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A Mini Ratna Company

सेन्ट्रल माईन प्लानिंग एण्ड डिजाइन इन्स्टीच्यूट लिमिटेड
इंडीय मन्थान - 7, प्लट नम्बर: 8-4, गान्धी पार्क के निकट, सामन्तापुरी, पो: आर आर एन, भुवनेश्वर, (ओडिशा), 751013

Central Mine Planning & Design Institute Limited

(A Subsidiary of Coal India Limited / Govt. of India Public Sector Undertaking)

Regional Institute VII, Plot No: E-4, Near Gandhi Park, Samantapur, PO: RRL, Bhubaneswar 751013 (Orissa)

CORPORATE IDENTITY NUMBER - U14292JH1975GO1001223

Registered Office, CMPDI HQ, Gondwana Place Kanke Road, Ranchi-834031

CORPORATE IDENTITY NUMBER - U14292JH1975GO1001223

Letter No.: CMPDI/RI-7/REC LAB /2021-22/ 342

Dated: 15-07-2021

By e-mail

gmenvt2018@gmail.com

To

General Manager (Env. & Forest.)

Mahanadi Coal fields Limited

Jagruti Vihar,

Sambalpur – 768 020 (Odisha)

Subject: Monthly Routine Environmental Monitoring Report for the month of June, 2021 (I & II Phase).

संदर्भ : MCL/HQ/Environment & Forest/20-21/23 dated 23.03.2021

Dear Sir,

With reference to your work order Vide No. MCL/HQ/Environment & Forest/20-21/23 dated 23.03.2021 enclosing here with the Routine Environment Monitoring Data for the month of June, 2021

As desired by you soft copy in PDF & XLS format has been send by e- mail to gmenvt2018@gmail.com for necessary action at your end. The soft copies in PDF format has also been sent to each mine for necessary action by the project authorities.

Yours Sincerely,

[Handwritten Signature]
15/7/21

OIC (Lab)
CMPDI RI VII
Bhubaneswar

Copy to:

1. GM (Environment), CMPDI (HQs), Gondwana Place, Kanke Road, Ranchi.
2. CGM/GM, Ib valley / Orient / Lakhanpur / Basundhara Area./ Jagannath / Bharatpur / Lingaraj / Hingula / Talcher / Kaniha Area
3. The Project Officer, Samaleswari OCP / Lajkura OCP / Lakhanpur OCP / Lilari OCP / Belpahar OCP / Basundhara (West) OCP / Kulda OCP / Garjanbahal OCP/ Orient Mine No 1 & 2 / Orient Mine No. 3 / Orient Mine no.4 / HRC Mine / HBI Mine / Jagannath OCP / Ananta OCP / Hingula OCP / Lingaraj OCP / Balaram OCP / Bharatpur OCP / Nandira Colliery / Talcher colliery / Deulbera Colliery / Chhendipada OCP / Kaniha OCP



वेब साईट / Website Address : www.cmpdi.co.in E-mail: rdri7.cmpdi@coalindia.in

फोन नम्बर / Phone No : Phone: +91 (674) 2301271 फैक्स नम्बर / Fax No. : +91 (674) 2301762

CMPDI HQ : Phone No : Phone: +91 (651) 2230483/2230880 फैक्स नम्बर / Fax No. : +91 (651) 2231447

Job No.750001

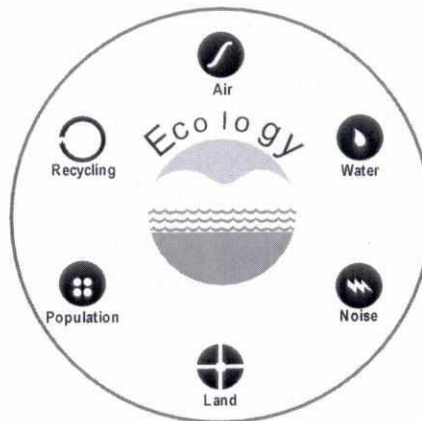
**Environmental Monitoring Report
Of
Ib Valley Area
For
June- 2021**

Ib Valley Coalfield



MCL

Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

The test report shall not be reproduced in part or full without written approval of the competent authority



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Ib Valley

(Compliance Station)

Project :

Lajkura OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|-------------------------|-----|------|-------|-------|-------|--|-------------------|
| 09-Jun-21 | Near South Coal Stock ✓ | 305 | 180 | 50 | 12.12 | 25.20 | Mining Activities, Coal Transportation | About 500m |
| 09-Jun-21 | Near Project Office ✓ | 269 | 148 | 38 | 10.93 | 18.99 | Domestic, OCP, Transportation | About 500m |
| 10-Jun-21 | North of the Mine ✓ | 279 | 158 | 47 | 17.87 | 25.97 | Mining Activity | About 500m |
| 25-Jun-21 | North of the Mine ✓ | 308 | 189 | 55 | 16.15 | 31.94 | Mining Activity | About 500m |
| 25-Jun-21 | Near South Coal Stock ✓ | 337 | 209 | 53 | 16.04 | 33.59 | Mining Activities, Coal Transportation | About 500m |
| 25-Jun-21 | Near Project Office ✓ | 287 | 169 | 42 | 19.41 | 32.67 | Domestic, OCP, Transportation | About 500m |

Project :

Samleswari OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|------------------------|-------|------|-------|-------|-------|--|-------------------|
| 03-Jun-21 | West of the Mine | 206 ✓ | 137 | 41 | 16.83 | 42.13 | Distance From 'y' Curve Railway Siding | About 450m |
| 03-Jun-21 | South of the Mine | 293 ✓ | 172 | 47 | 22.56 | 42.72 | Mine Haul Roads | About 400m |
| 05-Jun-21 | South-East of the Mine | 298 ✓ | 163 | 49 | 15.46 | 31.70 | Coal Transportation Road | About 500m |
| 05-Jun-21 | East of the Mine | 266 ✓ | 164 | 44 | 21.46 | 30.34 | Coal Transportation Road | About 500m |
| 23-Jun-21 | West of the Mine | 297 ✓ | 172 | 49 | 21.24 | 46.31 | Distance From 'y' Curve Railway Siding | About 450m |
| 23-Jun-21 | South of the Mine | 327 ✓ | 195 | 54 | 19.08 | 42.10 | Mine Haul Roads | About 400m |
| 24-Jun-21 | South-East of the Mine | 339 ✓ | 207 | 58 | 23.71 | 39.91 | Coal Transportation Road | About 500m |
| 24-Jun-21 | East of the Mine | 297 ✓ | 188 | 51 | 20.64 | 33.37 | Coal Transportation Road | About 500m |

K. Hanrik
 Authorized Signatory
 CMPDI, RI-VII, LAB
 BHUBANESWAR

Dal SW
 O.I.C.
 Env. Lab
 CMPDI, RI-VH
 Bhubaneswar

| | | | | |
|---|-----|-----|-----|-----|
| MoE Standards Notification dated 25th September, 2000 | 500 | 250 | 120 | 120 |
|---|-----|-----|-----|-----|



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Test Report

AMBIENT AIR QUALITY DATA

Area : **Ib Valley**

(Reference Station)

Project :

Samleswari OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|---------------------------|-----|------|-------|-------|-------|-----------------------------|------------------------|
| 01-Jun-21 | Khokelmal (Reported Only) | 78 | 46 | 26 | 17.78 | 29.24 | Railway siding | About 1000m FromSiding |
| 01-Jun-21 | Rampur Sub Area | 88 | 52 | 27 | 23.51 | 33.48 | Coal Stock And CT Road | About 900m |
| 02-Jun-21 | Rampur Sub Area | 206 | 60 | 32 | 16.83 | 42.13 | Coal Stock And CT Road | About 900m |
| 02-Jun-21 | Khokelmal (Reported Only) | 91 | 51 | 28 | 25.38 | 42.71 | Railway siding | About 1000m FromSiding |
| 07-Jun-21 | Khokelmal (Reported Only) | 103 | 63 | 31 | 31.01 | 42.40 | Railway siding | About 1000m FromSiding |
| 07-Jun-21 | Rampur Sub Area | 123 | 74 | 34 | 17.08 | 36.28 | Coal Stock And CT Road | About 900m |
| 08-Jun-21 | Rampur Sub Area | 118 | 71 | 37 | 19.74 | 29.96 | Coal Stock And CT Road | About 900m |
| 08-Jun-21 | Khokelmal (Reported Only) | 118 | 71 | 33 | 21.76 | 51.28 | Railway siding | About 1000m FromSiding |
| 18-Jun-21 | Khokelmal (Reported Only) | 144 | 88 | 48 | 21.72 | 50.37 | Railway siding | About 1000m FromSiding |
| 18-Jun-21 | Rampur Sub Area | 151 | 84 | 47 | 16.92 | 36.62 | Coal Stock And CT Road | About 900m |
| 19-Jun-21 | Rampur Sub Area | 155 | 76 | 41 | 15.66 | 26.35 | Coal Stock And CT Road | About 900m |
| 19-Jun-21 | Khokelmal (Reported Only) | 149 | 80 | 43 | 18.08 | 44.89 | Railway siding | About 1000m FromSiding |
| 21-Jun-21 | Rampur Sub Area | 124 | 69 | 39 | 21.84 | 25.50 | Coal Stock And CT Road | About 900m |
| 21-Jun-21 | Khokelmal (Reported Only) | 139 | 75 | 40 | 20.18 | 40.14 | Railway siding | About 1000m FromSiding |
| 22-Jun-21 | Khokelmal (Reported Only) | 115 | 74 | 35 | 24.44 | 49.84 | Railway siding | About 1000m FromSiding |
| 22-Jun-21 | Rampur Sub Area | 111 | 62 | 36 | 20.26 | 35.55 | Coal Stock And CT Road | About 900m |

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 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

*NAAQS.2009

| | | | |
|-----|----|----|----|
| 100 | 60 | 80 | 80 |
|-----|----|----|----|



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Ib Valley

(Reference Station)

Project :

Lajkura OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|--------------------|-----|------|-------|-------|-------|-----------------------------|------------------------|
| 01-Jun-21 | Khokelmal | 78 | 46 | 26 | 17.78 | 29.24 | Railway siding | About 1000m FromSiding |
| 02-Jun-21 | Khokelmal | 91 | 51 | 28 | 25.38 | 42.71 | Railway siding | About 1000m FromSiding |
| 07-Jun-21 | Khokelmal | 103 | 63 | 31 | 31.01 | 42.40 | Railway siding | About 1000m FromSiding |
| 08-Jun-21 | Khokelmal | 118 | 71 | 33 | 21.76 | 51.28 | Railway siding | About 1000m FromSiding |
| 18-Jun-21 | Khokelmal | 144 | 88 | 48 | 21.72 | 50.37 | Railway siding | About 1000m FromSiding |
| 19-Jun-21 | Khokelmal | 149 | 80 | 43 | 18.08 | 44.89 | Railway siding | About 1000m FromSiding |
| 21-Jun-21 | Khokelmal | 139 | 75 | 40 | 20.18 | 40.14 | Railway siding | About 1000m FromSiding |
| 22-Jun-21 | Khokelmal | 115 | 74 | 35 | 24.44 | 49.84 | Railway siding | About 1000m FromSiding |

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 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

| | | | | | |
|-------------|--|-----|----|----|----|
| *NAAQS,2009 | | 100 | 60 | 80 | 80 |
|-------------|--|-----|----|----|----|



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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

| Project | Samleswari OCP | | | |
|---------------------------|----------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | Khokelmal (Reported Only) | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 01-June-2021 | 4.12 | <0.1 | <1.0 | <1.0 |
| 02-June-2021 | 3.99 | <0.1 | <1.0 | <1.0 |
| 07-June-2021 | 4.20 | <0.1 | <1.0 | <1.0 |
| 08-June-2021 | 4.17 | <0.1 | <1.0 | <1.0 |
| 18-June-2021 | 3.47 | <0.1 | <1.0 | <1.0 |
| 19-June-2021 | 3.28 | <0.1 | <1.0 | <1.0 |
| 21-June-2021 | 3.54 | <0.1 | <1.0 | <1.0 |
| 22-June-2021 | 3.60 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

| Project | Samleswari OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | Rampur Sub Area | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 01-June-2021 | 3.21 | <0.1 | <1.0 | <1.0 |
| 02-June-2021 | 3.18 | <0.1 | <1.0 | <1.0 |
| 07-June-2021 | 3.22 | <0.1 | <1.0 | <1.0 |
| 08-June-2021 | 3.15 | <0.1 | <1.0 | <1.0 |
| 18-June-2021 | 2.71 | <0.1 | <1.0 | <1.0 |
| 19-June-2021 | 2.67 | <0.1 | <1.0 | <1.0 |
| 21-June-2021 | 2.54 | <0.1 | <1.0 | <1.0 |
| 22-June-2021 | 2.45 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Ib Valley

PROJECT :

Lajkura OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|-----------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 03-Jun-21 | Khokelmal | 66.7 | 64.9 |
| 03-Jun-21 | North of Mine | 64.8 | 63.2 |
| 03-Jun-21 | Near South Coal Stock | 66.7 | 62.1 |
| 03-Jun-21 | Near Project Office | 67.5 | 64.3 |
| 16-Jun-21 | Near Project Office | 64.7 | 58.6 |
| 16-Jun-21 | Near South Coal Stock | 66.9 | 63.2 |
| 16-Jun-21 | North of Mine | 64.8 | 62.6 |
| 16-Jun-21 | Khokelmal | 63.3 | 56.4 |

PROJECT :

Samleswari OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|---------------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 03-Jun-21 | South-East of the Mine | 64.7 | 61.8 |
| 03-Jun-21 | Khokelmal (Reported Only) | 66.7 | 64.9 |
| 03-Jun-21 | Rampur Sub Area | 67.8 | 63.2 |
| 03-Jun-21 | South of the Mine | 64.3 | 60.7 |
| 03-Jun-21 | East of the Mine | 66.9 | 62.4 |
| 03-Jun-21 | West of the Mine | 66.8 | 62.3 |
| 16-Jun-21 | South-East of the Mine | 67.4 | 62.1 |
| 16-Jun-21 | Khokelmal (Reported Only) | 63.3 | 56.4 |
| 16-Jun-21 | Rampur Sub Area | 63.9 | 57.6 |
| 16-Jun-21 | South of the Mine | 65.8 | 62.1 |
| 16-Jun-21 | West of the Mine | 63.6 | 57.6 |
| 16-Jun-21 | East of the Mine | 66.6 | 64.8 |

Method Standard Notification dated 25th September, 2000

6.00 AM - 10.00 PM
Leq 75dB(A)

10.00 PM - 6.00 AM
Leq 70dB(A)

Kattarouk
Authorized Signatory
CMPDI, RI-VII, Bhubaneswar

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O.I.C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar

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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Central Hospital

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|---|------|--------------|-----|-----|------|---------|
| 09-Jun-21 | Tap Discharge Water of Central Hospital | 7.85 | <4.0 | 30 | 20 | <2.0 | |

Project :

Lajkura OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|------------------|------|--------------|-----|-----|------|---------|
| 09-Jun-21 | Outlet of MDTP | 3.46 | <4.0 | 32 | 24 | | |
| 09-Jun-21 | STP Outlet | 7.50 | | 42 | | <2.0 | |
| 23-Jun-21 | Outlet of MDTP | 4.33 | <4.0 | 56 | 32 | | |
| 23-Jun-21 | STP Outlet | 7.51 | | 44 | | <2.0 | |

Project :

Samaleswari OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|------------------------------|------|--------------|-----|-----|------|---------|
| 09-Jun-21 | Outlet of Orampada Sump | 7.62 | <4.0 | 20 | 12 | | |
| 09-Jun-21 | Outlet of Sedimentation Pond | 7.44 | <4.0 | 16 | 12 | | |
| 09-Jun-21 | STP Outlet | 7.72 | | 28 | | <2.0 | |
| 09-Jun-21 | O&G Trap Inlet | 7.66 | <4.0 | 26 | 20 | | |
| 09-Jun-21 | O&G Trap Outlet | 7.74 | <4.0 | 20 | 16 | | |
| 23-Jun-21 | STP Outlet | 7.66 | | 40 | | <2.0 | |
| 23-Jun-21 | Outlet of Sedimentation Pond | 8.10 | <4.0 | 28 | 16 | | |

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MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents

5.5-9.0

10

100

250

30



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TABLE-

EFFLUENT QUALITY DATA

Area :

IB Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Samaleswari OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|------------------------------------|------|--------------|-----|-----|-----|---------|
| 09-Jun-21 | Discharge Point of Mine Sump Water | 6.90 | <4.0 | 34 | 50 | | |

H. Das
 Authorised Signatory
 CMPDI, RI-VII, LAB
 BHUBANESWAR

S. S. S. S.

O. I. C.
 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|



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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Samaleswari OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|---------------------------------|------|--------------|-----|-----|-----|---------|
| 23-Jun-21 | Mine Sump Water Discharge Point | 6.74 | <4.0 | 38 | 32 | | |

Kattarai
 Authorised Signatory
 CMPDI, RI-VII, LAB
 BHUBANESWAR

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 O.L.C.
 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar

| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|



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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Central Hospital

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|---|------|--------------|-----|-----|------|---------|
| 10-Apr-21 | Tap Discharge Water of Central Hospital | 7.78 | <4.0 | 26 | 16 | <2.0 | |
| 13-May-21 | Tap Discharge Water of Central Hospital | 7.64 | <4.0 | 34 | 20 | <2.0 | |

[Handwritten Signature]

**Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR**

**O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar**

| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|



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Drinking Water Quality Data IB Valley Area

| Project / OCP | Samaleswari OCP | | Indian Drinking Standards (IS-10500):2012 | |
|---|--------------------------------|--|--|----------------------|
| | Well Water From Kudopali | Tap Water From Samaleswari OCP Colony | | |
| Monitoring Station | | | | |
| Date of Sampling | 9-Jun-2021 | 9-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 1 | 3 | 1 | 5 |
| pH | 6.97 | 7.04 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 92 | 108 | 200 | 600 |
| Total Hardness (Ca CO₃)(mg/L) | 84 | 100 | 200 | 600 |
| Iron(mg/L) | <0.1 | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 20 | 26 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 188 | 212 | 500 | 2000 |
| Calcium(mg/L) | 22.44 | 24.05 | 75 | 200 |
| Copper(mg/L) | <0.03 | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 28.53 | 13.85 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | <0.04 | 0.15 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | <0.001 | 0.003 | No relaxation |

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Env. Lab
CMPDI, RI-VII
Bhubaneswar



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Drinking Water Quality Data IB Valley Area

| Project / OCP | Samleswari OCP | | Indian Drinking Standards (IS-10500):2012 | |
|--|---------------------------------------|-------------------------------|--|---------------|
| | Water from IWSS, IB Valley Area | Well Water From Lajkura | | |
| Monitoring Station | | | | |
| Date of Sampling | 9-Jun-2021 | 9-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 1 | 3 | 1 | 5 |
| pH | 7.18 | 7.14 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 84 | 80 | 200 | 600 |
| Total Hardness (Ca CO ₃)(mg/L) | 84 | 80 | 200 | 600 |
| Iron(mg/L) | <0.1 | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 24 | 24 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 186 | 190 | 500 | 2000 |
| Calcium(mg/L) | 19.24 | 22.44 | 75 | 200 |
| Copper(mg/L) | <0.03 | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 14.83 | 17.90 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | 0.05 | 0.06 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | <0.001 | 0.003 | No relaxation |

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Drinking Water Quality Data IB Valley Area

| Project / OCP | Lajkura OCP | | Indian Drinking Standards (IS-10500):2012 | |
|---|---------------------------------------|---------------------------------|--|----------------------|
| | Chhualiberna Village Well Water | VIP Guest House Tap Water | | |
| Monitoring Station | | | | |
| Date of Sampling | 9-Jun-2021 | 9-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 2 | 1 | 1 | 5 |
| pH | 6.52 | 7.12 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 44 | 72 | 200 | 600 |
| Total Hardness (Ca CO₃)(mg/L) | 92 | 80 | 200 | 600 |
| Iron(mg/L) | <0.1 | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 26 | 18 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 158 | 178 | 500 | 2000 |
| Calcium(mg/L) | 30.46 | 24.05 | 75 | 200 |
| Copper(mg/L) | <0.03 | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 15.66 | 30.35 | 200 | 400 |
| Nitrate(mg/L) | 6.48 | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | 0.35 | 0.15 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | <0.001 | 0.003 | No relaxation |

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Drinking Water Quality Data IB Valley Area

| Project / OCP | Lajkura OCP | | Indian Drinking Standards (IS-10500):2012 | |
|--|---------------------------------|--------------------------------------|--|---------------|
| | Madhuban Nagar Well Water | Adarsh Nagar Colony Well Water | | |
| Monitoring Station | | | | |
| Date of Sampling | 9-Jun-2021 | 9-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 1 | 2 | 1 | 5 |
| pH | 6.63 | 6.77 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 48 | 120 | 200 | 600 |
| Total Hardness (Ca CO ₃)(mg/L) | 88 | 124 | 200 | 600 |
| Iron(mg/L) | <0.1 | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 36 | 42 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 174 | 322 | 500 | 2000 |
| Calcium(mg/L) | 24.05 | 40.08 | 75 | 200 |
| Copper(mg/L) | <0.03 | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 13.40 | 29.23 | 200 | 400 |
| Nitrate(mg/L) | 16.68 | 15.56 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | 0.36 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | <0.04 | 0.38 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | <0.001 | 0.003 | No relaxation |

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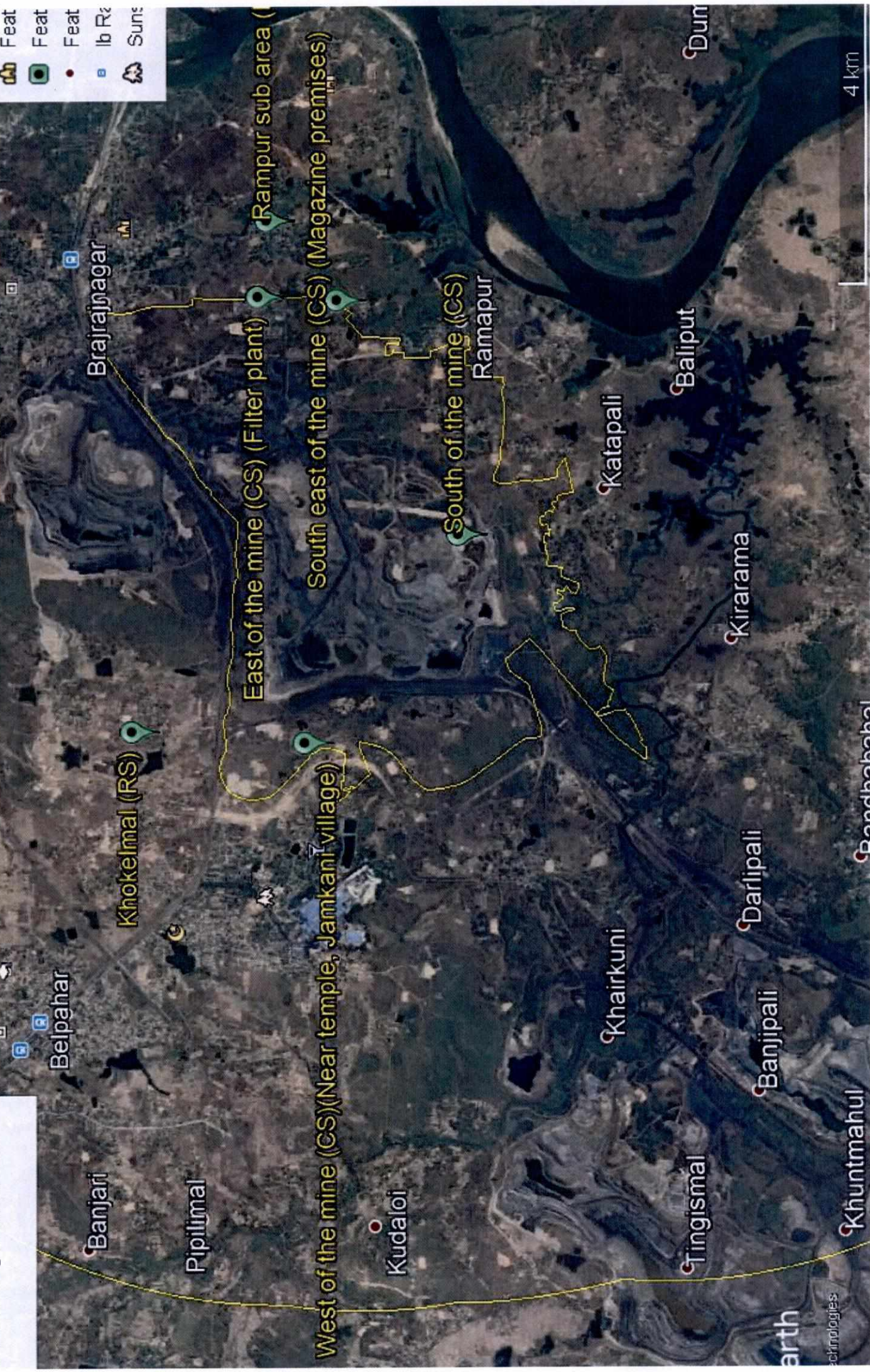
S. I. S. W.

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Wari Air stations

Air monitoring stations 2021

- Legend**
- Belp
 - Feat
 - Feat
 - Feat
 - Feat
 - lb Rz
 - Suns



Lajkura Air Stations

Lajkura Air monitoring stations

North of the mine (CS)

Near project office (CS)

Khokelmal (RS)

Near south coal stock (CS)

Brajrajnagar

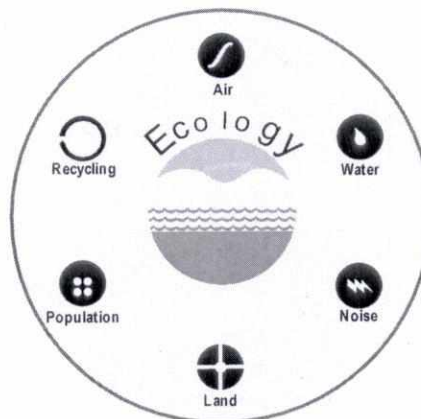
Job No.750001

**Environmental Monitoring Report
Of
Lakhanpur Area
For
June- 2021**

Ib Valley Coalfield



Mahanadi Coalfields Limited



Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Lakhanpur

(Compliance Station)

Project :

Lilari OCP

(conc. in $\mu\text{g}/\text{cu.m.}$)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|----------------------------|-----|------|-------|-------|-------|------------------------|-------------------|
| 05-Jun-21 | Near Lilari Magazine House | 199 | 118 | 42 | 21.19 | 34.34 | Coal Transportation | About 500m |
| 26-Jun-21 | Near Lilari Magazine House | 249 | 151 | 46 | 20.08 | 35.94 | Coal Transportation | About 500m |

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| | | | | | |
|--|-----|-----|--|-----|-----|
| MoEF Standards Notification dated 25th September, 2000 | 600 | 300 | | 120 | 120 |
|--|-----|-----|--|-----|-----|



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Lakhanpur

(Compliance Station)

Project :

Belpahar OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|-------------------------|-----|------|-------|-------|-------|------------------------|-------------------|
| 11-Jun-21 | Near Magazine House ✓ | 214 | 127 | 49 | 17.72 | 39.52 | Mining Activities | About 500m |
| 11-Jun-21 | Near Central Workshop ✓ | 247 | 149 | 51 | 16.81 | 23.98 | Mining Activities | About 500m |
| 28-Jun-21 | Near Magazine House ✓ | 275 | 150 | 46 | 18.77 | 39.82 | Mining Activities | About 500m |
| 28-Jun-21 | Near Central Workshop ✓ | 319 | 203 | 58 | 16.52 | 23.66 | Mining Activities | About 500m |

Project :

Lakhanpur OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|---------------------------------|-----|------|-------|-------|-------|--|-------------------|
| 10-Jun-21 | Near Lilari Nallah Pump House ✓ | 113 | 65 | 30 | 16.31 | 44.29 | Mining Activities | About 500m |
| 11-Jun-21 | Near Quarry 3 ✓ | 211 | 121 | 48 | 26.04 | 43.01 | Coal Stockyard, Surface Bunker, Coal Transport | About 500m |
| 26-Jun-21 | Near Quarry 3 ✓ | 297 | 173 | 55 | 17.02 | 30.80 | Coal Stockyard, Surface Bunker, Coal Transport | About 500m |
| 26-Jun-21 | Near Lilari Nallah Pump House ✓ | 197 | 109 | 37 | 18.47 | 27.19 | Mining Activities | About 500m |

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| | | | | | |
|--|-----|-----|--|-----|-----|
| MoEF Standards Notification dated 25th September, 2000 | 500 | 250 | | 120 | 120 |
|--|-----|-----|--|-----|-----|



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Lakhanpur

(Reference Station)

Project :

Lakhanpur OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|------------------------|-----|------|-------|-------|-------|-----------------------------|-------------------|
| 01-Jun-21 | South West of Quarry 6 | 96 | 58 | 33 | 20.90 | 39.96 | Mining Related Activities | About 500m |
| 01-Jun-21 | South of Quarry 6 | 119 | 77 | 42 | 16.67 | 28.06 | | |
| 02-Jun-21 | South of Quarry 6 | 134 | 85 | 46 | 22.16 | 35.68 | | |
| 02-Jun-21 | South West of Quarry 6 | 110 | 64 | 37 | 18.97 | 30.47 | Mining Related Activities | About 500m |
| 07-Jun-21 | South West of Quarry 6 | 124 | 68 | 40 | 22.81 | 57.60 | Mining Related Activities | About 500m |
| 07-Jun-21 | South of Quarry 6 | 111 | 69 | 39 | 20.58 | 25.98 | | |
| 08-Jun-21 | South of Quarry 6 | 118 | 67 | 36 | 19.77 | 31.72 | | |
| 08-Jun-21 | South West of Quarry 6 | 137 | 79 | 43 | 19.62 | 45.93 | Mining Related Activities | About 500m |
| 16-Jun-21 | South West of Quarry 6 | 159 | 91 | 50 | 16.66 | 30.19 | Mining Related Activities | About 500m |
| 17-Jun-21 | South West of Quarry 6 | 166 | 86 | 52 | 21.15 | 23.27 | Mining Related Activities | About 500m |
| 18-Jun-21 | South of Quarry 6 | 160 | 89 | 47 | 20.16 | 38.99 | | |
| 19-Jun-21 | South of Quarry 6 | 164 | 86 | 49 | 21.52 | 30.85 | | |
| 21-Jun-21 | South of Quarry 6 | 169 | 80 | 39 | 18.99 | 33.32 | | |
| 21-Jun-21 | South West of Quarry 6 | 143 | 83 | 48 | 24.69 | 28.48 | Mining Related Activities | About 500m |
| 22-Jun-21 | South West of Quarry 6 | 128 | 73 | 44 | 15.35 | 26.52 | Mining Related Activities | About 500m |
| 22-Jun-21 | South of Quarry 6 | 146 | 66 | 41 | 22.85 | 38.46 | | |

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| | | | | |
|--------------|-----|----|----|----|
| *NAAQS, 2009 | 100 | 60 | 80 | 80 |
|--------------|-----|----|----|----|

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Lakhanpur

(Reference Station)

Project :

Belpahar OCP

(conc. in $\mu\text{g}/\text{cu.m.}$)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|---------------------|-----|------|-------|-------|-------|--|-------------------|
| 01-Jun-21 | South of the Mine ✓ | 145 | 82 | 42 | 26.07 | 34.93 | Mining Activities, Coal Transportation | About 500m |
| 01-Jun-21 | East of the Mine ✓ | 118 | 72 | 32 | 19.01 | 31.27 | Mining Activities | About 500m |
| 02-Jun-21 | East of the Mine ✓ | 102 | 62 | 36 | 22.81 | 32.22 | Mining Activities | About 500m |
| 02-Jun-21 | South of the Mine ✓ | 137 | 70 | 39 | 22.12 | 36.37 | Mining Activities, Coal Transportation | About 500m |
| 07-Jun-21 | South of the Mine ✓ | 140 | 78 | 43 | 12.61 | 35.59 | Mining Activities, Coal Transportation | About 500m |
| 07-Jun-21 | East of the Mine ✓ | 137 | 78 | 41 | 26.10 | 35.74 | Mining Activities | About 500m |
| 08-Jun-21 | East of the Mine ✓ | 126 | 76 | 39 | 23.90 | 45.47 | Mining Activities | About 500m |
| 08-Jun-21 | South of the Mine ✓ | 135 | 68 | 38 | 18.10 | 48.75 | Mining Activities, Coal Transportation | About 500m |
| 14-Jun-21 | South of the Mine ✓ | 117 | 74 | 37 | 23.46 | 37.29 | Mining Activities, Coal Transportation | About 500m |
| 15-Jun-21 | South of the Mine ✓ | 135 | 86 | 46 | 27.04 | 45.51 | Mining Activities, Coal Transportation | About 500m |
| 16-Jun-21 | East of the Mine ✓ | 159 | 78 | 43 | 18.56 | 31.99 | Mining Activities | About 500m |
| 17-Jun-21 | East of the Mine ✓ | 150 | 80 | 48 | 23.20 | 34.45 | Mining Activities | About 500m |
| 21-Jun-21 | East of the Mine ✓ | 131 | 74 | 40 | 12.03 | 37.59 | Mining Activities | About 500m |
| 21-Jun-21 | South of the Mine ✓ | 162 | 89 | 49 | 18.38 | 23.97 | Mining Activities, Coal Transportation | About 500m |
| 22-Jun-21 | South of the Mine ✓ | 174 | 85 | 51 | 13.71 | 38.97 | Mining Activities, Coal Transportation | About 500m |
| 22-Jun-21 | East of the Mine ✓ | 139 | 72 | 37 | 18.90 | 37.51 | Mining Activities | About 500m |

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24/5/21

| | | | | |
|-------------|-----|----|----|----|
| *NAAQS.2009 | 100 | 60 | 80 | 80 |
|-------------|-----|----|----|----|

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

| Project | Lakhanpur OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | South of Quarry 6 | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 01-June-2021 | 2.86 | <0.1 | <1.0 | <1.0 |
| 02-June-2021 | 2.74 | <0.1 | <1.0 | <1.0 |
| 07-June-2021 | 2.65 | <0.1 | <1.0 | <1.0 |
| 08-June-2021 | 2.60 | <0.1 | <1.0 | <1.0 |
| 18-June-2021 | 3.99 | <0.1 | <1.0 | <1.0 |
| 19-June-2021 | 4.01 | <0.1 | <1.0 | <1.0 |
| 21-June-2021 | 4.12 | <0.1 | <1.0 | <1.0 |
| 22-June-2021 | 4.24 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

| Project | Lakhanpur OCP | | | |
|---------------------------|-------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | South West of Quarry 6 | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 01-June-2021 ✓ | 3.54 | <0.1 | <1.0 | <1.0 |
| 02-June-2021 ✓ | 3.47 | <0.1 | <1.0 | <1.0 |
| 07-June-2021 ✓ | 3.51 | <0.1 | <1.0 | <1.0 |
| 08-June-2021 ✓ | 3.49 | <0.1 | <1.0 | <1.0 |
| 16-June-2021 ✓ | 3.86 | <0.1 | <1.0 | <1.0 |
| 17-June-2021 ✓ | 3.76 | <0.1 | <1.0 | <1.0 |
| 21-June-2021 ✓ | 3.61 | <0.1 | <1.0 | <1.0 |
| 22-June-2021 ✓ | 3.81 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

| Project | Belpahar OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | East of the Mine | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 01-June-2021 | 2.76 | <0.1 | <1.0 | <1.0 |
| 02-June-2021 | 2.61 | <0.1 | <1.0 | <1.0 |
| 07-June-2021 | 2.57 | <0.1 | <1.0 | <1.0 |
| 08-June-2021 | 2.50 | <0.1 | <1.0 | <1.0 |
| 16-June-2021 | 3.27 | <0.1 | <1.0 | <1.0 |
| 17-June-2021 | 3.33 | <0.1 | <1.0 | <1.0 |
| 21-June-2021 | 3.41 | <0.1 | <1.0 | <1.0 |
| 22-June-2021 | 3.29 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

| roject | Belpahar OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | South of the Mine | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 01-June-2021 | 2.31 | <0.1 | <1.0 | <1.0 |
| 02-June-2021 | 2.28 | <0.1 | <1.0 | <1.0 |
| 07-June-2021 | 2.18 | <0.1 | <1.0 | <1.0 |
| 08-June-2021 | 2.23 | <0.1 | <1.0 | <1.0 |
| 14-June-2021 | 2.14 | <0.1 | <1.0 | <1.0 |
| 15-June-2021 | 2.25 | <0.1 | <1.0 | <1.0 |
| 21-June-2021 | 2.12 | <0.1 | <1.0 | <1.0 |
| 22-June-2021 | 2.36 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Lakhanpur

PROJECT :

Belpahar OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|-----------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 04-Jun-21 | East of the Mine | 65.8 | 63.2 |
| 04-Jun-21 | South of the Mine | 63.3 | 57.7 |
| 04-Jun-21 | Near Magazine House | 66.8 | 64.6 |
| 04-Jun-21 | Near Central Workshop | 66.6 | 64.9 |
| 17-Jun-21 | Near Central Workshop | 66.3 | 60.8 |
| 17-Jun-21 | Near Magazine House | 67.5 | 62.9 |
| 17-Jun-21 | South of the Mine | 64.9 | 63.6 |
| 17-Jun-21 | East of the Mine | 68.2 | 64.6 |

PROJECT :

Lakhanpur OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|-------------------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 04-Jun-21 | Near Lilari Nallah Pump House | 66.9 | 57.6 |
| 04-Jun-21 | Near Quarry 3 | 64.2 | 60.8 |
| 04-Jun-21 | South of Quarry 6 | 63.6 | 58.6 |
| 04-Jun-21 | South West of Quarry 6 | 64.7 | 59.3 |
| 17-Jun-21 | Near Lilari Nallah Pump House | 64.8 | 62.1 |
| 17-Jun-21 | Near Quarry 3 | 66.3 | 64.9 |
| 17-Jun-21 | South of Quarry 6 | 64.8 | 62.6 |
| 17-Jun-21 | South West of Quarry 6 | 63.2 | 56.8 |

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MoEF Standard Notification dated 25th September, 2000

6.00 AM - 10.00 PM
Leq 75dB(A)

10.00 PM - 6.00 AM
Leq 70dB(A)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Lakhanpur

PROJECT :

Lilari OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|----------------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 04-Jun-21 | Near Lilari Magazine House | 68.8 | 63.2 |
| 17-Jun-21 | Near Lilari Magazine House | 68.2 | 63.6 |

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MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
 Leq 75dB(A)

10.00 PM -6.00 AM
 Leq 70dB(A)

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TABLE--

EFFLUENT QUALITY DATA

Area :

Lakhanpur

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Belpahar OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|--|------|--------------|-----|-----|-----|---------|
| 10-Jun-21 | Clear Water Tank of MDTP | 7.05 | <4.0 | 70 | 64 | | |
| 10-Jun-21 | Clear Water Tank of Sewage Treatment Plant | - | | - | | - | DRY |
| 24-Jun-21 | Clear Water Tank of Sewage Treatment Plant | - | | - | | - | DRY |
| 24-Jun-21 | Clear Water Tank of MDTP | 7.51 | <4.0 | 54 | 36 | | |

Project :

Lakhanpur OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|--|------|--------------|-----|-----|-----|---------|
| 10-Jun-21 | Outlet of Secondary Sedimentation Tank | 7.08 | <4.0 | 68 | 56 | | |
| 10-Jun-21 | Mine Sump Water | 7.03 | <4.0 | 62 | 48 | | |
| 24-Jun-21 | Mine Sump Water | 7.47 | <4.0 | 48 | 36 | | |
| 24-Jun-21 | Outlet of Secondary Sedimentation Tank | 7.47 | <4.0 | 46 | 32 | | |

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| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|



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Drinking Water Quality Data Lakhanpur Area

| Project / OCP | Belpahar OCP | Indian Drinking Standards (IS-10500):2012 | |
|---|--------------|--|---------------|
| Monitoring Station | IWSS Outlet | Acceptable | Permissible |
| Date of Sampling | 10-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 2 | 1 | 5 |
| pH | 7.69 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 68 | 200 | 600 |
| Total Hardness (Ca CO ₃)(mg/L) | 88 | 200 | 600 |
| Iron(mg/L) | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 26 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 184 | 500 | 2000 |
| Calcium(mg/L) | 19.24 | 75 | 200 |
| Copper(mg/L) | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 27.41 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | <0.04 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | 0.003 | No relaxation |

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Drinking Water Quality Data Lakhanpur Area

| Project / OCP | Lakhanpur OCP | Indian Drinking Standards (IS-10500):2012 | |
|---|--------------------------|--|---------------|
| Monitoring Station | LKP Canteen Tap Water | Acceptable | Permissible |
| Date of Sampling | 10-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 2 | 1 | 5 |
| pH | 7.75 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 60 | 200 | 600 |
| Total Hardness (Ca CO ₃)(mg/L) | 96 | 200 | 600 |
| Iron(mg/L) | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 30 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 194 | 500 | 2000 |
| Calcium(mg/L) | 24.05 | 75 | 200 |
| Copper(mg/L) | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 26.85 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | 0.06 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | 0.003 | No relaxation |

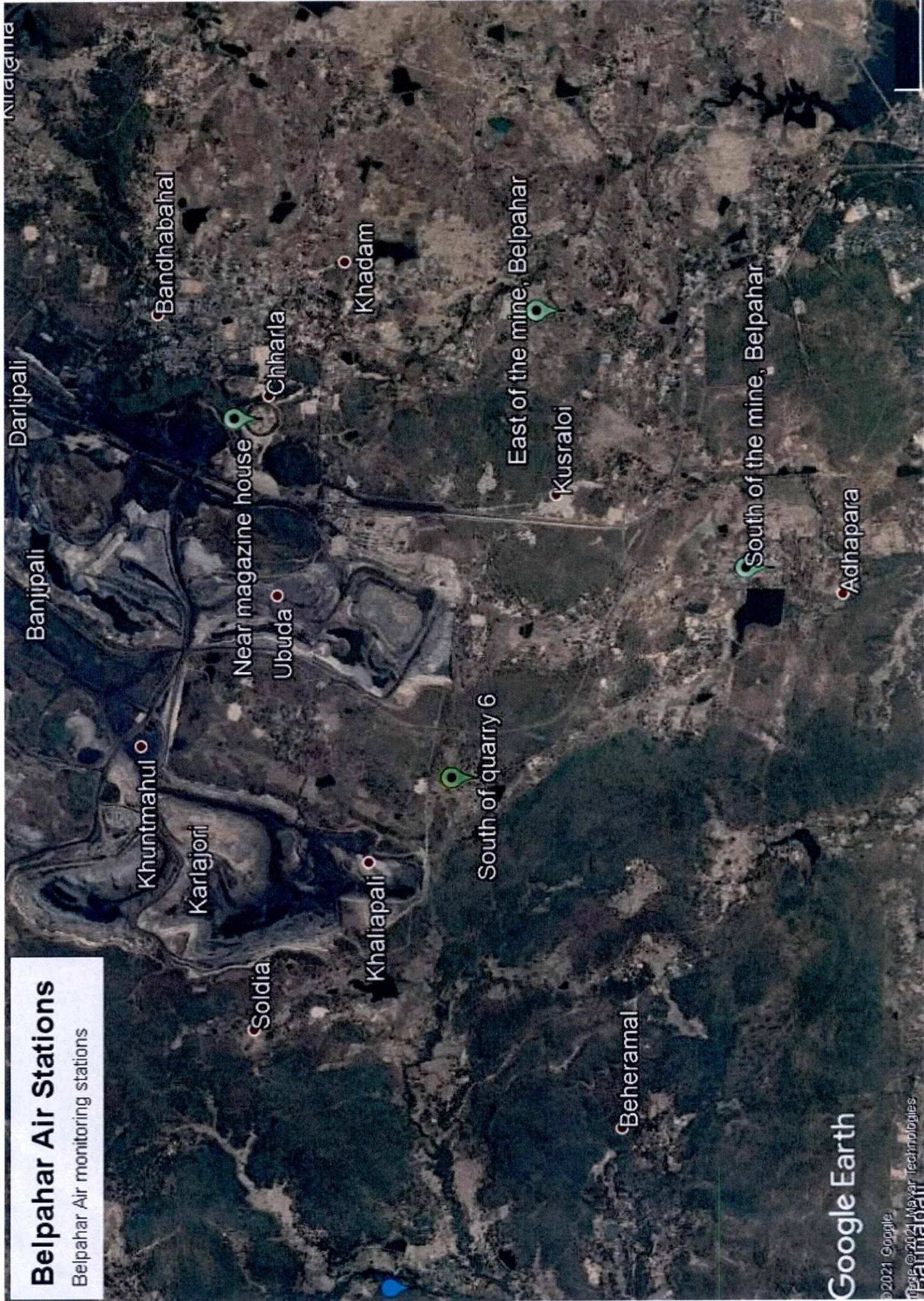
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CMPDI, RI-VII
Bhubaneswar

Belpahar Air Stations

Belpahar Air monitoring stations



Ukhanpur Air Station 2021

Ukhanpur Air monitoring station



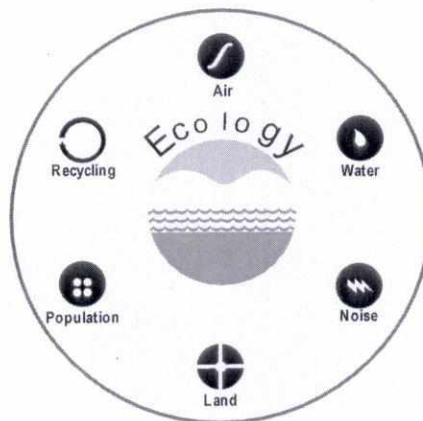
Job No.750001

**Environmental Monitoring Report
Of
Mahalaxmi Area
For
June- 2021**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in $\mu\text{g}/\text{cu.m.}$)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|--|-----|------|-------|-------|-------|---|-------------------|
| 12-Jun-21 | West of Coal Stock ✓ | 208 | 138 | 39 | 16.02 | 31.68 | Mining Activities, OCP, Transportation | About 500m |
| 12-Jun-21 | South West of Working Face Gopalpur Village, Near CMPDI Camp ✓ | 162 | 89 | 36 | 20.82 | 39.24 | Mining Activity | About 500m |
| 12-Jun-21 | North of the Sardega Railway Siding ✓ | 238 | 142 | 47 | 21.58 | 33.89 | Mining Activities, OCP, Coal Transportation | About 500m |
| 29-Jun-21 | West of Coal Stock ✓ | 268 | 177 | 56 | 19.91 | 23.31 | Mining Activities, OCP, Transportation | About 500m |
| 29-Jun-21 | South West of Working Face Gopalpur Village, Near CMPDI Camp ✓ | 195 | 124 | 40 | 20.74 | 40.73 | Mining Activity | About 500m |
| 29-Jun-21 | North of the Sardega Railway Siding ✓ | 323 | 193 | 52 | 25.35 | 33.19 | Mining Activities, OCP, Coal Transportation | About 500m |

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| | | | | | |
|--|-----|-----|--|-----|-----|
| MoEF Standards Notification dated 25th September, 2000 | 500 | 250 | | 120 | 120 |
|--|-----|-----|--|-----|-----|



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|--------------------------------|-----|------|-------|-------|-------|-----------------------------|-------------------|
| 03-Jun-21 | Sarangijharia Community Centre | 142 | 77 | 29 | 18.93 | 45.61 | Domestic | About 500m |
| 04-Jun-21 | Sarangijharia Community Centre | 128 | 81 | 31 | 21.76 | 36.62 | Domestic | About 500m |
| 09-Jun-21 | Sarangijharia Community Centre | 128 | 87 | 33 | 22.09 | 40.97 | Domestic | About 500m |
| 10-Jun-21 | Sarangijharia Community Centre | 114 | 70 | 30 | 18.52 | 28.34 | Domestic | About 500m |
| 16-Jun-21 | Sarangijharia Community Centre | 117 | 61 | 38 | 23.24 | 42.38 | Domestic | About 500m |
| 17-Jun-21 | Sarangijharia Community Centre | 102 | 70 | 37 | 19.69 | 41.79 | Domestic | About 500m |
| 23-Jun-21 | Sarangijharia Community Centre | 108 | 59 | 29 | 17.26 | 30.43 | Domestic | About 500m |
| 24-Jun-21 | Sarangijharia Community Centre | 98 | 63 | 32 | 22.95 | 45.06 | Domestic | About 500m |

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*NAAQS.2009

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

| Project | Basundhara (W) OCP | | | |
|---------------------------|---------------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | Sarangijharia Community Centre | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 03-June-2021 | 3.71 | <0.1 | <1.0 | <1.0 |
| 04-June-2021 | 3.64 | <0.1 | <1.0 | <1.0 |
| 09-June-2021 | 3.65 | <0.1 | <1.0 | <1.0 |
| 10-June-2021 | 3.59 | <0.1 | <1.0 | <1.0 |
| 16-June-2021 | 3.86 | <0.1 | <1.0 | <1.0 |
| 17-June-2021 | 3.71 | <0.1 | <1.0 | <1.0 |
| 23-June-2021 | 3.47 | <0.1 | <1.0 | <1.0 |
| 24-June-2021 | 3.61 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|-------------------------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 05-Jun-21 | Sarangijharia Community Centre | 64.6 | 57.6 |
| 05-Jun-21 | South-West of Working Face | 68.3 | 62.8 |
| 05-Jun-21 | West of Coal Stock | 66.7 | 59.8 |
| 05-Jun-21 | North of the Sardega Railway Siding | 63.2 | 57.8 |
| 18-Jun-21 | Sarangijharia Community Centre | 63.6 | 58.7 |
| 18-Jun-21 | South-West of Working Face | 66.3 | 56.2 |
| 18-Jun-21 | West of Coal Stock | 64.6 | 59.3 |
| 18-Jun-21 | North of the Sardega Railway Siding | 65.3 | 57.6 |

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| | | |
|---|----------------------------------|----------------------------------|
| MoEF Standard Notification dated 25th September, 2000 | 6.00 AM -10.00 PM Leq 75dB(A) | 10.00 PM -6.00 AM Leq 70dB(A) |
|---|----------------------------------|----------------------------------|



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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|--|------|--------------|-----|-----|-----|---------|
| 11-Jun-21 | M1-Basundhara (E) OCP's Sump ✓ | 8.06 | <4.0 | 32 | 24 | | |
| 11-Jun-21 | Inlet of Settling Pond at Excavation Workshop, B(W) OCP ✓ | 7.39 | <4.0 | 42 | 32 | | |
| 11-Jun-21 | Outlet of Settling Pond at Excavation Workshop, B(W) OCP ✓ | 8.10 | <4.0 | 28 | 20 | | |
| 25-Jun-21 | M1-Basundhara (E) OCP's Sump ✓ | 7.86 | <4.0 | 34 | 28 | | |

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24/5/21

| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|

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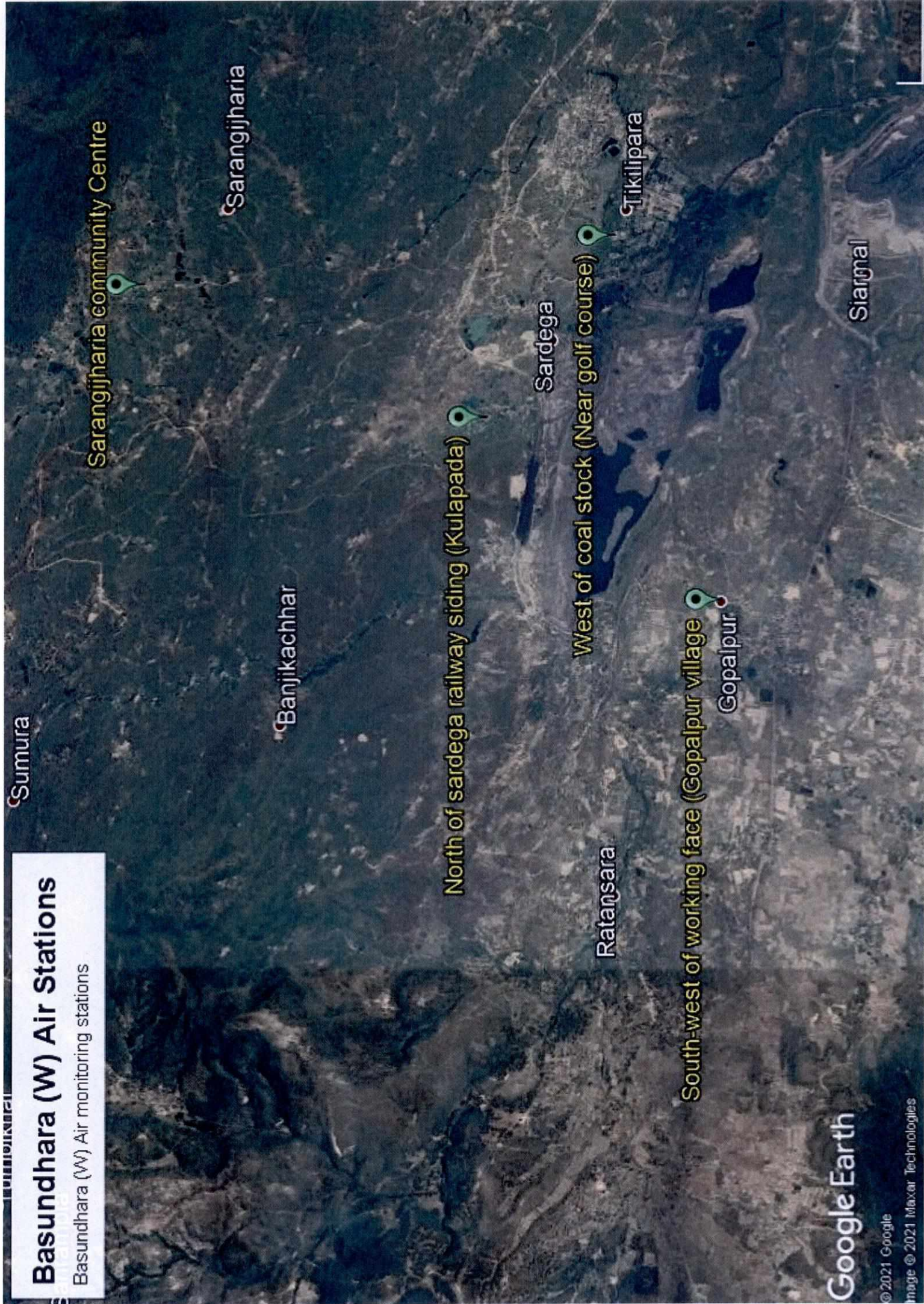
Drinking Water Quality Data Mahalaxmi Area

| Project / OCP | Basundhara OCP | Indian Drinking Standards (IS-10500):2012 | |
|--|---|---|---------------|
| Monitoring Station | Water Treatment Plant Clear Water Reservoir | Acceptable | Permissible |
| Date of Sampling | 11-Jun-2021 | | |
| Colour(Hazen) | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 1 | 1 | 5 |
| pH | 6.98 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 16 | 200 | 600 |
| Total Hardness (Ca CO ₃)(mg/L) | 184 | 200 | 600 |
| Iron(mg/L) | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 12 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 302 | 500 | 2000 |
| Calcium(mg/L) | 43.29 | 75 | 200 |
| Copper(mg/L) | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 91.61 | 200 | 400 |
| Nitrate(mg/L) | 1.10 | 45 | No relaxation |
| Fluoride(mg/L) | 0.38 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | 0.09 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | 0.003 | No relaxation |

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Basundhara (W) Air Stations

Basundhara (W) Air monitoring stations



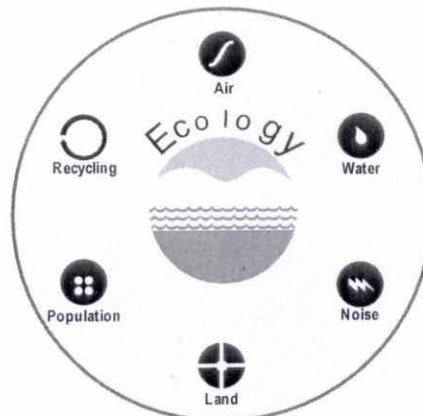
Job No.750001

**Environmental Monitoring Report
Of
Basundhara Area
For
June- 2021**

Ib Valley Coalfield



Mahanadi Coalfields Limited



Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Compliance Station)

Project :

Garjanbahal OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|-------------------------|-----|------|-------|-------|-------|--------------------------------|-------------------|
| 14-Jun-21 | South West of Coal Face | 268 | 139 | 51 | 24.29 | 24.22 | Mining Activity | About 500m |
| 14-Jun-21 | Near Coal Sampling Lab | 143 | 86 | 31 | 18.17 | 25.69 | Railway Siding, Transportation | About 500m |
| 14-Jun-21 | 220 KV Substation | 212 | 127 | 43 | 23.32 | 28.21 | C.T Road, Mining | About 350m |
| 30-Jun-21 | South West of Coal Face | 251 | 157 | 49 | 18.81 | 41.28 | Mining Activity | About 500m |
| 30-Jun-21 | Near Coal Sampling Lab | 178 | 108 | 39 | 17.47 | 26.27 | Railway Siding, Transportation | About 500m |
| 30-Jun-21 | 220 KV Substation | 185 | 110 | 40 | 15.37 | 34.28 | C.T Road, Mining | About 350m |

Project :

Kulda OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|--------------------|-----|------|-------|-------|-------|--|-------------------|
| 14-Jun-21 | External CT Road | 239 | 128 | 48 | 19.36 | 33.39 | Mining Activities, Coal Transportation | About 500m |
| 30-Jun-21 | External CT Road | 266 | 173 | 57 | 23.32 | 43.87 | Mining Activities, Coal Transportation | About 500m |

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MoEF Standards Notification dated 25th
 September, 2000

500 250 120 120



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

Project :

Kulda OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|-------------------------|-----|------|-------|-------|-------|---|-------------------|
| 03-Jun-21 | South of Working Face ✓ | 158 | 73 | 41 | 15.48 | 25.23 | Mining Activities, Coal Transportation, CHP | About 500m |
| 03-Jun-21 | North of CHP ✓ | 102 | 50 | 27 | 13.74 | 36.72 | Domestic, OCP, Transportation | About 500m |
| 03-Jun-21 | West of Working Face ✓ | 86 | 53 | 24 | 19.60 | 31.53 | Mining Activities | About 500m |
| 04-Jun-21 | West of Working Face ✓ | 106 | 65 | 27 | 16.10 | 30.57 | Mining Activities | About 500m |
| 04-Jun-21 | South of Working Face ✓ | 164 | 85 | 49 | 19.41 | 34.22 | Mining Activities, Coal Transportation, CHP | About 500m |
| 04-Jun-21 | North of CHP ✓ | 119 | 58 | 33 | 17.69 | 28.41 | Domestic, OCP, Transportation | About 500m |
| 09-Jun-21 | North of CHP ✓ | 126 | 71 | 41 | 18.10 | 27.00 | Domestic, OCP, Transportation | About 500m |
| 09-Jun-21 | West of Working Face ✓ | 127 | 71 | 37 | 19.19 | 38.34 | Mining Activities | About 500m |
| 09-Jun-21 | South of Working Face ✓ | 152 | 78 | 40 | 21.86 | 28.85 | Mining Activities, Coal Transportation, CHP | About 500m |
| 10-Jun-21 | West of Working Face ✓ | 135 | 80 | 40 | 21.64 | 23.31 | Mining Activities | About 500m |
| 10-Jun-21 | South of Working Face ✓ | 157 | 80 | 44 | 14.15 | 44.56 | Mining Activities, Coal Transportation, CHP | About 500m |
| 10-Jun-21 | North of CHP ✓ | 148 | 80 | 44 | 23.96 | 36.22 | Domestic, OCP, Transportation | About 500m |
| 16-Jun-21 | South of Working Face ✓ | 167 | 92 | 52 | 19.66 | 30.21 | Mining Activities, Coal Transportation, CHP | About 500m |
| 16-Jun-21 | North of CHP ✓ | 149 | 83 | 46 | 23.66 | 39.09 | Domestic, OCP, Transportation | About 500m |
| 16-Jun-21 | West of Working Face ✓ | 146 | 85 | 48 | 22.61 | 33.91 | Mining Activities | About 500m |
| 17-Jun-21 | West of Working Face ✓ | 132 | 91 | 50 | 18.98 | 31.94 | Mining Activities | About 500m |
| 17-Jun-21 | South of Working Face ✓ | 157 | 80 | 48 | 23.85 | 29.33 | Mining Activities, Coal Transportation, CHP | About 500m |

*NAAQS,2009

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

| | | | | | | | | |
|-----------|-------------------------|-----|----|----|-------|-------|---|------------|
| 17-Jun-21 | North of CHP ✓ | 158 | 89 | 51 | 22.21 | 36.56 | Domestic, OCP, Transportation | About 500m |
| 23-Jun-21 | West of Working Face ✓ | 123 | 78 | 41 | 23.63 | 28.79 | Mining Activities | About 500m |
| 23-Jun-21 | South of Working Face ✓ | 178 | 90 | 45 | 16.42 | 38.37 | Mining Activities, Coal Transportation, CHP | About 500m |
| 23-Jun-21 | North of CHP ✓ | 137 | 79 | 45 | 22.38 | 39.84 | Domestic, OCP, Transportation | About 500m |
| 24-Jun-21 | North of CHP ✓ | 126 | 71 | 42 | 23.15 | 33.19 | Domestic, OCP, Transportation | About 500m |
| 24-Jun-21 | West of Working Face ✓ | 138 | 83 | 44 | 24.48 | 32.96 | Mining Activities | About 500m |
| 24-Jun-21 | South of Working Face ✓ | 139 | 78 | 49 | 27.73 | 39.37 | Mining Activities, Coal Transportation, CHP | About 500m |

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| | | | | | |
|-------------|--|-----|----|----|----|
| *NAAQS.2009 | | 100 | 60 | 80 | 80 |
|-------------|--|-----|----|----|----|



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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

Project :

Garjanbahal OCP

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|--|-----|------|-------|-------|-------|-----------------------------|-------------------|
| 04-Jun-21 | Kaletpani Village ✓ | 146 | 77 | 32 | 16.34 | 46.11 | Mining Activities | About 2500m |
| 04-Jun-21 | North West of Working Face (Tumulia) ✓ | 165 | 84 | 42 | 23.62 | 27.47 | Mining Activities | About 1000m |
| 05-Jun-21 | North West of Working Face (Tumulia) ✓ | 170 | 92 | 49 | 18.08 | 28.97 | Mining Activities | About 1000m |
| 05-Jun-21 | Kaletpani Village ✓ | 149 | 74 | 27 | 15.50 | 39.91 | Mining Activities | About 2500m |
| 11-Jun-21 | Kaletpani Village ✓ | 158 | 88 | 37 | 17.49 | 40.38 | Mining Activities | About 2500m |
| 11-Jun-21 | North West of Working Face (Tumulia) ✓ | 158 | 75 | 35 | 22.39 | 33.08 | Mining Activities | About 1000m |
| 12-Jun-21 | North West of Working Face (Tumulia) ✓ | 164 | 83 | 38 | 22.22 | 30.79 | Mining Activities | About 1000m |
| 12-Jun-21 | Kaletpani Village ✓ | 166 | 91 | 36 | 21.51 | 49.29 | Mining Activities | About 2500m |
| 18-Jun-21 | Kaletpani Village ✓ | 139 | 80 | 48 | 25.77 | 33.25 | Mining Activities | About 2500m |
| 18-Jun-21 | North West of Working Face (Tumulia) ✓ | 169 | 83 | 47 | 17.51 | 34.26 | Mining Activities | About 1000m |
| 19-Jun-21 | North West of Working Face (Tumulia) ✓ | 158 | 89 | 51 | 19.33 | 39.46 | Mining Activities | About 1000m |
| 19-Jun-21 | Kaletpani Village ✓ | 125 | 71 | 44 | 27.37 | 35.66 | Mining Activities | About 2500m |
| 25-Jun-21 | North West of Working Face (Tumulia) ✓ | 136 | 77 | 41 | 23.99 | 28.50 | Mining Activities | About 1000m |
| 25-Jun-21 | Kaletpani Village ✓ | 134 | 75 | 38 | 22.24 | 31.08 | Mining Activities | About 2500m |
| 26-Jun-21 | Kaletpani Village ✓ | 117 | 69 | 36 | 26.45 | 40.67 | Mining Activities | About 2500m |
| 26-Jun-21 | North West of Working Face (Tumulia) ✓ | 115 | 63 | 35 | 22.98 | 35.81 | Mining Activities | About 1000m |

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| | | | | | |
|-------------|--|-----|----|----|----|
| *IAQS, 2009 | | 100 | 60 | 80 | 80 |
|-------------|--|-----|----|----|----|



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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

| Project | Garjanbahal OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | Kaletpani Village | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 04-June-2021 | 3.18 | <0.1 | <1.0 | <1.0 |
| 05-June-2021 | 3.25 | <0.1 | <1.0 | <1.0 |
| 11-June-2021 | 3.34 | <0.1 | <1.0 | <1.0 |
| 12-June-2021 | 3.39 | <0.1 | <1.0 | <1.0 |
| 18-June-2021 | 2.99 | <0.1 | <1.0 | <1.0 |
| 19-June-2021 | 3.12 | <0.1 | <1.0 | <1.0 |
| 25-June-2021 | 3.20 | <0.1 | <1.0 | <1.0 |
| 26-June-2021 | 3.37 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

| Project | Garjanbahal OCP | | | |
|---------------------------|---|------------------------------|----------------------------|----------------------------|
| Monitoring Station | North West of Working Face (Tumulia) | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 04-June-2021 | 2.81 | <0.1 | <1.0 | <1.0 |
| 05-June-2021 | 2.74 | <0.1 | <1.0 | <1.0 |
| 11-June-2021 | 2.68 | <0.1 | <1.0 | <1.0 |
| 12-June-2021 | 2.57 | <0.1 | <1.0 | <1.0 |
| 18-June-2021 | 3.12 | <0.1 | <1.0 | <1.0 |
| 19-June-2021 | 3.21 | <0.1 | <1.0 | <1.0 |
| 25-June-2021 | 3.27 | <0.1 | <1.0 | <1.0 |
| 26-June-2021 | 3.38 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

| Project | Kulda OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | North of CHP | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 03-June-2021 | 3.41 | <0.1 | <1.0 | <1.0 |
| 04-June-2021 | 3.21 | <0.1 | <1.0 | <1.0 |
| 09-June-2021 | 3.36 | <0.1 | <1.0 | <1.0 |
| 10-June-2021 | 3.31 | <0.1 | <1.0 | <1.0 |
| 16-June-2021 | 4.12 | <0.1 | <1.0 | <1.0 |
| 17-June-2021 | 4.32 | <0.1 | <1.0 | <1.0 |
| 23-June-2021 | 4.17 | <0.1 | <1.0 | <1.0 |
| 24-June-2021 | 4.29 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

| Project | Kulda OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | South of Working Face | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 03-June-2021 | 2.12 | <0.1 | <1.0 | <1.0 |
| 04-June-2021 | 2.18 | <0.1 | <1.0 | <1.0 |
| 09-June-2021 | 2.23 | <0.1 | <1.0 | <1.0 |
| 10-June-2021 | 3.76 | <0.1 | <1.0 | <1.0 |
| 16-June-2021 | 2.12 | <0.1 | <1.0 | <1.0 |
| 17-June-2021 | 2.27 | <0.1 | <1.0 | <1.0 |
| 23-June-2021 | 2.36 | <0.1 | <1.0 | <1.0 |
| 24-June-2021 | 2.40 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

| Project | Kulda OCP | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | West of Working Face | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 03-June-2021 | 4.12 | <0.1 | <1.0 | <1.0 |
| 04-June-2021 | 4.23 | <0.1 | <1.0 | <1.0 |
| 09-June-2021 | 4.29 | <0.1 | <1.0 | <1.0 |
| 10-June-2021 | 4.20 | <0.1 | <1.0 | <1.0 |
| 16-June-2021 | 2.86 | <0.1 | <1.0 | <1.0 |
| 17-June-2021 | 2.91 | <0.1 | <1.0 | <1.0 |
| 23-June-2021 | 2.75 | <0.1 | <1.0 | <1.0 |
| 24-June-2021 | 3.02 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Basundhara

PROJECT :

Garjanbahal OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|-------------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 05-Jun-21 | 220 KV Substation | 68.7 | 64.3 |
| 05-Jun-21 | South-West of Coal Face | 64.3 | 59.3 |
| 18-Jun-21 | 220 KV Substation | 66.8 | 62.6 |
| 18-Jun-21 | South-West of Coal Face | 64.2 | 57.7 |

PROJECT :

Kulda OCP

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 05-Jun-21 | External CT Road | 63.2 | 56.4 |
| 05-Jun-21 | North of CHP | 66.8 | 58.9 |
| 18-Jun-21 | External CT Road | 64.4 | 57.4 |
| 18-Jun-21 | North of CHP | 63.2 | 59.8 |

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MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

EFFLUENT QUALITY DATA

Area :

Basundhara

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Garjanbahal OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|---|------|--------------|-----|-----|-----|---------|
| 11-Jun-21 | Inlet of Settling Tank (Kanika Siding) ✓ | 6.83 | <4.0 | 92 | 116 | | |
| 11-Jun-21 | Mine Sump Water ✓ | 7.42 | <4.0 | 30 | 24 | | |
| 11-Jun-21 | Outlet of Settling Tank (Kanika Siding) ✓ | 8.09 | <4.0 | 36 | 32 | | |
| 25-Jun-21 | Outlet of Settling Tank (Kanika Siding) ✓ | 7.41 | <4.0 | 76 | 96 | | |
| 25-Jun-21 | Mine Sump Water ✓ | 7.43 | <4.0 | 26 | 32 | | |

Project :

Kulda OCP

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|--------------------------------------|------|--------------|-----|-----|-----|---------|
| 11-Jun-21 | Mine Sump Water Near Kulda Nursery ✓ | 7.04 | <4.0 | 94 | 108 | | |
| 11-Jun-21 | Final Outlet of ETP ✓ | 8.09 | <4.0 | 32 | 24 | | |
| 11-Jun-21 | Inlet of ETP ✓ | 8.01 | <4.0 | 38 | 32 | | |
| 25-Jun-21 | Final Outlet of ETP ✓ | 7.94 | <4.0 | 26 | 32 | | |
| 25-Jun-21 | Mine Sump Water Near Kulda Nursery ✓ | 7.66 | <4.0 | 36 | 28 | | |
| 25-Jun-21 | Inlet of ETP ✓ | 7.74 | <4.0 | 32 | 44 | | |

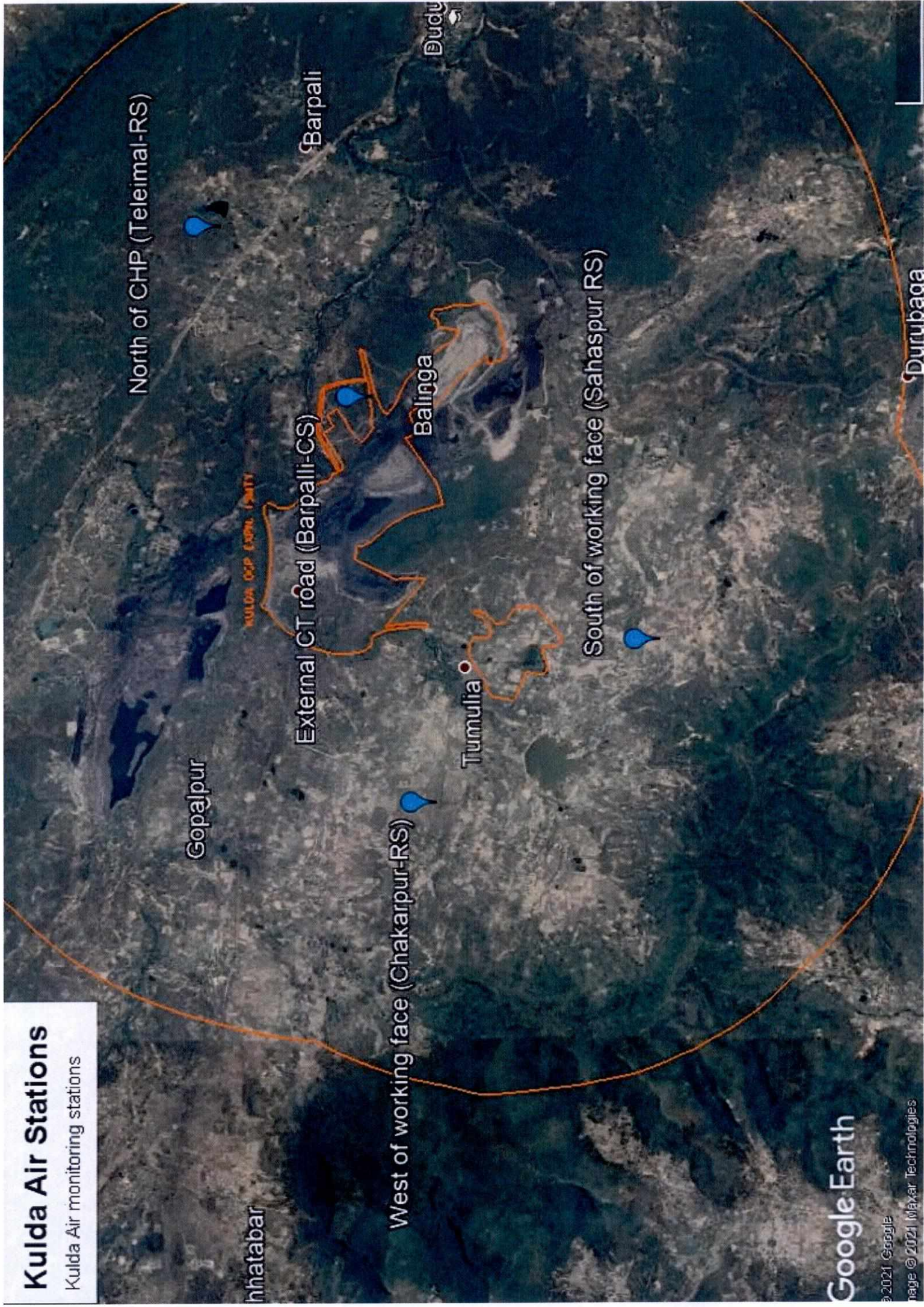
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| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|

Kulda Air Stations

Kulda Air monitoring stations



Garjhanbahal Air Stations

Garjhanbahal Air monitoring stations

Gopalpur

Siarmal

Barpali

Kaletpani village

North-west of working face (Tumulia)

Tumulia

220 KV substation

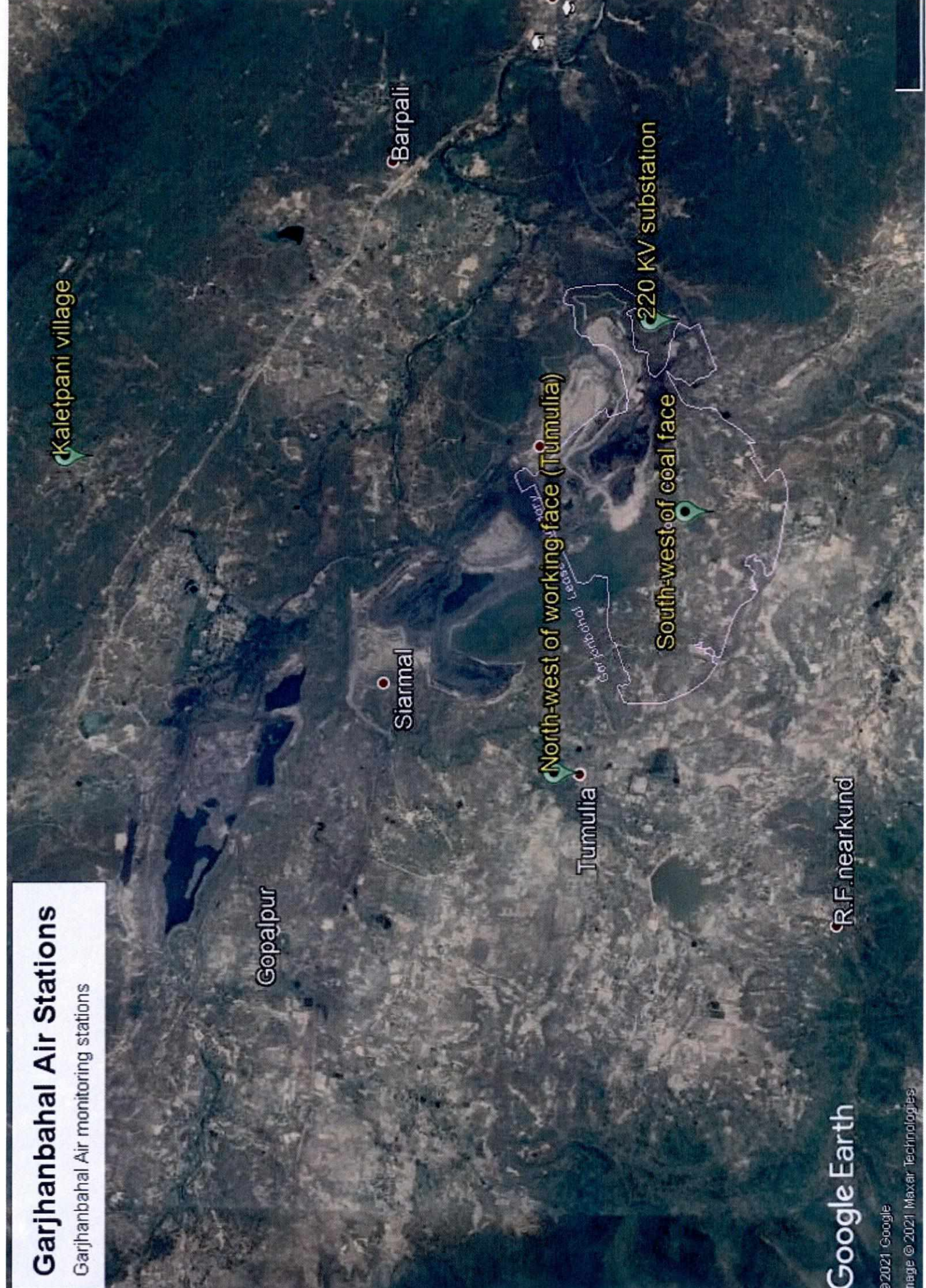
South-west of coal face

Google Earth

R.F.nearkund

©2021 Google

Image © 2021 Maxar Technologies



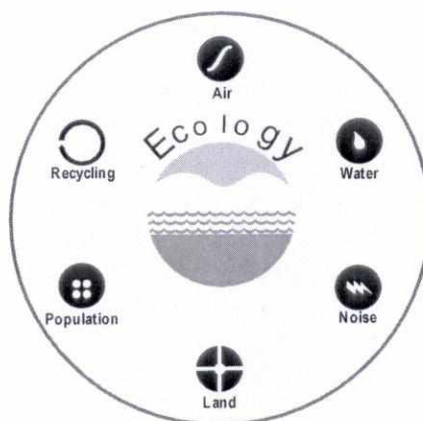
Job No.750001

**Environmental Monitoring Report
Of
Orient Area
For
June- 2021**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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A Mini Ratna Company

Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No.1 & 2

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|--------------------|-----|------|-------|-------|-------|---|-------------------|
| 14-Jun-21 | Orient Mine No.2 ✓ | 273 | 149 | 46 | 17.93 | 34.24 | Coal Stock Yard, Surface Bunker, Coal Transport | About 250m |
| 29-Jun-21 | Orient Mine No.2 ✓ | 306 | 185 | 53 | 20.59 | 30.32 | Coal Stock Yard, Surface Bunker, Coal Transport | About 250m |

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[Signature]

| | | | | | |
|--|-----|-----|--|-----|-----|
| MoEF Standards Notification dated 25th September, 2000 | 500 | 250 | | 120 | 120 |
|--|-----|-----|--|-----|-----|

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Reference Station)

Project :

Orient Mine No.1 & 2

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|---------------------------|-----|------|-------|-------|-------|---------------------------------------|-------------------|
| 04-Jun-21 | VIP Guest House IB Valley | 133 | 61 | 30 | 19.99 | 31.24 | Coal Stock Yard, Surface Bunker, Coal | About 800m |
| 05-Jun-21 | VIP Guest House IB Valley | 146 | 78 | 36 | 23.59 | 30.40 | Coal Stock Yard, Surface Bunker, Coal | About 800m |
| 11-Jun-21 | VIP Guest House IB Valley | 120 | 73 | 25 | 20.75 | 26.04 | Coal Stock Yard, Surface Bunker, Coal | About 800m |
| 12-Jun-21 | VIP Guest House IB Valley | 106 | 67 | 21 | 23.19 | 35.31 | Coal Stock Yard, Surface Bunker, Coal | About 800m |
| 18-Jun-21 | VIP Guest House IB Valley | 128 | 79 | 37 | 19.79 | 22.21 | Coal Stock Yard, Surface Bunker, Coal | About 800m |
| 19-Jun-21 | VIP Guest House IB Valley | 116 | 75 | 41 | 21.31 | 34.60 | Coal Stock Yard, Surface Bunker, Coal | About 800m |
| 25-Jun-21 | VIP Guest House IB Valley | 103 | 66 | 35 | 19.00 | 33.26 | Coal Stock Yard, Surface Bunker, Coal | About 800m |
| 26-Jun-21 | VIP Guest House IB Valley | 110 | 59 | 29 | 23.59 | 29.77 | Coal Stock Yard, Surface Bunker, Coal | About 800m |

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24/5/21

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Orient

| Project | Orient Mine No. 1 & 2 | | | |
|---------------------------|-----------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | VIP Guest House, IB Valley | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 04-June-2021 | 2.86 | <0.1 | <1.0 | <1.0 |
| 05-June-2021 | 2.74 | <0.1 | <1.0 | <1.0 |
| 11-June-2021 | 2.65 | <0.1 | <1.0 | <1.0 |
| 12-June-2021 | 2.81 | <0.1 | <1.0 | <1.0 |
| 18-June-2021 | 2.12 | <0.1 | <1.0 | <1.0 |
| 19-June-2021 | 2.17 | <0.1 | <1.0 | <1.0 |
| 25-June-2021 | 2.11 | <0.1 | <1.0 | <1.0 |
| 26-June-2021 | 2.27 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No. 3

(conc. in $\mu\text{g}/\text{cu.m.}$)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|---------------------|-----|------|-------|-------|-------|--|-------------------|
| 15-Jun-21 | Orient Mine No. 3 ✓ | 213 | 106 | 39 | 25.09 | 40.93 | Coal Stockyard, Surface Bunker, Coal Transport | About 200m |
| 29-Jun-21 | Orient Mine No. 3 ✓ | 287 | 166 | 50 | 21.42 | 25.24 | Coal Stockyard, Surface Bunker, Coal Transport | About 200m |

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DA/SW

| | | | | | |
|--|-----|-----|--|-----|-----|
| MoEF Standards Notification dated 25th September, 2000 | 500 | 250 | | 120 | 120 |
|--|-----|-----|--|-----|-----|

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Hirakand Bundia Mine (HBM)

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|-------------------------------|-----|------|-------|-------|-------|--|-------------------|
| 15-Jun-21 | Rampur Officers Guest House ✓ | 98 | 65 | 29 | 31.80 | 39.05 | Coal Stockyard, Surface Bunker, Coal Transport | About 1000m |
| 15-Jun-21 | HBI Mine ✓ | 263 | 149 | 52 | 17.22 | 30.76 | Coal Stockyard, Surface Bunker, Coal Transport | About 100m |
| 15-Jun-21 | Bundia Colony Pump House ✓ | 192 | 101 | 37 | 24.08 | 35.54 | Coal Stockyard, Surface Bunker, Coal Transport | About 150m |
| 28-Jun-21 | Rampur Officers Guest House ✓ | 117 | 73 | 37 | 23.23 | 33.03 | Coal Stockyard, Surface Bunker, Coal Transport | About 1000m |
| 28-Jun-21 | HBI Mine ✓ | 306 | 173 | 48 | 16.10 | 30.80 | Coal Stockyard, Surface Bunker, Coal Transport | About 100m |
| 28-Jun-21 | Bundia Colony Pump House ✓ | 213 | 131 | 39 | 20.82 | 37.10 | Coal Stockyard, Surface Bunker, Coal Transport | About 150m |

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24/9/21

| | | | | | |
|--|-----|-----|--|-----|-----|
| MoEF Standards Notification dated 25th September, 2000 | 500 | 250 | | 120 | 120 |
|--|-----|-----|--|-----|-----|

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Reference Station)

Project :

Hirakand Bundia Mine (HBM)

(conc. in µg/cu.m.)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source(DGS) | Distance from DGS |
|------------------|---------------------------------|-----|------|-------|-------|-------|-----------------------------|-------------------|
| 01-Jun-21 | Rampur Sub Area (Reported Only) | 88 | 52 | 27 | 23.51 | 33.48 | Coal Stock And CT Road | About 900m |
| 02-Jun-21 | Rampur Sub Area (Reported Only) | 206 | 60 | 32 | 16.83 | 42.13 | Coal Stock And CT Road | About 900m |
| 07-Jun-21 | Rampur Sub Area (Reported Only) | 123 | 74 | 34 | 17.08 | 36.28 | Coal Stock And CT Road | About 900m |
| 08-Jun-21 | Rampur Sub Area (Reported Only) | 118 | 71 | 37 | 19.74 | 29.96 | Coal Stock And CT Road | About 900m |
| 18-Jun-21 | Rampur Sub Area (Reported Only) | 151 | 84 | 47 | 16.92 | 36.62 | Coal Stock And CT Road | About 900m |
| 19-Jun-21 | Rampur Sub Area (Reported Only) | 155 | 76 | 41 | 15.66 | 26.35 | Coal Stock And CT Road | About 900m |
| 21-Jun-21 | Rampur Sub Area (Reported Only) | 124 | 69 | 39 | 21.84 | 25.50 | Coal Stock And CT Road | About 900m |
| 22-Jun-21 | Rampur Sub Area (Reported Only) | 111 | 62 | 36 | 20.26 | 35.55 | Coal Stock And CT Road | About 900m |

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Orient

| Project | HBI Mine | | | |
|---------------------------|-----------------------------------|------------------------------|----------------------------|----------------------------|
| Monitoring Station | Rampur Sub Area (Reported) | | | |
| Date of sampling | Ozone (O ₃) | Lead (Pb) | Arsenic (As) | Nickel (Ni) |
| | ($\mu\text{g}/\text{m}^3$) | ($\mu\text{g}/\text{m}^3$) | (ng/m^3) | (ng/m^3) |
| 01-June-2021 | 3.21 | <0.1 | <1.0 | <1.0 |
| 02-June-2021 | 3.18 | <0.1 | <1.0 | <1.0 |
| 07-June-2021 | 3.22 | <0.1 | <1.0 | <1.0 |
| 08-June-2021 | 3.15 | <0.1 | <1.0 | <1.0 |
| 18-June-2021 | 2.71 | <0.1 | <1.0 | <1.0 |
| 19-June-2021 | 2.67 | <0.1 | <1.0 | <1.0 |
| 21-June-2021 | 2.54 | <0.1 | <1.0 | <1.0 |
| 22-June-2021 | 2.45 | <0.1 | <1.0 | <1.0 |
| Standard | 180(hour) | 1.0(24hours) | 6.0(Annual) | 20(Annual) |

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No. 4

(conc. in $\mu\text{g}/\text{cu.m.}$)

| Date of Sampling | Monitoring Station | SPM | PM10 | PM2.5 | SO2 | NOx | Dust Generating Source | Distance from DGS |
|------------------|--------------------|-----|------|-------|-------|-------|--------------------------|-------------------|
| 15-Jun-21 | Orient Mine No. 4 | 209 | 119 | 43 | 25.42 | 39.12 | Coal Transportation Road | About 300m |
| 28-Jun-21 | Orient Mine No. 4 | 239 | 147 | 47 | 15.47 | 26.04 | Coal Transportation Road | About 300m |

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DA/SW

| | | | | | |
|--|-----|-----|--|-----|-----|
| MoEF Standards Notification dated 25th September, 2000 | 500 | 250 | | 120 | 120 |
|--|-----|-----|--|-----|-----|

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No. 1 & 2

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|----------------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 03-Jun-21 | VIP Guest House, IB Valley | 64.9 | 60.7 |
| 03-Jun-21 | Orient Mine No. 1 & 2 | 66.7 | 63.2 |
| 16-Jun-21 | VIP Guest House, IB Valley | 64.6 | 61.8 |
| 16-Jun-21 | Orient Mine No. 1 & 2 | 66.3 | 62.5 |

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| | | |
|---|-----------------------------------|-----------------------------------|
| MoEF Standard Notification dated 25th September, 2000 | 6.00 AM - 10.00 PM Leq 75dB(A) | 10.00 PM - 6.00 AM Leq 70dB(A) |
|---|-----------------------------------|-----------------------------------|

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No.3

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 03-Jun-21 | Orient Mine No.3 | 65.8 | 63.2 |
| 16-Jun-21 | Orient Mine No.3 | 63.2 | 57.9 |

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MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

HBI Mine

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|------------------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 03-Jun-21 | HBI Mine | 67.6 | 62.6 |
| 03-Jun-21 | Bundia Colony Pump House | 64.9 | 63.7 |
| 03-Jun-21 | Rampur Officer's Guest House | 66.7 | 58.7 |
| 16-Jun-21 | HBI Mine | 64.2 | 56.8 |
| 16-Jun-21 | Bundia Colony Pump House | 66.6 | 63.7 |
| 16-Jun-21 | Rampur Officer's Guest House | 65.2 | 62.8 |

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MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No.4

| DATE OF SAMPLING | STATION | Noise Level Measurement in Leq dB(A) | |
|------------------|------------------|--------------------------------------|-------|
| | | DAY | NIGHT |
| 03-Jun-21 | Orient Mine No.4 | 64.6 | 57.9 |
| 16-Jun-21 | Orient Mine No.4 | 64.8 | 61.9 |

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MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Orient Mine No. 1 & 2

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|---------------------------|------|--------------|-----|-----|-----|---------|
| 09-Jun-21 | Mine Sump of Mine No. 2 ✓ | 7.58 | <4.0 | 44 | 28 | | |
| 25-Jun-21 | Mine Sump of Mine No. 2 ✓ | 7.27 | <4.0 | 34 | 20 | | |

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| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|

24/06/21

O. I. C.
 Env. Lab
 CMPDI, RI-VII
 Bhubaneswar



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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Orient Mine No. 3

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|---------------------------|------|--------------|-----|-----|-----|---------|
| 09-Jun-21 | Mine Sump of Mine No. 3 ✓ | 7.51 | <4.0 | 24 | 16 | | |
| 25-Jun-21 | Mine Sump of Mine No. 3 ✓ | 7.16 | <4.0 | 26 | 20 | | |

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| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|

MS/
 O. I. C.
 Env. Lab
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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

HBI Mine

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|--------------------|------|--------------|-----|-----|-----|---------|
| 09-Jun-21 | Mine Sump of HBM ✓ | 7.89 | <4.0 | 16 | 12 | | |
| 25-Jun-21 | Mine Sump of HBM ✓ | 7.07 | <4.0 | 36 | 24 | | |

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24/9/21

O. I. C.
Env. Lab
CMPDI, RI-VH
Bhubaneswar

| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|



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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Orient Mine No. 4

| Date of Sampling | Sampling Station | pH | Oil & Grease | TSS | COD | BOD | Remarks |
|------------------|---------------------------|------|--------------|-----|-----|-----|---------|
| 09-Jun-21 | Mine Sump of Mine No. 4 ✓ | 7.69 | <4.0 | 24 | 16 | | |
| 25-Jun-21 | Mine Sump of Mine No. 4 ✓ | 7.01 | <4.0 | 28 | 20 | | |

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| | | | | | |
|--|---------|----|-----|-----|----|
| MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents | 5.5-9.0 | 10 | 100 | 250 | 30 |
|--|---------|----|-----|-----|----|

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Drinking Water Quality Data Orient Area

| Project / OCP | Orient Mine No. 1 & 2 | | Indian Drinking Standards (IS-10500):2012 | |
|---|-------------------------------------|-------------------------------|--|----------------------|
| | Tap Water at Budhijaam Colony | Mine no 1 & 2 Filter Plant | | |
| Date of Sampling | 9-Jun-2021 | 9-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 2 | 2 | 1 | 5 |
| pH | 7.21 | 7.89 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 72 | 100 | 200 | 600 |
| Total Hardness (Ca CO₃)(mg/L) | 96 | 100 | 200 | 600 |
| Iron(mg/L) | <0.1 | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 16 | 30 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 180 | 214 | 500 | 2000 |
| Calcium(mg/L) | 25.65 | 16.03 | 75 | 200 |
| Copper(mg/L) | <0.03 | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 26.01 | 9.37 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | 0.25 | <0.04 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | <0.001 | 0.003 | No relaxation |

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Drinking Water Quality Data Orient Area

| Project / OCP | Orient Mine No. 3 | Indian Drinking Standards (IS-10500):2012 | |
|---|---------------------------|--|---------------|
| Monitoring Station | Mine no 3 Filter Plant | | |
| Date of Sampling | 9-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 3 | 1 | 5 |
| pH | 6.69 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 60 | 200 | 600 |
| Total Hardness (Ca CO ₃)(mg/L) | 92 | 200 | 600 |
| Iron(mg/L) | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 18 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 182 | 500 | 2000 |
| Calcium(mg/L) | 24.05 | 75 | 200 |
| Copper(mg/L) | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 36.08 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | 0.08 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | 0.003 | No relaxation |

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Drinking Water Quality Data Orient Area

| Project / OCP | HBI Mine | | Indian Drinking Standards (IS-10500):2012 | |
|--|----------------------------|------------------------|---|---------------|
| | Tap Water at Rampur Colony | HBI Water Filter Plant | Acceptable | Permissible |
| Date of Sampling | 9-Jun-2021 | 9-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 3 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 1 | 2 | 1 | 5 |
| pH | 7.66 | 6.67 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 96 | 112 | 200 | 600 |
| Total Hardness (Ca CO ₃)(mg/L) | 92 | 144 | 200 | 600 |
| Iron(mg/L) | <0.1 | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 28 | 30 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 220 | 228 | 500 | 2000 |
| Calcium(mg/L) | 20.84 | 24.05 | 75 | 200 |
| Copper(mg/L) | <0.03 | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 13.01 | 11.05 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | 0.42 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | <0.04 | 0.06 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | <0.001 | 0.003 | No relaxation |

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Orient UG Mines Air Stations

Orient UG Mines Air monitoring stations

Chaurimahul

Belpahar

Brajrajnagar

Kudaloi

Orient Mine no.4

Orient Mine no.3

VIP Guest house

Orient Mine no. 1&2

Rampur officers guest house

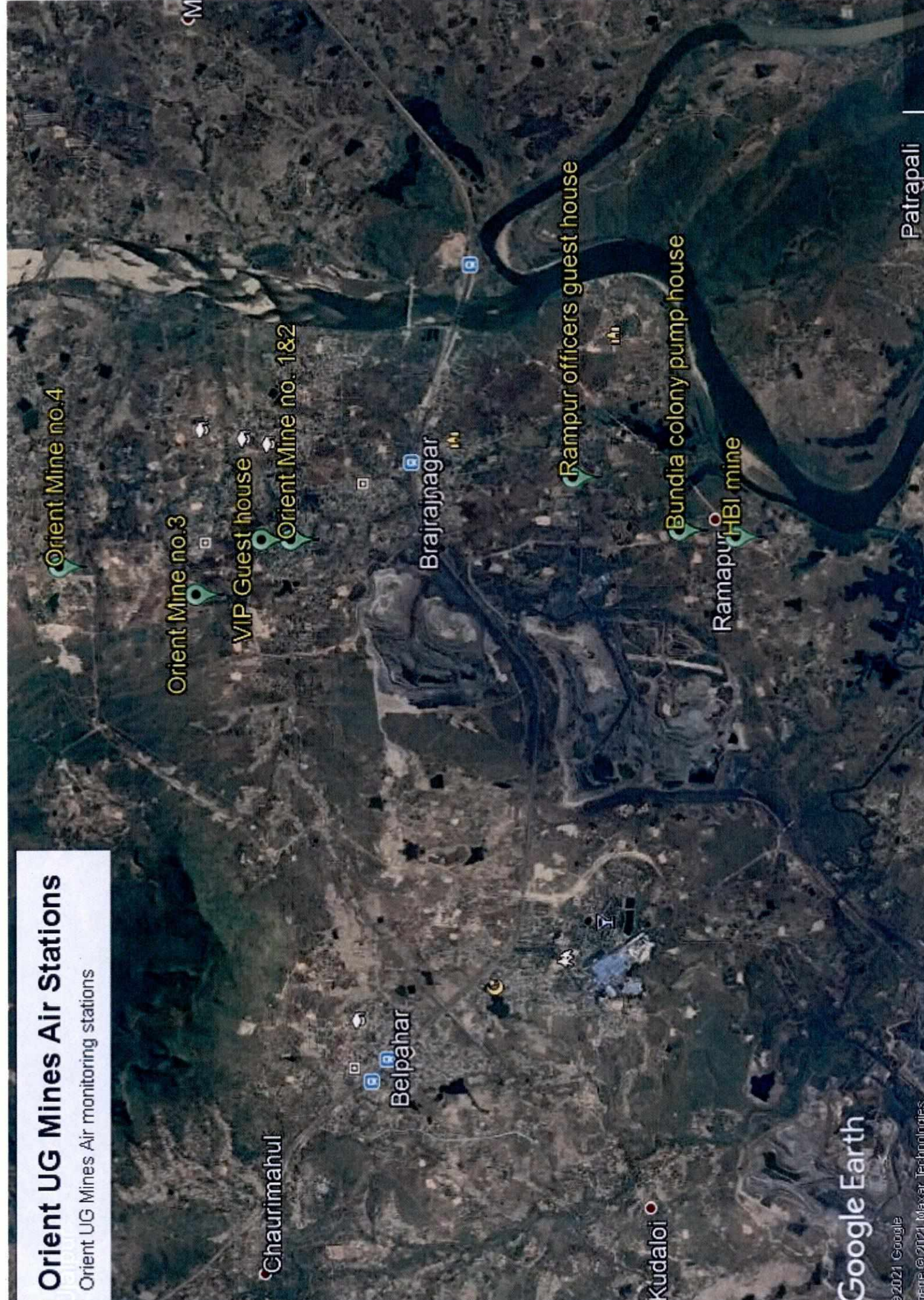
Bundia colony pump house

Ramapur HBI mine

Google Earth

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Patrapali



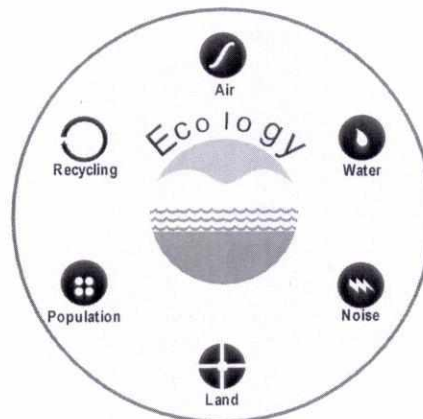
Job No.750001

**Environmental Monitoring Report
Of
MCL HQ
For
June- 2021**

IB Valley Coalfield



Mahanadi Coalfields Limited



Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Drinking Water Quality Data MCL (HQ)

| Project / OCP | MCL(HQ) | | Indian Drinking Standards (IS-10500):2012 | |
|---|---|--|--|----------------------|
| | Tap water at DAV School (Anand vihar) | Tap Water at Corporate Office (Jagrati Vihar) | | |
| Monitoring Station | | | | |
| Date of Sampling | 12-Jun-2021 | 12-Jun-2021 | Acceptable | Permissible |
| Colour(Hazen) | 1 | 2 | 5 | 15 |
| Odour | Agreeable | Agreeable | Agreeable | Agreeable |
| Taste | Agreeable | Agreeable | Agreeable | Agreeable |
| Turbidity(NTU) | 1 | 3 | 1 | 5 |
| pH | 7.87 | 7.88 | 6.5-8.5 | No relaxation |
| Total Alkalinity(mg/L) | 84 | 84 | 200 | 600 |
| Total Hardness (Ca CO₃)(mg/L) | 60 | 92 | 200 | 600 |
| Iron(mg/L) | <0.1 | <0.1 | 1.0 | No relaxation |
| Chloride(mg/L) | 12 | 12 | 250 | 1000 |
| Total Dissolve Solid(mg/L) | 160 | 162 | 500 | 2000 |
| Calcium(mg/L) | 25.65 | 27.25 | 75 | 200 |
| Copper(mg/L) | <0.03 | <0.03 | 0.05 | 1.5 |
| Manganese(mg/L) | <0.04 | <0.04 | 0.1 | 0.3 |
| Sulphate(mg/L) | 18.46 | 18.60 | 200 | 400 |
| Nitrate(mg/L) | <0.5 | <0.5 | 45 | No relaxation |
| Fluoride(mg/L) | <0.30 | <0.30 | 1 | 1.5 |
| Arsenic(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Lead(mg/L) | <0.005 | <0.005 | 0.01 | No relaxation |
| Zinc(mg/L) | <0.04 | 0.04 | 5 | 15 |
| Total Chromium (mg/L) | <0.01 | <0.01 | 0.05 | No relaxation |
| Boron(mg/L) | <0.1 | <0.1 | 0.5 | 2.4 |
| Cadmium(mg/L) | <0.001 | <0.001 | 0.003 | No relaxation |

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