



HIL/LHD/ENV/MoEF/ 3 88

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-II 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-11015/297/2011M (M) dated 21st July 2015.

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Kujam-II (157.38 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 |
|-----------------|--------------------------|--------------------------|
| 157.38 | 300000 | 24.03.2006 to 23.03.2056 |

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, ranchiispcb@gmail.com, roranchi47@gmail.com

Name of the Project : Kujam II Bauxite Mine (157.38 ha)
M/s Hindalco Industries Ltd

Environment Clearance No & date : J-11015/297/2011-IA. II (M) dated 21.07.2015

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

| S No | Specific Conditions | Compliance |
|------|--|---|
| i | Implementation of all the conditions as specified in earlier EC vide no. J-11015/242/2005-1A.II (M), dated 14.08.2006 and shall be complied by M/s Hindalco Industries Limited. | Implemented. Certified compliance reports duly submitted to MoEF by Regional Office, Ranchi. |
| ii | Environmental clearance is granted subject to final outcome of Hon'ble Supreme Court of India, Hon'ble High Court of Jharkhand and any other Court of Law, if any, as may be applicable to this project. | Noted. |
| iii | The environmental clearance is valid for 13 years as the life of mine is 13 years. | Noted, This may extend subject to enhancement of reserve in due course of mining in line with EIA notification as applicable. |
| iv | Environmental clearance is subject to obtaining clearance, if any, under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project. | We understand this is not applicable to this project. Mine is located outside eco sensitive zone. However, 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 II Bauxite Mines. Approval letter (Memo No 1871, dated 02.12.2021) has been submitted to your good office on 21.02.2022. |
| v | The Project Proponent shall obtain Consent to Operate from the State Pollution Control Board, Jharkhand and effectively implement all the conditions stipulated therein. | Existing consent to Operate is valid till 31.12.2025. |
| vi | No mining activities will be allowed in forest area for which the Forest | There is no forest area involved within the lease. |

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| | Clearance is not available. | |
| vii | Project Proponent has to conduct a study from an Institution of Repute on the impact of Bauxite dust on crop productivity for agricultural land located around mines and mitigation measures to be implemented by Project Proponent to reduce the impact. | Study conducted and report prepared. It may be noted that agriculture activity is being carried out in nearby areas and no adverse effect of mining operation is noticed. Mitigation measures suggested in study report is being implemented. |
| viii | Project Proponent has to implement the Recommendation by the Institute for Crops most suited in this environment and training to the farmers to switch over to new cropping system which will sustain nutrient loading. | Study conducted and report prepared. It may be noted that agriculture activity is being carried out in nearby areas and no adverse effect of mining operation is noticed. Mitigation measures suggested in study report is being implemented. |
| ix | Implementation of the Recommendations of National Institute of Miners Health for ensuring good occupational environment for mine workers. | Occupational health study is being done as per the recommendation of the safety conference proposal. |
| x | Use of mechanical devices with total mechanization and reducing use of explosives. | We are using Nonel for blasting and the use of explosive is optimum. Rock breaker is being used to reduce the use of explosive Soft strata is being completely excavator without use of any explosive. We are using rock breaker as mechanical devices to reduce use of explosives. We are also exploring use of eccentric ripper for excavation of hard strata to reduce the use of explosive. |
| xi | Concurrent reclamation of mined out areas. | Concurrent back filling/ reclamation are being carried out in mined out areas. |
| xii | Use of effective sprinkler system to suppress fugitive dust on haul road and other transport road and comprehensive study for slope stabilization of mine benches and OB dumps in one year. | Effective water sprinkling is being done to suppress fugitive dust on haul road by mobile water tanker during dry season. No external dump as on date. |
| xiii | Implementation of Action Plan on the issues raised during the Public Hearing. The proponent shall complete all the tasks as per the action plan submitted with the budgetary provisions during the public hearing held on 11.07.2013. The issues raised during Public Hearing were discussed during the Meeting, which inter-alia, included, local employment, regular water spraying to prevent pollution and socio economic development i.e. water facilities, medical and education etc. As per the villager's requirements, it was informed by the Proponent that they would prefer to take care of local employment, assistance in medical, drinking water and education facilities etc. These have been incorporated in the action plan with budgetary provisions. | Being implemented as per the issues raised during the Public Hearing dated 11.07.2013. |
| xiv | Implementation of Recommendation of Compliance Report by Regional Office of Ministry of Environment, Forest and Climate Change. | Recommendations by Regional Office, Ranchi are being complied. |

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| xv | Washing of all transport vehicles should be done inside the mining lease. | Being complied. |
| xvi | A comprehensive ore evacuation plan for all existing mines of the Project Proponent in the area may be made by streamlining transport of ore based on proper study. | Evacuation plan prepared and transport has been streamlined. SOP are framed and in place. |
| xvii | Regular and periodical medical examination of the workers engaged in the project shall be carried out and records maintained; also, Occupational health check-ups for workers having some ailments like BP, diabetes, habitual smokers, etc. shall be undertaken once in six months and necessary remedial/preventive measures taken accordingly. | Regular and periodical medical examination of the workers engaged in project is being carried out and records are being maintained. |
| xviii | Implementation of Environment Management Policy of the Company w.r.t, judicious use of Mineral resources for growth & development synchronizing mining & environment with prosperity. | Environment Management Policy of the Company w.r.t, judicious use of Mineral resources for growth & development synchronizing mining & environment with prosperity is being implemented. Mining is being carried out in a scientific and eco-friendly manner as per Mining Plan. |
| xix | Specific programmes be initiated especially covering education, health care, livelihood generation, infrastructure development & promotion of sports & culture for SC/ST population; Regular monitoring of ground water table to be carried out, as also the depth of water available in the network of existing wells, by constructing new piezometers as required. | All these aspects are covered under CSR activities being carried out in and around the area. Piezometer has been installed to regular monitoring of ground water. |
| xx | Effective safeguard measures, such as regular water sprinkling, shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul roads, loading and unloading points and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. | Regular water sprinkling is being carried out in critical areas such as haul roads, loading and unloading points and transfer points. Ambient Air Quality parameters are found within the norms prescribed by the Central Pollution Control Board in this regard. |
| xxi | Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly. Occupational health and safety measures for workers who are having some ailments like BP, diabetes, or are habitual smokers, should have health check-up once in six months. | Pre-placement medical examination and periodical medical examination of the workers engaged in the project are being carried out and records maintained as per statute. |
| xxii | Stratified layer system of plantation to be adopted in consultation with the State Govt., which would effectively mitigate the additional dust, sound and vibration. | Progressive plantation is being carried out in consultation with local forest Dept. Total 2300 nos. of saplings have been planted during FY 2022-23 within this |

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| | | <p>lease. Total 6.64 ha areas have been planted till date. In addition to these agricultural activities (bio plantation) is going on reclaimed land as per the consent from land owners.</p> <p>Green belt development programme is in progress with progress of mining activities.</p> |
| xxiii | The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and ground water for the project. | <p>Rainwater harvested during rainy season is being used for sprinkling on haul roads and raising plantation. No natural water resource/ground water is being used for mining purpose.</p> <p>No Objection Certificate (NOC) for ground water abstraction for Kujam II mines has been obtained for drinking purpose only.</p> |
| xxiv | The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment, Forest and Climate Change and Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out. | The mining operations are restricted to above ground water table only and in future also same will be adhered to. |
| xxv | The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUCC only will be allowed to ply. The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded. Project should obtain 'PUC' certificate from all the vehicles from authorized pollution testing Centre. | Mobile water tanker with sprinkling facility has been provided a long-haul roads, loading, unloading & at transfer points to arrest dust emission. Regular maintenance of vehicles is 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. |
| xxvi | There shall be planning, developing and implementing facility of rainwater harvesting measures on long term basis in consultation with Regional Director, Central Groundwater Board and implementation of conservation measures to augment ground water resources in the area in consultation with Central Ground Water Board. | A detail rainwater harvesting plan to augment ground water has been prepared and suitable measures like water harvesting pond etc. are created for augmentation of ground water in Mine. |
| xxvii | Regular monitoring of ground water table to be carried out at the upstream and depth of water available in the dug well is to be measured. Monitoring to be done by establishing a network of existing wells and constructing new piezometers. | Monitoring of ground water table is being carried out regularly and reported along with six monthly compliance reports. Piezometer has been installed to regular monitoring of ground water. |
| xxviii | Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended from | AAQM monitoring report is carried out regularly. Report is attached as |

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| | time to time by the Central Pollution Control Board. | Annexure-2. |
| xxix | The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations. | It is being ensured that no natural water course and/or water resource is being and will be obstructed due to any mining operations. |
| xxx | The topsoil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The maximum height of the dumps shall not exceed 8m and width 20 m and overall slope of the dumps shall be maintained to 45°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office located at Ranchi on six monthly basis. | <p>Topsoil is being stacked separately as and when required & used for reclamation and rehabilitation at appropriate time.</p> <p>There is no external OB dump. The excavated area are being back filled concurrently and back filled area is used for afforestation/agricultural activity as required</p> <p>Monitoring and management of rehabilitated areas is continuing through supervision.</p> |
| xxxi | Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de silted particularly after monsoon and maintained properly. The drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of sediments directly into the river and other water bodies 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 shall be constructed at the corners of the garland drains and de silted at regular intervals. | <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> <p>There is no external OB dump.</p> |
| xxxii | Dimension of the retaining wall at the toe of over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain | There is no external dump within mine lease area as on date. Hence not applicable. |

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| | fall data. | |
| xxxiii | Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained. | Regular water sprinkling is being carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. Ambient Air Quality parameters found within the norms prescribed by the Central Pollution Control Board in this regard. The quality parameter of the surface water has been monitored; report is attached as Annexure 2 |
| xxxiv | Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented. Drills shall either be operated with dust extractors or equipped with water injection system. | Blasting time is fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method is in practice. Ground vibration study has been conducted by IIT, Kharagpur. All efforts are being taken to mitigate impact of blasting. |
| xxxv | Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, Mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project. | Local laborers are employed who resides nearby mines. Necessary infrastructures for office staff are in place at Netarhat plateau. Toilets constructed under CSR programmes. Drinking water, mobile health care facility are provided under CSR programmes. |
| xxxvi | A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest and Climate Change. 5 years in advance of final mine closure for approval. | A Final Mine Closure Plan along with details of corpus fund will be submitted to the Ministry of Environment, Forest and Climate Change in appropriate time for approval as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. 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 |
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| i | No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change. | Noted. |

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| ii | No change in the calendar plan including excavation, quantum of bauxite ore and waste should be made. | Calendar plan including excavation, quantum of bauxite ore and waste is being done as per IBM approved mining plan scheme in scientific manner. Report is attached herewith as Annexure 4 . |
| iii | The critical parameters such as PM10 (size less than 10 micro meter), PM2.5 (size less than 2.5 micro meter), NO in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PII and Total Suspended Solids (TSS))}. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance. | Monitoring of AAQ and water quality is being done. Monitored data is being uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. Report is attached as Annexure 2 . |
| iv | Four ambient air quality-monitoring stations should be established in the core zone as well as buffer zone for PM10, PM2.5, SO2 & NOx monitoring. Location of the stations should be decided based on the ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. Data on ambient air quality should be regularly submitted to the Ministry including its Regional Office located at Ranchi and the State Pollution Control Board/Central Pollution Control Board once in six month. | 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 . |
| v | 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. | Mobile water tanker with sprinkling facility has been provided along the haul roads, loading, unloading & at transfer points to arrest dust emission. |
| vi | 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. | Necessary measures are being implemented to control of noise levels below 85 dB (A). PPEs are provided to workers. |
| vii | Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Board. | Water quality upstream and downstream of water bodies are being monitored, analysis report is attached as Annexure_2 . |

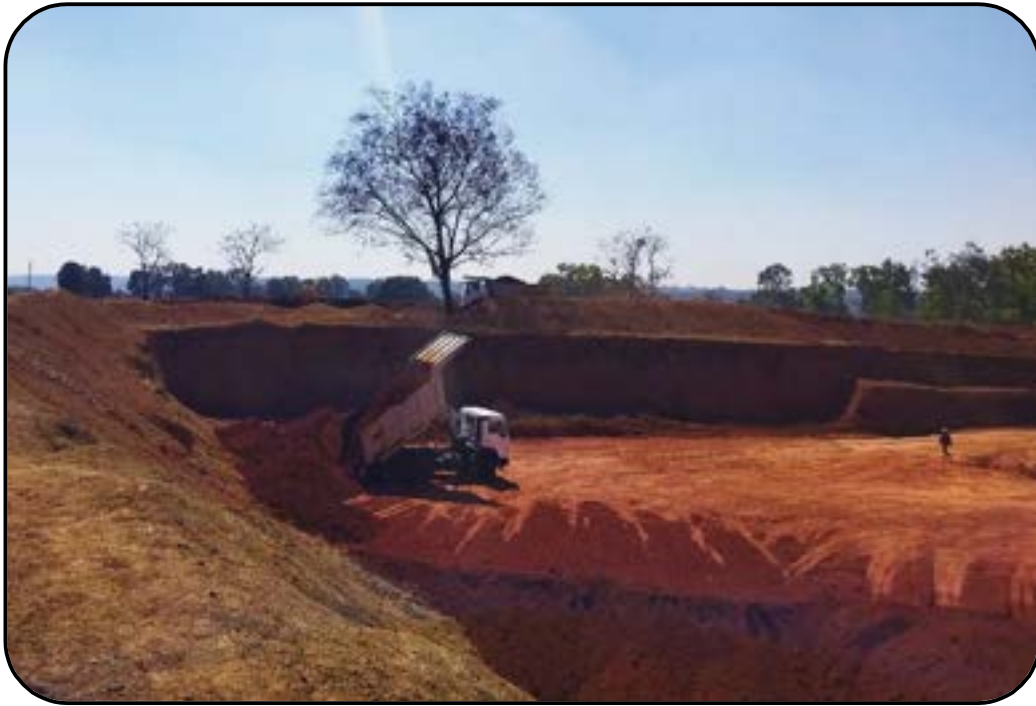
| | | |
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| viii | Regular monitoring of ground water level and quality shall be carried out in constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year - pre- monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Ranchi, 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 level report are attached herewith as Annexure 1 . |
| ix | Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19m May, 1993 and 31' 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. However, for washing of HEMM, Effluent treatment mechanism (Oil and grease trap) has been installed in Kujam mine. |
| x | 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. | As it is operating mines -PPE's such as safety shoes, ear plug, goggles are being provided. Periodic training on safety & occupational health is being imparted to workers and health checks up conducted. |
| xi | 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. | A separate environmental management cell has been established under the control of a Senior Executive attached as Annexure 3 . |
| xii | 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 Ranchi. | Year wise expenditure is being reported to the ministry and its Regional Office located at Ranchi. Report is attached as Annexure 5 . |
| xiii | The project authorities should inform to the Regional Office located at Ranchi regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work. | This is an operative mine hence provision related to financial closure is not applicabic. |
| xiv | The Regional Office of this Ministry located at Ranchi shall monitor compliance of the stipulated | Noted & Agreed. |

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| | conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports. | |
| xv | The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Pollution Control Board and State Pollution Control Board. | Six monthly reports on status of the EC are being duly and timely submitted. |
| xvi | The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Ranchi, Central Pollution Control Board and State Pollution Control Board, | Six monthly report on the status of the EC is being duly and timely submitted. |
| xvii | A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal. | Copy of Clearance letter submitted to concern panchayat. |
| xviii | 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. | Copy of the clearance letter provided to the concerned Offices. |
| xix | 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, Forest and Climate Change at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Ranchi | Published in two newspapers widely circulated (Hindustan and Dainik Jagran) on 27.07.2015. Paper cutting enclosed. |



Signature

KUJAM-II BAUXITE MINE OF M/S HINDALCO INDUSTRIES LTD



Pic: Reclamation of the mined-out area after mining.



Pic: Paddy cultivation over reclaimed area.



Pic: Paddy cultivation over reclaimed area.



Pic: Rain harvesting pond developed after mining for the purpose of fisheries, water sprinkling & villagers use.



Pic: Pear's plantation over the reclaimed area.



Pic: Plantation over the reclaimed area.



Pic: Roadside plantation.



Pic: Safety barrier plantation/ Greenbelt.

Pic: Trucks ready for dispatch with proper tarpaulin cover



Pic: Water sprinkling on mines haul road.





Pic: Washing platform and oil & grease trap.

Annexure 1

Piezometer reading - Kujam II Bauxite Mines

| S No | Month | Depth (meter) |
|-------------|--------------|----------------------|
| 1 | Apr-22 | 37.82 |
| 2 | May-22 | 37.67 |
| 3 | Jun-22 | 35.59 |
| 4 | Jul-22 | 34.26 |
| 5 | Aug-22 | 34.54 |
| 6 | Sep-22 | 33.56 |



ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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ENGINEERING SERVICES PVT. LTD.

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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935M | 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/1048M |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Kujam-II Weigh Bridge Kujam-II Bauxite Mine |
| 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) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 69 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'30.39"E | 6 | Latitude | : 23°18'50.59"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 70 |
| 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) | 9.5 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 11.2 |
| 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) | 0.044 |
| 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) | 3.2 |

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ENVIRONMENTAL LABORATORIES &

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Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935M | 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) | 2.6 |
| 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****

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Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/0935N | 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/1048N |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Nawatoli Quarry Kujam-II Bauxite Mine |
| 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) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 69 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'38.67"E | 6 | Latitude | : 23°18'20.87"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 69 |
| 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) | 5.5 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 9.6 |
| 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) | 0.023 |
| 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/2022/0935N | 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) | 2.5 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.29 |

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/09350 | 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/10480 |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Jawadih Quarry Kujam-II Bauxite Mine |
| 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) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 69 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'30.27"E | 6 | Latitude | : 23°18'56.89"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 79 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 44 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 8.0 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 12.3 |
| 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) | 0.038 |
| 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/2022/09350 | 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) | 0.32 |

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

Authorized Signatory

SANDIP BERA
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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935P | 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/1048P |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Bhattipat Kujam-II Bauxite Mine |
| 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) | : 30 | 2 | Barometric Pressure (mmHg) | : 741 |
| 3 | Relative Humidity (%) | : 69 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'54.25"E | 6 | Latitude | : 23°18'34.89"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) | 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) | 0.015 |
| 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) | 2.2 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/0935P | 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) | 2.6 |
| 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
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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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| 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.

****End of Report****



Authorized Signatory
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Page 2 of 2

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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/2022/0935F | 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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CIN: U74999JH2018PTC031125

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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 |

| 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.

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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

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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CIN: U74999JH2018PTC011125

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 |

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/1048H |
| Address | : Lohardaga, Jharkhand-835203 | Location | : Near Shakhuapani 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****


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

Kujam II Bauxite Mine-Environmental Monitoring Report

May 2022



CONTENT

| Hindalco Industries : Kujam-II Bauxite Mine | | Environmental Monitoring Report | May2022 |
|---|--------------------------|---------------------------------|---------|
| Kujam-II Bauxite Mine | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Kujam-II Weigh Bridge | | |
| 2 | Nawatoli Quarry | | |
| 3 | Jawadih Quarry | | |
| 4 | Bhattipat | | |
| 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/2022/1351M | 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/1359M |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam-II Weigh Bridge Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/05/2022 to 19/05/2022 |
| | | 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 (%) : 70 | 4 | Weather Condition : Clear |
| 5 | Longitude : 84°17'30.39"E | 6 | Latitude : 23°18'50.59"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) | 32 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.8 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 10.9 |
| 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) | 0.030 |
| 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 |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351M | 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) | 2.1 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.29 |

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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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351N | 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/1359N |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Nawatoli Quarry Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/05/2022 to 19/05/2022 |
| | | 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 (%) | : 70 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'38.67"E | 6 | Latitude | : 23°18'20.87"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 61 |
| 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) | <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) | 0.016 |
| 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) | 2.8 |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351N | 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.

****End of Report****


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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/13510 | 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/13590 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Jawadih Quarry Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/05/2022 to 19/05/2022 |
| | | 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 (%) | : 70 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'30.27"E | 6 | Latitude | : 23°18'56.89"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 74 |
| Particulate Matter (PM2.5) | µg/m ³ | IS 5182 (Part- 24): 2019 | 60 (24hrs) | 41 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 7.7 |
| 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) | 0.036 |
| 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) | 2.8 |

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TEST REPORT

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|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/13510 | 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.

****End of Report****


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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1351P | 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/1359P |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Bhattipat Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 18/05/2022 to 19/05/2022 |
| | | 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 (%) | : 70 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'54.25"E | 6 | Latitude | : 23°18'34.89"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) | 27 |
| 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) | 0.016 |
| 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/2022/1351P | 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****


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SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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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 |

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CIN: U74999JH2918P7C011125

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TEST REPORT

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|---------------------------------------|----------------------------------|
| 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.

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SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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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/2022/1351H | 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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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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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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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* | $\mu\text{g}/\text{m}^3$ | 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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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 |

| 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 / NKCP 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) | 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) | 23 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.5 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.6 |
| 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) | 0.018 |
| 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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SANDIP BERA
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TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--------------------|
| Customer Name | : Hindalco Industries Limited | Sample Date | : 19.05.2022 |
| 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-II Bauxite Mines | dB(A) | IS 9989:1981, RA 2020 | Day Time | 71 | 75 dB(A) Day Time & 70 dB(A) Night Time |
| Sample ID: ELES/RNC/2022/AN/1363K | | | Night Time | 57 | |

****End of Report****


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TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--------------------|
| Customer Name | : Hindalco Industries Limited | Sampling Date | : 19.05.2022 |
| 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} | |
| Compressor at Quarry No.4 Kujam-II Mines (157.38 ha.) | dB(A) | IS 9989:1981, RA 2020 | Time | | 75 dB(A) Day Time |
| Sample ID: ELES/RNC/2022/AN/1364K | | | Day Time | 74 | |

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Phone no : 0651-2290103

Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/DW/1367K |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Drinking Water Kujam-II Bauxite Mines |
| Plant Status | : Operational | Sampling Date | : 19/05/2022 |
| | | 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 | 6.9 | 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 | 0.11 | 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 | 149 | 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 | 40.3 | 200 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23):1986 | 28.2 | 200 |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32): 1988: RA 2014 | 6.2 | 250 |

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1359K | 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 | 3.1 | 200 |
| Nitrate (as NO ₃) | mg/L | IS 3025 (Part-34): 1988 | 1.22 | 45 |
| Fluoride (as F) | mg/L | APHA 23rd Edition 2017,4500-F-D | 0.1099 | 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 | 11.8 | 75 |
| Magnesium (as Mg) | mg/L | IS 3025 (Part-46):1994 | 2.6 | 30 |
| Iron (as Fe) | mg/L | APHA 23rd Edition, 3111 B&C | 0.188 | 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/2022/1359K | 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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CIN: U74999JH2018PTC011125

TEST REPORT

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

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|---|------|------------------|--------|----------------------|
| | | | | as per IS:10500:2012 |
| | | | | Acceptable Limit |
| Chlorpyriphos* | 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.

Page 4 of 4

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

KujamII Bauxite Mine-Environmental Monitoring Report

June 2022



CONTENT

| Hindalco Industries : Kujam-II Bauxite Mine | | Environmental Monitoring Report | June2022 |
|---|-----------------------------|---------------------------------|----------|
| Kujam-II Bauxite Mine | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Kujam-II Weigh Bridge | | |
| 2 | Nawatoli Quarry | | |
| 3 | Jawadih Quarry | | |
| 4 | Bhattipat | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 1 | Near Pakri Gada Village | | |
| 2 | Near Pol Pol Village | | |
| 3 | Near Shakhuapani Village | | |
| 4 | Near Dipa Kujam Village | | |
| STREAM WATER | | | |
| 1 | Dhardhari Nala (Upstream) | | |
| 2 | Dhardhari Nala (Downstream) | | |





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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609M | 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/1793M |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam-II Weigh Bridge Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 16/06/2022 to 17/06/2022 |
| | | 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 |
| 5 | Longitude : 84°17'30.39"E | 6 | Latitude : 23°18'50.59"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) | 29 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 7.5 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 12.4 |
| 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) | 0.019 |
| 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) | 2.2 |

Page 1 of 2

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609M | 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) | 0.21 |

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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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1609N | 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/1793N |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Nawatoli Quarry Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 16/06/2022 to 17/06/2022 |
| | | 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 |
| 5 | Longitude | : 84°17'38.67"E | 6 | Latitude | : 23°18'20.87"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 62 |
| 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) | <5.0 |
| 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) | 0.018 |
| 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) | 2.1 |

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CIN: U74999JH2018PTC011125

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609N | 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) | 0.28 |

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

****End of Report****


Authorized Signatory
SANDIP BERA
SENIOR MANAGER
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CIN: U74999JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/16090 | 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/17930 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Jawadih Quarry Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 16/06/2022 to 17/06/2022 |
| | | 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 |
| 5 | Longitude : 84°17'30.27"E | 6 | Latitude : 23°18'56.89"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) | 30 |
| 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) | 12.8 |
| 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) | 0.024 |
| 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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CIN: U74999JH2018PTC011125

TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/16090 | 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) | 2.2 |
| Benzo (a) Pyrene* | ng/m^3 | USEPA 8270 C to -13A | 01(Annual) | 0.26 |

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

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1609P | 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/1793P |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Bhattipat Kujam-II Bauxite Mine |
| Plant Status | : Operational | Sampling Date | : 16/06/2022 to 17/06/2022 |
| | | 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 |
| 5 | Longitude : 84°17'54.25"E | 6 | Latitude : 23°18'34.89"N |

| 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) | 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) | 8.4 |
| 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) | 0.012 |
| 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) | <2.0 |

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CIN: U74999JH2018PTC031125

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TEST REPORT

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| Test Report No. : ELES/RNC/2022/1609P | 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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TEST REPORT

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| 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

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| 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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TEST REPORT

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|---------------------------------------|----------------------------------|
| 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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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.

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CIN: U74999JH2018PTC011125

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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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.

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TEST REPORT

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| Test Report No. : ELES/RNC/2022/1609H | 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/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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| Test Report No. : ELES/RNC/2022/1609H | 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* | µg/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

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1628K | Report Release Date : 15/07/2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/SW/1799K |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Dhardhari Nala (Upstream) Kujam-II Bauxite Mines |
| Plant Status | : Operational | Sampling Date | : 17/06/2022 |
| | | Type of Sample | : Surface Water (Stream 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 | 6.9 | 6.5-8.5 |
| Color | Hazen | IS 3025 (Part-04): 1983 | 7 | 300 |
| Odour | - | IS 3025 (Part-05): 1983 | Unobjectionable | Unobjectionable |
| Turbidity | NTU | APHA 23rd Edition 2017,2130 B | 0.42 | -- |
| Free Residual Chlorine | mg/L | IS 3025 (Part-26): 1986 | <0.1 | -- |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16):1984 | 1219 | 1500 |
| Total Hardness (as CaCO ₃) | mg/L | APHA 23rd Edition 2017, 2340 C | 340 | -- |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23):1986 | 204 | -- |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32): 1988; RA 2014 | 76.8 | 600 |
| Sulphate (as SO ₄) | mg/L | IS 3025 (Part-24):1986 | 43.3 | 400 |
| Fluoride (as F) | mg/L | APHA 23rd Edition 2017,4500-F-D | 0.1231 | 1.5 |
| Cyanide (as CN) | mg/L | IS 3025 (Part-27): 1986 | <0.0125 | 0.05 |

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628K 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 | 0.255 | -- |
| Calcium (as Ca) | mg/L | APHA 23rd Edition 2017, 3500 B | 90.4 | -- |
| Magnesium (as Mg) | mg/L | IS 3025 (Part-46):1994 | 27.7 | -- |
| 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 | 0.304 | 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 | 7.2 | 4.0 (Minimum) |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1628L | Report Release Date : 15/07/2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/SW/1799L |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Dhardhari Nala (Downstream) Kujam-II Bauxite Mines |
| Plant Status | : Operational | Sampling Date | : 17/06/2022 |
| | | Type of Sample | : Surface Water (Stream 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 | 7.0 | 6.5-8.5 |
| Color | Hazen | IS 3025 (Part-04): 1983 | 6 | 300 |
| Odour | - | IS 3025 (Part-05): 1983 | Unobjectionable | Unobjectionable |
| Turbidity | NTU | APHA 23rd Edition 2017,2130 B | 0.37 | -- |
| Free Residual Chlorine | mg/L | IS 3025 (Part-26): 1986 | <0.1 | -- |
| Total Dissolved Solids (TDS) | mg/L | IS 3025 (Part-16):1984 | 1312 | 1500 |
| Total Hardness (as CaCO ₃) | mg/L | APHA 23rd Edition 2017, 2340 C | 347 | -- |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23):1986 | 220 | -- |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32): 1988: RA 2014 | 89.2 | 600 |
| Sulphate (as SO ₄) | mg/L | IS 3025 (Part-24):1986 | 46.5 | 400 |
| Fluoride (as F) | mg/L | APHA 23rd Edition 2017,4500-F-D | 0.1319 | 1.5 |
| Cyanide (as CN) | mg/L | IS 3025 (Part-27): 1986 | <0.0125 | 0.05 |

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TEST REPORT

Test Report No. : ELES/RNC/2022/1628L 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 | 0.261 | -- |
| Calcium (as Ca) | mg/L | APHA 23rd Edition 2017, 3500 B | 92.2 | -- |
| Magnesium (as Mg) | mg/L | IS 3025 (Part-46):1994 | 28.4 | -- |
| Iron (as Fe) | mg/L | APHA 23rd Edition, 3111 B&C | 0.711 | 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 | 0.340 | 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 | 7.3 | 4.0 (Minimum) |

****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.

KujamII Bauxite Mine-Environmental Monitoring Report

July 2022



CONTENT

| Hindalco Industries : Kujam-II Bauxite Mine | | Environmental Monitoring Report | July 2022 |
|---|--------------------------|---------------------------------|-----------|
| Kujam-II Bauxite Mine | | | |
| AMBIENT AIR QUALITY- CORE ZONE | | | |
| 1 | Kujam-II Weigh Bridge | | |
| 2 | Nawatoli Quarry | | |
| 3 | Jawadih Quarry | | |
| 4 | Bhattipat | | |
| AMBIENT AIR QUALITY- BUFFER ZONE | | | |
| 1 | Near Pakri Gada Village | | |
| 2 | Near Pol Pol Village | | |
| 3 | Near Shakhuapani Village | | |
| 4 | Near Dipa Kujam Village | | |





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TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201M |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 06/07/2022 to 07/07/2022 |
| | | 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°17'30.39"E | 6 | Latitude | : 23°18'50.59"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 51 |
| 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) | 6.2 |
| 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

Test Report No. : ELES/RNC/2022/1769M

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****

Page 2 of 2

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TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201N |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 06/07/2022 to 07/07/2022 |
| | | 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°17'38.67"E | 6 Latitude : 23°18'20.87"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 52 |
| 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) | 0.007 |
| 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

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769N | 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) | 0.24 |

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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CIN: U74999/JH2018PTC011125

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/17690 | Report Release Date : 18.08.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/52010 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Jawadih Quarry Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 06/07/2022 to 07/07/2022 |
| | | 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°17'30.27"E | 6 | Latitude | : 23°18'56.89"N |

| 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) | 24 |
| 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) | 10.5 |
| 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) | 0.018 |
| 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) | 2.4 |

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TEST REPORT

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|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/17690 | 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) | 0.21 |

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

****End of Report****

Authorized Signatory

Dr. Deependra Kumar Sinha
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ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201P |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Bhattipat Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 06/07/2022 to 07/07/2022 |
| | | 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°17'54.25"E | 6 Latitude : 23°18'34.89"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) | 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) | 7.0 |
| 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) | 0.011 |
| 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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Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1769P | 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/2022/1769E | 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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|-----------------|-----------------------|---------------------|--------------|
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|-----------------|-----------------------|---------------------|--------------|

| 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
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ELES Pvt. Ltd. Technical Manager

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TEST REPORT

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

| 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
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ELES Pvt. Ltd. Technical Manager

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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 |

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TEST REPORT

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

| 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

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TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|----------------------------|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/5201H |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Near Shakhuapani 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 |

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Phone no : 0651-2290103

Website : www.elespl.co.in

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

KujamII(157.38ha) Bauxite Mine-Environmental Monitoring Report

August 2022



CONTENT

| Hindalco Industries : Kujam-II(157.38ha) Bauxite Mine | | Environmental Monitoring Report |
|---|---|---------------------------------|
| August 2022 | | |
| Kujam-II(157.38ha) Bauxite Mine | | |
| | AMBIENT AIR QUALITY- CORE ZONE | |
| 1 | Kujam-II Weigh Bridge | |
| 2 | Nawatoli Quarry | |
| 3 | Jawadih Quarry | |
| 4 | Bhattipat | |
| | AMBIENT AIR QUALITY- BUFFER ZONE | |
| 1 | Near Pakri Gada Village | |
| 2 | Near Pol Pol Village | |
| 3 | Near Shakhuapani Village | |
| 4 | Near Dipa Kujam Village | |





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TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187M |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 16/08/2022 to 17/08/2022 |
| | | 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°17'30.39"E | 6 | Latitude | : 23°18'50.59"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) | 22 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.7 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 8.6 |
| 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) | 0.014 |
| 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) | 2.3 |

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TEST REPORT

Test Report No. : ELES/RNC/2022/1889M 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****

Page 2 of 2

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187N |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 16/08/2022 to 17/08/2022 |
| | | 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°17'38.67"E | 6 | Latitude | : 23°18'20.87"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) | 5.9 |
| 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) | 0.018 |
| 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) | 2.7 |

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TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/1889N | 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****



ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/18890 | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/31870 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Jawadih Quarry Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 16/08/2022 to 17/08/2022 |
| | | 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°17'30.27"E | 6 | Latitude : 23°18'56.89"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) | 22 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 7.1 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 11.6 |
| 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) | 0.012 |
| 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) | 2.7 |

Page 1 of 2

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/18890 | 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) | 0.23 |

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/2022/1889P | Report Release Date : 16.09.2022 |
|---------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3187P |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Bhattipat Kujam-II Bauxite Mine (157.38ha) |
| | | Sampling Date | : 16/08/2022 to 17/08/2022 |
| 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°17'54.25"E | 6 | Latitude | : 23°18'34.89"N |

| Parameter | Unit | Test Protocol | Regulatory Limit | Result |
|--------------------------------------|-------------------|---------------------------------|------------------|--------|
| Particulate Matter (PM10) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 40 |
| 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) | 5.2 |
| 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) | 2.2 |

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TEST REPORT

| | |
|---------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/1889P | 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

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

****End of Report****

Page 2 of 2

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Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

| | | | |
|-----------------|-----------------------|---------------------|--------------|
| 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) | µg/m ³ | IS 5182 (Part-23): 2006; RA2017 | 100 (24hrs) | 40 |
| 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) | 8.0 |
| 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; 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****

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Website : www.elespl.co.in

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

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|-----------------|-----------------------|---------------------|--------------|
| 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****

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Website : www.elespl.co.in

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) | 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) | 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) | 6.3 |
| 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) | <0.002 |
| 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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TEST REPORT

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

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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

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

****End of Report****

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SERVICES PVT.LTD.**

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

Kujam II Bauxite Mine-Environmental Monitoring Report

September 2022



CONTENT

| Hindalco Industries : Kujam-II Bauxite Mine | | Environmental Monitoring Report | September 2022 |
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CIN: U74999JH2018PTC011125

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| Test Report No. : ELES/RNC/2022/2300 | Report Release Date : 11.11.2022 |
|--------------------------------------|----------------------------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3305 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha) |
| | | Sampling Date | : 06/09/2022 to 07/09/2022 |
| 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 (%) | : 64 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'30.39"E | 6 | Latitude | : 23°18'50.59"N |

| 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) | 20 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 5.4 |
| Nitrogen Di-Oxide (NO ₂) | µg/m ³ | IS 5182 (Part-6): 2001; RA2017 | 80 (24hrs) | 10.5 |
| 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) | 2.6 |

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TEST REPORT

Test Report No. : ELES/RNC/2022/2300

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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Page 2 of 2

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CIN: U74999JH2018PTC011125

TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2301 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3306 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha) |
| | | Sampling Date | : 06/09/2022 to 07/09/2022 |
| 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 (%) | : 64 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'38.67"E | 6 | Latitude | : 23°18'20.87"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) | 20 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.3 |
| 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) | 0.012 |
| 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) | 2.1 |

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TEST REPORT

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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

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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Page 2 of 2

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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2302 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|--|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3307 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Jawadih Quarry Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 06/09/2022 to 07/09/2022 |
| | | 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 (%) | : 64 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'30.27"E | 6 | Latitude | : 23°18'56.89"N |

| 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) | 17 |
| Sulphur Di-Oxide (SO ₂) | µg/m ³ | IS 5182 (Part-2): 2001; RA2017 | 80 (24hrs) | 6.3 |
| 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) | 0.007 |
| 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) | 2.4 |

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|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2302 | 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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Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

| | | | |
|-----------------|----------------------|---------------------|--------------|
| Test Report No. | : ELES/RNC/2022/2303 | Report Release Date | : 11.11.2022 |
|-----------------|----------------------|---------------------|--------------|

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/AA/3308 |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Bhattipat Kujam-II Bauxite Mine (157.38ha) |
| Plant Status | : Operational | Sampling Date | : 06/09/2022 to 07/09/2022 |
| | | 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 (%) | : 64 | 4 | Weather Condition | : Clear |
| 5 | Longitude | : 84°17'54.25"E | 6 | Latitude | : 23°18'34.89"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) | 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) | 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) | <0.002 |
| 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/2022/2303 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
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****End of Report****

Page 2 of 2

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

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

| CUSTOMER DETAILS | | SAMPLE DETAILS | |
|------------------|-------------------------------|--------------------|---|
| Customer Name | : Hindalco Industries Limited | Sample Ref. No. | : ELES/RNC/2022/DW/3357J |
| Address | : Lohardaga, Jharkhand-835302 | Location | : Drinking Water - Kujam-II Bauxite Mines(157.38 ha) |
| Plant Status | : Operational | Sampling Date | : 07/09/2022 |
| | | 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 | 7.3 | 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 | 0.15 | 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 | 195 | 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 | 42.8 | 200 |
| Total Alkalinity (as CaCO ₃) | mg/L | IS 3025 (Part-23):1986 | 36.5 | 200 |
| Chloride (as Cl) | mg/L | IS 3025 (Part-32): 1988: RA 2014 | 5.5 | 250 |

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CIN: U74999JH2018PTC011125

TEST REPORT

| Test Report No. : ELES/RNC/2022/2353J | | 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 | 7.3 | 200 |
| Nitrate (as NO ₃) | mg/L | IS 3025 (Part-34): 1988 | 3.24 | 45 |
| Fluoride (as F) | mg/L | APHA 23rd Edition 2017,4500-F-D | 0.1285 | 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 | 11.2 | 75 |
| Magnesium (as Mg) | mg/L | IS 3025 (Part-46):1994 | 3.6 | 30 |
| Iron (as Fe) | mg/L | APHA 23rd Edition, 3111 B&C | 0.219 | 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/2022/2353J | 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 |

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TEST REPORT

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

| Parameter | Unit | Test Protocol | Result | Regulatory Limit |
|---|------|------------------|--------|----------------------|
| | | | | as per IS:10500:2012 |
| | | | | Acceptable Limit |
| Chlorpyriphos* | 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.

Authorized Signatory

SANDIP BERA
SENIOR MANAGER

****End of Report****

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TEST REPORT

| | |
|--------------------------------------|----------------------------------|
| 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.

****End of Report****

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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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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/2022/2293 | 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

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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ENVIRONMENTAL LABORATORIES &

PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA
HATIA, RANCHI-834003 (JHARKHAND)
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Phone no : 0651-2290103

Website : www.elespl.co.in

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

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/2022/2295 | 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) | 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) | 16 |
| 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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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

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 II Bauxite Mine (Area 157.38 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. Dhananjay Dash (Coordinator)
2. Mr. Shubham Kumar – (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 Gangopadhyay", is written over a blue horizontal line.

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)