

HIL/LHD/ENV/MoEF/SG

Date: 24.05.2021

To,
The Additional Principal Chief Conservator of Forest (C)
Ministry of Environment, Forests and Climate Changes
Regional Office (ECZ), Ranchi-834002.

Sub: Compliance Report of EC conditions for Bhusar (65.31 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Lohardaga, Jharkhand for the period October'20 to March'21.

Ref: Environmental Clearance No-J-11015/184/2011-IA.II (M) dated 17th June 2013.

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Bhusar (65.31 ha) Bauxite** Mining project of **M/s Hindalco Industries Limited** located in Lohardaga, Jharkhand for the period October'20 to March'21.

The lease detail is as below.

| Lease area (ha) | Production Capacity (MT) | Lease Period |
|-----------------|--------------------------|--------------------------|
| 65.31 | 280000 | 11.07.1981 to 31.03.2030 |

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

for Basudev
(Basudev Gangopadhyay)
GM (Geology & Environment)

Enclosure: - As Above

CC: ro.ranchi-mef@gov.in, mef@ori.nic.in, mef@nic.in, mef.or@nic.in, mscb.cpcb@nic.in, zokolkatta.cpcb@nic.in, ranchiispcb@gmail.com, roranchi47@gmail.com

Name of the Project : **Bhusar Bauxite Mine (65.31 ha)**
M/s Hindalco Industries Ltd

Environment Clearance No & date : **J-11015/184/2011-IA.II (M), dated 17.06.2013**

Period of compliance Report : **From 1st October 2020 to 31st March 2021**

| S No | Specific Condition | Compliance |
|-------|--|---|
| (i) | All the conditions stipulated by State Pollution Control Board in their NOC shall be effectively implemented. | Implementations of stipulated conditions in NOC are fulfilled post which consent to operate has been obtained from time to time. Existing consent to operate is valid up to 30.09.2021 and implementations of conditions are being full filled with progress of mining. |
| (ii) | Environmental clearance is subject to obtaining clearance under the wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project. | We understand, this is not applicable. Mine is located far away from nearest Eco sensitive zone. |
| (iii) | The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table. | Shallow depth mining is being done and not intersected ground water. In future also, working zone will be restricted to above ground water table. We undertake that no mining is/was carried out below groundwater table and the same status will be maintained in future also. |
| (iv) | The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operations. | Agreed. No natural water course is being and will be obstructed due to mining activities. |
| (v) | Top soil should be stacked with proper slope at earmarked site(s) only with adequate measures and should be used for reclamation and rehabilitation of mined out areas. | Top soil is being temporary stored with proper slope as applicable and is being spread over back filled area in process of reclamation. Entire top soil generated earlier has been used for reclamation and plantation purpose. |
| (vi) | The entire waste generated shall be backfilled and there shall be no external over burden dump left at the end of the mine life. The entire backfilled area shall be reclaimed by plantation. The back filling should be carried out in such a manner that it is restored to the normal ground level. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. | Over burden generated during mining operation temporarily stacked at earmarked dump site (s) only for purpose of backfilling. Backfilling is in progress. The entire area is being reclaimed by suitable plantation which is under progressive stage as of now. Monitoring and management of rehabilitated area is continuous until vegetation becomes self-sustaining. There shall be no external dump left at the end of mine life as applicable. |

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| | Compliance status should be submitted to the Ministry of Environment as Forests and its Regional Office, Bhubaneswar on six monthly basis. | However existing dump is stabilized. Compliance status is being submitted to MoEF on six monthly basis. |
| (vii) | <p>Catch drains and siltation ponds of appropriate size should be constructed for the working pit, temporary OB dumps, if any and mineral dumps to arrest flow of silt and sediment. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted, particularly after monsoon, and maintained properly.</p> <p>Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and temporary dumps and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p> | <p>No run-off is generated from mining activities. However, to collect & manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Rain water stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary.</p> <p>Catch drains, Garland drains, of appropriate size have been constructed both around the mine pit to prevent run off of water and flow of sediments directly into the agricultural field and water bodies.</p> <p>Sump of adequate capacity is being provided and maintained as required.</p> <p>No active external dump exists and old dumps are stabilized.</p> |
| (viii) | Dimension of the retaining wall at the toe of temporary dumps and OB benches within the mine to check run-off and siltation should be based on the rain fall data. | Dimensions of the retaining wall of OB dumps are maintained based on average rain fall. |
| (ix) | Plantation shall be raised in an area of 52.50 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around ML area, backfilled and reclaimed area, around water body, roads etc. in consultation with the local DFO/Agriculture Department at the end of life of mine. The density of the trees should be around 2500 plants per ha. | <p>It is already in practice. Phase wise plantation of native species in consultation with forest department has been carried out within safety zone and mined out/reclaimed pits.</p> <p>As on date approx. 45.79 Ha area is covered with plantation. Total 3596 saplings have been planted during April'20 to March'21 period within the Bhusar mine lease area.</p> <p>In addition to this agricultural activity is going on reclaimed land.</p> <p>Green belt development programme is in progress with progress of mining activities.</p> |
| (x) | Regular water sprinkling should be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as haul road, loading and unloading point and transfer points. It should be ensured that the | Mobile water tankers have been provided for sprinkling of water in critical areas to suppress dust. AAQ parameters in mine monitored on regular basis is attached as Annexure-1 . |

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| | Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. | |
| (xi) | The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board. | <p>A plan has been prepared to implement suitable conservation measures to augment ground water resources in area (Bagru Plateau).</p> <p>The water reservoir, drainage system, sequential backfilling in mining lease area is so designed that all the rain water within lease will be collected in pond only. Required slope is being maintained for this purpose. No water is allowed to flow out of lease. Near the portion of the slopes, bund is created by boulder and morrum to arrest outflow.</p> <p>Plantation is done at susceptible portions to prevent soil erosion. The same practice will continue in future.</p> <p>It may be noted that as mentioned earlier there is no chance of intersection of ground water table during mining operation at present and in future also.</p> |
| (xii) | Regular monitoring of ground water level and quality should be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year i.e. January, April-May, August, November and the data thus collected may be sent regularly to Ministry of Environment and Forests, its Regional Office, Bhubaneswar; Central Ground Water Authority and Central Ground Water Board. | <p>We are not using ground water for any mining purpose. There is no chance of intersection ground water table during mining operation at present and in future also as the total mining depth is being and will be restricted above water table.</p> <p>Piezometer has been installed for monitoring of ground water level. Water quality and level report are attached herewith as Annexure 1.</p> <p>Now Regional office is at Ranchi.</p> |
| (xiii) | The project authorities should obtain prior approval of the competent authority for drawl of groundwater if any, required for the project. | <p>Suitable arrangement for collection of water in rain water harvesting pond is in practice.</p> <p>Water is drawn from rain water harvesting pond being used for sprinkling on haul roads and for raising plantation.</p> <p>We are not using any ground water for mining purposes.</p> <p>No Objection Certificate (NOC) for ground water abstraction for Bhusar mines has been</p> |

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| | | obtained for drinking purpose only. |
| (xiv) | Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded. | Regular maintenance of vehicles and all measures are being undertaken to minimize vehicular emission. Bauxite is transported through ropeway from mine to Lohardaga siding. |
| (xv) | Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented | Blasting time is fixed during lunch time i.e. 1.00 PM -2.00 PM. Controlled blasting method is in practice. Ground vibration study has been conducted by IIT, Kharagpur. All efforts are being taken to mitigate impact of blasting |
| (xvi) | Drills shall either be operated with dust extractors or equipped with water injection system. | Wet drilling is in practice. |
| (xvii) | Consent to operate should be obtained from SPCB before starting/ enhanced production from the mine. | Consent to operate has been obtained. Current CTO is valid up to Sept'2021. |
| (xviii) | A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval. | Progressive mine closure plan along with mining scheme has been approved by IBM. Final mine closure plan will be prepared in due time. Based on present resource estimate, and peak rated production capacity mentioned in EC, tentative balance life is around 6 years. However, based on further availability of geological data in future with progress of mining , resources estimate vis-à-vis EC capacity and cut-off grade at that point of time ,balance life of the mine may change based on final resource estimate,. |
| S No | General Condition | Compliance |
| (i) | No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests. | Noted. |
| (ii) | No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made. | Calendar plan including excavation, quantum of mineral bauxite and waste is being done as per IBM approved mining scheme. Report is attached as Annexure-4. |

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| (iii) | Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for PM10, SO2 as NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. | We have already established four ambient air quality monitoring stations in core zone as well as buffer zone. Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure 1 . |
| (iv) | Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained. | Suitable water spraying system is already available. To arrest fugitive dust proper water sprinkling is being carried out on haul roads, loading and unloading and at transfer points. |
| (v) | Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs. | Noise monitoring is being done regularly. Workers engaged in operation of HEMMs, etc. has also been provided with PPEs such as ear plugs and ear muffs. Monitoring of noise level is being conducted at various locations of the work zone area. |
| (vi) | Industrial wastewater (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 03 or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop. | There is no industrial waste water generation from workshop within mine lease area. We are not discharging any waste water outside mine lease area. Effluent treatment mechanism (Oil and grease trap) has been installed at suitable site in Bagru Plateau. |
| (vii) | Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. | Workers engaged in operation of HEMMs, etc. has been provided with PPEs such as ear plugs and ear muffs. Monitoring of noise level is being conducted at various locations of work zone area. Training is being provided through group vocational training Centre on safety and health aspects. |
| (viii) | Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. | Being carried out. |
| (ix) | A separate environmental management cell with suitable qualified personnel should be set up under the control of a senior | Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy is enclosed as Annexure-3. |

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| | Executive, who will report directly to the Head of the organization. | |
| (x) | The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purposes. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar | Year wise expenditure is being reported to the Ministry and its Regional Office located at Ranchi. Copy is enclosed as Annexure-2 . |
| (xi) | The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing requisite data/information/monitoring reports. | Agreed. Now Regional office is at Ranchi. |
| (xii) | The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board. | Six monthly reports on status of compliance of stipulated environmental clearance conditions including results of monitored data (by e mail) are being submitted to the Ministry of Environment and Forests, its Regional office Ranchi, the respective Zonal office of Central Pollution Control Board, the State Pollution Control Board and uploaded in company's website. Now Regional office is at Ranchi. |
| (xiii) | A copy of the clearance letter will be marked to the concerned Panchayat/local NGO, if any, from whom suggestions/representation has been received while processing the proposal. | A copy of clearance letter has been sent to concerned Panchayat, Zila Parisad / Municipal corporation, urban local body and the local NGO. |
| (xiv) | The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work. | It is an operational mine. Hence provisional related to financial closure is not applicable. |
| (xv) | State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's/Tehsildar's Office for 30 days. | Displayed. |
| (xvi) | The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the | Complied. Copies of relevant paper cutting are submitted earlier. |

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| <p>Clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.</p> | |
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Signature

Photographs of Bhusar Bauxite Mine – Hindalco Industries Ltd



(Plantation at Bhusar Bauxite mine)



(Plantation at Bhusar Bauxite mine)



(Stylohameta ,Sindwar & Lantana For Slope Stability)



(Rainwater Harvesting Pond at Bhusar mine)



(Oil & Grease Trap)



(Water Sprinkling)



(Ropeway transportation- eco-friendly)



Eco Ventures Pvt. Ltd.

Regd. Office: 2/37, Sarvapriya Vihar, Near IIT Gate, New Delhi-110016

Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden, Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

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Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

BHUSAR BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

OCTOBER 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Branch Office:

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|---------------------------------|--|
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| 3 | Near Rest Shelter |
| 4 | Near GTS Point |
| AMBIENT NOISE | |
| SPOT NOISE | |
| DRINKING WATER ANALYSIS | |
| | |





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Hindalco Industries : Bhusar

Environmental Monitoring Report

OCTOBER 2020

| | |
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| Report No: MEEPL/NOV/0435/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample Location: Near View Point 1 (Bhusar Mine Pit I) | |
| Sample collected on: 06.10.2020 | |

| LOCATION / IDENTIFICATION: Near View Point 1 (Bhusar Mine Pit I) | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 72 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 38 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 6.2 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.35 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.32 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries - Bhusar

Environmental Monitoring Report

OCTOBER 2020

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|--|--|
| Report No: MEEPL/NOV/0436/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near View Point 2 (Bhusar Mine Pit II) | |
| Sample collected on: 06.10.2020 | |

LOCATION / IDENTIFICATION: Near View point 2 (Bhusar Mine Pit II)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 76 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 39 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 6.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.38 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.5 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.7 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Bhusar

Environmental Monitoring Report

OCTOBER 2020

| | |
|---|--|
| Report No: MEEPL/NOV/0437/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Rest Shelter | |
| Sample collected on: 06.10.2020 | |

| LOCATION / IDENTIFICATION: Near Rest Shelter | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 66 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 34 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 5.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.31 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.30 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Bhusar

Environmental Monitoring Report

OCTOBER 2020

Report No: MEEPL/NOV/0438/2020-21

Date: 30th November, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near GTS Point

Sample collected on: 06.10.2020

LOCATION / IDENTIFICATION: Near GTS Point

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 73 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 39 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 4.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.6 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.26 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.28 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries - Bhusar

Environmental Monitoring Report

OCTOBER 2020

| | |
|---|--|
| Report No: MEEPL/NOV/0439/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: Measurement of Noise | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Description: Measurement of Noise | |
| Sampling Method: Instrumental, using Sound level Meter | |
| Data Collection Date: 06.10.2020 | |

| Location/Identification | Unit | Limit (day) | Result | Limit (night) | Result |
|-------------------------|------------------------|-------------|-------------|---------------|-------------|
| Bhusar Mines Pit 1 | dB (A) L _{eq} | 75 | 66.1 | 70 | 53.7 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries - Bhusar

Environmental Monitoring Report

OCTOBER 2020

| | |
|---|--|
| Report No: MEEPL/NOV/0440/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: Measurement of Spot Noise | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Description: Measurement of Spot Noise | |
| Sampling Method: Instrumental, using Sound level Metter | |
| Data Collection Date: 06.10.2020 | |

| Location/Identification | Unit | Limit (day) | Result |
|-------------------------|------------------------|-------------|-------------|
| Bhusar Mines Pit - II | dB (A) L _{eq} | 75 | 71.6 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Bhusar

Environmental Monitoring Report

OCTOBER 2020

| | |
|--|--|
| Report No.: MEEPL/NOV/0441/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer : DRINKING WATER-POTABILITY | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: DRINKING WATER-POTABILITY | |
| Marks on Sample: Location: Tap Water – Near Rest Shelter. | |
| Sample collected on: 06.10.2020 | |

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method reference |
|---------|--|-------|-----------|---------------------------------|---|
| 1 | Colour | Hazen | <1 | 5 Max | APHA 22 nd Ed. 2012, 2120-B, 2-6 |
| 2 | Odour | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 3 | Taste | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 4 | Turbidity | NTU | 0.2 | 1 Max | APHA 22 nd Ed. 2012, 2130-B, 2-13 |
| 5 | pH | -- | 6.9 | 6.5-8.5 | APHA 22 nd Ed. 2012, 4500-H+-B, 4-92 |
| 6 | Free Chlorides (Residual) | mg/l | <0.5 | 0.2 min | APHA 22 nd Ed. 2012, 4500-CI-G, 4-69 |
| 7 | Total Dissolved Solids | mg/l | 163 | 500 max | IS 3025 (Part 16): 1984, Reaffirmed 2006 |
| 8 | Monochloramines | mg/l | <0.05 | -- | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 9 | Dichloramines | mg/l | <0.05 | -- | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 10 | Total hardness (as CaCO ₃) | mg/l | 32.7 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 11 | Alkalinity Total (as CaCO ₃) | mg/l | 31.3 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 12 | Chloride (as Cl) | mg/l | 6..2 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 13 | Sulphate (as SO ₄) | mg/l | 4.5 | 200 max | APHA 22 nd Ed. 2012, 4500-so4-e, 4-190 |





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Hindalco Industries - Bhusar

Environmental Monitoring Report

OCTOBER 2020

Continuation Sheet

MEEPL/NOV/0441/2020-21

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method reference |
|---------|--|------|--------|---------------------------------|--|
| 14 | Nitrate (as NO ₃) | mg/l | 1.5 | 45 max | APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125 |
| 15 | Fluoride (as F) | mg/l | 0.11 | 1 max | APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87 |
| 16 | Boron (as B) | mg/l | 0.10 | 0.5 max | APHA 22 nd Ed. 2012, 4500-BB, 4-25 |
| 17 | Calcium (as Ca) | mg/l | 30 | 75 max | APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67 |
| 18 | Magnesium (as Mg) | mg/l | 1.6 | 30 max | APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84 |
| 19 | Ammonical Nitrogen/Total Ammonia | mg/l | <0.1 | -- | APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115 |
| 20 | Iron (as Fe) | mg/l | 0.15 | 0.3 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 21 | Manganese (as Mn) | mg/l | N.D | 0.1 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 22 | Aluminium (as Al) | mg/l | 0.01 | 0.03 max | APHA 22 nd Ed. 2012, 3500-Al-B, 3-61 |
| 23 | Cadmium (as Cd) | mg/l | N.D | 0.003 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 24 | Chromium Total (as Cr) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 25 | Copper (as Cu) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 26 | Lead (as Pb) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 27 | Zinc (as Zn) | mg/l | 0.02 | 5 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 28 | Arsenic (as As) | mg/l | <0.01 | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-18 |
| 29 | Selenium (as Se) | mg/l | N.D | 0.001 max | APHA 22 nd Ed. 2012, 3112-B, 3-18 |
| 30 | Mercury (as hg) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-18 |
| 31 | Nickel (as Ni) | mg/l | <0.02 | 0.02 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 32 | Mineral Oil | mg/l | N.D | 0.5 max | IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1 |
| 33 | Cyanide (as CN) | mg/l | N.D | 0.05 max | APHA 22 nd ED. 2012, 4500-CN.C & 4-39 & 4-44 |
| 34 | Anionic detergents as MBAS | mg/l | <0.1 | 0.2 max | APHA 22 nd ED. 2012, 5540-C.C & 5-53 |
| 35 | Phenolic compounds (as C ₆ H ₅ OH) | mg/l | N.D | 0.001 max | APHA 22 nd ED. 2012, 5530-B & C 5-4753 |
| 36 | Polynuclear aromatic hydrocarbons (PAH) | mg/l | N.D | 0.0001 max | APHA 22 nd ED. 2012, 6440, 6-93 |
| 37 | Polychlorinated Biphenyls (PCBs) | mg/l | N.D | 0.0005 max | USEPA Method 8082 |
| 38 | Sulphide (as S) | mg/l | N.D | 0.05 max | APHA 22 nd ED. 2012, 4500-S2-C 4-175 & F 4-178 |





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Hindalco Industries - Bhusar

Environmental Monitoring Report

OCTOBER 2020

Continuation Sheet
MEEPL/NOV/0441/2020-21

| S.No | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method Reference |
|-----------------------------------|---------------------|------------|--------|---------------------------------|---|
| Microbiological Analysis | | | | | |
| 1. | Total Colliforms | MPN/100 mL | N.D | <1.1 | APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 |
| 2. | E-Coli | MPN/100 mL | N.D | Absent | APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9- 76 |
| Pesticides Residues | | | | | |
| 3. | p,p DDT | µg/L | N.D | 1 | US EPA 508-1995 |
| 4. | o,p DDT | µg/L | N.D | 1 | US EPA 508-1995 |
| 5. | p,p DDE | µg/L | N.D | 1 | US EPA 508-1995 |
| 6. | o,p DDE | µg/L | N.D | 1 | US EPA 508-1995 |
| 7. | p,p DDD | µg/L | N.D | 1 | US EPA 508-1995 |
| 8. | o,p DDD | µg/L | N.D | 1 | US EPA 508-1995 |
| 9. | γ-HCH (Lindane) | µg/L | <0.01 | 2 | US EPA 508-1995 |
| 10. | α-HCH | µg/L | <0.01 | 0.02 | US EPA 508-1995 |
| 11. | β-HCH | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 12. | δ - HCH | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 13. | Butachlor | µg/L | N.D | 120 | US EPA 508-1995 |
| 14. | Alachlor | µg/L | N.D | 20 | US EPA 508-1995 |
| 15. | Atrazine | µg/L | N.D | 2.1 | US EPA 532-2000 |
| 16. | α Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 17. | β Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 18. | Endosulfan Sulphate | µg/L | N.D | 0.3 | US EPA 508-1995 |
| 19. | Ethion | µg/L | N.D | 3 | US EPA 8141A-1994 |
| 20. | Malathion | µg/L | N.D | 185 | US EPA 8141A -1994 |
| 21. | Methyl Parathion | µg/L | N.D | 0.4 | US EPA 8141A -1994 |
| 22. | Monocrotophos | µg/L | N.D | 1 | US EPA 8141A-1994 |
| 23. | Phorate | µg/L | N.D | 2 | US EPA 8141A -1994 |
| 24. | Chlorpyrifos | µg/L | N.D | 26 | US EPA 8141A -1994 |
| 25. | Aldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 26. | Dieldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| Remarks: N.D- Not Detected | | | | | |

Conclusion: The Physical & Chemical Analysis report indicates that water is not contaminated.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries - Bagru

Environmental Monitoring Report

OCTOBER 2020

| | |
|---|--|
| Report No: MEEPL/NOV/0426/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample Location: Near Daldaliya Village | |
| Sample collected on: 05.10.2020 | |

LOCATION / IDENTIFICATION: Near Daldaliya Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 59.4 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 26.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.6 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 6.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.4 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.31 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.9 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.6 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.42 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries - Bagru

Environmental Monitoring Report

OCTOBER 2020

| | |
|---|--|
| Report No: MEEPL/NOV/0427/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Aditya School Gangupara | |
| Sample collected on: 05.10.2020 | |

LOCATION / IDENTIFICATION: Aditya School Gangupara

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 55 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 28 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 5.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.17 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.01 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.6 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.5 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries - Bagru

Environmental Monitoring Report

OCTOBER 2020

| | |
|---|--|
| Report No: MEEPL/NOV/0428/2020-21 | Date: 30 th November, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Ropeway Unloading Station | |
| Sample collected on: 05.10.2020 | |

| LOCATION / IDENTIFICATION: Ropeway Unloading Station | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 61 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 33 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 5.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.24 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.5 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.39 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries - Bagru

Environmental Monitoring Report

OCTOBER 2020

Report No: MEEPL/NOV/0429/2020-21

Date: 30th November, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Ropeway Angle Station

Sample collected on: 05.10.2020

LOCATION / IDENTIFICATION: Ropeway Angle Station

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 57 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 35 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 6.2 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.17 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.6 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.34 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.

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BHUSAR BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

NOVEMBER 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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CONTENT

| LOCATION - BHUSAR BAUXITE MINE | |
|---------------------------------|--|
| AMBIENT AIR QUALITY - CORE ZONE | |
| 1 | Near View Point 1 (Bhusar Mine Pit I) |
| 2 | Near View Point 2 (Bhusar Mine Pit II) |
| 3 | Near Rest Shelter |
| 4 | Near GTS Point |
| | |





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Hindalco Industries : Bhusar

Environmental Monitoring Report

NOVEMBER 2020

| | |
|--|--|
| Report no: MEEPL/DEC/0418/2020-21 | Date: 28 th December, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample Location: Near View Point 1 (Bhusar Mine Pit I) | |
| Sample collected on: 06.11.2020 | |

LOCATION / IDENTIFICATION: Near View Point 1 (Bhusar Mine Pit I)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 26.3 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.2 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.1 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.18 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.2 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.13 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries - Bhusar

Environmental Monitoring Report

NOVEMBER 2020

| | |
|--|--|
| Report no: MEEPL/DEC/0419/2020-21 | Date: 28 th December, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near View Point 2 (Bhusar Mine Pit II) | |
| Sample collected on: 06.11.2020 | |

LOCATION / IDENTIFICATION: Near View point 2 (Bhusar Mine Pit II)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 57.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 29.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.6 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.9 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.20 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.2 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Bhusar

Environmental Monitoring Report

NOVEMBER 2020

| | |
|---|--|
| Report no: MEEPL/DEC/0420/2020-21 | Date: 28 th December, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Rest Shelter | |
| Sample collected on: 06.11.2020 | |

| LOCATION / IDENTIFICATION: Near Rest Shelter | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 41.6 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 20.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.6 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.09 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.4 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Bhusar

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0421/2020-21

Date: 28th December, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near GTS Point

Sample collected on: 06.11.2020

LOCATION / IDENTIFICATION: Near GTS Point

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 48.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 23.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.4 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.20 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.7 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.5 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries - Bagru

Environmental Monitoring Report

NOVEMBER 2020

| | |
|---|--|
| Report no: MEEPL/DEC/0414/2020-21 | Date: 28 th December, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample Location: Near Daldaliya Village | |
| Sample collected on: 05.11.2020 | |

LOCATION / IDENTIFICATION: Near Daldaliya Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 44.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 27.0 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 1.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.04 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.6 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.10 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries - Bagru

Environmental Monitoring Report

NOVEMBER 2020

| | |
|---|--|
| Report no: MEEPL/DEC/0415/2020-21 | Date: 28 th December, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Aditya School Gangupara | |
| Sample collected on: 05.11.2020 | |

LOCATION / IDENTIFICATION: Aditya School Gangupara

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 37.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 21.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.06 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.21 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.7 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.5 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.3 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.4 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries - Bagru

Environmental Monitoring Report

NOVEMBER 2020

| | |
|---|--|
| Report no: MEEPL/DEC/0416/2020-21 | Date: 28 th December, 2020 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Ropeway Unloading Station | |
| Sample collected on: 05.11.2020 | |

| LOCATION / IDENTIFICATION: Ropeway Unloading Station | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 49.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 26.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.20 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.18 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries - Bagru

Environmental Monitoring Report

NOVEMBER 2020

Report no: MEEPL/DEC/0417/2020-21

Date: 28th December, 2020

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Ropeway Angle Station

Sample collected on: 05.11.2020

LOCATION / IDENTIFICATION: Ropeway Angle Station

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 56.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 30.8 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.6 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.25 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.6 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.3 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.23 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
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Mahabal Enviro Engineers Pvt. Ltd.

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District – Ranchi 834009

BHUSAR BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

DECEMBER 2020

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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CONTENT

| LOCATION – BHUSAR BAUXITE MINE | |
|---------------------------------|--|
| AMBIENT AIR QUALITY – CORE ZONE | |
| 1 | Near View Point 1 (Bhusar Mine Pit I) |
| 2 | Near View Point 2 (Bhusar Mine Pit II) |
| 3 | Near Rest Shelter |
| 4 | Near GTS Point |
| | |





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Hindalco Industries : Bhusar

Environmental Monitoring Report

DECEMBER 2020

Reports no: MEEPL/JAN/0318/2020-21

Date: 25th January, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample Location: Near View Point 1 (Bhusar Mine Pit I)

Sample collected on: 04.12.2020

LOCATION / IDENTIFICATION: Near View Point 1 (Bhusar Mine Pit I)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 27.3 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.8 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.21 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Bhusar

Environmental Monitoring Report

DECEMBER 2020

| | |
|--|---|
| Reports no: MEEPL/JAN/0319/2020-21 | Date: 25 th January, 2021 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near View Point 2 (Bhusar Mine Pit II) | |
| Sample collected on: 04.12.2020 | |

| LOCATION / IDENTIFICATION: Near View point 2 (Bhusar Mine Pit II) | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 50.4 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 26.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.45 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.27 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.4 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Bhusar

Environmental Monitoring Report

DECEMBER 2020

Reports no: MEEPL/JAN/0320/2020-21

Date: 25th January, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Rest Shelter

Sample collected on: 04.12.2020

LOCATION / IDENTIFICATION: Near Rest Shelter

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 38.6 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 25.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.17 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.13 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Bhusar

Environmental Monitoring Report

DECEMBER 2020

Reports no: MEEPL/JAN/0321/2020-21

Date: 25th January, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near GTS Point

Sample collected on: 04.12.2020

LOCATION / IDENTIFICATION: Near GTS Point

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 41.2 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 24.7 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.3 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.19 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.25 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Bagru

Environmental Monitoring Report

DECEMBER 2020

Reports no: MEEPL/JAN/0314/2020-21

Date: 25th January, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample Location: Near Daldaliya Village

Sample collected on: 03.12.2020

LOCATION / IDENTIFICATION: Near Daldaliya Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 48.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 21.4 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 1.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.24 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.7 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries : Bagru

Environmental Monitoring Report

DECEMBER 2020

| | |
|---|---|
| Reports no: MEEPL/JAN/0315/2020-21 | Date: 25 th January, 2021 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Aditya School Gangupara | |
| Sample collected on: 03.12.2020 | |

| LOCATION / IDENTIFICATION: Aditya School Gangupara | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 40.6 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 27.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 1.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.24 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.11 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Bagru

Environmental Monitoring Report

DECEMBER 2020

Reports no: MEEPL/JAN/0316/2020-21

Date: 25th January, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Ropeway Unloading Station

Sample collected on: 03.12.2020

LOCATION / IDENTIFICATION: Ropeway Unloading Station

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 89.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 40.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 7.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.4 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 11.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.35 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.22 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Bagru

Environmental Monitoring Report

DECEMBER 2020

Reports no: MEEPL/JAN/0317/2020-21

Date: 25th January, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Ropeway Angle Station

Sample collected on: 03.12.2020

LOCATION / IDENTIFICATION: Ropeway Angle Station

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 45.9 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 27.1 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.12 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Eco Ventures Pvt. Ltd.

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Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
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BHUSAR BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

JANUARY 2021

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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CONTENT

| LOCATION - BHUSAR BAUXITE MINE | |
|---------------------------------|--|
| AMBIENT AIR QUALITY - CORE ZONE | |
| 1 | Near View Point 1 (Bhusar Mine Pit I) |
| 2 | Near View Point 2 (Bhusar Mine Pit II) |
| 3 | Near Rest Shelter |
| 4 | Near GTS Point |
| DRINKING WATER ANALYSIS | |
| | |
| | |
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Hindalco Industries : Bhusar

Environmental Monitoring Report

JANUARY 2021

| | |
|--|--|
| Report No.: MEEPL/FEB/0324/2020-21 | Date: 10 th February, 2021 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample Location: Near View Point 1 (Bhusar Mine Pit I) | |
| Sample collected on: 07.01.2021 | |

| LOCATION / IDENTIFICATION: Near View Point 1 (Bhusar Mine Pit I) | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 79 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 45 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 5.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 6.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 7.1 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.4 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.39 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.3 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.30 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries - Bhusar

Environmental Monitoring Report

JANUARY 2021

| | |
|--|--|
| Report No.: MEEPL/FEB/0325/2020-21 | Date: 10 th February, 2021 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near View Point 2 (Bhusar Mine Pit II) | |
| Sample collected on: 07.01.2021 | |

LOCATION / IDENTIFICATION: Near View point 2 (Bhusar Mine Pit II)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 81 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 49 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 6.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.40 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.04 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.4 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.42 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Bhusar

Environmental Monitoring Report

JANUARY 2021

| | |
|---|--|
| Report No.: MEEPL/FEB/0326/2020-21 | Date: 10 th February, 2021 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near Rest Shelter | |
| Sample collected on: 07.01.2021 | |

| LOCATION / IDENTIFICATION: Near Rest Shelter | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 72 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 42 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.0 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 5.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.9 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 10.2 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.35 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.6 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.1 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.28 |

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Bhusar

Environmental Monitoring Report

JANUARY 2021

Report No.: MEEPL/FEB/0327/2020-21

Date: 10th February, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near GTS Point

Sample collected on: 07.01.2021

LOCATION / IDENTIFICATION: Near GTS Point

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 78 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 45 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 5.1 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 9.6 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.29 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.30 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Bhusar

Environmental Monitoring Report

JANUARY 2021

| | |
|--|--|
| Report No.: MEEPL/FEB/0328/2020-21 | Date: 10 th February, 2021 |
| Sample described by customer : DRINKING WATER-POTABILITY | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample Type: DRINKING WATER-POTABILITY | |
| Marks on Sample: Location: Tap Water – Near Rest Shelter. | |
| Sample collected on: 07.01.2021 | |

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method reference |
|---------|--|-------|-----------|---------------------------------|---|
| 1 | Colour | Hazen | <1 | 5 Max | APHA 22 nd Ed. 2012, 2120-B, 2-6 |
| 2 | Odour | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 3 | Taste | -- | Agreeable | Agreeable | IS 3025 (Part 7): 1983, Reaffirmed 2006 |
| 4 | Turbidity | NTU | 0.2 | 1 Max | APHA 22 nd Ed. 2012, 2130-B, 2-13 |
| 5 | pH | -- | 6.9 | 6.5-8.5 | APHA 22 nd Ed. 2012, 4500-H+-B, 4-92 |
| 6 | Free Chlorides (Residual) | mg/l | <0.5 | 0.2 min | APHA 22 nd Ed. 2012, 4500-CI-G, 4-69 |
| 7 | Total Dissolved Solids | mg/l | 284 | 500 max | IS 3025 (Part 16): 1984, Reaffirmed 2006 |
| 8 | Monochloramines | mg/l | <0.05 | -- | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 9 | Dichloramines | mg/l | <0.05 | -- | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 10 | Total hardness (as CaCO ₃) | mg/l | 34.1 | 200 max | APHA 22 nd Ed. 2012, 4500-CIG, 4-69 |
| 11 | Alkalinity Total (as CaCO ₃) | mg/l | 32.5 | 200 max | IS 3025 (Part 237): 1986, Reaffirmed 2009 |
| 12 | Chloride (as Cl) | mg/l | 6.7 | 250 max | APHA 22 nd Ed. 2012, 4500-CI-b, 4-72 |
| 13 | Sulphate (as SO ₄) | mg/l | 4.3 | 200 max | APHA 22 nd Ed. 2012, 4500-so4-e, 4-190 |





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Hindalco Industries - Bhusar

Environmental Monitoring Report

JANUARY 2021

Continuation Sheet

MEEPL/FEB/0328/2020-21

| Sl. No. | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method reference |
|---------|--|------|--------|---------------------------------|--|
| 14 | Nitrate (as NO ₃) | mg/l | 1.5 | 45 max | APHA 22 nd Ed. 2012, 4500-NO ₃ -E, 4-125 |
| 15 | Fluoride (as F) | mg/l | 0.13 | 1 max | APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87 |
| 16 | Boron (as B) | mg/l | 0.11 | 0.5 max | APHA 22 nd Ed. 2012, 4500-BB, 4-25 |
| 17 | Calcium (as Ca) | mg/l | 28 | 75 max | APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67 |
| 18 | Magnesium (as Mg) | mg/l | 1.5 | 30 max | APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84 |
| 19 | Ammonical Nitrogen/Total Ammonia | mg/l | <0.1 | -- | APHA 22 nd Ed. 2012, 4500-NH ₃ -F, 4-115 |
| 20 | Iron (as Fe) | mg/l | 0.15 | 0.3 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 21 | Manganese (as Mn) | mg/l | N.D | 0.1 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 22 | Aluminium (as Al) | mg/l | 0.01 | 0.03 max | APHA 22 nd Ed. 2012, 3500-Al-B, 3-61 |
| 23 | Cadmium (as Cd) | mg/l | N.D | 0.003 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 24 | Chromium Total (as Cr) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 25 | Copper (as Cu) | mg/l | N.D | 0.05 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 26 | Lead (as Pb) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 27 | Zinc (as Zn) | mg/l | 0.02 | 5 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 28 | Arsenic (as As) | mg/l | <0.01 | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-18 |
| 29 | Selenium (as Se) | mg/l | N.D | 0.001 max | APHA 22 nd Ed. 2012, 3112-B, 3-18 |
| 30 | Mercury (as hg) | mg/l | N.D | 0.01 max | APHA 22 nd Ed. 2012, 3114-B, 3-18 |
| 31 | Nickel (as Ni) | mg/l | <0.02 | 0.02 max | APHA 22 nd Ed. 2012, 3111-B, 3-18 |
| 32 | Mineral Oil | mg/l | N.D | 0.5 max | IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1 |
| 33 | Cyanide (as CN) | mg/l | N.D | 0.05 max | APHA 22 nd ED. 2012, 4500-CN.C & 4-39 & 4-44 |
| 34 | Anionic detergents as MBAS | mg/l | <0.1 | 0.2 max | APHA 22 nd ED. 2012, 5540-C.C & 5-53 |
| 35 | Phenolic compounds (as C ₆ H ₅ OH) | mg/l | N.D | 0.001 max | APHA 22 nd ED. 2012, 5530-B & C 5-4753 |
| 36 | Polynuclear aromatic hydrocarbons (PAH) | mg/l | N.D | 0.0001 max | APHA 22 nd ED. 2012, 6440, 6-93 |
| 37 | Polychlorinated Biphenyls (PCBs) | mg/l | N.D | 0.0005 max | USEPA Method 8082 |
| 38 | Sulphide (as S) | mg/l | N.D | 0.05 max | APHA 22 nd ED. 2012, 4500-S2-C 4-175 & F 4-178 |





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Hindalco Industries - Bhusar

Environmental Monitoring Report

JANUARY 2021

Continuation Sheet
MEEPL/FEB/0328/2020-21

| S.No | Parameters | Unit | Result | Acceptable Limit (IS10500:2012) | Method Reference |
|-----------------------------------|---------------------|------------|--------|---------------------------------|--|
| Microbiological Analysis | | | | | |
| 1. | Total Colliforms | MPN/100 mL | N.D | <1.1 | APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 |
| 2. | E-Coli | MPN/100 mL | N.D | Absent | APHA 22nd Ed. 2012, 9221-B, C & G, 9-66, 9-69 and 9-76 |
| Pesticides Residues | | | | | |
| 3. | p,p DDT | µg/L | N.D | 1 | US EPA 508-1995 |
| 4. | o,p DDT | µg/L | N.D | 1 | US EPA 508-1995 |
| 5. | p,p DDE | µg/L | N.D | 1 | US EPA 508-1995 |
| 6. | o,p DDE | µg/L | N.D | 1 | US EPA 508-1995 |
| 7. | p,p DDD | µg/L | N.D | 1 | US EPA 508-1995 |
| 8. | o,p DDD | µg/L | N.D | 1 | US EPA 508-1995 |
| 9. | γ-HCH (Lindane) | µg/L | <0.01 | 2 | US EPA 508-1995 |
| 10. | α-HCH | µg/L | <0.01 | 0.02 | US EPA 508-1995 |
| 11. | β-HCH | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 12. | δ - HCH | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 13. | Butachlor | µg/L | N.D | 120 | US EPA 508-1995 |
| 14. | Alachlor | µg/L | N.D | 20 | US EPA 508-1995 |
| 15. | Atrazine | µg/L | N.D | 2.1 | US EPA 532-2000 |
| 16. | α Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 17. | β Endosulfan | µg/L | N.D | 0.4 | US EPA 508-1995 |
| 18. | Endosulfan Sulphate | µg/L | N.D | 0.3 | US EPA 508-1995 |
| 19. | Ethion | µg/L | N.D | 3 | US EPA 8141A-1994 |
| 20. | Malathion | µg/L | N.D | 185 | US EPA 8141A -1994 |
| 21. | Methyl Parathion | µg/L | N.D | 0.4 | US EPA 8141A -1994 |
| 22. | Monocrotophos | µg/L | N.D | 1 | US EPA 8141A-1994 |
| 23. | Phorate | µg/L | N.D | 2 | US EPA 8141A -1994 |
| 24. | Chlorpyrifos | µg/L | N.D | 26 | US EPA 8141A -1994 |
| 25. | Aldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| 26. | Dieldrin | µg/L | N.D | 0.03 | US EPA 508-1995 |
| Remarks: N.D- Not Detected | | | | | |

Conclusion: The Physical & Chemical Analysis report indicates that water is not contaminated.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Eco Ventures Pvt. Ltd.

Regd. Office: 2/37, Sarvapriya Vihar, Near IIT Gate, New Delhi -110016

Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

BHUSAR BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

FEBRUARY 2021

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Branch Office:

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009,

Mobile No: +91 9431.102.102 / +91 9955.358.262,

E-mail: mahabalranchi@gmail.com

CONTENT

| LOCATION – BHUSAR BAUXITE MINE | |
|---------------------------------|--|
| AMBIENT AIR QUALITY – CORE ZONE | |
| 1 | Near View Point 1 (Bhusar Mine Pit I) |
| 2 | Near View Point 2 (Bhusar Mine Pit II) |
| 3 | Near Rest Shelter |
| 4 | Near GTS Point |
| | |





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E-mail: mahabalaranchi@gmail.com

Hindalco Industries : Bhusar

Environmental Monitoring Report

FEBRUARY 2021

Report No.: MEEPL/MAR/0368/2020-21

Date: 25th March, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample Location: Near View Point 1 (Bhusar Mine Pit I)

Sample collected on: 05.02.2021

LOCATION / IDENTIFICATION: Near View Point 1 (Bhusar Mine Pit I)

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 49 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 32 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 5.7 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 6.5 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.21 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.5 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.7 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

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E-mail: mahabalaranchi@gmail.com

Hindalco Industries : Bhusar

Environmental Monitoring Report

FEBRUARY 2021

| | |
|--|---|
| Report No.: MEEPL/MAR/0369/2020-21 | Date: 25 th March, 2021 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Near View Point 2 (Bhusar Mine Pit II) | |
| Sample collected on: 05.02.2021 | |

| LOCATION / IDENTIFICATION: Near View point 2 (Bhusar Mine Pit II) | | | | |
|---|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 54 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 35 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.8 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.45 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.27 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.4 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.9 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.21 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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E-mail: mahabalanranchi@gmail.com

Hindalco Industries : Bhusar

Environmental Monitoring Report

FEBRUARY 2021

Report No.: MEEPL/MAR/0370/2020-21

Date: 25th March, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near Rest Shelter

Sample collected on: 05.02.2021

LOCATION / IDENTIFICATION: Near Rest Shelter

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 47 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 31 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.5 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.6 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 5.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.20 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.2 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.15 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

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Hindalco Industries : Bhusar

Environmental Monitoring Report

FEBRUARY 2021

Report No.: MEEPL/MAR/0371/2020-21

Date: 25th March, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Near GTS Point

Sample collected on: 05.02.2021

LOCATION / IDENTIFICATION: Near GTS Point

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 49 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 30 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.7 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.9 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 6.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 7.3 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.19 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.3 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.5 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 0.8 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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E-mail: mahabalaranchi@gmail.com

Hindalco Industries : Bagru

Environmental Monitoring Report

FEBRUARY 2021

Report No.: MEEPL/MAR/0364/2020-21

Date: 25th March, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample Location: Near Daldaliya Village

Sample collected on: 04.02.2021

LOCATION / IDENTIFICATION: Near Daldaliya Village

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 53.5 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 21.9 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 3.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 2.4 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.0 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.8 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.25 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.4 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.7 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.2 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.17 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Bagru

Environmental Monitoring Report

FEBRUARY 2021

| | |
|---|---|
| Report No.: MEEPL/MAR/0365/2020-21 | Date: 25 th March, 2021 |
| Sample described by customer: AMBIENT AIR QUALITY MONITORING | |
| Client Name: Hindalco Industries Limited | |
| Client Address: Lohardaga | |
| Postal Code: 835203 | |
| State: Jharkhand | |
| Country: India | |
| Sample type: AMBIENT AIR QUALITY MONITORING | |
| Marks on Sample: Location: Aditya School Gangupara | |
| Sample collected on: 04.02.2021 | |

| LOCATION / IDENTIFICATION: Aditya School Gangupara | | | | |
|--|--|-------------------|----------------|---------------|
| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 46.1 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 27.2 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 1.1 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 3.0 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 2.3 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.28 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.02 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 0.8 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.6 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.14 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries : Bagru

Environmental Monitoring Report

FEBRUARY 2021

Report No.: MEEPL/MAR/0366/2020-21

Date: 25th March, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Ropeway Unloading Station

Sample collected on: 04.02.2021

LOCATION / IDENTIFICATION: Ropeway Unloading Station

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 82.7 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 45.5 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 4.9 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 7.5 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 4.5 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 11.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.35 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.03 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 2.0 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.9 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 1.5 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.20 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries : Bagru

Environmental Monitoring Report

FEBRUARY 2021

Report No.: MEEPL/MAR/0367/2020-21

Date: 25th March, 2021

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample Type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Ropeway Angle Station

Sample collected on: 04.02.2021

LOCATION / IDENTIFICATION: Ropeway Angle Station

| Sl. No. | PARAMETERS | UNIT | Standard Limit | Concentration |
|---------|--|-------------------|----------------|---------------|
| 01. | Particulate Matter (size less than 10 µm) PM ₁₀ | µg/m ³ | 100 | 50.3 |
| 02. | Particulate Matter (size less than 2.5 µm) PM _{2.5} | µg/m ³ | 60 | 30.7 |
| 03. | Sulphur Dioxide (SO ₂) | µg/m ³ | 80 | 2.2 |
| 04. | Nitrogen Dioxide (NO ₂) | µg/m ³ | 80 | 1.8 |
| 05. | Ammonia (NH ₃) | µg/m ³ | 400 | 3.6 |
| 06. | Ozone (O ₃) | µg/m ³ | 180 | 8.7 |
| 07. | Carbon Monoxide (CO) | mg/m ³ | 02 | 0.15 |
| 08. | Lead (Pb) | µg/m ³ | 1.0 | 0.05 |
| 09. | Nickel (Ni) | ng/m ³ | 20 | 1.8 |
| 10. | Arsenic (As) | ng/m ³ | 06 | 1.1 |
| 11. | Benzene (C ₆ H ₆) | µg/m ³ | 05 | 2.0 |
| 12. | Benzo (a) Pyrene | µg/m ³ | 01 | 0.19 |

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



Bhusar Bauxite Mine

March - 2021

March month of environment monitoring is not done due to Covid -19 pandemic.

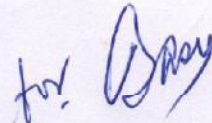
Annexure-2

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2020-21

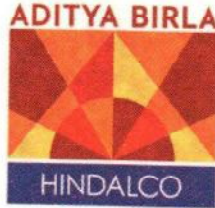
The composite cost during the year 2020-21 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 ha), Pakhar (15.58 ha), Pakhar (109.507 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), Serengdag (140.06 ha), Serengdag (155.81 ha), Jalim & Sanai (12.14 ha), Gurdari (584.19 ha), Amtipani (190.95 ha), Kujam I (80.97 ha) Kujam II (157.38 ha), Bagru (75.41 ha), Hisri New (14.55 ha), Chiro kukud (152.57 ha), Orsa pat (196.36 ha), Bhusar (65.31 ha) and Bimarla Bauxite Mines (134.52 ha).

| S No | Description | Budget (in Rupees) FY 2020-21 | Actual (in Rupees) FY 2020-21 (From October'20 to March'21) |
|------|---|----------------------------------|---|
| 1 | Pollution Control & Environment monitoring | 38,21,524.00 | 26,99,875.07 |
| 2 | Reclamation/ Back filing & Rehabilitation** | 3,21,50,000.00 | 2,90,93,388.00 |
| 3 | Green belt, Plantation & Water spraying arrangement | 49,25,800.00 | 46,95,346.80 |
| 4 | Rural Development | 3,20,21,451.00 | 1,65,48,825.39 |

**Part of OB removed cost.

for 

(Basudev Gangopadhyay)
Head (Geology & Environment)



Annexure 3

Date – 06.07.2020

Office Order

Environmental Cell has been re-constituted at Bhusar Bauxite Mine (Area 65.31 ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

1. Mr. Akhilesh Sinha (Coordinator)
2. Mr. Rupak Kumar Dubey (Member)
3. Mr. Anil Kumar Singh (Member)
4. Mr. Abhay Kumar – Environment Engineer

The Undersigned is the in charge of above Environment Management Cell constituted for the purpose of ensuring compliances of environmental act rule and regulation for the above mine.

A handwritten signature in blue ink, appearing to read "Basudev Gangopadhyay", with a horizontal line drawn underneath.

Basudev Gangopadhyay
Senior Executive (Quality & Environment)

Annexure 4


| Production, Mined Out, Back Filled and Over Burden removal from October'20 to March'21 | | | | | | | | | |
|---|----------------------------|------------------------|---------------------------|--------------------------------|-----------------|---------------------|-----------------------|--------------------|--|
| S No | Name of the Mines | Mining lease area (ha) | Production Capacity (MT)* | Lease Period* | Production (MT) | Mined out area (ha) | Back filled area (ha) | Over burden (Cu.M) | |
| 1 | Bagru bauxite Mine | 75.41 | 85000 | 22.01.1974 to 31.03.2030 | NIL | NIL | NIL | NIL | |
| 2 | Bhusar Bauxite Mine | 65.31 | 280000 | 11.07.1981 to 31.03.2030 | 25490 | 0.178 | 0.15 | 0.00 | |
| 3 | Hisri (New) Bauxite Mine | 14.55 | 100000 | 19.07.1981 to 31.03.2030 | 57149 | 0.512 | 0.00 | 0.00 | |
| 4 | Kujam - I Bauxite Mine | 80.87 | 150000 | 13.03.2006 to 12.03.2056 | 37780 | 1.52 | 4.28 | 50116.10 | |
| 5 | Kujam - II Bauxite Mine | 157.38 | 300000 | 24.03.2006 to 23.03.2056 | 90915 | 3.19 | 6.18 | 157480.42 | |
| 6 | Amtipani Bauxite Mine | 190.95 | 150000 | 13.03.2006 to 12.03.2056 | 79180 | 3.27 | 8.420 | 285021.770 | |
| 7 | Gurdari Bauxite Mine | 584.19 | 325000 | 23.03.1985 to 22.03.2035 | 138808 | 6.52 | 6.23 | 208233.55 | |
| 8 | Shrengdag A Bauxite Mine | 155.81 | 260000 | 16.10.1974 to 31.03.2030 | 81960 | 1.9 | 1.2 | 225276.75 | |
| 9 | Shrengdag B Bauxite Mine | 140.07 | 100000 | 04.10.1978 to 31.03.2030 | Nil | Nil | Nil | Nil | |
| 10 | Jalim & Sanai Bauxite Mine | 12.14 | 50000 | 16.10.1974 to 31.03.2030 | 23128 | 0.46 | 0.44 | 22658.4 | |

AH

Annexure 4

| | | | | | | | | | |
|--|--------------------------|---------|--------|--------------------------------|--------|------|------|-----------|-----|
| 11 | Orsapat Bauxite Mine | 196.36 | 200000 | 17.07.1986 to 16.07.2036 | NIL | NIL | NIL | NIL | NIL |
| 12 | Chiro Kukud bauxite Mine | 152.57 | 100000 | 29.01.1985 to 28.01.2035 | NIL | NIL | NIL | NIL | NIL |
| 13 | Pakhar (8.09) | 8.09 | 80000 | 16.05.1973 to 31.03.2030 | NIL | NIL | NIL | NIL | NIL |
| 14 | Pakhar (35.12) | 35.12 | 200000 | 17.04.1975 to 31.03.2030 | NIL | NIL | NIL | NIL | NIL |
| 15 | Pakhar (115.13) | 115.13 | 300000 | 19.07.1996 to 31.03.2030 | 111000 | 0.80 | 0.70 | 272905.96 | |
| Minerals & Minerals Limited | | | | | | | | | |
| 16 | Pakhar (15.58) | 15.58 | 60000 | 28.04.1965 to 31.03.2030 | 3200 | 0.20 | 0.10 | 31346.54 | |
| 17 | Pakhar (109.507) | 109.507 | 280000 | 26.07.2008 to 25.07.2058 | 108500 | 0.46 | 0.75 | 234214.42 | |
| 18 | Bimarla Bauxite Mine | 134.37 | 300000 | 18.07.2009 to 17.07.2059 | 62100 | 2.95 | 2.50 | 160141.10 | |

*Static information about the mines included in the above table


 for
Basudev Gangopadhyay
 Head (Geology & Environment)