                                                                    | Sample Ref. No.    | REM/BCCL/2024/07               |                                |                                                          | Sampling Method           | CMPDI/RI-II/LPM 22 |                                                                |                      |
| Sampling Stations | i                                                                                                                  | Dobari UGP         | Date of Sampling               | 05.07.2024                     | 22.07.2024                                               | 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      | 53.3                           | 51.8                           | CPCB, Protocol for Ambient Level Noise Monitoring - 2015 | 35 dB-135 dB              | 35 dB(A)           | Industrial<br>Commercial<br>Residential<br>Silence             | 75<br>65<br>55<br>50 |
| 2                 |                                                                                                                    | 07:00 - 08:00      | 55.9                           | 52.1                           |                                                          |                           |                    |                                                                |                      |
| 3                 |                                                                                                                    | 08:00 - 09:00      | 58.3                           | 56.6                           |                                                          |                           |                    |                                                                |                      |
| 4                 |                                                                                                                    | 09:00 - 10:00      | 65.1                           | 62.4                           |                                                          |                           |                    |                                                                |                      |
| 5                 |                                                                                                                    | 10:00 - 11:00      | 66.7                           | 64.5                           |                                                          |                           |                    |                                                                |                      |
| 6                 |                                                                                                                    | 11:00 - 12:00      | 65.1                           | 66                             |                                                          |                           |                    |                                                                |                      |
| 7                 |                                                                                                                    | 12:00 - 13:00      | 69                             | 68.3                           |                                                          |                           |                    |                                                                |                      |
| 8                 |                                                                                                                    | 13:00 - 14:00      | 68.1                           | 68.3                           |                                                          |                           |                    |                                                                |                      |
| 9                 |                                                                                                                    | 14:00 - 15:00      | 63.5                           | 64.8                           |                                                          |                           |                    |                                                                |                      |
| 10                |                                                                                                                    | 15:00 - 16:00      | 64.2                           | 64.6                           |                                                          |                           |                    |                                                                |                      |
| 11                |                                                                                                                    | 16:00 - 17:00      | 63.5                           | 63.7                           |                                                          |                           |                    |                                                                |                      |
| 12                |                                                                                                                    | 17:00 - 18:00      | 61.5                           | 61                             |                                                          |                           |                    |                                                                |                      |
| 13                |                                                                                                                    | 18:00 - 19:00      | 59.6                           | 55.9                           |                                                          |                           |                    |                                                                |                      |
| 14                |                                                                                                                    | 19:00 - 20:00      | 58.1                           | 54.9                           |                                                          |                           |                    |                                                                |                      |
| 15                |                                                                                                                    | 20:00 - 21:00      | 56.9                           | 53.7                           |                                                          |                           |                    |                                                                |                      |
| 16                |                                                                                                                    | 21:00 - 22:00      | 57.8                           | 53.3                           |                                                          |                           |                    |                                                                |                      |
|                   |                                                                                                                    | <b>Leq DAY</b>     | 63.8                           | 63.2                           |                                                          |                           |                    |                                                                |                      |
| 1                 | Noise Level dB(A) Leq - Night                                                                                      | 22:00-23:00        | 49.1                           | 47.7                           | CPCB, Protocol for Ambient Level Noise Monitoring - 2015 | 35 dB-135 dB              | 35 dB(A)           | Industrial<br>Commercial<br>Residential<br>Silence             | 70<br>55<br>45<br>50 |
| 2                 |                                                                                                                    | 23:00- 00:00       | 45.5                           | 42.4                           |                                                          |                           |                    |                                                                |                      |
| 3                 |                                                                                                                    | 00:00- 01:00       | 39.3                           | 39.1                           |                                                          |                           |                    |                                                                |                      |
| 4                 |                                                                                                                    | 01:00-02:00        | 38.9                           | 38.8                           |                                                          |                           |                    |                                                                |                      |
| 5                 |                                                                                                                    | 02:00-03:00        | 38.7                           | 38.7                           |                                                          |                           |                    |                                                                |                      |
| 6                 |                                                                                                                    | 03:00-04:00        | 41.1                           | 41.3                           |                                                          |                           |                    |                                                                |                      |
| 7                 |                                                                                                                    | 04:00-05:00        | 40.7                           | 41.7                           |                                                          |                           |                    |                                                                |                      |
| 8                 |                                                                                                                    | 05:00-06:00        | 42                             | 41.8                           |                                                          |                           |                    |                                                                |                      |
|                   |                                                                                                                    | <b>Leq NIGHT</b>   | 39.1                           | 39.2                           |                                                          |                           |                    |                                                                |                      |

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

|                     |                    |                             |  |
|---------------------|--------------------|-----------------------------|--|
| Sampling Assistants | <br>(Gaurav Kant)  | <br>(Amit Raj Mishra)       |  |
| <b>ANALYSED BY</b>  | <b>REVIEWED BY</b> | <b>Authorised Signatory</b> |  |

JOB NO. 200316028

Cluster – VII, BCCL Environmental Monitoring 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                                                                     | 07/2024                                                                                                            | Cluster            | Cluster VII                                                                                           |                                  |                                                          |                  |                           | ULR No.                                                        | TC1012224000001082F                                                                                        |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------------|------------------|---------------------------|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Customer                                                                         | Environment Department, Bharat Coking Coal Limited (BCCL), Koyla Bhawan, Dhanbad (E-mail: gmenv.bccl@coalindia.in) |                    |                                                                                                       |                                  |                                                          |                  |                           | Date of Issue                                                  | 23.09.2024                                                                                                 |
| Project                                                                          |                                                                                                                    |                    | Sample Ref. No.                                                                                       | REM/BCCL/2024/07                 |                                                          | Sampling Method  |                           | CMPDI/RI-II/LPM 22                                             |                                                                                                            |
| Sampling Stations                                                                | i                                                                                                                  | Moonidih Washery   |                                                                                                       | Date of Sampling                 | 12.07.2024                                               | 23.07.2024       | 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      | 52.5                                                                                                  | 52.7                             | CPCB, Protocol for Ambient Level Noise Monitoring - 2015 | 35 dB-135 dB     | 35 dB(A)                  | Industrial<br>Commercial<br>Residential<br>Silence             | 75<br>65<br>55<br>50                                                                                       |
| 2                                                                                |                                                                                                                    | 07:00 - 08:00      | 55.1                                                                                                  | 55.5                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 3                                                                                |                                                                                                                    | 08:00 - 09:00      | 59                                                                                                    | 58.5                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 4                                                                                |                                                                                                                    | 09:00 – 10:00      | 62.8                                                                                                  | 62.9                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 5                                                                                |                                                                                                                    | 10:00 - 11:00      | 65.2                                                                                                  | 65.2                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 6                                                                                |                                                                                                                    | 11:00 - 12:00      | 66.3                                                                                                  | 63.7                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 7                                                                                |                                                                                                                    | 12:00 - 13:00      | 68.2                                                                                                  | 69                               |                                                          |                  |                           |                                                                |                                                                                                            |
| 8                                                                                |                                                                                                                    | 13:00 - 14:00      | 67.5                                                                                                  | 67.5                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 9                                                                                |                                                                                                                    | 14:00 - 15:00      | 62                                                                                                    | 62.9                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 10                                                                               |                                                                                                                    | 15:00 - 16:00      | 62.9                                                                                                  | 61.7                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 11                                                                               |                                                                                                                    | 16:00 - 17:00      | 61.2                                                                                                  | 59.1                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 12                                                                               |                                                                                                                    | 17:00 - 18:00      | 59.8                                                                                                  | 59                               |                                                          |                  |                           |                                                                |                                                                                                            |
| 13                                                                               |                                                                                                                    | 18:00 - 19:00      | 58.3                                                                                                  | 58.2                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 14                                                                               |                                                                                                                    | 19:00 - 20:00      | 57.1                                                                                                  | 57.7                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 15                                                                               |                                                                                                                    | 20:00 - 21:00      | 56.1                                                                                                  | 54.3                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 16                                                                               |                                                                                                                    | 21:00 - 22:00      | 53.7                                                                                                  | 54.4                             |                                                          |                  |                           |                                                                |                                                                                                            |
|                                                                                  |                                                                                                                    | Leq DAY            | 62.8                                                                                                  | 62.6                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 1                                                                                | Noise Level dB(A)Leq -Night                                                                                        | 22:00-23:00        | 50.1                                                                                                  | 50.7                             | CPCB, Protocol for Ambient Level Noise Monitoring - 2015 | 35 dB-135 dB     | 35 dB(A)                  | Industrial<br>Commercial<br>Residential<br>Silence             | 70<br>55<br>45<br>50                                                                                       |
| 2                                                                                |                                                                                                                    | 23:00- 00:00       | 42.1                                                                                                  | 41.4                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 3                                                                                |                                                                                                                    | 00:00- 01:00       | 38.4                                                                                                  | 38.3                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 4                                                                                |                                                                                                                    | 01.00-02.00        | 38.1                                                                                                  | 38.1                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 5                                                                                |                                                                                                                    | 02.00-03.00        | 37.8                                                                                                  | 36.9                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 6                                                                                |                                                                                                                    | 03.00-04.00        | 41.6                                                                                                  | 42.3                             |                                                          |                  |                           |                                                                |                                                                                                            |
| 7                                                                                |                                                                                                                    | 04.00-05.00        | 43.6                                                                                                  | 42                               |                                                          |                  |                           |                                                                |                                                                                                            |
| 8                                                                                |                                                                                                                    | 05:00-06:00        | 42                                                                                                    | 42.2                             |                                                          |                  |                           |                                                                |                                                                                                            |
|                                                                                  |                                                                                                                    | Leq NIGHT          | 39.6                                                                                                  | 39.4                             |                                                          |                  |                           |                                                                |                                                                                                            |
| *LDL indicates Lower Detection Limit                                             |                                                                                                                    |                    |                                                                                                       |                                  |                                                          |                  |                           |                                                                |                                                                                                            |
| **All noise measurements are integrated for a 01 hour period, All units in dB(A) |                                                                                                                    |                    |                                                                                                       |                                  |                                                          |                  |                           |                                                                |                                                                                                            |
| Sampling Assistants                                                              |                                                                                                                    |                    | <br>(Gaurav Kant) |                                  |                                                          |                  |                           |                                                                | <br>(Amit Raj Mishra) |
|                                                                                  | ANALYSED BY                                                                                                        |                    | REVIEWED BY                                                                                           |                                  |                                                          |                  |                           |                                                                | Authorised Signatory                                                                                       |

JOB NO. 200316028

Cluster – VII, BCCL Environmental Monitoring Report

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

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

**Note:**

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

\*\* 24hourly/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 18<sup>th</sup> November 2009

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

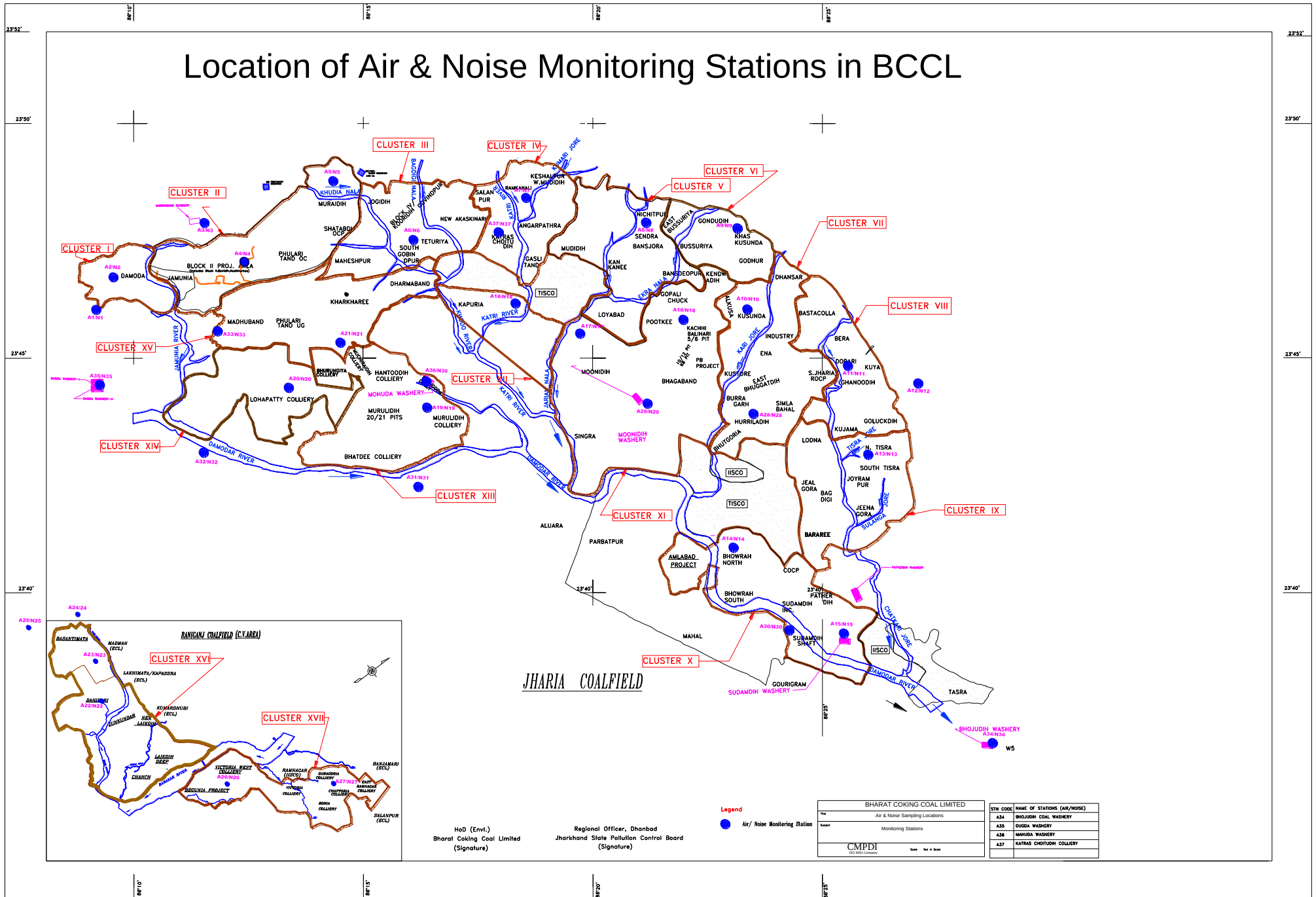
| Pollutant                                                                          | Time Weighted Average   | Concentration in Ambient Air                   |                                                              | Methods of Measurement                                                     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

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

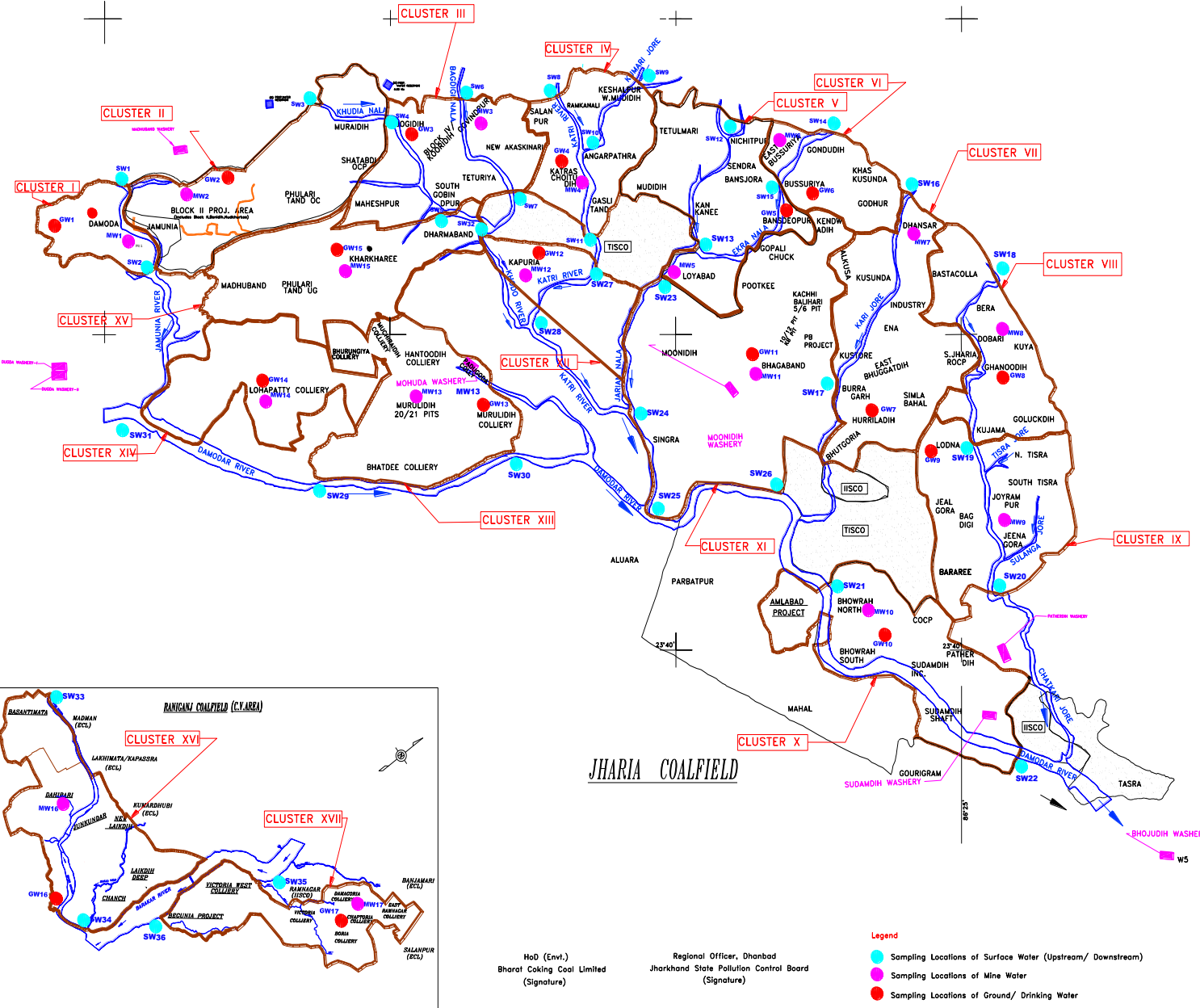
\*\* 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

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

# Location of Air & Noise Monitoring Stations in BCCL



# Water Sampling Locations in BCCL



## INDEX

| Cluster | Surface Water (U/S, D/S) | Name of River/Nala        | Effluent Water | Sampling Location  | Ground Water | Sampling Location |
|---------|--------------------------|---------------------------|----------------|--------------------|--------------|-------------------|
| I       | SW1, SW2                 | Jharia River              | MW1            | Damoda Area        | GW1          | Chutway 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     | Kan River, Kuman Jore     | MW4            | Chotudih           | GW4          | Kankane Village   |
| V       | SW12, SW13, SW15         | Jharia Nala, Ekra Nala    | MW5            | Mudidih            | GW5          | Nichitpur         |
| VI      | SW14, SW15               | Ekra Nala                 | MW6            | East Bassuria UGP  | GW6          | Bansara Borewell  |
| VII     | SW16, SW17               | Kan Jore                  | MW7            | Doban UGP          | GW7          | Humidih           |
| VIII    | SW18, SW19               | Kan Jore                  | MW8            | Doban UGP          | GW8          | Gharudih          |
| IX      | SW19, SW20               | Kan Jore                  | MW9            | Jemagora           | GW9          | Lodna             |
| X       | SW21, SW22               | Damodar River             | MW10           | Bhowrah North      | GW10         | Bhowrah South     |
| XI      | SW23, SW24, SW25, SW26   | Kan River, Damodar River  | MW11           | Bhagband UGP       | GW11         | Bhagband          |
| XII     | SW27, SW28               | Kan 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           | Kharkhane UGP      | GW15         | Kharkhane         |
| XVI     | SW35, SW36               | Khudra River              | MW16           | Bahabani OCP       | GW16         | Pallabani 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)

|             |                            |
|-------------|----------------------------|
| Company     | BHARAT COKING COAL LIMITED |
| Title       | WATER SAMPLING LOCATIONS   |
| Subject     | MONITORING STATIONS        |
| Scale       | 1:10,000                   |
| Drawn by    | ...                        |
| Checked by  | ...                        |
| Approved by | ...                        |