



HIL/LHD/ENV/MoEF/387

Date: 25.11.2022

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 Kujam-I Bauxite Mining project of M/s Hindalco Industries Limited located in Dist- Gumla, Jharkhand for the period April'22 to September'22.

Ref: Environmental Clearance letter no J-11015/240/2005-IA II (M) dated 14th August 2006

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Kujam-I (80.87 ha) Bauxite Mining project of M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period April'22 to September'22.

The lease detail is as below.

| Lease area (ha) | Production Capacity (MT) | Lease Period |
|-----------------|--------------------------|--------------------------|
| 80.87 | 150000 | 13.03.2006 to 12.03.2056 |

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

(Basudev Gangopadhyay)
AVP (Planning, Environment & Compliance)

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, ranchijspcb@gmail.com, roranchi47@gmail.com

Name of the Project : **Kujam I Bauxite Mine (80.87 ha)**
M/s Hindalco Industries Ltd

Environment Clearance No & date : **J-11015/240/2005-IA.II (M), dated 14.08.2006**

Period of compliance Report : **From 1st April 2022 to 30th September 2022**

| S No | Conditions | Compliance Status |
|----------------------------|---|---|
| Specific Conditions | | |
| 1 | All the conditions stipulated by the State Pollution Control Board in their NOC should 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 upto 31.12.2025. Productions of bauxite are within limits specified in consent to operate. |
| 2 | The mining operations shall not intersect ground water table. Prior approval of the MoEF and CGWA shall be obtained for mining below water table. | The mining operation confined within shallow depth (20 m max) 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 ground water table and the same status will be maintained in future also. |
| 3 | The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use. | The land acquisition is being done with permission of competent authority of State Government i.e. concerned Deputy Commissioner (D.C.) under CNT Act. The land lease agreement is being done with raiyat (Landowner) for 20 years with permission of State Govt with provision of returning the land as per the norms set by D.C. The compensation and facilities are being provided as per norms set in agreement. Thus, land acquisition has the approval of State Government. |

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| 4 | Topsoil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas. | Topsoil is being stacked separately for reclamation and rehabilitation of mined out areas with progress of Mining. |
| 5 | The waste generated in the initial period shall be dumped temporarily and backfilled in the mined-out area. There shall be no permanent external OB dump in the project area. Concurrent backfilling should start from the fifth year onwards. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on six monthly basis. | <p>Concurrent backfilling is being done in mined out pit.</p> <p>No permanent external OB dump is in the project area.</p> <p>Afforestation is being carried out progressively over reclaimed area for rehabilitation.</p> <p>The detail of back filling is attached here with as Annexure 4</p> |
| 6 | <p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil and mineral dump. 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 (size, gradient and length) shall be constructed for mine pit 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 rainwater during monsoon, part of mined out area is used as settling tank for the runoff. Rainwater 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 are being constructed in both around the mine pit to prevent runoff of water and flow of sediments directly into the agricultural field and water bodies, if applicable.</p> <p>Sump of adequate capacity is being provided and maintained as required.</p> |
| 7 | Plantation shall be raised in an area of 43.5 ha including a green belt of adequate width by planting the native species around the ML area, roads, etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1500 plants per ha. | Progressive plantation is being carried out as per with progress of mining. During FY 2022-23 around 2800 nos. of saplings have been planted. Total 5.84 ha area in plantation have been planted till date. In addition to this agricultural activities are going on reclaimed land as per the consent from landowners. |

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| 8 | 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. | Suitable conservation measures to augment ground water have been taken as directed in NOC granted by CGWB c.g. Constructing water harvesting pond, garland drain etc. Water harvesting scheme is also prepared. |
| 9 | Regular monitoring of ground water level and quality should be carried out 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 - pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board. | We are not using ground water for any mining purpose. There is no chance of intersection of ground water table during mining operation at present and in future. Piezometer has been installed for monitoring of ground water level. Water quality and water level report are attached herewith as Annexure 1 . |
| 10 | Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies. | Water is being drawn from rainwater harvesting pond located at mined out pit. We are not using ground water/natural water resources for mining purpose. We have obtained NOC for extraction of ground water from CGWB. |
| 11 | The project proponent shall monitor the spring discharge on long term basis (at least one major spring) both in terms of quantity and quality of water and records maintained. Six monthly report should be submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubneshwar. | Spring water is being monitored. Analysis report is attached as Annexure 2 . Now Regional office is at Ranchi. |
| 12 | 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 are undertaken to minimize vehicular emission. All measures are being taken to control vehicular emission. The vehicles are being covered with tarpaulin while transportation of mineral. |
| 13 | Drills should either be operated with dust extractors or should be equipped with water injection system. | Wet drilling is in practice. |

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| 14 | 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. All efforts are being taken to mitigate impact of blasting. |
| 15 | Consent to operate should be obtained from SPCB prior to start of production of mine. | Consent to operate obtained from JSPCB prior to start of production from Mincs, which is being renewed by JSPCB periodically. Existing consent to Operate is valid up to 31.12.2025. |
| 16 | Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations. | The sewage water from domestic uses is being collected through individual septic tanks & soaks pits. Sludge is collected to an integrated soak pit. Effluent treatment mechanism (Oil-grease trap) are provided where the maintenance of machine is carried out. |
| 17 | Land oustees and land loser/affected people should be compensated and rehabilitated as per the National Policy on Resettlement and Rehabilitation of project Affected Families (NPRR), 2003 | Land acquisition activities is done as per CNT Act and with permission of competent authority i.e. concerned Deputy Commissioner (D.C.) and consent of Raiyat (Landowner) The land compensation and other related benefit are being provided as per norms set out in land purchase agreement with the consent of DC. |
| 18 | The higher benches of the excavated void to be converted into water reservoir shall be terraced and afforested to stabilize the slopes. Peripheral fencing shall be done along the excavated area. | Is being and will be implemented with progress of mining. Water harvesting pond is provided. Fencing provided as required. |
| 19 | 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. | Final mine closure plan will be submitted at appropriate time as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. Presently we are having approved progressive mine closure plan. Based on present resource estimate, and peak rated production capacity mentioned in EC, Mining operation is being carried out. |

General Conditions

| S No | Conditions | Compliance Status |
|------|---|--|
| 1 | No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests. | Noted. |
| 2 | 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 in scientific manner. Report is attached as Annexure 4. |
| 3 | Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife departments. | We have prepared Wildlife Conservation Plan in consultation with State Forest Department and also obtained approval letter from Principal Chief Conservator of Forest, Wildlife & Chief Wildlife Warden, Jharkhand for conservation and protection of flora and fauna in the core and buffer zone for Kujam I Bauxite Mines. Approval letter (Memo No 1870, dated 02.12.2021) has been submitted to your good office on 21.02.2022. |
| 4 | Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x 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 2. |
| 5 | Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution Control Board once in six months. | Monitoring Reports is enclosed as Annexure -2 |
| 6 | 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. | Water spraying arrangement on haul roads, loading and unloading and at transfer points is being carried out on regular basis. |

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| 7 | 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. | PPEs provided to workers at noise prone areas |
| 8 | 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, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents. | There is no industrial wastewater generation within mine lease area. We are not discharging any wastewater outside mine lease area. Effluent treatment mechanism (Oil-grease trap) is provided where the maintenance of machine is carried out. |
| 9 | 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. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. | PPE's (safety shoes, goggles, earmuff) provided to workers at dusty areas. Periodic health checks up/ occupational health checkup is in practice for workers at Mine. |
| 10 | A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization | Separate Environmental Management Cell (EMC) is already formed with qualified personals and informed as Annexure 3. |
| 11 | The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work. | Date of financial closure is not applicable since it is operating mine. Now Regional office is at Ranchi. |
| 12 | The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar. | Year wise expenditure is being reported to the Ministry and its Regional Office located at Ranchi. Copy is enclosed as Annexure 5 |
| 13 | The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work. | Already mentioned above Point no. 11. |
| 14 | The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the | Agreed. Now Regional office is at Ranchi |

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| | requisite data / information / monitoring reports. | |
| 15 | A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom and suggestion / representation has been received while processing the proposal. | Complied |
| 16 | State Pollution Control Board should display a copy of the clearance letter at the regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days. | Displayed. |
| 17 | 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 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 Bhubneshwar. | Complied. (Documents already submitted). |



Signature

KUJAM-I BAUXITE MINE OF M/S HINDALCO INDUSTRIES LTD.



Retaining wall to prevent solid wash-off



Potato & paddy cultivation over reclaimed area.



Pic: Greenbelt and roadside avenue plantation



Pic: Fruits bearing Plantation over the reclaimed area.



Pic: Water sprinkling on mines haul road.



Pic: Washing platform and oil & grease trap.



Pic: Shows Southern view of Water Pond (Rain water Harvesting Pond) at Kujam-I Bauxite Mines.

Annexure 1

Piezometer reading - Kujam I Bauxite Mines

| S No | Month | Depth (meter) |
|-------------|--------------|----------------------|
| 1 | Apr-22 | 34.87 |
| 2 | May-22 | 35.66 |
| 3 | Jun-22 | 34.46 |
| 4 | Jul-22 | 32.84 |
| 5 | Aug-22 | 32.47 |
| 6 | Sep-22 | 31.4 |



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:- 20AAECE9713D124**ENGINEERING SERVICES PVT. LTD.**Email: info@elespl.co.in, eles.ranchi@gmail.com

Phone no : 0651-2290103

Website : www.elespl.co.in**TEST REPORT**

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935A | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048A |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Kujam Quarry 430 Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/04/2022 to 19/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°19'9.46"E | 6 | Latitude | : 23°18'30.17"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 71 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 35 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 8.4 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 10.6 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.036 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 3.3 |

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Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935A | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 3.1 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.45 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

****End of Report****

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048B |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Talabkhanta 4A13 Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/04/2022 to 19/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'56.50"E | 6 | Latitude | : 23°18'21.76"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 63 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 26 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 10.4 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.009 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935B | Report Release Date : 12.05.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.23 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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Phone no : 0651-2290103

Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935C | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048C |
| Address | : Lohardaga, Jharkhand-835203 | Location | : 4 A11 Football Ground Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/04/2022 to 19/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'47.03"E | 6 | Latitude | : 23°17'48.77"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 54 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 22 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.2 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.006 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935C | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935D | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|------------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048D |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Camp; Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/04/2022 to 19/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'42.75"E | 6 | Latitude | : 23°17'39.60"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 65 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 28 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.6 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.019 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.3 |

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Website : www.elespl.co.in

TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935D | Report Release Date : 12.05.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.7 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.24 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

****End of Report****

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935E | Report Release Date : 12.05.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048E |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Near Pakri Gada Village |
| Plant Status | : Operational | Sampling Date | : 19/04/2022 to 20/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 29 | 2 | Barometric Pressure (mmHg) : 741 |
| 3 | Relative Humidity (%) : 66 | 4 | Weather Condition : Clear |
| 5 | Longitude : 84°14'52.25"N | 6 | Latitude : 23°17'41.21"E |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 60 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 26 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.014 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935E | Report Release Date : 12.05.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.3 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.24 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935F | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048F |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Near Pol Pol Village |
| Plant Status | : Operational | Sampling Date | : 19/04/2022 to 20/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 29 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 53 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 25 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 5.3 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.008 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
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| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.21 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
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ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in, eles.ranchi@gmail.com

Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935G | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048G |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Near Dipa Kujam Village |
| Plant Status | : Operational | Sampling Date | : 18/04/2022 to 19/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 53 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 19 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.5 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.008 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935G | Report Release Date | : 12.05.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

****End of Report****

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

Page 2 of 2

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935H | Report Release Date : 12.05.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|-----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048H |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Near Shakhuaipani Village |
| Plant Status | : Operational | Sampling Date | : 20/04/2022 to 21/04/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 31 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 70 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 50 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 22 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.3 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.004 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935H | Report Release Date : 12.05.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.8 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

Page 2 of 2

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Plot No.30, Mansarovar Enclave, Tupudana,Hatia,Ranchi-834003,
Jharkhand.

KujamI Bauxite Mine-Environmental Monitoring Report

May 2022



CONTENT

| Hindalco Industries : Kujam-I Bauxite Mine | | Environmental Monitoring Report | May2022 |
|--|--------------------------|---------------------------------|---------|
| Kujam-I Bauxite Mine | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Kujam Quarry 430 | | |
| 2 | Talabkhanta 4A13 | | |
| 3 | 4 A11 Football Ground | | |
| 4 | Camp | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 1 | Near Pakri Gada Village | | |
| 2 | Near Pol Pol Village | | |
| 3 | Near Shakhuapani Village | | |
| 4 | Near Dipa Kujam Village | | |
| AMBIENT NOISE | | | |
| WORKZONE/SPOT NOISE | | | |
| WORKSHOP EFFLUENT | | | |
| DRINKING WATER ANALYSIS | | | |





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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351A | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359A |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam Quarry 430 Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 17/05/2022 to 18/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 27 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 69 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°19'9.46"E | 6 | Latitude | : 23°18'30.17"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 67 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 39 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 7.9 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 12.5 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.032 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 3.4 |



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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351A | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.8 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.26 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

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SANDIP BERA
SENIOR MANAGER,
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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351B | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359B |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Talabkhanta 4A13 Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 17/05/2022 to 18/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 27 | 2 | Barometric Pressure (mmHg) : 741 |
| 3 | Relative Humidity (%) : 69 | 4 | Weather Condition : Clear |
| 5 | Longitude : 84°18'56.50"E | 6 | Latitude : 23°18'21.76"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 55 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 25 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.003 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351B | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****


Authorized Signatory
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Page 2 of 2

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351C | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359C |
| Address | : Lohardaga, Jharkhand-835302 | Location | : 4 A11 Football Ground Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 17/05/2022 to 18/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 27 | 2 | Barometric Pressure (mmHg) : 741 |
| 3 | Relative Humidity (%) : 69 | 4 | Weather Condition : Clear |
| 5 | Longitude : 84°18'47.03"E | 6 | Latitude : 23°17'48.77"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 56 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 19 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.5 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.004 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |



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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351C | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****


Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351D | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|------------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359D |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Camp; Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 17/05/2022 to 18/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 27 | 2 | Barometric Pressure (mmHg) : 741 |
| 3 | Relative Humidity (%) : 69 | 4 | Weather Condition : Clear |
| 5 | Longitude : 84°18'42.75"E | 6 | Latitude : 23°17'39.60"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 66 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 30 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.2 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.7 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.012 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.3 |

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| Test Report No. : ELES/RNC/2022/1351D | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.2 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.22 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
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CIN: U74999JH2018PTC011125

TEST REPORT

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| Test Report No. : ELES/RNC/2022/1351E | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359E |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pakri Gada Village |
| Plant Status | : Operational | Sampling Date | : 16/05/2022 to 17/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 29 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°14'52.25"N | 6 | Latitude | : 23°17'41.21"E |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 50 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 22 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 9.2 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.005 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351E | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.2 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.25 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351F | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359F |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pol Pol Village |
| Plant Status | : Operational | Sampling Date | : 16/05/2022 to 17/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 29 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 44 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 21 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.4 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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| Test Report No. : ELES/RNC/2022/1351F | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

SANDIP BERA
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ELES PVT. LTD.

****End of Report****

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Website : www.elespl.co.in**TEST REPORT**

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1351G | Report Release Date | : 14.06.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359G |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Dipa Kujam Village |
| Plant Status | : Operational | Sampling Date | : 17/05/2022 to 18/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 27 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 69 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 43 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 20 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.4 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

Page 1 of 2

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Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1351G | Report Release Date | : 14.06.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

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Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1351H | Report Release Date | : 14.06.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359H |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Shakhupani Village |
| Plant Status | : Operational | Sampling Date | : 16/05/2022 to 17/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 28 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 69 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 46 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 15 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.8 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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CIN: U74999JH2018PTC031125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351H | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.22 |

Remarks: (*)-Parameters are outsourced to other Lab.

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Authorized Signatory

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351K | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359K |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Mine Weigh Bridge Gurdari Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 16/05/2022 to 17/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|----------------|
| 1 | Average Temperature (°C) | : 29 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°14'40.25"N | 6 | Latitude | : 23°19'9.21"E |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 55 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 22 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 5.2 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 9.7 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.009 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.7 |

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CIN: U74999JH2018PTC011125

TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351K | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|-------------------|----------------------|------------------|--------|
| Benzene* | µg/m ³ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m ³ | USEPA 8270 C to -13A | 01(Annual) | 0.24 |

Remarks: (*)-Parameters are outsourced to other Lab.

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351L | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1359L |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Ambakana Pit / NKCPL Camp; Gurdari Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 16/05/2022 to 17/05/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 29 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 59 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 23 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.5 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.6 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.018 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351L | Report Release Date : 14.06.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.22 |

Remarks: (*)-Parameters are outsourced to other Lab.

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Authorized Signatory

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1355J | Report Release Date : 14.06.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--------------------|
| Customer Name | : Hindalco Industries Limited | Sample Date | : 18.05.2022 |
| Address | : Lohardaga, Jharkhand-835203 | Type of Sample | : Ambient Noise |
| Plant Status | : Operational | Sampling procedure | : ELES/DOC/SMPL/03 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |

| Location | Unit | Test Protocol | Result | | Regulatory Limit (Industrial Zone) |
|--------------------------------------|-------|--------------------------|------------|-----------------|---|
| | | | Time | L _{eq} | |
| Kujam-I (80.87 ha.) Bauxite Mines | dB(A) | IS 9989:1981, RA 2020 | Day Time | 70 | 75 dB(A) Day Time & 70 dB(A) Night Time |
| Sample ID: ELES/RNC/2022/AN/1363J | | | Night Time | 54 | |

****End of Report****


Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

Page 1 of 1

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Website : www.elespl.co.in

CIN: U74999JM2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1356J | Report Release Date : 14.06.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--------------------|
| Customer Name | : Hindalco Industries Limited | Sampling Date | : 18.05.2022 |
| Address | : Lohardaga, Jharkhand-835302 | Type of Sample | : Workzone Noise |
| Plant Status | : Operational | Sampling procedure | : ELES/DOC/SMPL/03 |
| | | Sample Drawn By | : ELES Pvt. Ltd. |

| Location | Unit | Test Protocol | Result | | Regulatory Limit (Industrial Zone) |
|---|-------|--------------------------|----------|-----------------|---------------------------------------|
| | | | Time | L _{eq} | |
| Drill rig at Working Pit - Kujam-I Mines (80.87 ha.) | dB(A) | IS 9989:1981, RA 2020 | Day Time | 71 | 75 dB(A) Day Time |
| Sample ID: ELES/RNC/2022/AN/1364J | | | | | |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1359J | Report Release Date : 14/06/2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/DW/1367J |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Drinking Water Kujam-I Bauxite Mines |
| Plant Status | : Operational | Sampling Date | : 18/05/2022 |
| | | Type of Sample | : Drinking Water |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sample Condition | : Sealed & Preserved |

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--|-------|-----------------------------------|-----------|---|
| | | | | as per IS:10500:2012 Acceptable Limit |
| pH | - | APHA 23rd Edition 2017,4500-H+-B | 6.7 | 6.5-8.5 |
| Color | Hazen | IS 3025 (Part-04): 1983 | <1.0 | 5 |
| Odour | - | IS 3025 (Part-05): 1983 | Agreeable | Agreeable |
| Taste | - | IS 3025 (Part-07): 1984 | Agreeable | Agreeable |
| Turbidity | NTU | APHA 23rd Edition 2017,2130 B | 0.13 | 1 |
| Free Residual Chlorine | mg/L | IS 3025 (Part-26): 1986 | <0.1 | 0.2 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16):1984 | 160 | 500 |
| Monochloramines | mg/L | APHA 23rd Edition 2017, 4500 CI-G | <1.0 | 4 |
| Dichloramines | mg/L | APHA 23rd Edition 2017, 4500 CI-G | <1.0 | 4 |
| Total Hardness (as CaCO ₃) | mg/L | APHA 23rd Edition 2017, 2340 C | 45.7 | 200 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23):1986 | 29.0 | 200 |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32): 1988: RA 2014 | 7.0 | 250 |

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1359J Report Release Date : 14/06/2022

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|---|------|--|----------|---|
| | | | | as per IS:10500:2012 Acceptable Limit |
| Sulphate (as SO ₄) | mg/L | IS 3025 (Part-24):1986 | 4.9 | 200 |
| Nitrate (as NO ₃) | mg/L | IS 3025 (Part-34): 1988 | 1.31 | 45 |
| Fluoride (as F) | mg/L | APHA 23rd Edition 2017,4500-F--D | 0.1678 | 1 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA 23rd Edition 2017, 4500 Norg-C | <0.1 | 0.5 |
| Cyanide (as CN) | mg/L | IS 3025 (Part-27): 1986 | <0.0125 | 0.05 |
| Phenolic Compounds (as C ₆ H ₅ OH) | mg/L | IS 3025 (Part-43): 1992 | <0.00002 | 0.001 |
| Sulphide (as S) | mg/L | IS 3025 (Part-29): 1986 | <0.04 | 0.05 |
| Boron (as B) | mg/L | APHA 23rd Edition, 3125 B | <0.2 | 0.5 |
| Calcium (as Ca) | mg/L | APHA 23rd Edition 2017, 3500 B | 13.6 | 75 |
| Magnesium (as Mg) | mg/L | IS 3025 (Part-46):1994 | 2.9 | 30 |
| Iron (as Fe) | mg/L | APHA 23rd Edition, 3111 B&C | 0.277 | 1 |
| Manganese (as Mn) | mg/L | APHA 23rd Edition, 3111 B&C | <0.05 | 0.1 |
| Aluminum (as Al) | mg/L | APHA 23rd Edition, 3125 B | <0.02 | 0.03 |
| Cadmium (as Cd) | mg/L | APHA 23rd Edition, 3111 B&C | <0.003 | 0.003 |
| Total Chromium (as Cr) | mg/L | APHA 23rd Edition, 3111 B&C | <0.03 | 0.05 |
| Copper (as Cu) | mg/L | APHA 23rd Edition, 3111 B&C | <0.03 | 0.05 |
| Lead (as Pb) | mg/L | APHA 23rd Edition, 3111 B&C | <0.01 | 0.01 |
| Zinc (as Zn) | mg/L | APHA 23rd Edition, 3111 B&C | <0.1 | 5 |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1359J | Report Release Date : 14/06/2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|---|-----------|-----------------------------|--------------|----------------------|
| | | | | as per IS:10500:2012 |
| | | | | Acceptable Limit |
| Arsenic (as As) | mg/L | APHA 23rd Edition, 3111 B&C | <0.005 | 0.01 |
| Selenium (as Se) | mg/L | APHA 23rd Edition, 3125 B | <0.01 | 0.01 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 2000 | <0.001 | 0.001 |
| Nickel (as Ni) | mg/L | APHA 23rd Edition, 3111 B&C | <0.01 | 0.02 |
| Mineral Oil* | mg/L | IS 3025 (Part-39): 1991 | <0.01 | 0.5 |
| Anionic Detergents (as MBAS)* | mg/L | Annex K of IS 13428:2005 | <0.05 | 0.2 |
| Polynuclear Aromatic Hydrocarbons (PAHs)* | mg/L | SO-IN-MUL-TE-023 | <0.00005 | 0.0001 |
| Polychlorinated Biphenyls (PCBs)* | mg/L | SO-IN-MUL-TE-022 | <0.00005 | 0.0005 |
| Total Coliforms | MPN/100ml | IS 15185:2016 | Not Detected | Should Not Detected |
| Escheria Coli | MPN/100ml | IS 15185:2016 | Not Detected | Should Not Detected |
| Pesticides | | | | |
| Alachlor* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 20 |
| Atrazine* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 2 |
| Aldrin/ Dieldrin* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.03 |
| Alpha HCH* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.01 |
| Beta HCH* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.04 |
| Butachlor* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 125 |

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1359J | Report Release Date | : 14/06/2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|---|------|------------------|--------|----------------------|
| | | | | as per IS:10500:2012 |
| | | | | Acceptable Limit |
| Chlorpyrifos* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 30 |
| Delta HCH* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.04 |
| 2,4- Dichlorophenoxyacetic acid* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 30 |
| DDT (o, p and p, p – Isomers of DDT)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |
| Endosulfan (alpha, beta, and sulphate)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.4 |
| Ethion* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 3 |
| Gamma — HCH (Lindane)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 2 |
| Isoproturon* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 9 |
| Malathion* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 190 |
| Methyl parathion* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.3 |
| Monocrotophos* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |
| Phorate* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 2 |
| DDE (o, p and p, p – Isomers of DDE)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |
| DDD (o, p and p, p – Isomers of DDD)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |

Remarks: (*) All the parameters are outsourced to other Lab.

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Authorized Signatory

SANDIP BERA

SENIOR MANAGER

ELES PVT. LTD.

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Plot No.30, Mansarovar Enclave, Tupudana,Hatia,Ranchi-834003,
Jharkhand.

Kujam-I Bauxite Mine-Environmental Monitoring Report

June 2022



CONTENT

| Hindalco Industries : Kujam-I Bauxite Mine | | Environmental Monitoring Report | June2022 |
|--|--------------------------|---------------------------------|----------|
| Kujam-I Bauxite Mine | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Kujam Quarry 430 | | |
| 2 | Talabkhanta 4A13 | | |
| 3 | 4 A11 Football Ground | | |
| 4 | Camp | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 1 | Near Pakri Gada Village | | |
| 2 | Near Pol Pol Village | | |
| 3 | Near Shakhuapani Village | | |
| 4 | Near Dipa Kujam Village | | |
| SPRING WATER | | | |





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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609A | Report Release Date | : 15.07.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793A |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam Quarry 430 Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 13/06/2022 to 14/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°19'9.46"E | 6 | Latitude | : 23°18'30.17"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 60 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 31 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 8.5 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 10.4 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.037 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.9 |

Page 1 of 2

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609A | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.4 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.27 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****


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SANDIP BERA
SENIOR MANAGER
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Page 2 of 2

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609B | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793B |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Talabkhanta 4A13 Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 13/06/2022 to 14/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 26 | 2 | Barometric Pressure (mmHg) : 741 |
| 3 | Relative Humidity (%) : 71 | 4 | Weather Condition : Clear |
| 5 | Longitude : 84°18'56.50"E | 6 | Latitude : 23°18'21.76"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 60 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 29 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 5.7 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.1 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.011 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609B | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****


Authorized Signatory
SANDIP BERA
SENIOR MANAGER
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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609C | Report Release Date | : 15.07.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793C |
| Address | : Lohardaga, Jharkhand-835302 | Location | : 4 A11 Football Ground Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 13/06/2022 to 14/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'47.03"E | 6 | Latitude | : 23°17'48.77"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 43 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 23 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.6 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.004 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609C | Report Release Date | : 15.07.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

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Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609D | Report Release Date | : 15.07.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|------------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793D |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Camp; Kujam-I Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 13/06/2022 to 14/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 71 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'42.75"E | 6 | Latitude | : 23°17'39.60"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 59 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 25 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.2 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.010 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.6 |

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TEST REPORT

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|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609D | Report Release Date | : 15.07.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.3 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.22 |

Remarks: (*)-Parameters are outsourced to other Lab.

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609E | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793E |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pakri Gada Village |
| Plant Status | : Operational | Sampling Date | : 14/06/2022 to 15/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°14'52.25"N | 6 | Latitude | : 23°17'41.21"E |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 47 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 23 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.2 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.006 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609E | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.22 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****


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"Save Environment, Save Future"



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609F | Report Release Date | : 15.07.2022 |
| Work Order No. | : HIL/LHD/FY22-23/001 | Work Order Date | : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793F |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pol Pol Village |
| Plant Status | : Operational | Sampling Date | : 14/06/2022 to 15/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 41 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 23 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.1 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.007 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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Phone no : 0651-2290103

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609F | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****


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SENIOR MANAGER
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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609G | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793G |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Dipa Kujam Village |
| Plant Status | : Operational | Sampling Date | : 13/06/2022 to 14/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 26 | 2 | Barometric Pressure (mmHg) : 741 |
| 3 | Relative Humidity (%) : 71 | 4 | Weather Condition : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 49 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 26 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.2 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609G | Report Release Date : 15.07.2022 |
| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****


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SENIOR MANAGER
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| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1793H |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Shakhupani Village |
| Plant Status | : Operational | Sampling Date | : 14/06/2022 to 15/06/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | |
|---|-------------------------------|---|----------------------------------|
| 1 | Average Temperature (°C) : 26 | 2 | Barometric Pressure (mmHg) : 741 |
| 3 | Relative Humidity (%) : 68 | 4 | Weather Condition : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 45 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 23 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 9.0 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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| Work Order No. : HIL/LHD/FY22-23/001 | Work Order Date : 01.04.2022 |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1629F | Report Release Date : 15/07/2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/SW/1800F |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Spring Water - Kujam-I Bauxite Mines |
| Plant Status | : Operational | Sampling Date | : 14/06/2022 |
| | | Type of Sample | : Surface Water |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sample Condition | : Sealed & Preserved |

| Parameter | Unit | Test Protocol | Result | As per CPCB & IS2296:1982 (Class-C) |
|--|-------|----------------------------------|-----------------|-------------------------------------|
| | | | | Tolerance Limit |
| pH | - | APHA 23rd Edition 2017,4500-H+-B | 7.2 | 6.5-8.5 |
| Color | Hazen | IS 3025 (Part-04): 1983 | 9 | 300 |
| Odour | - | IS 3025 (Part-05): 1983 | Unobjectionable | Unobjectionable |
| Turbidity | NTU | APHA 23rd Edition 2017,2130 B | 0.15 | -- |
| Free Residual Chlorine | mg/L | IS 3025 (Part-26): 1986 | <0.1 | -- |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16):1984 | 974 | 1500 |
| Total Hardness (as CaCO ₃) | mg/L | APHA 23rd Edition 2017, 2340 C | 288 | -- |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23):1986 | 241 | -- |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32): 1988; RA 2014 | 40.8 | 600 |
| Sulphate (as SO ₄) | mg/L | IS 3025 (Part-24):1986 | 69.5 | 400 |
| Fluoride (as F) | mg/L | APHA 23rd Edition 2017,4500-F-D | 0.1624 | 1.5 |
| Cyanide (as CN) | mg/L | IS 3025 (Part-27): 1986 | <0.0125 | 0.05 |



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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1629F Report Release Date : 15/07/2022

| Parameter | Unit | Test Protocol | Result | As per CPCB & IS2296:1982 (Class-C) |
|------------------------|------|--------------------------------|--------|-------------------------------------|
| | | | | Tolerance Limit |
| Boron (as B) | mg/L | APHA 23rd Edition, 3125 B | <0.2 | -- |
| Calcium (as Ca) | mg/L | APHA 23rd Edition 2017, 3500 B | 77.4 | -- |
| Magnesium (as Mg) | mg/L | IS 3025 (Part-46):1994 | 23.0 | -- |
| Iron (as Fe) | mg/L | APHA 23rd Edition, 3111 B&C | 0.682 | 50 |
| Manganese (as Mn) | mg/L | APHA 23rd Edition, 3111 B&C | <0.05 | -- |
| Cadmium (as Cd) | mg/L | APHA 23rd Edition, 3111 B&C | <0.003 | 0.01 |
| Total Chromium (as Cr) | mg/L | APHA 23rd Edition, 3111 B&C | <0.03 | 0.05 |
| Copper (as Cu) | mg/L | APHA 23rd Edition, 3111 B&C | <0.03 | 1.5 |
| Lead (as Pb) | mg/L | APHA 23rd Edition, 3111 B&C | <0.01 | 0.1 |
| Zinc (as Zn) | mg/L | APHA 23rd Edition, 3111 B&C | 0.231 | 15 |
| Arsenic (as As) | mg/L | APHA 23rd Edition, 3111 B&C | <0.005 | 0.2 |
| Selenium (as Se) | mg/L | APHA 23rd Edition, 3125 B | <0.01 | 0.05 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 2000 | <0.001 | -- |
| Dissolved Oxygen (DO) | mg/L | IS 3025 (Part-38) : 2014 | 7.4 | 4.0 (Minimum) |

****End of Report****


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SANDIP BERA
SENIOR MANAGER
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Plot No.30, Mansarovar Enclave, Tupudana,Hatia,Ranchi-834003,
Jharkhand.

Kujam-I Bauxite Mine-Environmental Monitoring Report

July 2022



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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769A | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201A |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam Quarry 430 Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/07/2022 to 06/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 70 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°19'9.46"E | 6 | Latitude | : 23°18'30.17"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 57 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 23 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 5.7 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 10.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.015 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.3 |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769A | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.3 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.22 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

****End of Report****

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1769B | Report Release Date | : 18.08.2022 |
|-----------------|-----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201B |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Talabkhanta 4A13 Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/07/2022 to 06/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 70 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'56.50"E | 6 | Latitude | : 23°18'21.76"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 47 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 20 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.5 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.004 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1769B | Report Release Date | : 18.08.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

****End of Report****

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769C | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201C |
| Address | : Lohardaga, Jharkhand-835302 | Location | : 4 A11 Football Ground Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/07/2022 to 06/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 70 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'47.03"E | 6 | Latitude | : 23°17'48.77"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 36 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 18 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.003 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769C | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

****End of Report****

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769D | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201D |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Camp; Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/07/2022 to 06/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 26 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 70 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'42.75"E | 6 | Latitude | : 23°17'39.60"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 49 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 27 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 5.5 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.0 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.003 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.3 |

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TEST REPORT

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|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1769D | Report Release Date | : 18.08.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

****End of Report****

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDAMA
HATIA, RANCHI-834003 (JHARKHAND)
GST NO:- 20AAECE97130124

ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in, eles.ranchi@gmail.com

Phone no : 0651-2290103

Website : www.elespl.co.in

CIN: U74999JK2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769E | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201E |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pakri Gada Village |
| Plant Status | : Operational | Sampling Date | : 04/07/2022 to 05/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 27 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 72 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°14'52.25"N | 6 | Latitude | : 23°17'41.21"E |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 45 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 27 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.6 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.004 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1769E | Report Release Date | : 18.08.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | 2.3 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory
Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769F | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201F |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pol Pol Village |
| Plant Status | : Operational | Sampling Date | : 04/07/2022 to 05/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 27 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 72 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 42 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part-24): 2019 | 60 (24hrs) | 25 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.4 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part-25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.004 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1769F | Report Release Date | : 18.08.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769G | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201G |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Dipa Kujam Village |
| Plant Status | : Operational | Sampling Date | : 05/07/2022 to 06/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 27 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 70 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 44 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 21 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.004 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769G | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory
Dr. Deendra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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"Save Environment, Save Future"



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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769H | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201H |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Shakhupani Village |
| Plant Status | : Operational | Sampling Date | : 04/07/2022 to 05/07/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 27 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 72 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 46 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 20 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.4 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004; RA2019 | 1 (24hrs) | 0.003 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |



ENVIRONMENTAL LABORATORIES &

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769H | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | 2.2 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*) Parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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"Save Environment, Save Future"

**ENVIRONMENTAL LABORATORIES & ENGINEERING
SERVICES PVT.LTD.**

Plot No.30, Mansarovar Enclave, Tupudana,Hatia,Ranchi-834003,
Jharkhand.

Kujam-I (80.87ha) Bauxite Mine-Environmental Monitoring Report

August 2022



CONTENT

| Hindalco Industries : Kujam-I(80.87ha) Bauxite Mine August 2022 | | Environmental Monitoring Report |
|--|--------------------------|--|
| Kujam-I(80.87ha) Bauxite Mine | | |
| AMBIENT AIR QUALITY- CORE ZONE | | |
| 1 | Kujam Quarry 430 | |
| 2 | Talabkhanta 4A13 | |
| 3 | 4 A11 Football Ground | |
| 4 | Camp | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | |
| 1 | Near Pakri Gada Village | |
| 2 | Near Pol Pol Village | |
| 3 | Near Shakhuapani Village | |
| 4 | Near Dipa Kujam Village | |





ENVIRONMENTAL LABORATORIES &

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889A | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187A |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam Quarry 430 Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 15/08/2022 to 16/08/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°19'9.46"E | 6 | Latitude | : 23°18'30.17"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 53 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 24 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.2 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.0 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.008 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.7 |

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CIN: U74999JH2018PTC011125

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889A | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

****End of Report****

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Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1889B | Report Release Date | : 16.09.2022 |
|-----------------|-----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187B |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Talabkhanta 4A13 Kujam-I Bauxite Mine (80.87ha) |
| | | Sampling Date | : 15/08/2022 to 16/08/2022 |
| Plant Status | : Operational | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'56.50"E | 6 | Latitude | : 23°18'21.76"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 42 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 14 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.4 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.007 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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Report Release Date : 16.09.2022

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889C | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187C |
| Address | : Lohardaga, Jharkhand-835302 | Location | : 4 A11 Football Ground Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 15/08/2022 to 16/08/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'47.03"E | 6 | Latitude | : 23°17'48.77"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 33 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 12 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.1 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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| Test Report No. | : ELES/RNC/2022/1889C | Report Release Date | : 16.09.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

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ELES Pvt. Ltd. Technical Manager

****End of Report****

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
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| Test Report No. : ELES/RNC/2022/1889D | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187D |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Camp; Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 15/08/2022 to 16/08/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | |
|----------------------------|--------------------------|-----------------|------------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 Weather Condition | : Clear |
| 5 | Longitude | : 84°18'42.75"E | 6 Latitude | : 23°17'39.60"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 44 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 18 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.2 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.005 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.24 |

Remarks: (*)-Parameters are outsourced to other Lab.

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Authorized Signatory

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TEST REPORT

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| Test Report No. : ELES/RNC/2022/1889H | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187H |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Shakhuapani Village |
| Plant Status | : Operational | Sampling Date | : 15/08/2022 to 16/08/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 40 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 22 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.0 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889H Report Release Date : 16.09.2022

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*) Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

****End of Report****

Page 2 of 2

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889E | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187E |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pakri Gada Village |
| Plant Status | : Operational | Sampling Date | : 15/08/2022 to 16/08/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°14'52.25"N | 6 | Latitude | : 23°17'41.21"E |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 44 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 20 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889E | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

****End of Report****

Page 2 of 2

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889F | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187F |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pol Pol Village |
| Plant Status | : Operational | Sampling Date | : 15/08/2022 to 16/08/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 37 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 14 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.3 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1889F | Report Release Date | : 16.09.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889G | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187G |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Dipa Kujam Village |
| Plant Status | : Operational | Sampling Date | : 15/08/2022 to 16/08/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 68 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 39 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 15 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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| Test Report No. : ELES/RNC/2022/1889G | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

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ELES Pvt. Ltd. Technical Manager

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SERVICES PVT.LTD.**

Plot No.30, Mansarovar Enclave, Tupudana,Hatia,Ranchi-834003,
Jharkhand.

KujamI Bauxite Mine-Environmental Monitoring Report

September 2022



CONTENT

| Hindalco Industries : Kujam-I Bauxite Mine | | Environmental Monitoring Report | September 2022 |
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| Kujam-I Bauxite Mine | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
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| 3 | Near Shakhuapani Village | | |
| 4 | Near Dipa Kujam Village | | |
| DRINKING WATER ANALYSIS | | | |





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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2288 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3293 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam Quarry 430 Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

METEOROLOGICAL INFORMATION

| | | | | | |
|---|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°19'9.46"E | 6 | Latitude | : 23°18'30.17"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 47 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 26 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 5.8 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 9.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.012 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | 2.5 |

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TEST REPORT

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|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2288 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | 2.3 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

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SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2289 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3294 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Talabkhanta 4A13 Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'56.50"E | 6 | Latitude | : 23°18'21.76"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 39 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 19 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.8 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.005 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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| Test Report No. | : ELES/RNC/2022/2289 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

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|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2290 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3295 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : 4 A11 Football Ground Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'47.03"E | 6 | Latitude | : 23°17'48.77"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 37 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 15 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.5 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

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ELES PVT. LTD.

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TEST REPORT

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| Test Report No. : ELES/RNC/2022/2291 | Report Release Date : 11.11.2022 |
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| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3296 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Camp; Kujam-I Bauxite Mine (80.87ha) |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°18'42.75"E | 6 | Latitude | : 23°17'39.60"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 41 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 22 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.2 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | 0.003 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |



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| Test Report No. : ELES/RNC/2022/2291 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|----------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | ASTM D3687:2007 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

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TEST REPORT

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|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2292 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3297 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pakri Gada Village |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°14'52.25"N | 6 | Latitude | : 23°17'41.21"E |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 36 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 19 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 7.5 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2292 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2293 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3298 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Pol Pol Village |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 25 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 38 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 17 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.2 |
| Ozone (O ₃) | µg/m ³ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | µg/m ³ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m ³ | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | µg/m ³ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m ³ | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m ³ | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |



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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2293 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

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ELES PVT. LTD.

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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2294 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3300 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Shakhupani Village |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 24 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 66 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 33 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 16 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.6 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004; RA2019 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

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|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2294 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*) Parameters are outsourced to other Lab.

Authorized Signatory

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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2295 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3299 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Dipa Kujam Village |
| Plant Status | : Operational | Sampling Date | : 05/09/2022 to 06/09/2022 |
| | | Type of Sample | : Ambient Air |
| | | Sampling Procedure | : ELES/DOC/SMPL/02 |
| | | Sample Condition | : Sealed & Preserved |

| METEOROLOGICAL INFORMATION | | | | | |
|----------------------------|--------------------------|------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 24 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 65 | 4 | Weather Condition | : Clear |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|--------------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 33 |
| Particulate Matter (PM2.5) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 16 |
| Sulphur Di-Oxide (SO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | <5.0 |
| Nitrogen Di-Oxide (NO ₂) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 6.2 |
| Ozone (O ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-9): 1974; RA2014 | 100 (8hrs) | <20.0 |
| Ammonia (NH ₃) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 25): 2018 | 400 (24hrs) | <10.0 |
| Carbon Monoxide (CO) | mg/m^3 | IS 5182 (Part-10): 1999; RA2019 | 2 (8hrs) | <1.0 |
| Lead (Pb) | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part-22): 2004 | 1 (24hrs) | <0.002 |
| Nickel (Ni) | ng/m^3 | IS 5182(Part-26):2020 | 20 (Annual) | <6.0 |
| Arsenic (As) | ng/m^3 | ELES/AIR/SOP/01:2021 | 6 (Annual) | <2.0 |

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2295 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|-------------------|--------------------------|--------------------------|------------------|--------|
| Benzene* | $\mu\text{g}/\text{m}^3$ | IS 5182 (Part- 11): 2004 | 05(Annual) | <2.0 |
| Benzo (a) Pyrene* | ng/m^3 | IS 5182 (Part- 12): 2006 | 01(Annual) | <0.20 |

Remarks: (*)-Parameters are outsourced to other Lab.

Authorized Signatory

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ELES PVT. LTD.

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TEST REPORT

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|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2353I | Report Release Date | : 11.11.2022 |
|-----------------|-----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/DW/3357I |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Drinking Water Kujam-I Bauxite Mines (80.87 ha) |
| Plant Status | : Operational | Sampling Date | : 06/09/2022 |
| | | Type of Sample | : Drinking Water |
| | | Sampling Procedure | : ELES/DOC/SMPL/01 |
| | | Sample Condition | : Sealed & Preserved |

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|--|-------|-----------------------------------|-----------|---|
| | | | | as per IS:10500:2012 Acceptable Limit |
| pH | - | APHA 23rd Edition 2017,4500-H+-B | 7.0 | 6.5-8.5 |
| Color | Hazen | IS 3025 (Part-04): 1983 | <1.0 | 5 |
| Odour | - | IS 3025 (Part-05): 1983 | Agreeable | Agreeable |
| Taste | - | IS 3025 (Part-07): 1984 | Agreeable | Agreeable |
| Turbidity | NTU | APHA 23rd Edition 2017,2130 B | 0.19 | 1 |
| Free Residual Chlorine | mg/L | IS 3025 (Part-26): 1986 | <0.1 | 0.2 |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16):1984 | 230 | 500 |
| Monochloramines | mg/L | APHA 23rd Edition 2017, 4500 Cl-G | <1.0 | 4 |
| Dichloramines | mg/L | APHA 23rd Edition 2017, 4500 Cl-G | <1.0 | 4 |
| Total Hardness (as CaCO ₃) | mg/L | APHA 23rd Edition 2017, 2340 C | 52.5 | 200 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23):1986 | 42.8 | 200 |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32): 1988: RA 2014 | 10.5 | 250 |

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TEST REPORT

Test Report No. : ELES/RNC/2022/2353I Report Release Date : 11.11.2022

| Parameter | Unit | Test Protocol | Result | Regulatory Limit as per IS:10500:2012 |
|---|------|--|----------|---|
| | | | | Acceptable Limit |
| Sulphate (as SO ₄) | mg/L | IS 3025 (Part-24):1986 | 6.8 | 200 |
| Nitrate (as NO ₃) | mg/L | IS 3025 (Part-34): 1988 | 1.55 | 45 |
| Fluoride (as F) | mg/L | APHA 23rd Edition 2017,4500-F--D | 0.1825 | 1 |
| Ammoniacal Nitrogen (as NH ₃ -N) | mg/L | APHA 23rd Edition 2017, 4500 Norg-C | <0.1 | 0.5 |
| Cyanide (as CN) | mg/L | IS 3025 (Part-27): 1986 | <0.0125 | 0.05 |
| Phenolic Compounds (as C ₆ H ₅ OH) | mg/L | IS 3025 (Part-43): 1992 | <0.00002 | 0.001 |
| Sulphide (as S) | mg/L | IS 3025 (Part-29): 1986 | <0.04 | 0.05 |
| Boron (as B) | mg/L | APHA 23rd Edition, 3125 B | <0.2 | 0.5 |
| Calcium (as Ca) | mg/L | APHA 23rd Edition 2017, 3500 B | 14.8 | 75 |
| Magnesium (as Mg) | mg/L | IS 3025 (Part-46):1994 | 3.8 | 30 |
| Iron (as Fe) | mg/L | APHA 23rd Edition, 3111 B&C | 0.230 | 1 |
| Manganese (as Mn) | mg/L | APHA 23rd Edition, 3111 B&C | <0.05 | 0.1 |
| Aluminum (as Al) | mg/L | APHA 23rd Edition, 3125 B | <0.02 | 0.03 |
| Cadmium (as Cd) | mg/L | APHA 23rd Edition, 3111 B&C | <0.003 | 0.003 |
| Total Chromium (as Cr) | mg/L | APHA 23rd Edition, 3111 B&C | <0.03 | 0.05 |
| Copper (as Cu) | mg/L | APHA 23rd Edition, 3111 B&C | <0.03 | 0.05 |
| Lead (as Pb) | mg/L | APHA 23rd Edition, 3111 B&C | <0.01 | 0.01 |
| Zinc (as Zn) | mg/L | APHA 23rd Edition, 3111 B&C | <0.1 | 5 |

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"Save Environment, Save Future"



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
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ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in, eles.ranchi@gmail.com

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Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2353I | Report Release Date | : 11.11.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Result | Regulatory Limit as per IS:10500:2012 |
|--|---------------|-----------------------------|--------------|---|
| | | | | Acceptable Limit |
| Arsenic (as As) | mg/L | APHA 23rd Edition, 3111 B&C | <0.005 | 0.01 |
| Selenium (as Se) | mg/L | APHA 23rd Edition, 3125 B | <0.01 | 0.01 |
| Mercury (as Hg) | mg/L | IS 3025 (Part-48): 2000 | <0.001 | 0.001 |
| Nickel (as Ni) | mg/L | APHA 23rd Edition, 3111 B&C | <0.01 | 0.02 |
| Mineral Oil* | mg/L | IS 3025 (Part-39): 1991 | <0.01 | 0.5 |
| Anionic Detergents (as MBAS)* | mg/L | Annex K of IS 13428:2005 | <0.05 | 0.2 |
| Polynuclear Aromatic Hydrocarbons (PAHs)* | mg/L | SO-IN-MUL-TE-023 | <0.00005 | 0.0001 |
| Polychlorinated Biphenyls (PCBs)* | mg/L | SO-IN-MUL-TE-022 | <0.00005 | 0.0005 |
| Total Coliforms | MPN/ 100ml | IS 15185:2016 | Not Detected | Should Not Detected |
| Escheria Coli | MPN/ 100ml | IS 15185:2016 | Not Detected | Should Not Detected |
| Pesticides | | | | |
| Alachlor* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 20 |
| Atrazine* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 2 |
| Aldrin/ Dieldrin* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.03 |
| Alpha HCH* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.01 |
| Beta HCH* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.04 |
| Butachlor* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 125 |



CIN: U74999JH2018PTC011125

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/23531 | Report Release Date | : 11.11.2022 |
|-----------------|-----------------------|---------------------|--------------|

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|---|------|------------------|--------|----------------------|
| | | | | as per IS:10500:2012 |
| | | | | Acceptable Limit |
| Chlorpyrifos* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 30 |
| Delta HCH* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.04 |
| 2,4- Dichlorophenoxyacetic acid* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 30 |
| DDT (o, p and p, p – Isomers of DDT)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |
| Endosulfan (alpha, beta, and sulphate)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.4 |
| Ethion* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 3 |
| Gamma — HCH (Lindane)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 2 |
| Isoproturon* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 9 |
| Malathion* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 190 |
| Methyl parathion* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 0.3 |
| Monocrotophos* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |
| Phorate* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 2 |
| DDE (o, p and p, p – Isomers of DDE)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |
| DDD (o, p and p, p – Isomers of DDD)* | µg/L | SO-IN-MUL-TE-020 | <0.01 | 1 |

Remarks: (*) All the parameters are outsourced to other Lab.

****End of Report****

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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"Save Environment, Save Future"



Annexure 3

Date – 01.09.2022

Office Order

Environmental Cell has been re-constituted at Kujam I Bauxite Mine (Area 80.87 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. Rajesh Routray (Coordinator)
2. Mr. Rajesh Kundu - Geologist
3. Ms. Swetapadma Nanda– Environment Engineer
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", with a flourish at the end.

Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)


Annexure 4

| Production, Mined Out, Back Filled and Over Burden removal from April'22 to September'22 | | | | | | | | |
|--|----------------------------|------------------------|---------------------------|--------------------------------|-----------------|---------------------|-----------------------|--------------------|
| 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 | 116176 | 0.78 | 0.34 | 82296.15 |
| 3 | Hisri (New) Bauxite Mine | 14.55 | 100000 | 19.07.1981 to 31.03.2030 | 63046 | 0.34 | 0.23 | 47769.44 |
| 4 | Kujam - I Bauxite Mine | 80.87 | 150000 | 13.03.2006 to 12.03.2056 | 53620 | 1.74 | 1.18 | 39931.13 |
| 5 | Kujam - II Bauxite Mine | 157.38 | 300000 | 24.03.2006 to 23.03.2056 | 147610 | 4.79 | 2.56 | 181309.80 |
| 6 | Amtipani Bauxite Mine | 190.95 | 150000 | 13.03.2006 to 12.03.2056 | 96500 | 2.12 | 2.050 | 126569.80 |
| 7 | Gurdari Bauxite Mine | 584.19 | 325000 | 23.03.1985 to 22.03.2035 | 114070 | 3.65 | 2.68 | 292766.10 |
| 8 | Shrengdag A Bauxite Mine | 155.81 | 260000 | 16.10.1974 to 31.03.2030 | 53600 | 1.2 | 0.9 | 40876.3 |
| 9 | Shrengdag B Bauxite Mine | 140.07 | 100000 | 04.10.1978 to 31.03.2030 | 45750 | 0.8157 | 0.6184 | 44264.72 |
| 10 | Jalim & Sanai Bauxite Mine | 12.14 | 50000 | 16.10.1974 to 31.03.2030 | 25000 | 0.2413 | 0.2 | 8656.24 |
| 11 | Orsapat Bauxite Mine | 196.36 | 200000 | 17.07.1986 | NIL | NIL | NIL | NIL |

Annexure 4

| | | | | | | | | |
|--|--|---------|--------|--------------------------------|--------|------|------|-----------|
| | | | | to 16.07.2036 | | | | |
| 12 | Chiro Kukud bauxite Mine | 152.57 | 100000 | 29.01.1985 to 28.01.2035 | NIL | NIL | NIL | NIL |
| 13 | Pakhar (8.09) | 8.09 | 80000 | 16.05.1973 to 31.03.2030 | NIL | NIL | NIL | NIL |
| 14 | Pakhar (35.12) | 35.12 | 200000 | 17.04.1975 to 31.03.2030 | NIL | NIL | NIL | NIL |
| 15 | Pakhar (115.13) | 115.13 | 300000 | 19.07.1996 to 31.03.2030 | 87500 | 1.52 | 0.57 | 242684.08 |
| Minerals & Minerals Limited | | | | | | | | |
| 16 | Pakhar (15.58) | 15.58 | 60000 | 28.04.1965 to 31.03.2030 | NIL | NIL | NIL | NIL |
| 17 | Pakhar (109.507) | 109.507 | 280000 | 26.07.2008 to 25.07.2058 | 129700 | 0.29 | 0.00 | 26032.12 |
| 18 | Bimarla Bauxite Mine | 134.526 | 300000 | 18.07.2009 to 17.07.2059 | 54050 | 1.34 | 0.60 | 118183.21 |
| 19 | Amtipani Chirodih Bauxite Mine (130.01 ha) | 130.01 | 450000 | 11.01.2017 to 10.01.2067 | NIL | NIL | NIL | NIL |

*Static information about the mines included in the above table


Basudev Gangopadhyay
 AVP (Planning, Environment & Compliance)

Annexure-5

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2022-23

The composite cost during the year 2022-23 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), Bimarla Bauxite Mines (134.52 ha) and Amtipani Chirodih (130.01 ha) Bauxite Mine.

| S No | Description | Budget (in Rupees) FY 2022-23 | Actual (in Rupees) FY 2022-23 (From April'22 to September'22) |
|------|---|----------------------------------|---|
| 1 | Pollution Control & Environment monitoring | 49,75,923.00 | 33,83,623.92 |
| 2 | Reclamation/ Back filing & Rehabilitation** | 5,83,65,000.00 | 5,07,53,126.66 |
| 3 | Green belt, Plantation & Water sprinkling arrangement | 48,76,825.00 | 45,85,322.59 |
| 4 | Rural Development | 3,10,21,250.00 | 2,39,91,751.19 |

**Part of OB removed cost.

for
Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)