

HIL/LHD/ENV/MoEF/ 432

Date: 25.11.2023

To,
The Dy. Director General of Forest (C)
Ministry of Environment, Forests and Climate Changes
2nd Floor, Headquarter-Jharkhand State Housing Board
Harmu Chowk, Ranchi, Jharkhand-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'23 to September'23.

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'23 to September'23. The lease details are 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, ranchijspcb@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 2023 to 30th September 2023

#### A. Specific Conditions

Condition 1- Implementation of all the conditions as specified in earlier EC vide no. J-11015/242/2005-1A.I1 (M), dated 14.08.2006 and shall be complied by M/s Hindalco Industries Limited.

**Reply to Condition 1 -** Implemented. Certified compliance reports duly submitted to MoEF by Regional Office, Ranchi.

Condition 2- 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.

Reply to Condition 2- Noted.

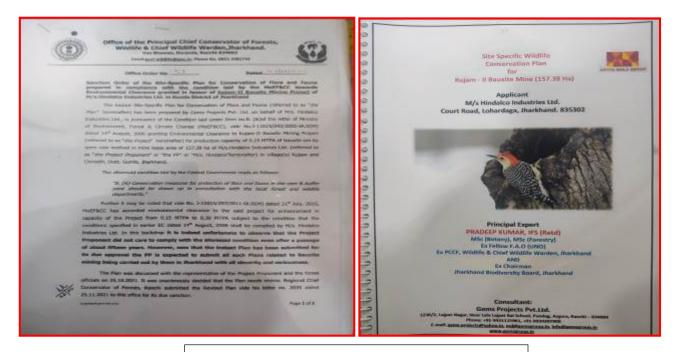
Condition 3- The environmental clearance is valid for 13 years as the life of mine is 13 years.

**Reply to Condition 3-** Noted, This may extend subject to enhancement of reserve in due course of mining in line with EIA notification as applicable.

Condition 4- 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.

**Reply to Condition 4-** We understand this is not applicable to this project. Mine is located outside an 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.



Site Specific WLCP for Kujam II Bauxite Mines

Condition 5- The Project Proponent shall obtain Consent to Operate from the State Pollution Control Board, Jharkhand and effectively implement all the conditions stipulated therein.

Reply to Condition 5- Existing consent to Operate is valid till 31.12.2025.

Condition 6- No mining activities will be allowed in forest area for which the Forest Clearance is not available.

**Reply to Condition 6-** There is no forest area involved within the lease.

Condition 7- 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.

**Reply to Condition 7-** 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 the study report are being implemented.

Condition 8- 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.

**Reply to Condition 8-** 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 the study report are being implemented.

Condition 9- Implementation of the Recommendations of National Institute of Miners Health for ensuring good occupational environment for mine workers.

**Reply to Condition 9-** Occupational health study is being done as per the recommendation of the safety conference proposal.

# Condition 10- Use of mechanical devices with total mechanization and reducing use of explosives.

**Reply to Condition 10-** We are using Nonel for blasting and the use of explosives is optimum. The rock breaker is being used to reduce the use of explosives Soft strata is being completely excavated without use of any explosive. We are using rock breakers as mechanical devices to reduce the use of explosives. We are also exploring the use of eccentric ripper for excavation of hard strata to reduce the use of explosives.

#### Condition 11- Concurrent reclamation of mined out areas.

Reply to Condition 11- Concurrent back filling/ reclamation are being carried out in mined out areas.



Concurrent backfilling in process

Condition 12- Use of an effective sprinkler system to suppress fugitive dust on haul road and other transport roads and comprehensive study for slope stabilization of mine benches and OB dumps in one year.

**Reply to Condition 12-** 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.



25 KL mobile sprinkler in operation.

Condition 13- 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 villagers' 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.

**Reply to Condition 13-** Being implemented as per the issues raised during the Public Hearing dated 11.07.2013.

Condition 14- Implementation of Recommendation of Compliance Report by Regional Office of Ministry of Environment, Forest and Climate Change.

Reply to Condition 14- Recommendations by Regional Office, Ranchi are being complied with.

Condition 15- Washing of all transport vehicles should be done inside the mining lease. Reply to Condition 15- Being complied.

Condition 16- 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. Reply to Condition 16- Evacuation plan prepared, and transport has been streamlined. SOP are framed and in place.

Condition 17- 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.

**Reply to Condition 17-** Regular and periodical medical examination of the workers engaged in the project is being carried out and records are being maintained.

Condition 18- Implementation of Environment Management Policy of the Company w.r.t, judicious use of Mineral resources for growth & development synchronizing mining & environment with prosperity.

**Reply to Condition 18-** 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 the Mining Plan.

Condition 19- 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. Reply to Condition 19- All these aspects are covered under CSR activities being carried out in and around the area. A piezometer has been installed for regular monitoring of ground water.

Condition 20- 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.

**Reply to Condition 20-** 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.

Condition 21- 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.

**Reply to Condition 21-** 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.

Condition 22- Stratified layer system of plantation to be adopted in consultation with the State Govt., which would effectively mitigate the additional dust, sound and vibration.

**Reply to Condition 22-** Progressive plantation is being carried out in consultation with local forest Dept. Total 5175 nos. of saplings have been planted during FY 2023-24 within this lease. A total of 9.75 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 landowners.

The Green belt development programme is in progress with the progress of mining activities.



Plantation and agriculture on reclaimed area and greenbelt area of Kujam II Mines

Condition 23- 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.

**Reply to Condition 23-** 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 purposes. No Objection Certificate (NOC) for ground water abstraction for Kujam II mines has been obtained for drinking purposes only.



Rainwater Harvesting Pond with fencing.



মাধন থকেচাৰ ভাৰ স্থাজিন মঁসালেঘ ভাৰ স্থাজিন মুখ্য বিকাৰ ভাৰ প্ৰধানৰ, নৱ বিকাৰ ভাৰতীয় মুখ্যি কৰে মাজিকলে Government of India Ministry of Jai Shakti Department of Water Resources, River Development & Ganga Rejuvenation Central Ground Water Authority

#### (भूजल निकासी हेतु अनापत्ति प्रमाण पत्र) NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

| Project Name:                     | Kujam li Bauxite Mine                         | Kujam li Bauxite Mine (157.38 Ha)                              |  |  |  |  |  |
|-----------------------------------|---|--|--|--|--|--|--|
| Project Address:                  | Kujam li Bauxite Mine                         | (ujam li Bauxite Mine, Vill - Kujam And Chirodih, Dist - Gumla |  |  |  |  |  |
| Village:                          | Kujam   | Block:   | Bishunpur  |  |  |  |  |
| District:                         | Gumla   | State:   | Jharkhand  |  |  |  |  |
| Pin Code:                         |   |  | 7.   |  |  |  |  |
| Communication Address:            | Kujam li Bauxite Mine<br>Gumla, Jharkhand - 8 |  | irodih, Dist - Gumla, Bishunpur,   |  |  |  |  |
| Address of CGWB Regional Office : |   |  | Region, 6th & Emp; amp; 7th Floor, Lok<br>Dak Banglow, Patna, Bihar - 800011 |  |  |  |  |

| 1.  | NOC No.:       |          | CGWA/       | NOC   | /MIN/R   | EN/1/2         | 022/72  | 275      |         |                 |                |         |         |       |       |
|-----|----------------|----------|-------------|-------|----------|----------------|---------|----------|---------|-----------------|----------------|---------|---------|-------|-------|
| 2.  | Application    | No.:     | 21-4/49     | 6/JH  | /MIN/20  | 19             |         |          | 3.      | Catego<br>(GWRE | ry:<br>E 2020) | S       | afe     |       |       |
| 4.  | Project Sta    | atus:    | Existing    | Gro   | und Wa   | ter            |         | 1000     | 6.      | NOC T           | ype:           | Re      | enewal  |       |       |
| 6.  | Valid from     | n:       | 18/09/2022  |       | 7.       | Valid up to:   |         | 17       | /09/202 | 4               |                |         |         |       |       |
| 8.  | Ground W       | ater Abs | straction P | ermi  | tted:    |                |         |          |         |                 |                |         |         |       |       |
|     | Fresh          | Water    |             |       | Saline   | Water          | -       | 1        | De      | waterin         | g              |         | 7       | otal  |       |
|     | mº/day         | mº/y     | /ear        | mº    | day      | m <sup>3</sup> | 7уваг   | n        | nº/day  | r               | nº/year        | m       | °/day   | m°    | /year |
|     | 9.50           | 346      | 7.50        |       |          |                | -1      |          |         |                 |                |         |         |       |       |
| 9.  | Details of     | ground v | water abst  | racti | on /Dew  | atering        | struct  | ures     |         |                 |                |         |         |       |       |
|     |                |          | Total I     | Exis  | ting No. | :1             |         |          |         |                 | To             | tal Pro | posed N | lo.:0 |       |
|     |                |          |             | W-    | DCB      | BW             | TW      | MP       | MPu     | DW              | DCB            | BW      | TW      | MP    | MPu   |
|     | Abstraction    | Structu  | re*         | 0     | 0        | 1              | 0       | 0        | 0       | 0               | 0              | 0       | 0       | 0     | 0     |
| DV  | V- Dug Well; D | CB Dug c | um-Bore We  | IL BW | Bore We  | II; TW-T       | ube Wel | : MP-Min | e PILMP | u-Mine Pu       | imps           |         |         |       |       |
| 10. | Ground W       | ater Abs | traction/R  | esto  | ration C | harges         | paid (  | Rs.):    |         |                 |                | 48      | 92.50   |       |       |

(Compliance Conditions given overleaf)

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NOC for Ground water extraction.

Condition 24- 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.

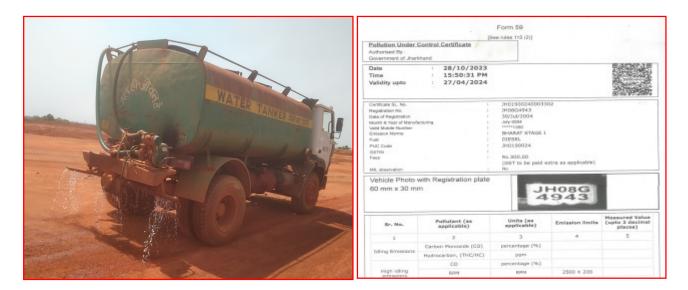
**Reply to Condition 24-** The mining operations are restricted to above ground water table only and in future also same will be adhered to.

Condition 25- 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.

**Reply to Condition 25-** 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.



Tarpaulin covered truck bring used for ore transportation.



Water Sprinkling for dust suppression.

**PUC** Certificate

Condition 26- 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.

**Reply to Condition 26-** A detailed 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.

Condition 27- 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.

**Reply to Condition 27-** Monitoring of ground water table is being carried out regularly and reported along with six monthly compliance reports. A piezometer has been installed for regular monitoring of ground water.

Condition 28- Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended from time to time by the Central Pollution Control Board.

**Reply to Condition 28-** AAQM monitoring report is carried out regularly. Report is attached as **Annexure-2.** 

Condition 29- The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations.

**Reply to Condition 29-** It is being ensured that no natural water course and/or water resource is being and will be obstructed due to any mining operations.

Condition 30- 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 (013) 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 450. 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.

**Reply to Condition 30-** Topsoil is being stacked separately as and when required & used for reclamation and rehabilitation at appropriate time. There is no external OB dump. The excavated area is being back filled concurrently and back filled area is used for afforestation/agricultural activity as required. Monitoring and management of rehabilitated areas is continuing through supervision.

Condition 31- 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 sit material. Sedimentation pits shall be constructed at the corners of the garland drains and de silted at regular intervals.

Reply to Condition 31- No run-off is generated from mining activities. However, to collect & manage rainwater during monsoon, part of mined out area is used as a settling tank for the runoff. Rainwater stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary. 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. Sump of adequate capacity is being provided and maintained as required. There is no external OB dump.



Garland drains around mine pit to prevent runoff.



Check drain and Siltation pit around mine pit to prevent runoff.

Condition 32- 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 fall data.

Reply to Condition 32- There is no external dump within the mine lease area as on date. Hence not applicable.

Condition 33- 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.

**Reply to Condition 33-** 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; a report is attached as **Annexure 2**.

Condition 34- 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 a water injection system.

**Reply to Condition 34-** 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 the impact of blasting. Wet Drilling practice is adopted at our mines.



Wet Drilling

Condition 35- 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.

**Reply to Condition 35-** Local laborers are employed who reside nearby mines. Necessary infrastructures for office staff are in place at Netarhat plateau. Toilets constructed under CSR programmes. Drinking water and mobile health care facilities are provided under CSR programmes.

Condition 36- 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.

**Reply to Condition 36-** 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.

#### **B.** General Conditions

Condition 1- No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change.

**Reply to Condition 1-** Noted.

Condition 2- No change in the calendar plan including excavation, quantum of bauxite ore and waste should be made.

**Reply to Condition 2-** 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.** 

Condition 3- The critical parameters such as PM10 (size less than 10 micrometer), PM2.5 (size less than 2.5 micrometer), 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, PH 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.

**Reply to Condition 3-** 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**.

Condition 4- 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 the 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.

**Reply to Condition 4-** We have already established four ambient air quality monitoring stations in the core zone as well as buffer zone. Monitoring is being carried out and reported to the concerned authorities. Report is attached as **Annexure 2.** 

Condition 5- 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.

**Reply to Condition 5-** Mobile water tanker with sprinkling facility has been provided along the haul roads, loading, unloading & at transfer points to arrest dust emission.



Water Tanker used for dust suppression.

Condition 6- 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.

**Reply to Condition 6-** Necessary measures are being implemented to control noise levels below 85 dB (A). PPEs are provided to workers.

Condition 7- 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.

Reply to Condition 7- Water quality upstream and downstream of water bodies are being monitored, analysis report is attached as Annexure- 2.

Condition 8- 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.

**Reply to Condition 8-** We are not using ground water for any mining purposes. There is no chance of intersection of ground water table during mining operation at present and in future.

A piezometer has been installed for monitoring of ground water level. Water quality and level report are attached herewith as **Annexure 1**.





Piezometer installed at mines.

Condition 9- Industrial wastewater (workshop and wastewater from the mine) should be properly collected and 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.

**Reply to Condition 9-** There is no industrial wastewater generation within the mine lease area. We are not discharging any wastewater outside the mine lease area. However, for washing of HEMM, Effluent treatment mechanism (Oil and grease trap) has been installed in Kujam mine.



Washing Ramp with Oil and Grease Trap

Condition 10- 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.

**Reply to Condition 10-** 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.

Condition 11- 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.

**Reply to Condition 11-** 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.

Condition 12- The funds earmarked for environmental protection measures should be kept in a separate account and should not be diverted for other purposes. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Ranchi.

**Reply to Condition 12-** Year wise expenditure is being reported to the ministry and its Regional Office located at Ranchi. Report is attached as **Annexure 5.** 

Condition 13- The project authorities should inform the Regional Office located at Ranchi regarding the date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

**Reply to Condition 13-** This is an operative mine hence provision related to financial closure is not applicable.

Condition 14- The Regional Office of this Ministry located at Ranchi shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.

**Reply to Condition 14-** Noted & Agreed.

Condition 15- 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.

Reply to Condition 15- Six monthly reports on the status of the EC are being duly and timely submitted.

Condition 16- 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.

Reply to Condition 16- Six monthly report on the status of the EC are being duly and timely submitted.

Condition 17- 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.

Reply to Condition 17- Copy of Clearance letter submitted to concern panchayat.

Condition 18- 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.

**Reply to Condition 18-** Copy of the clearance letter provided to the concerned Offices.

Condition 19- 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.inand a copy of the same should be forwarded to the Regional Office of this Ministry located Ranchi

**Reply to Condition 19-** Published in two newspapers widely circulated (Hindustan and Dainik Jagran) on 27.07.2015.

|      | Annexure 1                                  |               |  |  |  |  |  |
|------|---|---------------|--|--|--|--|--|
| Pie  | Piezometer reading - Kujam II Bauxite Mines |               |  |  |  |  |  |
| S No | Month                                       | Depth (meter) |  |  |  |  |  |
| 1    | Apr-23                                      | 35.12         |  |  |  |  |  |
| 2    | May-23                                      | 35.37         |  |  |  |  |  |
| 3    | Jun-23                                      | 34.59         |  |  |  |  |  |
| 4    | Jul-23                                      | 34.26         |  |  |  |  |  |
| 5    | Aug-23                                      | 32.14         |  |  |  |  |  |
| 6    | Sep-23                                      | 32.23         |  |  |  |  |  |

## ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT.LTD.

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

Kujam II Bauxite Mine-Environmental Monitoring Report

April 2023



### CONTENT

| Hind | alco Industries : Kujam-II Bauxite Mine | Environmental Monitoring Report | April 2023 |  |  |  |  |  |  |
|------|---|---------------------------------|------------|--|--|--|--|--|--|
|      | 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 ZO           | ONE                             |            |  |  |  |  |  |  |
| 1    | Near Pakri Gada Village                 |                                 |            |  |  |  |  |  |  |
| 2    | Near Pol Pol Village                    |                                 |            |  |  |  |  |  |  |
| 3    | Near Shakhuapani Village                |                                 |            |  |  |  |  |  |  |
| 4    | Near Dipa Kujam Village                 |                                 |            |  |  |  |  |  |  |





PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20A4ECES713D124

#### ENIVINEERING SERVICES PVT. LTD.

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Plione no.: 0651-2290103 Website: www.elespl.co.in



#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1968 | Report Release Date | : 12.06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000000929F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                         |   |  |  |  |
|--------------------|-------------------------------|--|---|--|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.                        | : ELES/RNC/2023/AA/1395                                     |  |  |  |
| Address            | The deep the day have an      | Location                               | : Kujam-II Weigh Bridge<br>Kujam-II Bauxite Mine (157:38ha) |  |  |  |
| Address            | Lohardaga, Jharkhand-835302   | Sampling Date                          | : 15.04.2023 to 16.04.2023                                  |  |  |  |
|                    |                               | Sample Received Date<br>Type of Sample | : 10.05.2023<br>: Ambient Air                               |  |  |  |
| Plant Status       | : Operational                 | Sample Drawn By                        | : ELES/DOC/SMPL/02  |  |  |  |
| Period of Analysis | = 10.05.2023 to 08.06.2023    | Sample Condition                       | : Sealed & Preserved  |  |  |  |

| M | ETEOROLOGICAL INFO       | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | :31             | 2 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | :61             | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'30.39"E | 6 | Latitude                   | : 23°18'50.59"N |

| NABL Accredited                     |                   |                                 | -          |                  |
|-------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline :                        | Chemical          | Group                           | Atmospheri | c Pollution      |
| Parameter                           | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)           | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 71         | .100 (24hrs)     |
| Particulate Matter (PM2.5)          | μg/m³             | IS 5182 (Part- 24): 2019        | 42         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 7.6        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO2)             | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 18.8       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )             | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>2</sub> )          | μg/m³             | IS 5182 (Part- 25); 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                | mg/m³             | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                           | µg/m³             | IS 5182 (Part-22): 2004; RA2019 | 0.016      | 1 (24hrs)        |
| Nickel (Ni)                         | ng/m³             | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                        | ng/m <sup>3</sup> | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



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Authorized Signatory Dr. Deependra Kumar Sinha

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Page 2 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:-20AAECE9713D124

#### ENGINEERING SERVICES PVT. LTD.

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Phone no.: 0651-2290103 Website: www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1968 | Report Release Date | : 12.06.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |  |  |  |
|--------------------|-------------------------------|---|--|--|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                               | : ELES/RNC/2023/AA/1395<br>: Kujam-II Weigh Bridge             |  |  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date   | Kujam-II Bauxite Mine (157.38ha)<br>: 15.04.2023 to 16.04.2023 |  |  |  |
| Piant Status       | : Operational                 | Sample Received Date<br>Type of Sample<br>Sample Drawn By | : 10.05.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02            |  |  |  |
| Period of Analysis | : 10.05.2023 to 08.06.2023    | Sample Condition  | : Sealed & Preserved   |  |  |  |

| MI | TEOROLOGICAL INFOR       | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | :31             | 2 | Barometric Pressure (mmHg) | : 739           |
| 3  | Relative Humidity (%)    | : 61            | 4 | Weather Condition          | : Clear         |
| 5  | Longitude                | : 84°17'30.39"E | 6 | Latitude                   | : 23°18'50,59"N |

| Discipline        | : Chemical | Group                          | : Atmospheri | c Pollution      |
|-------------------|------------|--------------------------------|--------------|------------------|
| Parameter         | Unit       | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (part-11): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5         | 01(Annual)       |

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



\*\*\*\*End of Report\*\*\*\*

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

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 2010ECES713D124

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Phone no.: 0651-2290103 Website: www.elespl.co.in



#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1969 | Report Release Date | : 12.06.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000000930F |                     |              |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                               | : ELES/RNC/2023/AA/1396<br>: Nawatoli Quarry                   |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date   | Kujam-II Bauxite Mine (157,38ha)<br>: 15.04.2023 to 16.04,2023 |  |
| Plant Status       | : Operational                 | Sample Received Date<br>Type of Sample<br>Sample Drawn By | : 10.05.2023<br>: Ambient Alir<br>: ELES/DOC/SMPL/02           |  |
| Period of Analysis | : 10.05.2023 to 08.06.2023    | Sample Condition  | : Sealed & Preserved   |  |

| MI | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | : 31            | 2 | Barometric Pressure (mmHg) | 1739            |
| 3  | Relative Humidity (%)    | : 61            | 4 | Weather Condition          | t Clear         |
| 5  | Longitude                | : 84°17'38.67"E | 6 | Latitude                   | : 23°18'20.87"N |

| NABL Accredited                      |                    |                                 |            |                  |
|--------------------------------------|--------------------|---------------------------------|------------|------------------|
| Discipline :                         | Chemical           | Group :                         | Atmospheri | c Pollution      |
| Parameter                            | Unit               | Test Protocol                   | Result     | Regulatory Limit |
| Perticulate Matter (PM10)            | μg/m³              | IS 5182 (Part-23): 2006; RA2022 | 61         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³              | 1S 5182 (Part- 24): 2019        | 30         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m <sup>3</sup>  | IS 5182 (Part-2): 2001; RA2022  | 9.1        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³              | IS 5182 (Part-6): 2006; RA2022  | 20.6       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | µg/m³              | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>2</sub> )           | μg/m³              | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/ni <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | μg/m³              | IS 5182 (Part-22); 2004; RA2019 | 0.009      | 1 (24hrs)        |
| Nickel (NI)                          | ng/m²              | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m <sup>2</sup>  | ELES/AIR/SOP/01                 | 2.1        | 06 (Annual)      |



\*\*\*\*End of Report\*\*\*\*

Dr. Deependra Kumar Sinha

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Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 2044ECE9713D123

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Phone no.: 0651-2290103 Website: www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1969 | Report Release Date | : 12.06.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | 13612310218          | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DET       | CUSTOMER DETAILS              |                      |                                 |
|--------------------|-------------------------------|----------------------|---------------------------------|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.      | : ELES/RNC/2023/AA/1396         |
|                    |                               | Location             | : Nawatoli Quarry               |
| Address            | : Lohardaga, Jharkhand-835302 | 1000                 | Kujam-II Bauxite Mine (157.38ha |
| Addiças            | : Lonaroaga, Hai Khang-653502 | Sampling Date        | : 15.04.2023 to 16.04.2023      |
|                    |                               | Sample Received Date | : 10.05.2023                    |
|                    | Charles Co.                   | Type of Sample       | : Ambient Air                   |
| Plant Status       | : Operational                 | Sample Drawn By      | : ELES/DOC/SMPL/02              |
| Period of Analysis | : 10,05,2023 to 08.06.2023    | Sample Condition     | : Sealed & Preserved            |

| M | ETEOROLOGICAL INFOR      | RMATION         |     |                            |                 |
|---|--------------------------|-----------------|-----|----------------------------|-----------------|
| 1 | Average Temperature (°C) | :31             | 2   | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 61            | - 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'38.67"E | 6   | Latitude                   | : 23°18'20.87"N |

| Discipline        | : Chemical | Group : Atmospheric Pollution  |        |                  |  |
|-------------------|------------|--------------------------------|--------|------------------|--|
| Parameter         | Unit       | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*          | μg/m³      | IS:5182 (part-11); 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5   | Ol(Annual)       |  |

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



\*\*\*\*End of Report\*\*\*\*

Dr. Deependra Rumar Sintle Ph. D. Environmental Engg. ELES Pvl. Ltd. Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124

Eurall Info@elesal.co.in , eles.ranchi@amail.com

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TEST REPORT

| Test Report No. | : ELES/RNC/2023/1970 | Report Release Date | : 12.06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | ; TC883923000000931F |                     |              |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS                        |  |  |
|--------------------|-------------------------------|---------------------------------------|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1397<br>: Jawadih Quarry                                    |  |
| Address            | * Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | Kujam-II Bauxite Mine (157.38ha)<br>: 15.04.2023 to 16.04.2023<br>: 10.05.2023 |  |
| Plant Status       | ; Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02  |  |
| Period of Analysis | : 10.05.2023 to 08.06.2023    | Sample Condition                      | : Scaled & Preserved   |  |

| MI | ETEOROLOGICAL INFORM     | IATION        |   |                            |                 |
|----|--------------------------|---------------|---|----------------------------|-----------------|
| T  | Average Temperature (°C) | 31            | 2 | Barometric Pressure (mmHg) | : 739           |
| 3  | Relative Humidity (%)    | 61            | 4 | Weather Condition          | : Clear         |
| 5  | Longitude :              | 84°17'30.27"E | 6 | Latitude                   | : 23°18'56.89"N |

| NABL Accredited                      |                   |                                 |            |                  |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline :                         | Chemical          | Group                           | Atmospheri | e Pollution      |
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 64         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 36         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2); 2001; RA2022  | 7.7        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m³             | IS 5182 (Part-6): 2006; RA2022  | 23.9       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m³             | IS 5182 (Part-9); 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m <sup>3</sup> | IS 5182 (Part- 25): 2018        | <10,0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³             | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | μg/m <sup>T</sup> | IS 5182 (Part-22): 2004; RA2019 | 0.014      | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2,0       | 06 (Annual)      |



Dr. D Authorized Signatory

\*\*\*\*End of Report\*\*\*\*

Page 1 of 1 ELES PVI. Ltd. Technical Manage?

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

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1970 | Report Release Date | : 12.06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET.      | AILS                           | SAMPLE DETAILS       |                                  |  |
|--------------------|--------------------------------|----------------------|----------------------------------|--|
| Customer Name      | : Hindalco Industries Limited  | Sample Ref. No.      | ELES/RNC/2023/AA/1397            |  |
|                    |                                | Location             | Jawadih Quarry                   |  |
| Address            | : Lohardaga, Jharkhand-835302  | 1.30                 | Kujam-II Bauxite Mine (157,38ha) |  |
| 73001600           | . Construiga, markitana-655502 | Sampling Date        | 15.04.2023 to 16.04.2023         |  |
|                    |                                | Sample Received Date | : 10.05.2023                     |  |
| K5 41 No.          | Paristra 1                     | Type of Sample       | : Ambient Air                    |  |
| Plant Status       | : Operational                  | Sample Drawn By      | ELES/DOC/SMPL/02                 |  |
| Period of Analysis | : 10.05.2023 to 08.06.2023     | Sample Condition     | : Sealed & Preserved             |  |

| M | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 31            | 2 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 61            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'30,27"E | 6 | Latitude                   | : 23"18'56.89"N |

| Discipline        | : Chemical | Group : Atmospheric Pollution  |        |                  |  |
|-------------------|------------|--------------------------------|--------|------------------|--|
| Parameter         | Unit       | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*          | μg/m³      | IS:5182 (part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |  |

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



\*\*\*\*End of Report\*\*\*\*

Hinter

Authorized Signatory

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

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAFCE97130124

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

Phone no.: 0651-2290103 Website: www.elespi.co.in



#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1971 | Report Release Date | ; 12.06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000000932F |                     |              |

| CUSTOMER DET.      | CUSTOMER DETAILS              |                                       | SAMPLE DETAILS   |  |  |
|--------------------|-------------------------------|---------------------------------------|--|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1398<br>: Bhattipat                                       |  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | Kujam-II Bauxite Mine (157.38h<br>; 15.04.2023 to 16.04.2023<br>; 10.05.2023 |  |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02  |  |  |
| Period of Analysis | : 10.05,2023 to 08.06.2023    | Sample Condition                      | : Sealed & Preserved   |  |  |

| M | ETEOROLOGICAL INFO       | RMATION         | -70 |                            |                 |
|---|--------------------------|-----------------|-----|----------------------------|-----------------|
| 1 | Average Temperature (°C) | 131             | 2   | Barometric Pressure (mmHg) | 739             |
| 3 | Relative Humidity (%)    | :61             | 4   | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'54.25"E | 6   | Latitude                   | : 23°18'34.89"N |

| Discipline :                         | Chemical          | Group                           | Atmospheri | c Pollution      |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 62         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 30         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m <sup>3</sup> | IS 5182 (Part-2): 2001; RA2022  | 8.6        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 17.6       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | µg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (Shrs)       |
| Ammonia (NH <sub>1</sub> )           | μg/m³             | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | µg/m <sup>1</sup> | IS 5182 (Part-22): 2004; RA2019 | 0.011      | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m              | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m <sup>4</sup> | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



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Page 1 of 1 ELES PVL LIG, Technical Management stated as Test Report, its issued by the Laboratory under General Terms and Conditions, only on Company letter head in present acceptable. The results shown in the Test Report refer or relates only to the job/analysis done by the Laboratory only. The information stand on the Test Report reflects the findings done by the Laboratory at the time of involvement only and within the limits of client's instructions. The Laboratory is responsible for all the information or data provided on the report. except the information which is provided by the client. The Report cannot be reproduced except in full and any part of the report is not taken out of context, without prior written approval of the Laboratory. The Report in full or in part shall not be published, advertise, used for any legal actions unless prior permission has been secured from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and jurisdiction issues. Any unmahorized alteration & faisification of the content or appearance of the Test Repurs is unlawful and offencers may be presented to the fallest extent of the law. All the samples are retained for Ridays from the Date of release/issue of the Test Report. The samples from Regulatory hedies are to be retained as specified. Any type of Observations or Complaints regarding the Reports shall be done within 15days from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Time schedule mentioned in Test Report is in 24hours format. Abbreviation used: N/A (Not Applicable); BOL (Below Detection Limit); LOL (Lower Detection Limit).

\*\*\*\*End of Report\*\*\*\*



PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 204AECE9713D124 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/2023/1971 | Report Release Date | : 12,06,2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS       |                                  |  |
|--------------------|-------------------------------|----------------------|----------------------------------|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.      | : ELES/RNC/2023/AA/1398          |  |
|                    |                               | Location             | : Bhattipat                      |  |
| Address            | Lohardaga, Jharkhand-835302   | 7 1                  | Kujam-II Bauxite Mine (157.38ha) |  |
| rioutess           | Lonardaga, markmand-055502    | Sampling Date        | : 15.04.2023 to 16.04.2023       |  |
|                    |                               | Sample Received Date | : 10.05.2023                     |  |
| Average and        | Tananian v                    | Type of Sample       | : Ambient Air                    |  |
| Plant Status       | : Operational                 | Sample Drawn By      | : ELES/DOC/SMPL/02               |  |
| Period of Analysis | : 10.05.2023 to 08.06,2023    | Sample Condition     | : Sealed & Preserved             |  |

| MI | TEOROLOGICAL INFOR       | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | :31             | 2 | Barometric Pressure (mmHg) | : 739           |
| 3  | Relative Humidity (%)    | : 61            | 4 | Weather Condition          | : Clear         |
| 5  | Longitude                | : 84°17'54.25"E | 6 | Latitude                   | : 23°18'34.89"N |

| Discipline : Chemical |                   | Group                          | Group : Atmospheric Pollution |                  |  |  |
|-----------------------|-------------------|--------------------------------|-------------------------------|------------------|--|--|
| Parameter             | Unit              | Test Protocol                  | Result                        | Regulatory Limit |  |  |
| Benzene*              | μg/m <sup>3</sup> | IS:5182 (part-11): 2006;RA2017 | <1.0                          | 05(Annual)       |  |  |
| Benzo (a) Pyrene*     | ng/m³             | IS:5182 (Part-12): 2004;RA2019 | < 0.5                         | 01(Annual)       |  |  |

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



\*\*\*\*End of Report\*\*\*\*

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

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PEET NO-30, MARSAROVAR ENELAVE TUPULIANA MITTA, RANCHI-834003 (IHARINIANO) BST NO-20MARCERTIADUN



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Phone no : 0651-2190109 Website: monselespl.co.in



TEST REPORT

| Test Report No. | ; ELES/RNC/2023/1964 | Report Release Date | : 12.06.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000000925F |                     |              |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS                        |  |  |
|--------------------|-------------------------------|---------------------------------------|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1391<br>: Near Pakri Gada Village |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | : 11.04.2023 to 12.04.2023<br>: 10.05.2023           |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02                  |  |
| Period of Analysis | : 10.05,2023 to 08.06,2023    | Sample Condition                      | 2 Sealed & Preserved                                 |  |

| M | ETEOROLOGICAL INFOR      | RMATION         |     |                            |                 |
|---|--------------------------|-----------------|-----|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 30            | 2   | Barometric Pressure (mmHg) | : 743           |
| 3 | Relative Humidity (%)    | ; 62            | - 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°14'52.25'N | 6   | Latitude                   | : 23°17'41.21"E |

| NABL Accredited                      |                   |                                 |            | 4.15             |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline:                          | Chemical          | Group                           | Atmospheri | e Pollution      |
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23); 2006; RA2022 | 63         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m <sup>3</sup> | IS 5182 (Part- 24): 2019        | 34         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 6.2        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>1</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 15,5       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m'             | IS 5182 (Part-9): 1974; RA2019  | <20,0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | µg/m              | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³             | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | µg/m³             | IS 5182 (Part-22): 2004; RA2019 | <0.007     | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS-5182 (Part-26):2020          | < 6.0      | 20 (Annual)      |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



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Authorized Signatory Dr. Deependra Kumar Sinha

\*\*\*\*End of Report\*\*\*\*

Fage Lof 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCIU-834003 (DHARNHAND) GST NO:- 20AAECE97130180

### WOWEERING SERVICES PUT, ATD.

Email: Info@elesol.co.in . eles.ranch(@amail.com Phone no.: 0651-2290203 Website: www.elespi.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1964 | Report Release Date | : 12,06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DETAILS         |  | SAMPLE DETAILS   |   |  |
|--------------------------|--|--|---|--|
| Customer Name<br>Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample | : ELES/RNC/2023/AA/1391<br>: Near Pakri Gada Village<br>: 11.04.2023 to 12.04.2023<br>: 10.05.2023<br>: Ambient Air |  |
| Plant Status             | : Operational  | Sample Drawn By  | : ELES/DOC/SMPL/02  |  |
| Period of Analysis       | : 10.05.2023 to 08.06.2023                                     | Sample Condition   | : Sealed & Preserved  |  |

| MI | TEOROLOGICAL INFO        | RMATION         |     |                            |                 |
|----|--------------------------|-----------------|-----|----------------------------|-----------------|
| 1  | Average Temperature (°C) | 30              | 2   | Barometric Pressure (mmHg) | : 743           |
| 3  | Relative Humidity (%)    | : 62            | - 4 | Weather Condition          | : Clear         |
| 5  | Longitude                | : 84°14'52.25"N | 6   | Latitude                   | : 23°17'41.21"E |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*              | μg/m³ | IS:5182 (part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene*     | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | < 0.5  | 01(Annual)       |  |

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



\*\*\*\*End of Report

Dr. Deependra Ruthar Sinns.
Ph. D. Environmental Engg
ELES Put Ltd. Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TURUDANA HATIA, RANCHI 454003 (HARRHAND) GST ND-208456597130124

### ENGINEERING SERFICES PUT. ATD.

Small <u>Inju@elmpl.co.in</u> ; <u>eles.rgach/@gmall.com</u> Phane no.: 9651-2290103 Webster ; www.elespl.co.in



TEST REPORT

| Test Report No. | : ELES/RNC/2023/1965 | Report Release Date | : 12.06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21,04,2023 |
| ULR No.         | : TC883923000000926F |                     |              |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS                        |   |  |
|--------------------|-------------------------------|---------------------------------------|---|--|
| Customer Name      | Hindalco Industries Limited   | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1392<br>: Near Pol Pol Village |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | : T1.04.2023 to 12.04.2023<br>: 10.05.2023        |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Aîr<br>: ELES/DOC/SMPL/02               |  |
| Period of Analysis | : 10.05.2023 to 08.06.2023    | Sample Condition                      | : Scaled & Preserved                              |  |

| METEOROLOGICAL INFORMATION       |   |                           |          |
|----------------------------------|---|---------------------------|----------|
| I Average Temperature (°C) : 30. | 2 | Barometric Pressure (mml- | ig) :743 |
| 3 Relative Humidity (%) : 62     | 4 | Weather Condition         | ; Clear  |

| NABL Accredited                      |          |                                 |            |                  |
|--------------------------------------|----------|---------------------------------|------------|------------------|
| Discipline :                         | Chemical | Group                           | Atmospheri | c Pollution      |
| Parameter                            | Unit     | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³    | IS 5182 (Part-23): 2006; RA2022 | 55         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³    | IS 5182 (Part- 24): 2019        | 34         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³    | IS 5182 (Paπ-2): 2001; RA2022   | 7.4        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³    | IS 5182 (Part-6): 2006; RA2022  | 15.2       | 80 (24hrs)       |
| Ozóne (O <sub>3</sub> )              | µg/m³    | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | µg/m³    | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³    | 1S 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | µg/m³    | IS 5182 (Part-22): 2004; RA2019 | < 0.002    | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³    | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenie (As)                         | ng/m³    | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



\*\*\*\* End of Report \*\*\*\*

Dr. Despender Runner entre Ph. D. Environmental Engg. ELES PVL Ltd. Technical Manager

Page I of I

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA MATIA, RANCHI-834003 (INARKHANDI GSTNO: 20AAECE9713D124 ENGINEERING SERVICES PVY. LYD.

Emall: info@elesal.co.in , sles.ranchi@amall.com Phane no.: 0651-2290103 Website : www.elespi.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1965 | Report Release Date | : 12.06.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order Na.  | : 13612310218        | Work Order Date     | : 21,04,2023 |  |

| CUSTOMER DETA         | AILS   | SAMPLE DETAILS  |   |
|-----------------------|--|---|---|
| Customer Name Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date | : ELES/RNC/2023/AA/1392<br>: Near Pol Pol Village<br>: 11.04.2023 to 12.04.2023 |
| Plant Status          | : Operational  | Type of Sample<br>Sample Drawn By                           | : Ambient Air<br>: ELES/DOC/SMPL/02   |
| Period of Analysis    | : 10.05.2023 to 08.06.2023                                     | Sample Condition  | : Sealed & Preserved  |

| ij | ETEOROLOGICAL INFORMATION     |   |                          |           |
|----|-------------------------------|---|--------------------------|-----------|
| Ī  | Average Temperature (°C) : 30 | 2 | Barometric Pressure (mml | lg) : 743 |
| _  | Relative Humidity (%) : 62    | 4 | Weather Condition        | : Clear   |

| Discipline : Chemical |                   | Group                          | Group : Atmospheric Pollution |                  |  |
|-----------------------|-------------------|--------------------------------|-------------------------------|------------------|--|
| Parameter             | Unit              | Test Protocol                  | Result                        | Regulatory Limit |  |
| Benzene*              | μg/m <sup>1</sup> | 1S:5182 (part-11): 2006;RA2017 | <1.0                          | 05(Annual)       |  |
| Benzo (a) Pyrene*     | ng/m³             | IS:5182 (Part-12): 2004;RA2019 | < 0.5                         | 01(Annual)       |  |

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



\*\*\*\*End of Report\*\*\*\*

Dr. Deependre Furner Str....
Ph. D. Environmental Engg.
ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA RATIA, RANCHI-ESADOS (IHARICHAND) BST NO-20AAECE97130124

### ENGINEERING SERVICES PUT, LTD

Land: infoffelesul.ca.lb.; eles.canchl@amail.cam Phone vo.: 0651-2250103 Websites www.elespl.co.in



TEST REPORT

| Test Report No. | : ELES/RNC/2023/1966 | Report Release Date | : 12.06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ; 21.04.2023 |
| ULR No.         | : TC883923000000927F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                               |   |
|--------------------|-------------------------------|--|---|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date | : ELES/RNC/2023/AA/1393<br>: Near Shakhuapani Village<br>: 11.04.2023 to 12.04.2023 |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date Type of Sample          | : 10.05.2023<br>: Ambient Air   |
| Plant Status       | : Operational                 | Sample Drawn By                              | : ELES/DOC/SMPL/02  |
| Period of Analysis | ; 10.05.2023 to 08.06.2023    | Sample Condition                             | : Sealed & Preserved  |

| MI | ETEOROLOGICAL INFORMATION     |   |                          |           |  |
|----|-------------------------------|---|--------------------------|-----------|--|
| 1  | Average Temperature (°C) : 30 | 2 | Barometric Pressure (mml | Hg) : 743 |  |
| 3  | Relative Humidity (%) : 62    | 4 | Weather Condition        | : Clear   |  |

| Discipline :                         | Chemical          | Group                           | Atmospheri | e Pollution      |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m <sup>±</sup> | IS 5182 (Part-23): 2006; RA2022 | 62         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m <sup>2</sup> | IS 5182 (Part- 24): 2019        | 34         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m <sup>2</sup> | IS 5182 (Part-2): 2001; RA2022  | 7.7        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m <sup>1</sup> | IS 5182 (Part-6): 2006; RA2022  | 19.2       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m³             | IS 5182 (Part- 25); 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m              | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | μg/m³             | IS 5182 (Part-22): 2004; RA2019 | < 0.002    | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26);2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



\*\*\*\*End of Report\*\*\*\*

Dr. Disepediate Signatory
Piv D. Environmental Engg.
ELES Pvt. Ltd. Tochmoal Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAYE, TUPUDANA HATIA, RANCHI-838003 (HARKHAND) GST NG- 2MARCE97130121 ENGINEERING SERVICES PVT. LTD.

Emall: <u>Infa@elespl.co.in</u>, eles.ronchi@amail.com Phone no.: 0651-2290103 Website: www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1966 | Report Release Date | : 12.06.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA            | AILS   | SAMPLE DETAILS   |  |
|--------------------------|--|--|--|
| Customer Name<br>Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample | : ELES/RNC/2023/AA/1393<br>: Near Shakhuapani Village<br>: 11.04.2023 to 12.04,2023<br>: 10.05,2023<br>: Ambient Air |
| Plant Status             | Operational  | Sample Drawn By  | : ELES/DOC/SMPL/02   |
| Period of Analysis       | ; 10.05.2023 to 08.06.2023                                     | Sample Condition   | : Sealed & Preserved   |

| MI | ETEOROLOGICAL INFORMATION     |   |                         |           |  |
|----|-------------------------------|---|-------------------------|-----------|--|
| 1  | Average Temperature (°C) : 30 | 2 | Barometric Pressure (mm | Hg) : 743 |  |
| 3  | Relative Humidity (%) : 62    | 4 | Weather Condition       | Clear     |  |

| Discipline        | : Chemical        | Group : Atmospheric Pollution  |        |                  |  |
|-------------------|-------------------|--------------------------------|--------|------------------|--|
| Parameter         | Unit              | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*          | µg/m³             | 18:5182 (part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene* | ng/m <sup>2</sup> | IS:5182 (Part-12): 2004;RA2019 | <0.5   | OI(Annual)       |  |

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



""\*\*End of Report"xan

Authorized Signatory

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

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PLOT NO-30, MANSAROVAR ENCLAVE TUPLIDANA HASIA, RANCHI-E34003 (IMARKHAND) 651 NO:- 2MAECESTI3D124



Timell' into Deleschering sign amenic month on Phone inc.: 0651-3240103

Phone no.: 0651-2290103 Website : www.elespl.co.in



**BEAMSON** 

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1967 | Report Release Date | : 12.06.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | ; TC883923000000928F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                        |  |  |
|--------------------|-------------------------------|---------------------------------------|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1394<br>; Near Dipa Kujam Village |  |
| Address            | : Lohandaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | : 11.04.2023 to 12.04.2023<br>: 10.05.2023           |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02                  |  |
| Period of Analysis | = 10,05,2023 to 08.06,2023    | Sample Condition                      | ; Sealed & Preserved                                 |  |

| MI | ETEOROLOGICAL INFO       | RMATION |   |                            |         |
|----|--------------------------|---------|---|----------------------------|---------|
| ł  | Average Temperature (°C) | : 30    | 2 | Barometric Pressure (mmHg) | : 743   |
| 3  | Relative Humidity (%)    | : 62    | 4 | Weather Condition          | : Clear |

| NABL Accredited                      |                   |                                 |        |                  |  |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|--|
| Discipline ;                         | Chemical          | Group : Atmospheric Pollution   |        |                  |  |
| Parameter                            | Unit              | Test Protocol                   | Result | Regulatory Limit |  |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 61     | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 33     | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 7.3    | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>t</sub> ) | µg/m³             | IS 5182 (Part-6): 2006; RA2022  | 15.6   | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )              | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0  | 100 (Shrs)       |  |
| Ammonia (NH <sub>3</sub> )           | μg/m³             | IS 5182 (Part- 25); 2018        | <10.0  | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |  |
| Lead (Pb)                            | µg/m³             | IS 5182 (Part-22): 2004; RA2019 | <0.002 | L (24hrs)        |  |
| Nickel (Ni)                          | ng/m³             | 1S 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |  |



\*\*\*\*End of Report\*\*\*

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Authorized Signutory

Dr. Deepandre Kumar Sinfra Ph. D. Environmental Engg.

Page 1 of 1

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PLOT NG-30, MANSAROVAR ENCLAVE, TURLDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20A45029713D314

### ENGINEERING SERVICES PUT. LTD.

Emuli: <u>Info@alespl.co.ln</u> . eles conchi@gmall.com Phone no.; 0651-2290103 Website www.clespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/1967 | Report Release Date | : 12.06.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | 1 13612310218        | Work Order Date     | : 21.04,2023 |  |

| CUSTOMER DETA         | AILS   | SAMPLE DETAILS  |  |
|-----------------------|--|---|--|
| Customer Name Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date              | : ELES/RNC/2023/AA/1394<br>: Near Dipa Kujam Village<br>: 11.04.2023 to 12.04.2023 |
| Plant Status          | : Operational  | Sample Received Date<br>Type of Sample<br>Sample Drawn By | : 10.05.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02                                |
| Period of Analysis    | ; 10.05.2023 to 08.06.2023                                     | Sample Condition  | : Sealed & Preserved   |

| MI | ETEOROLOGICAL INFORMATION     |   |                          |           |  |
|----|-------------------------------|---|--------------------------|-----------|--|
| I  | Average Temperature (°C) : 30 | 2 | Barometric Pressure (mmH | (g) : 743 |  |
| 3  | Relative Humidity (%) : 62    | 4 | Weather Condition        | : Clear   |  |

| Discipline        | : Chemical | Group                           | : Atmospheri | c Pollution      |
|-------------------|------------|---------------------------------|--------------|------------------|
| Parameter         | Unit       | Test Protocol                   | Result       | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (part-11): 2006;RA2017  | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004; RA2019 | < 0.5        | 01(Annual)       |

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



\*\*\*\*End of Report\*\*\*\*

Or, Deependra Rumar Sinha Ph. D. Environmental Engg. ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPLIDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE97110124 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/RAN/2023/0496 | Report Release Date | : 06.05.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DET       | AILS                          | SAMPLE DETAILS   |  |
|--------------------|-------------------------------|--|--|
| Customer Name      | # Hindalco Industries Limited | Sample Ref. No.<br>Sampling Date<br>Sample Received Date | : ELES/RAN/2023/DW/0381<br>: 08.04.2023<br>: 26.04.2023      |
| Address            | : Lohardaga, Jharkhand-835302 | Type of Sample<br>Source/Location of Sample              | : Drinking Water<br>: Kujam II- Bauxite Mines<br>(157.38 ha) |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Collected By                | ELES/DOC/SMPL/01 ELES Pvt. Ltd.                              |
| Period of Analysis | : 26.04.2023 to 05.05.2023    | Sample Condition   | : Sealed & Preserved   |

| Discipline : Chem  | ical  | Group : Water  | r .                 |                     | ory Limit            |
|--|-------|--|---------------------|---------------------|----------------------|
| Parameter  | Unit  | Test Protocol  | Result              | Acceptable<br>Limit | Permissible<br>Limit |
| pH (at 24.1 °C)  | (4)   | APHA 23 <sup>rd</sup> Ed.2017, 4500-H                                | 6.62                | 6,5-8,5             | No<br>Relaxation     |
| Turbidity  | NTU   | APHA 23rd Ed.2017, 2130 B  | 0.32                | 1.0                 | 5.0                  |
| Taste  | 114.1 | APHA 23rd Ed.2017, 2160 C  | Agreeable           | Agreeable           | Agreeable            |
| Odour  | (2    | IS 3025 (Part-5) :2018   | Agreeable           | Agreeable           | Agreeable            |
| Colour   | Hazen | APHA 23 <sup>rd</sup> Ed.2017, 2120B&D                               | 1.0                 | 5                   | 15                   |
| Total Dissolved Solids<br>(TDS)                            | mg/L  | APHA 23 <sup>rd</sup> Ed,2017, 2540B,C&D                             | 146                 | 500                 | 2000                 |
| Chloride (as Cl)   | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 CI B                             | 24.4                | 250                 | 1000                 |
| Fluoride (as F)  | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 F-D                              | BDL<br>(DL: 0.1)    | 1.0                 | 1.5                  |
| Total Alkalinity (as CaCO <sub>3</sub> )                   | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 2320 B                                | 26.4                | 200                 | 600                  |
| Total Hardness (as CaCO <sub>3</sub> )                     | mg/L  | APHA 23rd Ed,2017, 2340 C  | 54.2                | 200                 | 600                  |
| Sulphate (as SO <sub>4</sub> )                             | mg/L  | APHA 23 <sup>st</sup> Ed.2017, 4500 SO <sub>4</sub> <sup>-2</sup> -E | 28.4                | 200                 | 400                  |
| Nitrate (as NO <sub>3</sub> )                              | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 NO <sub>3</sub> -B               | 2.48                | 45                  | No<br>Relaxation     |
| Phenolic Compound<br>(as C <sub>6</sub> H <sub>5</sub> OH) | mg/L  | IS 3025 (Part-43):1992;RA2019  | BDL<br>(DL: 0.0005) | 0.001               | 0.002                |

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-KI-10113 (IMAIIKHAND) GST NO:- 20AAECE9713D174

### ENGINEERING SERVICES PUT. LTP.

Email: info@elespl.co.in , eles.ranchi@amail.com Phone no.: 0651-2290103 Website : www.elespl.co.in

#### TEST REPORT

 Test Report No.
 : ELES/RAN/2023/0496
 Report Release Date
 : 06.05,2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21,04,2023

| Discipl                         | ine : Che | mical Group: V                           | Vater              |            | tory Limit<br>310500:2012 |
|---------------------------------|-----------|--|--------------------|------------|---------------------------|
| Parameter                       | Unit      | Test Protocol                            | Result             | Acceptable | Permissible<br>Limit      |
| Cyanide (as CN)                 | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 4500 CN-E | BDL<br>(DL: 0.012) | 0.05       | No<br>Relaxation          |
| Residual Free Chlorine<br>(RFC) | mg/L      | IS 3025 (Part-26):2021                   | BDL<br>(DL: 0.1)   | 0.02       | 1.0                       |
| Calcium (as Ca)                 | mg/L      | APHA 23rd Ed.2017, 3500 Ca B             | 13.8               | 75         | 200                       |
| Discipl                         | ine: Che  | mical Group                              | ; Residues in      | Water      |                           |
| Aluminum (as Al)                | mg/L      | IS 3025 (Part-55): 2003; RA2019          | BDL<br>(DL: 0.02)  | 0.03       | 0.2                       |
| Arsenie (as As)                 | mg/L      | IS 3025 (Part 37): 2022                  | BDL<br>(DL: 0.005) | 0.01       | No<br>Relaxation          |
| Boron (as B)                    | mg/L      | IS 3025(Part-57): 2005; RA2021           | BDL<br>(DL: 0.2)   | 0.5        | 1:0                       |
| Cadmium (as Cd)                 | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | BDL<br>(DL: 0.003) | 0.003      | No<br>Relaxation          |
| Total Chromium (as Cr)          | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | BDL<br>(DL: 0.03)  | 0.05       | No<br>Relaxation          |
| Copper (as Cu)                  | mg/L      | APHA 23rd Ed,2017, 3111B                 | BDL<br>(DL: 0.03)  | 0.05       | 1.5                       |
| Iron (as Fe)                    | mg/L      | APHA 23rd Ed.2017, 3111B                 | 0,241              | 1.0        | 1.0                       |
| Lead (as Pb)                    | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | BDL<br>(DL: 0.01)  | 0.01       | No<br>Relaxation          |
| Manganese (as Mn)               | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | BDL<br>(DL: 0.05)  | 0.1        | 0.3                       |
| Mercury (as Hg)                 | mg/L      | 1S 3025 (Part-48): 1994; RA2019          | BDL<br>(DL; 0.001) | 0.001      | No<br>Relaxation          |
| Selenium (as Se)                | mg/L      | 1S 3025 (Part-56): 2003; RA2019          | BDL<br>(DL: 0.01)  | 0.01       | No<br>Relaxation          |
| Zinc (as Zn)                    | mg/L      | APHA 23rd Ed.2017 , 3111B                | BDL<br>(DL: 0.1)   | 5          | 15                        |

Remarks: L. pH & RFC done at Lab.

Page 2 of 4

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one Environment, Lave Franci



PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST NO:- 20AAECE97130124 ENGINEERING SERVICES PYT. 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/RAN/2023/0496
 Report Release Date
 : 06.05.2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21.04.2023

| Discipline: Che                                 | mical |               | Group: Water       |  |
|---|-------|---------------|--------------------|--|
| Parameter                                       | Unit  | Test Protocol | Result             | Regulatory Limit<br>as per IS 10500:2012 |
| Pesticides                                      |       |               |                    |  |
| Alachlor*                                       | μg/L  | APHA          | BDL<br>(DL: 1.0)   | 20                                       |
| Atrazine*                                       | µg/L  | АРНА          | BDL<br>(DL: 1.0)   | 2  |
| Aldrin/Dieldrin*                                | μg/L  | APHA          | BDL<br>(DL: 0.01)  | 0.03                                     |
| Alpha HCH*                                      | μg/L  | АРНА          | BDL<br>(DL: 0.001) | 0.01                                     |
| Beta HCH*                                       | μg/L  | АРНА          | BDL<br>(DL: 0.01)  | 0.04                                     |
| Butachlor*                                      | μg/L  | АРНА          | BDL<br>(DL: 10)    | 125                                      |
| Chlorpyriphos*                                  | μg/L  | APHA          | BDL<br>(DL: 10)    | 30                                       |
| Delta HCH*                                      | μg/L  | АРНА          | BDL<br>(DL: 0.01)  | 0.04                                     |
| 2,4 dichlorophenoxyacetic acid*                 | μg/L  | АРНА          | BDL<br>(DL: 10)    | 30                                       |
| DDT(o,p and p,p-isomers of<br>DDT,DDE and DDD)* | μg/L  | АРНА          | BDL<br>(DL: 0.5)   | - 1                                      |
| Endosulfan<br>(alpha, beta, and sulphate)*      | μg/L  | АРНА          | BDL<br>(DL: 0.1)   | 0.4                                      |
| Ethion*   | μg/L  | АРНА          | BDL<br>(DL: 0.5)   | 3  |
| Gamma HCH (Lindane)*                            | μg/L  | АРНА          | BDL<br>(DL: 0.5)   | 2  |
| Isoproturon*                                    | μg/L  | APHA          | BDL<br>(DL: 0.5)   | 9  |

Page 3 of 4

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### TEST REPORT

 Test Report No.
 : ELES/RAN/2023/0496
 Report Release Date
 : 06.05.2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21.04.2023

| Discipline: Bi                              | intonient   | Group : V              | Vator               |                     | ory Limit               |
|---|-------------|------------------------|---------------------|---------------------|-------------------------|
| Discipline: B                               | ological    | Group                  | Talet               | as per IS           | 10500:2012              |
| Parameter                                   | Unit        | Test Protocol          | Result              | Acceptable<br>Limit | Permissible<br>Limit    |
| Total Coliform                              | Per 100 mL  | IS 15185:2016; RA 2021 | Not Detected        | Chall not           | ne detected             |
| Escherichta Coli (E. Coli)                  | Per 100 ml. | IS 15185:2016; RA 2021 | Not Detected        | Snail not           | be detected             |
| Discipline :                                | Chemical    | Group:                 | Water               |                     | ory Limit<br>10500:2012 |
| Parameter                                   | Unit        | Test Protocol          | Result              | Acceptable<br>Limit | Permissible<br>Limit    |
| Anionic Surfactants<br>(as MBAS)*           | mg/L        | 1S 3025 Part 68        | BDL (DL: 0.1)       | 0.2                 | 1.0                     |
| Mineral Oil*                                | mg/L        | CL-6, IS: 3025 (P-39)  | BDL<br>(DL: 0,1)    | 1.0                 | No<br>relaxation        |
| Polynuclear Aromatic<br>Hydrocarbons (PAH)* | mg/L        | APHA 23rd Edition      | BDL<br>(DL: 0.0001) | 0.0001              | No<br>relaxation        |
| Polychlorinated Biphenyls<br>(PCB)*         | mg/L        | APHA 23rd Edition      | BDL<br>(DL: 0.0005) | 0.0005              | No<br>relaxation        |

Remarks: 1. (\*) Parameters are outsourced to other Lab.

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory Rekha Saxena B. Sc., M. Sc. (Botany) Director ELES Pvt. Ltd.

Page 4 of 4

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# ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT.LTD.

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

### Kujam II Bauxite Mine-Environmental Monitoring Report

May 2023



## CONTENT

| Hind | alco Industries : Kujam-II Bauxite Mine | Environmental Monitoring Report | May 2023 |
|------|---|---------------------------------|----------|
|      | 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 ZO          | NE                              |          |
| 1    | Near Pakri Gada Village                 |                                 |          |
| 2    | Near Pol Pol Village                    |                                 |          |
| 3    | Near Shakhuapani Village                |                                 |          |
| 4    | Near Dipa Kujam Village                 |                                 |          |





PLOT NO-30; MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D1Z4

### ENGINEERING SERVICES PUT, LTD.

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TC-8801

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2299 | Report Release Date | r 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001221F |                     |              |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS                    |   |  |
|--------------------|-------------------------------|-----------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.                   | : ELES/RNC/2023/AA/1772                                       |  |
|                    |                               | Location                          | : Kujam-II Weigh Bridge                                       |  |
| Address            | + Lohardaga, Jharkhand-835302 | Sampling Date                     | Kujam-II Bauxite Mine (157,38ha)<br>108.05.2023 to 09.05.2023 |  |
|                    |                               | Sample Received Date              | : 06.06.2023  |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02                           |  |
| Period of Analysis | 06.06.2023 to 09.06.2023      | Sample Condition                  | : Sealed & Preserved  |  |

| M | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 34            | 2 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | ; 59            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'30.39"E | 6 | Latitude                   | : 23°18'50.59"N |

| Discipline :                         | Chemical | Group : Atmospheric Pollution   |        |                  |  |  |
|--------------------------------------|----------|---------------------------------|--------|------------------|--|--|
| Parameter                            | Unit     | Test Protocol                   | Result | Regulatory Limit |  |  |
| Particulate Matter (PM10)            | µg/m³    | IS 5182 (Part-23): 2006; RA2022 | 67     | 100 (24hrs)      |  |  |
| Particulate Matter (PM2.5)           | μg/m³    | IS 5182 (Part- 24): 2019        | 36     | 60 (24hrs)       |  |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³    | IS 5182 (Part-2): 2001; RA2022  | 8.1    | 80 (24hrs)       |  |  |
| Nitrogen Di-Oxlde (NO <sub>1</sub> ) | μg/m³    | IS 5182 (Part-6): 2006; RA2022  | 20.5   | 80 (24hrs)       |  |  |
| Ozone (O3)                           | μg/m³    | IS 5182 (Part-9): 1974; RA2019  | <20.0  | 100 (8hrs)       |  |  |
| Ammonia (NH <sub>2</sub> )           | μg/m³    | IS 5182 (Part- 25): 2018        | <10.0  | 400 (24hrs)      |  |  |
| Carbon Monoxide (CO)                 | mg/m³    | 1S 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |  |  |
| Lead (P6)                            | μg/m³    | IS 5182 (Part-22): 2004; RA2019 | 0.013  | 1 (24hrs)        |  |  |
| Nickel (Ni)                          | ng/m³    | IS 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |  |  |
| Arsenic (As)                         | ng/m³    | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |  |  |

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Dr. Continuized Signatury

Page 1 of 1

Page 1 of 1 ELES PVI Ltd. 30 miles Melanager France Company letter head in pre-opproved formal. The results shown in the Test Report refer or relates unity to the job/analysis done by the Laboratory unity. The information stated on the Test Report reflects the findings done by the Laboratory in the time of involvement only and within the limits of client's instructions. The Laboratory is responsible for all the information or data provided on the report. except the information which is provided by the client. The Report cannot be reproduced except in full and any just of the report is not taken out of context, without prior written approval of the Laboratory. The Report in full or in part shall not be published, advertise, used for any legal actions unless price permission has been secured from the Management of the Laboratory. Attention is drawn to the limitation of liability, compressition and jurisdiction issues. Any unauthorized alteration & falsification of the content or appearance of the Test Report is unknown and offenders may be presecuted to the fullest extent of the law. All the samples are retained for Ridays from the Date of release/issue of the Test Report. The samples from Regulatory bodies are to be retained as specified. Any type of Observations or Complaints regarding the Reports shall be done within 15thys from the Date of Test Report released/issued. After the time period stated before, no complaints will be accepted. The entire Time schedule mentioned in Test Report is in 24hours format. Abbreviation used: N/A (Not Applicable), BDL (Below Detection Limit), LDL (Lower Detection Limit).



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Website: www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2299 | Report Release Date | : 01.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | 1 21.04.2023 |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS                    |  |  |
|--------------------|-------------------------------|-----------------------------------|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.                   | : ELES/RNC/2023/AA/1772  |  |
|                    |                               | Location                          | 2 Kujam-II Weigh Bridge  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date                     | Kujam-II Bauxite Mine (157.38ha)<br>: 08.05.2023 to 09.05.2023 |  |
|                    |                               | Sample Received Date              | : 06.06.2023   |  |
| Plant Status       | ; Operational                 | Type of Sample<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02                            |  |
| Period of Analysis | : 06.06.2023 to 09.06.2023    | Sample Condition                  | : Sealed & Preserved   |  |

| M | ETEOROLOGICAL INFOR      | MATION          |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 34            | 2 | Barometric Pressure (mmHg) | 739             |
| 3 | Relative Humidity (%)    | ₹ 59            | 4 | Weather Condition          | Clear           |
| 5 | Longitude                | : 84°17'30.39"E | 6 | Latitude                   | : 23°18'50.59"N |

| Discipline        | : Chemical        | Group : Atmospheric Pollution  |        |                  |  |
|-------------------|-------------------|--------------------------------|--------|------------------|--|
| Parameter         | Unit              | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*          | μg/m <sup>3</sup> | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene* | ng/m³             | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |  |

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



\*\*\*\*End of Report\*\*\*\*

Authorized Signatory
Dr. Deapendra Kumar Sinha
Ph. E. E. Johnson Manager
ELES PVI. Lt., Technicul Manager

Page 1 of 1

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ANADURUS SVALAR ENCLAVE, TURUDANA HATIA, RANCHI-834003 (INARKHAND) GST NO:- 20AAECE971301Z4

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TC-8839

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2300 | Report Release Date | : 01.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000001222F |                     |              |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS                        |  |  |
|--------------------|-------------------------------|---------------------------------------|--|--|
| Customer Name      | : Hindaico Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1773<br>: Nawatoli Quarry                                   |  |
| Address            | Lohardaga, Jharkhand-835302   | Sampling Date<br>Sample Received Date | Kujam-II Bauxite Mine (157.38ha)<br>: 10.05,2023 to 11.05,2023<br>: 06.06,2023 |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | Ambient Air ELES/DOC/SMPL/02   |  |
| Period of Analysis | : 06,06.2023 to 09.06,2023    | Sample Condition                      | Sealed & Preserved   |  |

| METEOROLOGICAL INFORMATION |                          |                 |   |                            |                 |
|----------------------------|--------------------------|-----------------|---|----------------------------|-----------------|
| 1                          | Average Temperature (°C) | : 34            | 2 | Barometric Pressure (mmHg) | : 739           |
| 3                          | Relative Humidity (%)    | : 59            | 4 | Weather Condition          | : Clear         |
| 5                          | Longitude                | : 84°17'38.67"E | 6 | Latitude                   | : 23°18'20.87"N |

| NABL Accredited                      |                   |                                  |                               |                  |  |  |
|--------------------------------------|-------------------|----------------------------------|-------------------------------|------------------|--|--|
| Discipline :                         | Chemical          | Group                            | Group : Atmospheric Pollution |                  |  |  |
| Parameter                            | Unit              | Test Protocol                    | Result                        | Regulatory Limit |  |  |
| Particulate Matter (PM10)            | µg/m²             | IS 5182 (Part-23): 2006; RA2022  | 69                            | 100 (24hrs)      |  |  |
| Particulate Matter (PM2.5)           | µg/m³             | IS 5182 (Part- 24): 2019         | 35                            | 60 (24hrs)       |  |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022   | 11.7                          | 80 (24lus)       |  |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-6); 2006; RA2022   | 23,1                          | 80 (24hrs)       |  |  |
| Ozone (O <sub>1</sub> )              | μg/m³             | IS 5182 (Part-9): 1974; RA2019   | <20.0                         | 100 (8hrs)       |  |  |
| Ammonia (NH <sub>3</sub> )           | μg/m³             | 1S 5182 (Part- 25); 2018         | <10.0                         | 400 (24hrs)      |  |  |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019  | <1.0                          | 2 (8hrs)         |  |  |
| Lead (Pb)                            | μg/m <sup>2</sup> | IS \$182 (Part-22): 2004; RA2019 | 0.005                         | 1 (24hrs)        |  |  |
| Nickel (Ni)                          | ng/m <sup>7</sup> | IS 5182 (Part-26):2020           | <6.0                          | 20 (Annual)      |  |  |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                  | 2.1                           | 06 (Annual)      |  |  |



Authorized Signatory

Dr. Deependra Kumar Sinha

Page 1 of 1

\*\*\*\*End of Report\*\*\*\*

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2300 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET       | CUSTOMER DETAILS              |   |  |
|--------------------|-------------------------------|---|--|
| Customer Name      | Hindalco Industries Limited   | Sample Ref. No.<br>Location                               | ; ELES/RNC/2023/AA/1773<br>: Nawatoli Quarry                   |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date   | Kujam-II Bauxite Mine (157,38ha)<br>: 10.05,2023 to 11.05,2023 |
| Plant Status       | : Operational                 | Sample Received Date<br>Type of Sample<br>Sample Drawn By | : 06.06,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02            |
| Period of Analysis | : 06.06.2023 to 09.06.2023    | Sample Condition  | : Sealed & Preserved   |

| 1 | Average Temperature (°C) : 34 | 2 | Barometric Pressure (mmHg) | : 739           |
|---|-------------------------------|---|----------------------------|-----------------|
| 3 | Relative Humidity (%) : 59    | 4 | Weather Condition          | Clear           |
| 5 | Longitude : 84°17'38.67*E     | 6 | Latitude                   | : 23°18'20.87"N |

| Discipline        | : Chemical        | Group                          | : Atmospheri | e Pollution      |
|-------------------|-------------------|--------------------------------|--------------|------------------|
| Parameter         | Unit              | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | μg/m³             | IS:5182 (Part-11): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m <sup>1</sup> | IS:5182 (Part-12): 2004;RA2019 | < 0.5        | 01(Annual)       |

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



\*\*\*\*End of Report\*\*\*\*

Authorized Signatory

Dr. Deependie Kurrar Sinha Ph. D. Environmental Engg. ELES Pv., Ltd. Trichnicol Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST NO:-20AAECE9713D124

### ENGINEERING SERVICES PVT. LTD.

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

Phone no.: 0651-2290103 Website: www.eiespl.co.in



TC-BETTO

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2301 | Report Release Date | : 01.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21,04.2023 |  |
| ULR No.         | : TC883923000001223F |                     |              |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS       |                                  |  |
|--------------------|-------------------------------|----------------------|----------------------------------|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.      | : ELES/RNC/2023/AA/1774          |  |
|                    |                               | Location             | : Jawadih Quarry                 |  |
| Address            | : Lohardaga, Jharkhand-835302 |                      | Kujam-II Bauxite Mine (157.38ha) |  |
| residings.         | - Loran Gaga, Markhand-833302 | Sampling Date        | : 10.05.2023 to 11.05.2023       |  |
|                    |                               | Sample Received Date | : 06.06.2023                     |  |
| MI CHICA           | Gurania.                      | Type of Sample       | : Ambient Air                    |  |
| Plant Status       | : Operational                 | Sample Drawn By      | : ELES/DOC/SMPL/02               |  |
| Period of Analysis | : 06.06.2023 to 09.06.2023    | Sample Condition     | : Sealed & Preserved             |  |

| M | ETEOROLOGICAL INFO       | RMATION        |   |                            |                 |
|---|--------------------------|----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 34           | 2 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 59           | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | :84°17'30.27"E | 6 | Latitude                   | : 23°18'56.89"N |

| NABL Accredited                      |                   |                                 |        |                  |  |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|--|
| Discipline :                         | Chemical          | Group : Atmospheric Pollution   |        |                  |  |
| Parameter                            | Unit              | Test Protocol                   | Result | Regulatory Limit |  |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 61     | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 32     | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 6.8    | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>1</sub> ) | μg/m <sup>3</sup> | IS 5182 (Part-6): 2006; RA2022  | 21.4   | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )              | µg/m³             | IS 5182 (Part-9); 1974; RA2019  | <20.0  | 100 (8hrs)       |  |
| Ammonia (NH <sub>3</sub> )           | µg/m³             | IS 5182 (Part- 25): 2018        | <10.0  | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m³             | IS 5182 (Part-10): 1999; RA2019 | <1,0   | 2 (8hrs)         |  |
| Lead (Pb)                            | μg/m³             | IS 5182 (Part-22): 2004; RA2019 | 0.01   | 1 (24hrs)        |  |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m <sup>1</sup> | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |  |

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\*\*\*\*End of Report\*\*\*\*
Page 1 of 1

r. Deepeodra Kumar Sinha

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:-20AAECE9713D124 ENCINEERING 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/2023/2301 | Report Release Date | : 01.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                        |  |  |
|--------------------|-------------------------------|---------------------------------------|--|--|
| Customer Name      | - Hindalco Industries Limited | Sample Ref. No.                       | : ELES/RNC/2023/AA/1774  |  |
|                    |                               | Location                              | : Jawadih Quarry   |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | Kujam-II Bauxite Mine (157,38ha)<br>: 10.05.2023 to 11.05.2023<br>: 06.06.2023 |  |
| Plant Status       | ; Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02  |  |
| Period of Analysis | : 06.06.2023 to 09.06.2023    | Sample Condition                      | : Sealed & Preserved   |  |

| MI | TEOROLOGICAL INFOR       | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | :34             | 2 | Barometric Pressure (mmHg) | : 739           |
| 3  | Relative Humidity (%)    | : 59            | 4 | Weather Condition          | : Clear         |
| 5  | Longitude                | : 84°17'30.27"E | 6 | Latitude                   | : 23°18'56.89"N |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |  |
| Benzene*              | µg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |  |
| Benzo (a) Pyrene*     | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | <0.5   | Ol(Annual)       |  |  |

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



\*\*\*\*End of Report\*\*\*\*

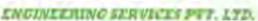
Dr. Deepandra Rum or Sinha Ph. D. Engranmold Engl. ELES For Life Tollows Manager

Page 1 of 1

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TC-BEST

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2302 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001224F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                        |  |
|--------------------|-------------------------------|---------------------------------------|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | ELES/RNC/2023/AA/1775<br>Bhattipat   |
| Address            | : Lohardaga; Jharkhand-835302 | Sampling Date<br>Sample Received Date | Kujam-II Bauxite Mine (157.38ha)<br>: 10.05.2023 to 11.05.2023<br>: 06.06.2023 |
| Plant Status       | / Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02  |
| Period of Analysis | 06.06.2023 to 09.06.2023      | Sample Condition                      | : Sealed & Preserved   |

| M | ETEOROLOGICAL INFO       | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
|   | Average Temperature (°C) | :34             | 2 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 59            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'54.25"E | 6 | Latitude                   | : 23°18'34.89"N |

| NABL Accredited                     |       |                                 |             |                  |
|-------------------------------------|-------|---------------------------------|-------------|------------------|
| Discipline :                        | Group | Atmospheri                      | c Pollution |                  |
| Parameter                           | Unit  | Test Protocol                   | Result      | Regulatory Limit |
| Particulate Matter (PM10)           | μg/m³ | IS 5182 (Part-23): 2006; RA2022 | 66          | 100 (24hrs)      |
| Particulate Matter (PM2.5)          | μg/m³ | IS 5182 (Part- 24): 2019        | 34          | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | µg/m³ | IS 5182 (Part-2): 2001; RA2022  | 7.5         | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO2)             | μg/m³ | IS 5182 (Part-6): 2006: RA2022  | 19,8        | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )             | µg/m³ | IS 5182 (Part-9): 1974; RA2019  | <20.0       | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )          | μg/m³ | IS 5182 (Part- 25): 2018        | <10.0       | 400 (24hrs)      |
| Carbon Monoxide (CO)                | mg/m³ | IS 5182 (Part-10): 1999; RA2019 | <1.0        | 2 (8hrs)         |
| Lead (Pb)                           | μg/m³ | IS 5182 (Part-22): 2004; RA2019 | 0.016       | 1 (24hrs)        |
| Nickel (Ni)                         | ng/m³ | IS 5182 (Part-26):2020.         | <6.0        | 20 (Annual)      |
| Arsenic (As)                        | ng/m³ | ELES/AIR/SOP/01                 | <2.0        | 06 (Annual)      |

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\*\*\*\*End of Report\*\*\*\*

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Dr. Deependra Komar Sinha

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2302 | Report Release Date | : 01.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                    |  |
|--------------------|-------------------------------|-----------------------------------|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.                   | : ELES/RNC/2023/AA/1775  |
|                    |                               | Location                          | : Bhattipat  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date                     | Kujam-II Bauxite Mine (157.38ha)<br>: 10.05.2023 to 11.05.2023 |
|                    |                               | Sample Received Date              | : 06.06.2023   |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02                            |
| Period of Analysis | : 06.06.2023 to 09.06.2023    | Sample Condition                  | : Sealed & Preserved   |

| M | TEOROLOGICAL INFOR       | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 34            | 2 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 59            |   | Westher Condition          | Clear           |
| 5 | Longitude                | : 84°17'54.25"E | 6 | Latitude                   | : 23°18'34.89"N |

| Discipline        | : Chemical        | Group                          | Group : Atmospheric Pollution |                  |  |
|-------------------|-------------------|--------------------------------|-------------------------------|------------------|--|
| Parameter         | Unit              | Test Protocol                  | Result                        | Regulatory Limit |  |
| Benzene*          | µg/m <sup>2</sup> | IS:5182 (Part-11): 2006;RA2017 | <1.0                          | 05(Annual)       |  |
| Benzo (a) Pyrene* | ng/m¹             | IS:5182 (Part-12): 2004;RA2019 | < 0.5                         | 01(Annual)       |  |

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



\*\*\*\*End of Report\*\*\*\*

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Dr. Deependra Kumlar Sinna

Page 1 of 1

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TEST REPORT

| Test Report No. | : ELES/RNC/2023/2295 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001217F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                               |  |
|--------------------|-------------------------------|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date | : ELES/RNC/2023/AA/1768<br>: Near Pakri Gada Village<br>: 08.05.2023 to 09.05.2023 |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample       | : 06.06.2023<br>: Ambient Air  |
| Plant Status       | : Operational                 | Sample Drawn By                              | : ELES/DOC/SMPL/02   |
| Period of Analysis | ; 06.06.2023 to 09.06.2023    | Sample Condition                             | : Sealed & Preserved   |

| M | ETEOROLOGICAL INFOI      | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | 234             | 2 | Barometric Pressure (mmHg) | 743             |
| 3 | Relative Humidity (%)    | - 59            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | - 84°14'52.25"N | 6 | Latitude                   | : 23°17'41.21'E |

| NABL Accredited                     |                   |                                 |        | A 500 Y          |  |  |
|-------------------------------------|-------------------|---------------------------------|--------|------------------|--|--|
| Discipline :                        | Chemical          | Group : Atmospheric Pollution   |        |                  |  |  |
| Parameter                           | Unit              | Test Protocol                   | Result | Regulatory Limit |  |  |
| Particulate Matter (PM10)           | μg/m <sup>3</sup> | IS 5182 (Part-23): 2006; RA2022 | 60     | 100 (24hrs)      |  |  |
| Particulate Matter (PM2.5)          | µg/m <sup>2</sup> | IS 5182 (Part- 24): 2019        | 31     | 60 (24hrs)       |  |  |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | µg/m³             | IS 5182 (Part-2); 2001; RA2022  | 5.7    | 80 (24hrs)       |  |  |
| Nitrogen Di-Oxide (NO2)             | µg/m³             | IS 5182 (Part-6): 2006; RA2022  | 13.3   | 80 (24hrs)       |  |  |
| Ozone (O <sub>3</sub> )             | ug/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.6  | 100 (8hrs)       |  |  |
| Ammonia (NH <sub>3</sub> )          | μg/m³             | IS 5182 (Part- 25): 2018        | <10.0  | 400 (24hrs)      |  |  |
| Carbon Monoxide (CO)                | mg/m <sup>3</sup> | 1S 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |  |  |
| Lead (Pb)                           | ug/m²             | IS 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24hrs)        |  |  |
| Nickel (Ni)                         | ng/m²             | 1S 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |  |  |
| Arsenic (As)                        | ng/m²             | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |  |  |



\*\*\*\* End of Report\*\*\*\*

Authorized Signatory Dr. Deeparcia kuma, sirka

Page 1 of 1

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PLOT NO-31 AMASTROWN ENCLIVE (LINDOWN =1711 CANONIC SECS (DESCRIPTION OST NO-10445557120124

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SERVINO SERVICES PVT. LUD.

Phone na.: 0651-2250103 Website cowb ------ Leade

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2295 | Report Release Date | : 01.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | 1 13612310218        | Work Order Date     | : 21.04,2023 |  |

| CUSTOMER DETA            | AILS   | SAMPLE DETAILS   |   |  |
|--------------------------|--|--|---|--|
| Customer Name<br>Address | : Hindalco Industries Limited<br>: Löhardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample | : ELES/RNC/2023/AA/1768<br>: Near Pakri Gada Village<br>: 08.05.2023 to 09.05.2023<br>: 06.06.2023<br>: Ambient Air |  |
| Plant Status             | : Operational  | Sample Drawn By  | : ELES/DOC/SMPL/02  |  |
| Period of Analysis       | : 06.06,2023 to 09.06.2023                                     | Sample Condition   | : Sealed & Preserved  |  |

| 1 | Average Temperature (°C) | : 34            | 2 | Barometric Pressure (mmHg) | : 743           |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 3 | Relative Humidity (%)    | : 59            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°14'52.25"N | 6 | Latitude                   | : 23°17'41.21"E |

| Discipline        | : Chemical | Group : Atmospheric Pollution  |        |                  |  |
|-------------------|------------|--------------------------------|--------|------------------|--|
| Parameter         | Unit       | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*          | hig/m)     | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |  |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Authorized Signatory

Dr. Deepardra Kurt ir Sinna Pr. D. Sava iras 193 BLES - L. T. 193

Page 1 of 1

The Discursest stated as Test Report, is issued by the Laboratory under General Terms and Conditions, only on Company laten here in pre-approved format. The results shown in the Test Report refer or relates only to the polyamilysis done by the Laboratory only. The enfortation stated on the Test Report reflects the indigended by the Laboratory in responsible for all the information or dain provided on the report, except the information which is provided by the client. The Report cannot be reported except in fail and any part of the report is not taken out of context, without provided in the Laboratory. The Report in fail or in part shall not be published advertise, used for any legal access saless prior permission has been secured from the Management of the Leboratory. Attention is unlocated and inhabitation of labelity, companions and jurisdiction issues. Any unauthorized alternation & fails find and offenders may be extracted to the fails extent of the law. All the samples are recorded from the Dale of release/issue of the Test Report. The samples from Regulatory bodies are to be retained as specified. Any type of Observations or Complaints regarding the Report as shall be done within USDays from the Dale metalling in Test Report released/stated. After the time period stated before, no complaints will be accepted. The entire Time schedule metalling in Test Report is in 24 norm. Abbreviators made 80% (Not Application) BDL (Better December Lond), LDL (Lawer December Limit).



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TEST REPORT

| Test Report No. | : ELES/RNC/2023/2296 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001218F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                        |   |  |
|--------------------|-------------------------------|---------------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1769<br>: Near Pol Pol Village |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | : 08.05.2023 to 09.05.2023<br>: 06.06.2023        |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02               |  |
| Period of Analysis | : 06.06,2023 to 09.06,2023    | Sample Condition                      | : Sealed & Preserved                              |  |

| MI | ETEOROLOGICAL INFOR      | MATION |   |                            |         |
|----|--------------------------|--------|---|----------------------------|---------|
| 1  | Average Temperature ("C) | 134    | 2 | Barometric Pressure (mmHg) | 743     |
| 3  | Relative Humidity (%)    | : 59   | 4 | Weather Condition          | : Clear |

| NABL Accredited                     |                               |                                 |         |                  |  |
|-------------------------------------|-------------------------------|---------------------------------|---------|------------------|--|
| Discipline :                        | Discipline : Chemical Group : |                                 |         |                  |  |
| Parameter                           | Unit                          | Test Protocol                   | Result  | Regulatory Limit |  |
| Particulate Matter (PM10)           | μg/m <sup>3</sup>             | IS 5182 (Part-23): 2006; RA2022 | 57      | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)          | µg/m³                         | IS 5182 (Part- 24): 2019        | 28      | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | µg/m³                         | IS 5182 (Part-2): 2001; RA2022  | 6.5     | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO2)             | µg/m³                         | IS 5182 (Part-6): 2006; RA2022  | 12.8    | 80 (24hrs)       |  |
| Ozone (O <sub>i</sub> )             | µg/m³                         | 1S 5182 (Part-9): 1974; RA2019  | <20.0   | 100 (8hrs)       |  |
| Ammonia (NH <sub>1</sub> )          | µg/m²                         | 15 5182 (Part- 25); 2018        | <10.0   | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                | mg/m²                         | IS 5182 (Part-10): 1999; RA2019 | <1.0    | 2 (8hrs)         |  |
| Lead (Pb)                           | μg/m <sup>7</sup>             | IS 5182 (Part-22): 2004; RA2019 | < 0.002 | 1 (24hrs)        |  |
| Nickel (Ni)                         | ng/m³                         | IS 5182 (Part-26):2020          | <6.0    | 20 (Annual)      |  |
| Arsenic (As)                        | ng/m³                         | ELES/A(R/SOP/0)                 | <2.0    | 06 (Annual)      |  |



\*\*\*\*End of Report\*\*\*\*

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Page 1 of 1

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2296 | Report Release Date | : 01.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS                        |   |  |
|--------------------|-------------------------------|---------------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/1769<br>: Near Pol Pol Village |  |
| Address            | ! Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | : 08.05.2023 to 09.05.2023<br>: 06.06.2023        |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02               |  |
| Period of Analysis | : 06.06,2023 to 09.06,2023    | Sample Condition                      | Sealed & Preserved                                |  |

| MI | ETEOROLOGICAL INFORMATION     |   |                         |           |  |
|----|-------------------------------|---|-------------------------|-----------|--|
| 1  | Average Temperature (°C) : 34 | 2 | Barometric Pressure (mm | Hg) : 743 |  |
| 3  | Relative Humidity (%) : 59    | 4 | Weather Condition       | Clear     |  |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |
|-----------------------|-------|--------------------------------|--------|------------------|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |
| Benzene <sup>e</sup>  | μg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo (a) Pyrene*     | ng/m² | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |

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



\*\*\*\*End of Report\*\*\*\*

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TEST REPORT

| Test Report No. | : ELES/RNC/2023/2297 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001219F |                     |              |

| CUSTOMER DETAILS      |  | SAMPLE DETAILS   |   |  |
|-----------------------|--|--|---|--|
| Customer Name Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date | ELES/RNC/2023/AA/1770<br>Near Shakhuapani Village<br>: 08,05.2023 to 09.05.2023<br>: 06.06.2023 |  |
| Plant Status          | Operational  | Type of Sample<br>Sample Drawn By                                    | : Ambient Air<br>: ELES/DOC/SMPL/02   |  |
| Period of Analysis    | : 06.06.2023 to 09.06.2023                                     | Sample Condition   | : Scaled & Preserved  |  |

| MI | ETEOROLOGICAL INFORMATION     |   |                          |           |
|----|-------------------------------|---|--------------------------|-----------|
| 1  | Average Temperature (°C) : 34 | 2 | Barometric Pressure (mm) | Hg) : 743 |
| 3  | Relative Humidity (%) : 59    | 4 | Weather Condition        | Clear     |

| NABL Accredited                     |                   |                                 |            |                  |
|-------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline :                        | Chemical          | Group                           | Atmospheri | e Pollution      |
| Parameter                           | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)           | μg/m <sup>J</sup> | IS 5182 (Part-23): 2006; RA2022 | 59         | 100 (24hrs)      |
| Particulate Matter (PM2.5)          | μg/m <sup>3</sup> | IS 5182 (Part- 24): 2019        | 28         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | μg/m <sup>3</sup> | IS 5182 (Part-2): 2001; RA2022  | 6.6        | 80 (24firs)      |
| Nitrogen Di-Oxide (NO2)             | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 16.8       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )             | µg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )          | ug/m²             | IS 5182 (Part- 25); 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                | mg/m³             | 1S 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                           | HB/m <sub>y</sub> | IS 5182 (Part-22): 2004; RA2019 | < 0.002    | I (24hrs)        |
| Nickel (Ni)                         | ng/m³             | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                        | ng/m²             | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



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Fig. 2: Englished E

Page 1 of 1

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#### TEST REPORT

| Test Report No. | ± ELES/RNC/2023/2297 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ; 21.04,2023 |

| CUSTOMER DETAILS         |  | SAMPLE DETAILS   |  |  |
|--------------------------|--|--|--|--|
| Customer Name<br>Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample | : ELES/RNC/2023/AA/1770<br>: Near Shakhuapani Village<br>: 08.05.2023 to 09.05.2023<br>: 06.06.2023<br>: Ambient Air |  |
| Plant Status             | : Operational  | Sample Drawn By  | = ELES/DOC/SMPL/02   |  |
| Period of Analysis       | : 06.66.2023 to 09.06.2023                                     | Sample Condition   | : Sealed & Preserved   |  |

| MI | TEOROLOGICAL INFORMAT         | ION |                         |            |
|----|-------------------------------|-----|-------------------------|------------|
| 1  | Average Temperature (°C) : 34 | 2   | Barometric Pressure (mn | nHg) : 743 |
| 3  | Relative Humidity (%) : 59    | 4   | Weather Condition       | : Clear    |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*              | μg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene#     | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |  |

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

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Page I of 1

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### NVIRONMENTAL LABOR

PUT NO. II CHALLENGE SYCLATE THE TENNENNESS DOS BRANCH SHALL

Weamping | 0,051-2296103 (Valuation opening applicable)



#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2298 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001220F |                     |              |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS                        |  |  |
|--------------------|-------------------------------|---------------------------------------|--|--|
| Customer Name      | ; Hindalco Industries Limited | Sample Ref. No.<br>Location           | ; ELES/RNC/2023/AA/1771<br>; Near Dipa Kujam Village |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | : 08,05,2023 to 09.05,2023<br>: 06,06,2023           |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02                  |  |
| Period of Analysis | : 06.06.2023 to 09.06.2023    | Sample Condition                      | : Sealed & Preserved                                 |  |

| M | TEOROLOGICAL INFO        | RMATION |     |                            |         |
|---|--------------------------|---------|-----|----------------------------|---------|
| 1 | Average Temperature (°C) | ; 34    | 2   | Barometric Pressure (mmHg) | 2.743   |
| 3 | Relative Humidity (%)    | : 59    | . 4 | Weather Condition          | : Clear |

| Discipline :                         | Chemical          | Group                           | Atmospheri | c Pollution      |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | µg/m³             | IS 5182 (Part-23): 2006; RA2022 | 58         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | µg/m³             | IS 5182 (Part- 24): 2019        | 27         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | µg/m³             | IS 5182 (Part-2): 2001; RA2022  | 6.2        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m³             | IS 5182 (Part-6): 2006; RA2022  | 13.9       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | µg/m³             | 1S 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m³             | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8h/s)         |
| Lead (Pb)                            | ji.g/m³           | IS 5182 (Part-22): 2004; RA2019 | < 0.002    | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m              | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenie (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0       | 06.(Annual)      |

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\*\*\*\*End of Report\*\*\*\*

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Page 1 of 1

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2298 | Report Release Date | : 01.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET.      | CUSTOMER DETAILS              |                                       | SAMPLE DETAILS                                      |  |  |
|--------------------|-------------------------------|---------------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location           | : ELES/RNC/2023/AA/177<br>: Near Dipa Kujam Village |  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | : 08.05.2023 to 09.05.2023<br>: 06.06.2023          |  |  |
| Plant Status       | : Operational                 | Type of Sample<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02                 |  |  |
| Period of Analysis | : 06.06.2023 to 09.06.2023    | Sample Condition                      | : Sealed & Preserved                                |  |  |

| MJ | TEOROLOGICAL INFORMATION      |   |                         |           |  |
|----|-------------------------------|---|-------------------------|-----------|--|
| 1  | Average Temperature (°C) : 34 | 2 | Barometric Pressure (mm | Hg) : 743 |  |
| 3  | Relative Humidity (%) : 59    | 4 | Weather Condition       | : Clear   |  |

| Discipline        | : Chemical        | Group                          | : Atmospheri | e Pollution      |
|-------------------|-------------------|--------------------------------|--------------|------------------|
| Parameter         | Unit              | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | µg/m³             | IS:5182 (Part-I1): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m <sup>3</sup> | IS:5182 (Part-12): 2004;RA2019 | < 0.5        | 01(Annual)       |

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

Reviewed by

\*\*\*\* End of Report\*\*\*\*

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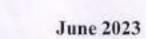
Page 1 of 1

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

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

Kujam II Bauxite Mine-Environmental Monitoring Report





### CONTENT

| Hinda | alco Industries : Kujam-II Bauxite Mine Environmental Monitoring Report | June 2023 |
|-------|---|-----------|
|       | Kujam-II Bauxite Mine   |           |
|       | AMBIENT AIR QUALITY- CORE ZONE  |           |
| 1     | Kujam-II Weigh Bridge   |           |
| 2     | Nawatoli Quarry   |           |
| 3     | Quarry 195  |           |
| 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   |           |
|       |   |           |







PLOT NO 30, MANSARO VAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) G57 NO:- 20AAECE9713D124

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

Phone no.: 0651-2290103 Website: www.elespl.co.in



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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2775 | Report Release Date | : 29.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000001640F |                     |              |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/1955<br>: Kujam-II Weigh Bridge<br>Kujam-II Bauxite Mine (157.38ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 10.06.2023 to 11.06.2023<br>: 17.06.2023   |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                                |  |
| Period of Analysis | : 17.06.2023 to 26.06.2023    | Sample Condition  | : Sealed & Preserved   |  |

| M | ETEOROLOGICAL INFOR      | RMATION         |   |                             |                 |
|---|--------------------------|-----------------|---|-----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 33            | 2 | Barometric Pressure (mmlfg) | = 740           |
| 3 | Relative Humidity (%)    | : 59            | 4 | Weather Condition           | : Clear         |
| 5 | Longitude                | : 84°17'30.39"E | 6 | Latitude                    | : 23°18'50.59"N |

| Discipline :                         | Discipline : Chemical Group |                                 |                        |                  |  |
|--------------------------------------|-----------------------------|---------------------------------|------------------------|------------------|--|
| Parameter                            | Unit                        | Test Protocol                   | : Atmospheri<br>Result | Regulatory Limit |  |
| Particulate Matter (PM10)            | µg/m³                       | 1S 5182 (Part-23); 2006; RA2022 | 60                     | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)           | µg/m³                       | IS \$182 (Part- 24): 2019       | 32                     | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³                       | IS 5182 (Part-2): 2001; RA2022  | 7.3                    | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³                       | IS 5182 (Part-6): 2006; RA2022  | 23.7                   | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )              | µg/m³                       | IS 5182 (Part-9): 1974; RA2019  | <20.0                  | 100 (8hrs)       |  |
| Ammonia (NH <sub>3</sub> )           | µg/m²                       | IS 3182 (Part- 25): 2018        | <10.0                  | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m³                       | 1S 5182 (Part-10): 1999; RA2019 | <1.0                   | 2 (8hrs)         |  |
| Lead (Pb)                            | μg/m³                       | IS 5182 (Part-22): 2004; RA2019 | 0.009                  | 1 (24hrs)        |  |
| Nickel (Ni)                          | ng/m"                       | IS 5182 (Part-26):2020          | <6.0                   | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m³                       | ELES/AIR/SOP/01                 | <2.0                   | 06 (Annual)      |  |

\*\*\*\* End of Report\*\*\*\*

Reviewed/by

Authorised Signatory

Dr. Deependra Kumar Sinha

Page I of 1 ELES Pvt. Ltd. Technical Manager
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PLOT NO-30, MANSAROVAR ENCLAYE, TUPUDANA HATIA RANCHI-834003 (JHARKHAND) G5T NO:- 20AAECE97130124

### ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290103 Website : www.elespl.co.ln

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2775 | Report Release Date | : 29.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DETA      | CUSTOMER DETAILS              |   |  |
|--------------------|-------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/1955<br>: Kujam-II Weigh Bridge<br>Kujam-II Bauxite Mine (157_38ha) |
| Address            | Lohardaga, Jharkhand-835302   | Sampling Date<br>Sample Received Date<br>Type of Sample | : 10.06.2023 to 11.06.2023<br>: 17.06.2023<br>- Ambient Air                            |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Drawn By                   | : ELES/DOC/SMPL/02   |
| Period of Analysis | : 17.06.2023 to 26.06.2023    | Sample Condition  | : ELES Pvt. Ltd.<br>: Scaled & Preserved   |

| 1 | Average Temperature (°C) | 1.33            | 2 | Barometric Pressure (mmHg) | (740)            |
|---|--------------------------|-----------------|---|----------------------------|------------------|
|   | Relative Humidity (%)    | : 59            |   | Weather Condition          | : Clear          |
| 5 | Longitude                | : 84°17'30.39"E |   | Latitude                   | :: 23°18'50.59"N |

| Discipline        | : Chemical | Group                          | : Atmospheri | c Pollution      |
|-------------------|------------|--------------------------------|--------------|------------------|
| Parameter         | Unit       | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004:RA2019 | <0.5         | 01(Annual)       |

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



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Authorised Signatory

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

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834603 (JHARNHAND) GST NO- 20AAECES719D124

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TC-3899

#### TEST REPORT

| Test Report No. | ± ELES/RNC/2023/2776 | Report Release Date | : 29.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | 13612310218          | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001641F |                     |              |

| CUSTOMER DET.          | AILS   | SAMPLE DETAILS   |  |  |
|------------------------|--|--|--|--|
| Customer Name  Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/1956<br>: Nawatoli Quarry<br>Kujam-II Bauxite Mine (157.38h<br>: 10.06.2023 to 11.06.2023 |  |
| Mines Status           | : Operational  | Sample Received Date<br>Type of Sample<br>Sampling Procedure | / 17.06.2023<br>Ambient Air<br>ELES/DOC/SMPL/02  |  |
| Period of Analysis     | : 17,06,2023 to 26,06,2023                                     | Sample Drawn By<br>Sample Condition                          | : ELES Pvt. Ltd.<br>: Scaled & Preserved   |  |

| M | ETEOROLOGICAL INFO       | RMATION          |   |                            |                 |
|---|--------------------------|------------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 33             | 2 | Barometric Pressure (mmHg) | -740            |
| 3 | Relative Humidity (%)    | : 59             | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'38.67"E. |   | Latitude                   | : 23°18'20,87"N |

| Discipline :                        | Atmospheri | c Pollution                     |        |                  |
|-------------------------------------|------------|---------------------------------|--------|------------------|
| Parameter                           | Unit       | Test Protocol                   | Result | Regulatory Limit |
| Particulate Matter (PM10)           | µg/m³      | IS 5182 (Part-23): 2006; RA2022 | 63     | 100 (24hrs)      |
| Particulate Matter (PM2.5)          | μg/m³      | IS 5182 (Part- 24): 2019        | 32     | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>1</sub> ) | μg/m³      | IS 5182 (Part-2): 2001; RA2022  | 9.8    | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO2)             | μg/m³      | IS 5182 (Part-6): 2006; RA2022  | 25.5   | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )             | µg/m³      | IS 5182 (Part-9): 1974; RA2019  | <20.0  | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )          | μg/m²      | IS 5182 (Part- 25): 2018        | <10.0  | 400 (24hrs)      |
| Carbon Monoxide (CO)                | mg/m³      | IS 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |
| Lead (Pb)                           | μg/m³      | IS 5182 (Part-22): 2004; RA2019 | 0.005  | 1 (24hrs)        |
| Nickel (Ni)                         | ng/m³      | 1S 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |
| Arsenic (As)                        | rig/m³     | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |

\*\*\*\*End of Report\*\*\*\*

Reviewed by

Authorised Signatory Dr. Deependra Kumar Sinti.

Page 1 of 1 ELES PVI. Ltd\_Technical Manager
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PLOT NO-30, MANSAROVAITENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST NO:- 20AAECE97130124 ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290103

Website: www.elespl.ca.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2776 | Report Release Date | : 29.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS  |   |  |
|--------------------|-------------------------------|---|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/1956<br>: Nawatoli Quarry<br>Kujam-II Bauxite Mine (157,38ha |  |
| Address            | Lohardaga, Jharkhand-835302   | Sampling Date<br>Sample Received Date<br>Type of Sample | : 10.06.2023 to 11.06.2023<br>: 17.06.2023<br>: Ambient Air                     |  |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Drawn By                   | : ELES/DOC/SMPL/02  |  |
| Period of Analysis | : 17.06.2023 to 26.06.2023    | Sample Condition  | : ELES Pvt. Ltd.<br>: Sealed & Preserved  |  |

| M | ETEOROLOGICAL INFORMATION     |   |                         |                 |
|---|-------------------------------|---|-------------------------|-----------------|
| 1 | Average Temperature (°C) : 33 | 2 | Barometric Pressure (mm | Hg) 740         |
| 3 | Relative Humidity (%) : 59    | 4 | Weather Condition       | : Clear         |
| 5 | Longitude ; 84°17'38.67"E     | 6 | Latitude                | : 23°18'20.87"N |

| Discipline : Chemical Group : |       |                                |        | c Pollution      |
|-------------------------------|-------|--------------------------------|--------|------------------|
| Parameter                     | Unit  | Test Protocol                  | Result | Regulatory Limit |
| Benzene*                      | µg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo (a) Pyrene*             | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |

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

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\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

Dr. Deependra Kumar Sinha
Ph. D. Environmental Engg.

ELES Pvt. Ltd., Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:-20AAECE9713D124

#### ENGINEERING SERVICES PUT. LTD.

Email: info@elespl.ca.in , eles.ranchi@amaii.com

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2777 | Report Release Date | : 29.07,2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001642F |                     |              |

| CUSTOMER DETA      | CUSTOMER DETAILS              |   | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/1957<br>: Quarry- 195  |  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | Kujam-II Bauxite Mine (157.38ha)<br>: 10.06.2023 to 11.06.2023<br>: 17.06.2023<br>: Ambient Air |  |  |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Drawn By                   | : ELES/DOC/SMPL/02  |  |  |
| Period of Analysis | : 17.06.2023 to 26,06,2023    | Sample Condition  | : ELES Pvi, Ltd.<br>: Sealed & Preserved  |  |  |

| M | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (%C) | : 33            | 2 | Barometric Pressure (mmHg) | =740            |
| 3 | Relative Humidity (%)    | : 59            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'30.27"E | 6 | Latitude                   | : 23°18'56.89"N |

| Discipline :                        | Atmospheri        | c Pollution                     |        |                  |
|-------------------------------------|-------------------|---------------------------------|--------|------------------|
| Parameter                           | Unit              | Test Protocol                   | Result | Regulatory Limit |
| Particulate Matter (PM10)           | μg/m <sup>3</sup> | IS 5182 (Part-23): 2006; RA2022 | 57     | 100 (24hrs)      |
| Particulate Matter (PM2.5)          | μg/m³             | IS 5182 (Part- 24): 2019        | 29     | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | μg/m <sup>3</sup> | IS 5182 (Part-2): 2001; RA2022  | 6.1    | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO2)             | μg/m³             | 15 5182 (Part-6): 2006; RA2022  | 19.1   | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )             | µg/m²             | IS 5182 (Part-9): 1974; RA2019  | <20.0  | 100 (8hrs)       |
| Ammonia (NH <sub>2</sub> )          | μg/m³             | IS 5182 (Part- 25): 2018        | <10.0  | -400 (24hrs)     |
| Carbon Monoxide (CO)                | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |
| Lend (Pb)                           | μg/m³             | IS 5182 (Part-22): 2004; RA2019 | 0.005  | 1 (24hrs)        |
| Nickel (Ni)                         | ng/m³             | IS 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |
| Arsenic (As)                        | ng/m³             | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |

\*\*\*\*End of Report\*\*\*\*

Reviewed by

Authorised Signatory

Dr. Deependra Kumar Sinha

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PLOT NO-3R, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124

### ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2777 | Report Release Date | : 29.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DET.      | AILS                          | SAMPLE DETAILS  |   |  |
|--------------------|-------------------------------|---|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/1957<br>: Quarry- 195  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | Kujam-II Bauxite Mine (157.38ha)<br>: 10.06.2023 to 11.06.2023<br>: 17.06.2023<br>: Ambient Air |  |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Drawn By                   | : ELES/DOC/SMPL/02  |  |
| Period of Analysis | : 17.06.2023 to 26.06.2023    | Sample Condition  | : ELES Pvt. Ltd.<br>: Scaled & Preserved  |  |

| MI | METEOROLOGICAL INFORMATION |                 |     |                            |                 |  |
|----|----------------------------|-----------------|-----|----------------------------|-----------------|--|
| 1  | Average Temperature (%C)   | : 33            | 1.2 | Barometric Pressure (mmHg) | 740             |  |
| 3  | Relative Humidity (%)      | : 59            | -4  | Weather Condition          | : Clear         |  |
| 5  | Longitude                  | : 84°17'30.27"E | 6   | Latitude                   | : 23°18'56.89"N |  |

| Discipline : Chemical Gr |       |                                | Atmospheri | c Pollution      |
|--------------------------|-------|--------------------------------|------------|------------------|
| Parameter                | Unit  | Test Protocol                  | Result     | Regulatory Limit |
| Benzene*                 | μg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0       | 05(Annual)       |
| Benzo (a) Pyrene*        | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | <0.5       | 01(Annual)       |

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

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Authorised Signatory

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

Page 1 of 1

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PLOT NO-36, MANSAROVAR ENCLAVE, TUPLIDANA HATIA, RANCHI-834003 (IMARKHAND) GST NO: 20AAECE9713D124

Email: injo@elespl.co.in , eles.ranch/@amail.com

Phone no.: 0691-2290103 Website | www.elespl.co.in



fc-8639

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2778 | Report Release Date | : 29.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001643F |                     |              |

| CUSTOMER DET          | AILS   | SAMPLE DETAILS   |  |  |
|-----------------------|--|--|--|--|
| Customer Name Address | : Hindalco Industries Limited  : Lohardaga, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date                           | : ELES/RNC/2023/AA/1958<br>: Bhattipat<br>  Kujam-II Bauxite Mine (157,38ha)<br>: 10.06.2023 to 11.06.2023 |  |
| Mines Status          | : Operational  | Sample Received Date Type of Sample Sampling Procedure Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02  |  |
| Period of Analysis    | : 17.06.2023 to 26.06.2023                                   | Sample Condition   | : ELES Pvt. Ltd.<br>: Sealed & Preserved   |  |

| M | TEOROLOGICAL INFO        | RMATION         | - |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 33            | 2 | Barometric Pressure (mmHg) | :740            |
| 3 | Relative Humidity (%)    | : 59            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°17'54.25"E | 6 | Latitude                   | : 23°18'34.89"N |

| Discipline :                         | Chemical | Group                           | Atmospheri | c Pollution      |
|--------------------------------------|----------|---------------------------------|------------|------------------|
| Parameter                            | Unit     | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³    | IS 5182 (Part-23): 2006; RA2022 | 60         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³    | IS 5182 (Part- 24): 2019        | 29         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | µg/m³    | IS 5182 (Part-2): 2001; RA2022  | 6.7        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³    | IS 5182 (Part-6): 2006; RA2022  | 17.2       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m³    | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | µg/m³    | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³    | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | µg/m³    | IS 5182 (Part-22): 2004; RA2019 | 0.007      | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³    | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m³    | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |

\*\*\*\*End of Report\*\*\*\*

Reviewed by

Or. Deependra Rumar Sinha

ELES Pvt. Ltd. Technical Manager Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPLIDANA HATIA, RANCHI-834003 (JHARRHAND) GST NO:- 20AAECE9713D174

### ENGINEERING SERVICES PVT. LTD.

Emall: Info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290203

Website : www.elespl.co.in

#### TEST REPORT

| Test Report No. | ELES/RNC/2023/2778 | Report Release Date | ± 29.07.2023 |
|-----------------|--------------------|---------------------|--------------|
| Work Order No.  | 13612310218        | Work Order Date     | T 21.04.2023 |

| CUSTOMER DETA      | CUSTOMER DETAILS              |   |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | ; Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/1958<br>: Bhattipat<br>Kujam-II Bauxite Mine (157.38ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | : 10.06.2023 to 11.06.2023<br>: 17.06.2023<br>: Ambient Air                |  |
| Mines Status       | : Operational                 | Sampling Procedure Sample Drawn By                      | : ELES/DOC/SMPL/02   |  |
| Period of Analysis | : 17.06.2023 to 26.06.2023    | Sample Condition  | : ELES Pvt. Ltd.<br>: Scaled & Preserved                                   |  |

| MI | ETEOROLOGICAL INFORMATION     |   |                         |                 |
|----|-------------------------------|---|-------------------------|-----------------|
| 1  | Average Temperature (°C) : 33 | 2 | Barometric Pressure (mm | Hg) : 740       |
| 3  | Relative Humidity (%) : 59    |   | Weather Condition       | : Clear         |
| 5  | Longitude : 84°17'54.25"E     | 6 | Latitude                | : 23°18'34.89"N |

| Discipline        | : Chemical | Group                          | : Atmospheri | e Pollution      |
|-------------------|------------|--------------------------------|--------------|------------------|
| Parameter         | Unit       | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | µg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5         | 01(Annual)       |

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

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\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

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

### Page 1 of 1

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2763 | Report Release Date | : 29.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001628F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date                                    | : ELES/RNC/2023/AA/1943<br>: Near Pakri Gada Village<br>: 07.06.2023 to 08.06.2023 |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : 17.06.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.            |  |
| Mines Status       | : Operational                 |   | Scaled & Preserved   |  |
| Period of Analysis | : 17.06,2023 to 26.06,2023    | Sample Condition  |  |  |

| M | ETEOROLOGICAL INFOR      | RMATTON         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | 133             | 2 | Barometric Pressure (mmHg) | : 741           |
| 3 | Relative Humidity (%)    | : 60            | 4 | Weather Condition          | : Clear         |
| 5 | Longitude                | : 84°14'52.25"N | 6 | Latitude                   | : 23°17'41.21"E |

| NABL Accredited                      |                   |                                 |              |                  |
|--------------------------------------|-------------------|---------------------------------|--------------|------------------|
| Discipline :                         | Chemical          | Group                           | : Atmospheri | e Pollution      |
| Parameter                            | Unit              | Test Protocol                   | Result       | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m <sup>1</sup> | IS 5182 (Part-23): 2006; RA2022 | 55           | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | µg/m              | IS 5182 (Part- 24): 2019        | 27           | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | µg/m <sup>3</sup> | IS 5182 (Part-2): 2001; RA2022  | 6.3          | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m³             | IS 5182 (Part-6): 2006; RA2022  | 17.9         | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | µg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0        | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | µg/m²             | 18 5182 (Part- 25): 2018        | <10.0        | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0         | 2 (8hrs)         |
| Lead (Pb)                            | µg/m³             | 15 5182 (Part-22): 2004; RA2019 | < 0.002      | l (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0         | 20 (Annual)      |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0         | 06 (Annual)      |

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Page 1 of 1

Page 1 of 1

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FLOT NO-30, MANSAROVAT EVICLAVE, TUTUTOANA HATOL KANCH-834003 (HARKHAND) OST NO:-3844ECEST133114

### ENGINEERING SERVICES PUT. LTD.

Email: Info@elespl.co.ln , eles ranchi@amail.com Phone no.: 0651-2290103 Website Lywwy.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2763 | Report Release Date | : 29.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | ; [3612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET         | AILS  | SAMPLE DETAILS   |  |  |
|----------------------|---|--|--|--|
| Customer Name        | : Hindalco Industries Limited                 | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date | : ELES/RNC/2023/AA/1943<br>: Near Pakri Gada Village<br>: 07.06.2023 to 08.06.2023<br>: 17.06.2023 |  |
| Address Mines Status | : Lohardaga. Harkhand-835302<br>: Operational | Type of Sample Sampling Procedure Sample Drawn By Sample Condition   | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.<br>: Sealed & Preserved                    |  |
| Period of Analysis   | : 17.06.2023 to 26.06.2023                    | 6.2023 to 26.06.2023 Sample Condition                                |  |  |

| TAL | ETEOROLOGICAL INFOR       | CERCITATION C   | _ | PERSONAL PROPERTY OF THE PERSON NAMED IN COLUMN 1 | P. / 1          |
|-----|---------------------------|-----------------|---|---|-----------------|
| 1   | Average Temperature (°C') | : 33            | 2 | Barometric Pressure (mmHg)                        | : 741           |
| 3   | Relative Humidity (%)     | : 60            | 4 | Weather Condition                                 | ; Clear         |
| 5   | Longitude                 | : 84°14'52.25"N | 6 | Latitude  | : 23°17'41.21"E |

| Discipline        | : Chemical | Group                          | Group : Atmospheric Pollution |                  |  |  |
|-------------------|------------|--------------------------------|-------------------------------|------------------|--|--|
| Parameter         | Unit       | Test Protocol                  | Result                        | Regulatory Limit |  |  |
| Benzenes          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0                          | 05(Amual)        |  |  |
| Benzo (a) Pyrene* | ng/m²      | IS:5182 (Part-12): 2004;RA2019 | < 0.5                         | D1(Annual)       |  |  |

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

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End of Report\*\*\*

Authorised Signatory

Dr. Deependra Kumar Sinhi Ph. D. Environmental Engg. EUES Pvt. Ltd. Technical Manager

Page I of I

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2764 | Report Release Date | : 29.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ; 21.04,2023 |
| ULR No.         | : TC883923000001629F |                     |              |

| CUSTOMER DET          | AILS   | SAMPLE DETAILS   |  |  |
|-----------------------|--|--|--|--|
| Customer Name Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date<br>Type of Sample | : ELES/RNC/2023/AA/1944<br>: Near Pol Pol Village<br>: 07.06.2023 to 08.06.2023<br>: 17.06.2023<br>: Ambient Air |  |
| Mines Status          | ; Operational  | Sampling Procedure<br>Sample Drawn By — Sample Condition                               | : BLES/DOC/SMPL/02<br>: ELES Pvt. Ltd,<br>: Sealed & Preserved   |  |
| Period of Analysis    | : 17.06,2023 to 26.06,2023                                     | Sample Condition   | Senien or Lieselven  |  |

| M | ETEOROLOGICAL INFO       | MATION |   |                            |         |
|---|--------------------------|--------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | : 33   | 2 | Barometric Pressure (mmHg) | ±741    |
| 3 | Relative Humidity (%)    | : 60   | 4 | Weather Condition          | : Clear |

| NABL Accredited                      |                         |                                 |                                      |                  |
|--------------------------------------|-------------------------|---------------------------------|--------------------------------------|------------------|
| Discipline :                         | : Atmospheric Pollution |                                 |                                      |                  |
| Parameter                            | Unit                    | Test Protocol                   | Result                               | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m <sup>3</sup>       | IS 5182 (Part-23): 2006; RA2022 | .61                                  | 100 (24hrs)      |
| Particulate Matter (PM2,5)           | μg/m³                   | IS 5182 (Part- 24): 2019        | 32                                   | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m <sup>3</sup>       | IS 5182 (Part-2): 2001; RA2022  | 7.1                                  | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m²                   | 1S 5182 (Part-6): 2006; RA2022  | 16,3                                 | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m³                   | IS 5182 (Part-9): 1974; RA2019  | <20.0                                | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m³                   | IS 5182 (Part- 25); 2018        | <10.0                                | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>2</sup>       | IS 5182 (Part-10): 1999; RA2019 | <i.0< td=""><td>2 (8hrs)</td></i.0<> | 2 (8hrs)         |
| Lead (Ph)                            | µg/m³                   | IS 5182 (Part-22): 2004; RA2019 | <0.002                               | 1 (24lus)        |
| Nickel (Ni)                          | ng/m³                   | IS 5182 (Part-26):2020          | <6.0                                 | 20 (Annual)      |
| Arsenic (As)                         | ng/m <sup>a</sup>       | ELES/AIR/SOP/01                 | <2.0                                 | 06 (Annual)      |



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\*\*\*\*End of Report\*\*\*\*

Dr. Deependra Kumar Sinna

Page 1 of 1 Pin. U. Environmental Engl

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#### ENGINEERING SERVICES PUT ATTA

Email: (nfo@elexpl.ca.lir., ejes,ranchi@ampil.cam Phone no.: 0651-2280103 Websire..www.elespl.co.m

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2764 | Report Release Date | : 29.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA                      | AILS   | SAMPLE DETAILS  |  |  |
|------------------------------------|--|---|--|--|
| Customer Name Address Mines Status | : Hindaico Industries Limited  : Lohardaga, Jharkhand-835302  : Operational  | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample Sample Procedure Sample Drawn By | : ELES/RNC/2023/AA/1944<br>: Near Pol Pol Villago<br>: 07,06,2023 to 08,06,2023<br>+ 17,06,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd. |  |
|                                    | A Company of the Comp | - Sample Condition  | Sealed & Preserved   |  |
| Period of Analysis                 | : 17.06.2023 to 26.06.2023   | asimple - College and   |  |  |

| ME | TEOROLOGICAL INFORMATION      |   |                          |           |
|----|-------------------------------|---|--------------------------|-----------|
| 1  | Average Temperature (°C) : 33 | 2 | Barometric Pressure (mir | Hg) : 741 |
| 3  | Relative Humidity (%) : 60    | 4 | Weather Condition        | : Clear   |

| Discipline : Chemical         |       | Group : Atmospheric Pollution  |        |                  |  |
|-------------------------------|-------|--------------------------------|--------|------------------|--|
| Parameter                     | Unit  | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene <sup>6</sup>          | µg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene <sup>a</sup> | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |  |

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

Reviewed b

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

Dr. Deependra Kumar Sinha Ph. D. Environmental Brigg. ELES Put. Ltd. Technical Manage

Page 1 of 1

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TC-8839

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2765 | Report Release Date | : 29.07.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | 1 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001630F |                     |              |

| CUSTOMER DETA         | ILS  | SAMPLE DETAILS   |  |  |
|-----------------------|--|--|--|--|
| Customer Name Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample Sample Sampling Procedure Sample Drawn By | : ELES/RNC/2023/AA/1945<br>: Near Shakhuapani Village<br>: 08.06.2023 to 09.06.2023<br>: 17.06.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd. |  |
| Mines Status          | : Operational  | - Sample Condition   | : Sealed & Preserved   |  |
| Period of Analysis    | : 17,06,2023 to 26,06,2023                                     | Salupie Condition  | - Sedict of Fresh vos  |  |

| M | ETEOROLOGICAL INFOR      | MATION |   |                            |         |
|---|--------------------------|--------|---|----------------------------|---------|
| 1 | Average Temperature (%C) | : 33   | 2 | Barometric Pressure (mmHg) | : 740   |
| 3 | Relative Humidity (%)    | : 59   | 4 | Weather Condition          | : Clear |

| NABL Accredited                      |                   |                                 |            |                  |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline :                         | Chemical          | Group                           | Atmospheri | e Pollution      |
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | µg/m³             | IS 5182 (Part-23): 2006; RA2022 | 53         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m <sup>3</sup> | IS 1182 (Part- 24): 2019        | 24         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | µg/m³             | IS 5182 (Part-2): 2001; RA2022  | 5.8        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>1</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 19.4       | 80 (24hrs)       |
| Ozone (O <sub>1</sub> )              | uu/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>x</sub> )           | ug/m²             | IS \$182 (Part- 25): 2018       | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>2</sup> | 18 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | µg/m              | IS 5182 (Part-22): 2004; RA2019 | < 0.002    | 1 (24lus).       |
| Niakel (Ni)                          | ng/m³             | IS 5182 (Part-26);2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m²             | ELES/AIR/SOP/01                 | <2,0       | 06 (Aunual)      |



\*\*\*\*End of Report\*\*\*\*

Authorised Signatory
Deependra Kumar Sinh

Ph. D. Environmental Engo: ELES PVI uto recinical filetager

Page 1 of 1

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Specificationment force frames



PLOT NO-33, MANSARO VAR ENCLAVE, TEPLOANA HATYA, RANCHI-853003 (MARKINANO) 367 NO-304ARCES7180124

#### ENGINEERING SERVICES PVT. LTD.

Email: Info@elesp).co.in eles ranchi@amail.com Phané no.: 0651-2290103 Wassitz : www.nelespi.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2765 | Report Release Date | : 29.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA                      | AILS   | SAMPLE DETAILS   |  |  |
|------------------------------------|--|--|--|--|
| Customer Name<br>Address           | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample | : ELES/RNC/2023/AA/1945<br>: Near Shakhuapuni Village<br>: 08.06.2023 to 09.06.2023<br>: 17.06.2023<br>: Ambient Air |  |
| Mines Status<br>Period of Analysis | : Operational<br>: 17.06.2023 to 26.06.2023                    | Sampling Procedure<br>Sample Drawn By<br>— Sample Condition                | : ELES/DOC/SMP1/02<br>: ELES Pvt. Ltd.<br>: Scaled & Preserved   |  |

| ME | TEOROLOGICAL INFORMATION      |     |                         |          |  |
|----|-------------------------------|-----|-------------------------|----------|--|
| 1  | Average Temperature (°C) : 33 | 1.2 | Barometric Pressure (mm | Hg) +740 |  |
| _  | Relative Humidity (%) 159     | 4   | Weather Condition       | Clear    |  |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene**             | µg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | DS(Annual)       |  |
| Benzo (a) Pyrene*     | ng/m² | IS:5182 (Part-12): 2004;RA2019 | <0,5   | Q1(Annual)       |  |

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

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+\*\*\*End of Report\*\*\*

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Dr. Deependra Kumar Sinita
Ph. D. Environmental Engage

ELES Pvt. Lid. Technical Marrage

Page 1 of 1

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TOASSE

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2766 | Report Release Date | : 29.07.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Wark Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000001631F |                     |              |  |

| CUSTOMER DET.      | AILS   | SAMPLE DETAILS  |  |
|--------------------|--|---|--|
| Customer Name      | : Hindalco Industries Limited<br>: Lohurdaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date | : ELES/RNC/2023/AA/1946<br>: Near Dipa Kujam Village<br>: 08.06.2023 to 09.06.2023<br>: 17.06.2023 |
|                    | : Operational  | Type of Sample<br>Sampling Procedure<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.<br>: Sealed & Preserved                    |
| Period of Analysis | : 17,06,2023 to 26,06,2023                                     | Sample Condition  | ; Sealed & Preserved   |

| M | ETEOROLOGICAL INFORM     | IATION |   |                            |         |
|---|--------------------------|--------|---|----------------------------|---------|
| 1 | Average Temperature (°C) | 33     | 2 | Barometric Pressure (mmHg) | : 740   |
| 3 | Relative Humidity (%)    | 59     | 4 | Weather Condition          | : Clear |

| NABL Accredited                      |                   |                                 |              |                  |
|--------------------------------------|-------------------|---------------------------------|--------------|------------------|
| Discipline †                         | Chemical          | Group                           | : Atmospheri | e Pollution      |
| Parameter                            | Unit              | Test Protacol                   | Result       | Regulatory Limit |
| Particulate Matter (PM 10)           | µg/m³             | IS 5182 (Part-23): 2006; RA2022 | 52           | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | µ2/m3             | IS 5182 (Part- 24): 2019        | 25           | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m <sup>3</sup> | IS 5182 (Part-2): 2001; RA2022  | 7.1          | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m³             | IS 5182 (Part-6): 2006; RA2022  | 15.3         | 80 (24hrs)       |
| Ozone (O <sub>1</sub> )              | μg/m <sup>3</sup> | IS 5182 (Part-9): 1974; RA2019  | <20.0        | 100 (8hrs)       |
| Animonia (NH <sub>3</sub> )          | μg/m <sup>2</sup> | 1S 5182 (Part- 25): 2018        | <10.0        | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³             | IS 5182 (Part-10): 1999; RA2019 | <1.0         | 2 (Shrs)         |
| Lead (Pb)                            | µg/m              | IS 5182 (Part-22); 2004; RA2019 | < 0.002      | I (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0         | 20 (Annual)      |
| Arsenic (As)                         | ng/m <sup>1</sup> | ELES/AIR/SOP/01                 | <2.0         | 06 (Annual)      |



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Authorised Signatory

r. Deepengra Kumar Siiii

Page 1 of 1 ELES PVI, Ltd., Technical Manager
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PLOT NO-30, MANGAROVAR ENCLAVE, TUPUJANA HATIA, NANCHI (1900) 7 (HARI (HAND) EST NO: MAASCERT (1903)

### ENGINEERING SERVICES FYE. LTD.

Email: Injo Beleso), ca.in eles ranchibiomali com

Phone no.: 0651-2290103 Website: www.eletal.co.m

#### TEST REPORT

| the state of the s |                      |                                  |  |
|--|----------------------|----------------------------------|--|
| Test Report No.  | : ELES/RNC/2023/2766 | Report Release Date : 29.07.2023 |  |
| Work Order No.   | : 13612310218        | Work Order Date : 21.04.2023     |  |

| CUSTOMER DETAILS   |  | SAMPLE DETAILS   |  |  |
|--------------------|--|--|--|--|
| Customer Name      | ; Hindalco Industries Limited                  | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date | : ELES/RNC/2023/AA/1946<br>: Near Dipu Kujam Village<br>: 08,06.2023 to 09,06.2023<br>: 17,06.2023 |  |
|                    | : Lohardaga, Jharkhand-835302<br>: Operational | Type of Sample Sampling Procedure Sample Drawn By Sample Condition   | Ambient Air     ELES/DOC/SMPL/02     ELES Pvt. Ltd.     Sealed & Preserved                         |  |
| Period of Analysis | : 17.06,2023 to 26,06,2023                     | Sample Condition   |  |  |

| MI | TEOROLOGICAL INFORMATION      |   |                            |         |
|----|-------------------------------|---|----------------------------|---------|
| T  | Average Temperature (°C) : 33 | 2 | Barometric Pressure (mmHg) | : 740   |
| 3  | Relative Humidity (%) : 59    | 4 | Weather Condition          | : Clear |

| Discipline : Chemical |                   | Group : Atmospheric Pollution  |        |                  |  |
|-----------------------|-------------------|--------------------------------|--------|------------------|--|
| Parameter             | Unit              | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*              | μg/m <sup>3</sup> | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene*     | ng/m³             | IS:5182 (Part-IZ); 2004;RA2019 | < 0.5  | 01(Annual)       |  |

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

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---End of Reportant

Authorised Signatory

Dr. Deependra Kumar Sinna

Ph. D. Environmental Engo. ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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

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

Kujam II Bauxite Mine-Environmental Monitoring Report

July 2023



### CONTENT

| Hind | alco Industries : Kujam-II Bauxite Mine | Environmental Monitoring Report | July 2023 |  |  |  |  |  |
|------|---|---------------------------------|-----------|--|--|--|--|--|
|      |   | -II Bauxite Mine                |           |  |  |  |  |  |
|      | AMBIENT AIR QUALITY- CORE ZONE          |                                 |           |  |  |  |  |  |
| 1    | Kujam-II Weigh Bridge                   |                                 |           |  |  |  |  |  |
| 2    | Nawatoli Quarry                         |                                 |           |  |  |  |  |  |
| 3    | Quarry 195                              |                                 |           |  |  |  |  |  |
| 4    | Bhattipat                               |                                 |           |  |  |  |  |  |
| 10   | AMBIENT AIR QUALITY- BUFFER ZO          | NE                              |           |  |  |  |  |  |
| 1    | Near Pakri Gada Village                 |                                 |           |  |  |  |  |  |
| 2    | Near Pol Pol Village                    |                                 |           |  |  |  |  |  |
| 3    | Near Shakhuapani Village                |                                 |           |  |  |  |  |  |
| 4    | Near Dipa Kujam Village                 |                                 |           |  |  |  |  |  |





PLOT NO 30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 LIHARKHAND) G57 NO:- 20AAECE9713D1Z4



Email: Info@elespl.co.in , etes.ranchi@amail.com

Phone no.: 0651-2290103 Website: www.elespl.co.in



#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2914 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001761F |                     |              |

| CUSTOMER DET.      | AILS                          | SAMPLE DETAILS  |   |
|--------------------|-------------------------------|---|---|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | ELES/RNC/2023/AA/2456 Kujam-II Weigh Bridge   |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | Kujam-II Bauxite Mine (157,38ha)<br>: 13.07,2023 to 14.07,2023<br>: 17.07,2023<br>: Ambient Air |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Drawn By                   | : ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.  |
| Period of Analysis | : 17.07.2023 to 24.07,2023    | Sample Condition  | : Sealed & Preserved  |

| M | ETEOROLOGICAL INFO       | RMATION         |    |                            |                 |
|---|--------------------------|-----------------|----|----------------------------|-----------------|
| 1 | Average Temperature (°C) | :27             | 12 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 65            | 4  | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | : 84°17'30.39"E | 6  | Latitude                   | : 23°18'50.59"N |

| NABL Accredited                      |                   |                                 |            |                  |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline :                         | Chemical          | Group :                         | Atmospheri | c Pollution      |
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 57         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | µg/m³             | IS 5182 (Part- 24): 2019        | 29         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 6.4        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>1</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 21.2       | 80 (24hrs)       |
| Ozone (O <sub>1</sub> )              | μg/m¹             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>2</sub> )           | μg/m³             | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m²             | IS 5182 (Part-10); 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | μg/m³             | IS 5182 (Part-22): 2004; RA2019 | 0.005      | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m <sup>3</sup> | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



\*\*\*\*End of Report\*\*\*\*

Authorised Signatory Dr. Deependra Kumar Sinha

ELES Pvt. Lld. Technical Manager Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST.NO:- 20AAECE9713D124 ENGINEERING SERVICES PVT. LTD.

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

Phone no.: 0651-2290103 Website: www.elespi.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2914 | Report Release Date | : 08.08.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DET       | AILS                          | SAMPLE DETAILS  |  |
|--------------------|-------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | ELES/RNC/2023/AA/2456 Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha) |
| Address            | ± Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | : 13.07.2023 to 14.07.2023   |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Drawn By                   | ELES/DOC/SMPL/02   |
| Period of Analysis | : 17.07.2023 to 24.07.2023    | Sample Condition  | : ELES Pvt. Ltd.<br>: Sealed & Preserved                                     |

| _ | ETEOROLOGICAL INFOR      | The state of the s |    |                            |                 |
|---|--------------------------|--|----|----------------------------|-----------------|
| _ | Average Temperature (°C) | 27   | 12 | Barometric Pressure (mmHg) | - 730           |
|   | Relative Humidity (%)    | 165  |    | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | : 84°17'30.39"E  | 6  | Latitude                   | : 23°18'50.59"N |

| Discipline        | : Chemical | Group                          | Atmospheri | c Pollution      |
|-------------------|------------|--------------------------------|------------|------------------|
| Parameter         | Unit       | Test Protocol                  | Result     | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0       | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5       | 01(Annual)       |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

Dr. Deependra Kurnar Sinha

Ph. D. Environmental Engg

ELES Pvt. Ltd. Technical Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAFCE97130124



Email: Info@elespl.co.in , eles.ranchi@amail.com

Phone no.: 0651-2290103 Website : www.elespl.co.in



TEST REPORT

| Test Report No. | : ELES/RNC/2023/2915 | Report Release Date | : 08.08.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | * TC883923000001762F |                     |              |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS   |   |  |
|--------------------|-------------------------------|--|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location  | : ELES/RNC/2023/AA/2457<br>: Nawatoli Quarty<br>Kujam-II Bauxite Mine (157,38ha)  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date Sample Received Date Type of Sample Sampling Procedure | : 13.07.2023 to 14.07.2023<br>: 17.07.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02 |  |
| Mines Status       | : Operational                 | Sample Drawn By  | : ELES Pvt. Ltd.  |  |
| Period of Analysis | = 17.07.2023 to 24.07.2023    | Sample Condition   | : Sealed & Preserved  |  |

| M | ETEOROLOGICAL INFOI      | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| I | Average Temperature (°C) | : 27            | 2 | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 65            | 4 | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | : 84°17'38.67"E | 6 | Latitude                   | 23°18'20.87"N   |

| Discipline :                        | Chemical          | Group                           | Atmospheri | c Pollution     |
|-------------------------------------|-------------------|---------------------------------|------------|-----------------|
| Parameter                           | Unit              | Test Protocol                   | Result     | Regulatory Limi |
| Particulate Matter (PM10)           | µg/m³             | IS 5182 (Part-23): 2006; RA2022 | 54         | 100 (24hrs)     |
| Particulate Matter (PM2.5)          | μg/m³             | IS 5182 (Part- 24): 2019        | 26         | 60 (24hrs)      |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 7,5        | 80 (24hrs)      |
| Nitrogen Di-Oxide (NO2)             | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 20,1       | 80 (24hrs)      |
| Ozone (O <sub>3</sub> )             | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)      |
| Ammonia (NH <sub>3</sub> )          | μg/m³             | IS 5182 (Part- 25); 2018        | <10,0      | 400 (24hrs)     |
| Carbon Monoxide (CO)                | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)        |
| Lead (Pb)                           | μg/m³             | IS 5182 (Part-22); 2004; RA2019 | 0.005      | 1 (24hrs)       |
| Nickel (Ni)                         | ng/m³             | IS 5182 (Part-26):2020          | <6.0       | 20 (Amoual)     |
| Arsenic (As)                        | ng/m³             | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)     |

\*\*\*\*End of Report\*\*\*\*

Reviewed

Authorised Signatory

Dr. Despendra Kumar Sinha

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) EST NO:- 20AAECE97130174 ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in , eles.ranchi@amail.com Phone no.: 0651-2290103

Website: www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2915 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET.      | AILS                          | SAMPLE DETAILS  |   |
|--------------------|-------------------------------|---|---|
| Customer Name      | > Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2457<br>: Nawatoli Quarry<br>Kujam-Il Bauxite Mine (157.38ha |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | : 13.07.2023 to 14.07.2023<br>: 17.07.2023                                      |
| Mines Status       | : Operational                 | Sampling Procedure                                      | : ELES/DOC/SMPL/02  |
| Period of Analysis | : 17.07.2023 to 24.07.2023    | Sample Drawn By<br>Sample Condition                     | : ELES Pyt. Ltd.<br>: Sealed & Preserved  |

| MI | ETEOROLOGICAL INFORMATION     |   |                          |                 |
|----|-------------------------------|---|--------------------------|-----------------|
|    | Average Temperature (°C) : 27 | 2 | Barometric Pressure (mmF | Ja) → 739       |
| 3  | Relative Humidity (%) 65      |   | Weather Condition        | Partly Cloudy   |
| 5  | Longitude : 84°17'38.67"E     |   | Latitude                 | : 23°18'20.87"N |

| : Chemical        | Group                          | : Atmospheri   | c Pollution  |
|-------------------|--------------------------------|--|--|
| Unit              | Test Protocol                  | Result   | Regulatory Limit   |
| μg/m³             | TS:5182 (Part-11): 2006;RA2017 | 7/1/201  | 05(Annual)   |
| ng/m <sup>3</sup> | IS:5182 (Part-12): 2004:RA2019 | 1474   | 01(Annual)   |
|                   | μg/m³                          | Unit Test Protocol μg/m³ IS:5182 (Part-11): 2006; RA2017 | Unit Test Protocol Result  μg/m³ IS:5182 (Part-11): 2006;RA2017 <1.0 |

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

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\*\*\*\*End of Report\*\*\*\*

Dr. Deependra Signators Inha

Ph. D. Environmental Engg. ELES Pvt. Ltd. Technical Manager

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PLOT NO 30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) G5T NO:- 20AAECE9713D174



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TEST REPORT

| Test Report No. | ; ELES/RNC/2023/2916 | Report Release Date | : 08.08.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000001763F |                     |              |  |

| CUSTOMER DET.      | AILS                          | SAMPLE DETAILS  |  |
|--------------------|-------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2458<br>; Quarry- 195<br>Kujam-II Bauxite Mine (157.38ha) |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | i 13.07.2023 to 14.07.2023<br>= 17.07.2023<br>: Ambient Air                  |
| Mines Status       | (Operational                  | Sampling Procedure<br>Sample Drawn By                   | : ELES/DOC/SMPL/02   |
| Period of Analysis | : 17.07.2023 to 24.07.2023    | Sample Condition  | ELES Pvt. Ltd.<br>Sealed & Preserved   |

| M | ETEOROLOGICAL INFO       | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature ("C) | ; 27            | 2 | Barometric Pressure (mmHg) | : 739           |
| _ | Relative Humidity (%)    | 65              | 4 | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | : 84°17'30.27"E | 6 | Latitude                   | : 23°18'56.89"N |

| Discipline :                         | Chemical | Group                           | : Atmospheri | c Pollution      |
|--------------------------------------|----------|---------------------------------|--------------|------------------|
| Parameter                            | Unit     | Test Protocol                   | Result       | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³    | IS 5182 (Part-23): 2006; RA2022 | 50           | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³    | IS 5182 (Part- 24): 2019        | 25           | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³    | IS 5182 (Part-2): 2001; RA2022  | 5.3          | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>3</sub> ) | μg/m³    | 1S 5182 (Part-6): 2006; RA2022  | 15.5         | 80 (24hrs)       |
| Ozone (O <sub>1</sub> )              | µg/m³    | IS 5182 (Part-9): 1974; RA2019  | <20.0        | 100 (8hrs)       |
| Ammonia (NH <sub>1</sub> )           | μg/m³    | IS 5182 (Part- 25): 2018        | <10.0        | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³    | IS 5182 (Part-10); 1999; RA2019 | <1.0         | 2 (8hrs)         |
| Lead (Pb)                            | μg/m³    | IS 5182 (Part-22): 2004; RA2019 | < 0.002      | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³    | IS 5182 (Part-26):2020          | <6.0         | 20 (Annual)      |
| Arsenic (As)                         | ng/m³    | ELES/AIR/SOP/01                 | <2.0         | 06 (Annual)      |

\*\*\*\*End of Report\*\*\*\*

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\*

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**Dr.** Deependra ки O. Environmental Enga

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124 ENGINEERING SERVICES PUT. LTD.

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2916 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET.      | AILS                          | SAMPLE DETAILS  |   |
|--------------------|-------------------------------|---|---|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2458<br>: Quarry- 195                                      |
| Address            | : Lobardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | Kujam-II Bauxite Mine (157,38ha<br>: 13.07.2023 to 14.07.2023<br>: 17.07.2023 |
| Mines Status       | : Operational                 | Sampling Procedure Sample Drawn By                      | : Ambient Air<br>: ELES/DOC/SMPL/02   |
| Period of Analysis | : 17.07.2023 to 24.07.2023    | Sample Condition  | : ELES Pvt. Ltd.<br>: Scaled & Preserved                                      |

| _ | TEOROLOGICAL INFO        |                 | 70.00 |                            |                 |
|---|--------------------------|-----------------|-------|----------------------------|-----------------|
| _ | Average Temperature (°C) | :27             | 2     | Barometric Pressure (mmHg) | : 739           |
| 3 | Relative Humidity (%)    | : 65            |       | Weather Condition          | ; Partly Cloudy |
| 5 | Longitude                | : 84°17'30.27"E | 6     | Latitude                   | : 23°18'56.89"N |

| Discipline        | : Chemical         | Group                          | : Atmospheri | c Pollution      |
|-------------------|--------------------|--------------------------------|--------------|------------------|
| Parameter         | Unit               | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | μg/in <sup>3</sup> | IS:5182 (Part-11): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³              | IS:5182 (Part-12): 2004;RA2019 | <0.5         | 01(Annual)       |

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

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

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TC-8839

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2917 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001764F |                     |              |

| CUSTOMER DET.      | CUSTOMER DETAILS              |                                       | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---------------------------------------|---|--|--|
| Customer Name      | ( Hindalco Industries Limited | Sample Ref. No.<br>Location           | ELES/RNC/2023/AA/2459<br>Bhattipat  |  |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date | Kujam-II Bauxite Mine (157.38ha<br>2 13.07.2023 to 14.07.2023<br>2 17.07.2023 |  |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure  |   |  |  |
| Period of Analysis | : 17.07.2023 to 24.07.2023    | Sample Condition                      | : ELES Pvt. Ltd.<br>: Sealed & Preserved                                      |  |  |

| M | ETEOROLOGICAL INFOI      | RMATION         |   |                          |                 |
|---|--------------------------|-----------------|---|--------------------------|-----------------|
|   | Average Temperature (°C) | : 27            | 2 | Barometric Pressure (mm) | Hg) : 739       |
| 3 | Relative Humidity (%)    | : 65            | 4 | Weather Condition        | : Partly Cloudy |
| 5 | Longitude                | : 84°17'54.25°E | 6 | Latitude                 | : 23°18'34.89"N |

| Discipline :                         | Chemical          | Group                           | Atmospheri | c Pollution      |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | 15 5182 (Part-23): 2006; RA2022 | 53         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 24         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m <sup>3</sup> | IS 5182 (Part-2): 2001; RA2022  | 5.9        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m³             | IS 5182 (Part-6); 2006; RA2022  | 14.6       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m <sup>3</sup> | IS 5182 (Part-9); 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m <sup>7</sup> | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>1</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Ph)                            | μg/m³             | IS 5182 (Part-22); 2004; RA2019 | 0.004      | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | 1S 5182 (Part-26):2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |

\*\*\*\*End of Report\*\*\*\*

Reviewed

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Dr. Authorised Signatory Sinha

Ph. D. Environmental Enon LEG I VI. Ltd. (Schnical Manager

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2917 | Report Release Date | : 08.08.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DET.      | AILS                          | SAMPLE DETAILS   |  |
|--------------------|-------------------------------|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                              | : ELES/RNC/2023/AA/2459<br>: Bhattipat<br>Kujam-II Bauxite Mine (157.38ha) |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date.<br>Sample Received Data<br>Type of Sample | : 13.07.2023 to 14.07.2023<br>: 17.07.2023<br>: Ambient Air                |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Drawn By                    | ELES/DOC/SMPL/02<br>: ELES Pvt, Ltd.                                       |
| Period of Analysis | : 17.07.2023 to 24.07.2023    | Sample Condition   | : Sealed & Preserved   |

| M | ETEOROLOGICAL INFORMATION     |   |                          |                 |
|---|-------------------------------|---|--------------------------|-----------------|
| 1 | Average Temperature (°C) : 27 | 2 | Barometric Pressure (min | Hg) : 739       |
| 3 | Relative Humidity (%) : 65    | 4 | Weather Condition        | : Partly Cloudy |
| 5 | Longitude : 84°17'54.25"E     | 6 | Latitude                 | : 23°18'34.89"N |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*              | μg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene*     | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | < 0.5  | 01(Annual)       |  |

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

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Dr. Bulherised Signatory
Ph. D. Environmental Engg.
ELES Pvi. Ltd. Technical Manager

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VIOT NO-10, MANSAROVAR ENCLAVE, TURLIDANII MATIA, RANCHINISADOS (HARRHAND) GIT NO-JUNECENTISOCIA

#### ENGINEERING SERVICES PUT, LTD.

Princip Info@elesal.co.in , eles rancol@gradi com Priorie no. 0651-2290103 Website numicelesal co.in



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|---|-----|----|----|----|---|----|---|
| = |     | _  | _  |    | _ |    |   |

| Test Report No. | : ELES/RNC/2023/2902 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21,04,2023 |
| ULR No.         | : TC883923000001749F |                     |              |

| CUSTOMER DET       | ATLS  | SAMPLE DETAILS                               |  |  |
|--------------------|---|--|--|--|
| Customer Name      | : Hindalco Industries Limited               | Sample Ref. No.<br>Location<br>Sampling Date | : ELES/RNC/2023/AA/2444<br>: Near Pakri Gada Village<br>: 10.07,2023 to 11,07,2023 |  |
| Address :          | : Lohurdagu, Jharkhand-835302               | Sample Received Date<br>Type of Sample       | : 17.07,2023<br>: Ambient Air  |  |
| Mines Status       | : Operational                               | Sampling Procedure<br>Sample Drawn By        | : ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.   |  |
| Period of Analysis | : 17.07.2023 to 24.07.2023 Sample Condition |  | : Sealed & Preserved   |  |

| M | ETEOROLOGICAL INFO       | RMATION         |   |                            |                 |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | ±27             | 2 | Barometric Pressure (mmHg) | ; 739           |
| 3 | Relative Humidity (%)    | : 65            | 4 | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | : 84°14'52.25"N | 0 | Latitude                   | : 23°17'41.21"E |

| NABL Accredited Discipline:         | Chemical          | Group                           | Atmospheri | c Pollution      |
|-------------------------------------|-------------------|---------------------------------|------------|------------------|
| Parameter                           | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)           | ug/m²             | IS 5182 (Part-23): 2006; RA2022 | 51         | 100 (24hrs)      |
| Particulate Matter (PM2.5)          | µg/m <sup>1</sup> | IS 5182 (Part- 24): 2019        | 25         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>1</sub> ) | µg/m³             | (S 5)82 (Part-2): 2001; RA2022  | 5.2        | 80 (24brs)       |
| Nitrogen Di-Oxide (NO2)             | µg/m³             | LS 5182 (Part-6); 2006; RA2022  | 14.5       | 80 (24hrs)       |
| Ozone (Oil                          | цg/m <sup>1</sup> | 1S 5182 (Part-9): 1974; RA2019  | <20.0      | (00 (8hrs)       |
| Ammonia (NH <sub>2</sub> )          | μg/m <sup>λ</sup> | IS 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                | mg/m <sup>3</sup> | IS 5182 (Part-10); 1999; RA2019 | <1.0       | 2 (8lirs)        |
| Lead (Pb)                           | ag/m³             | IS 5182 (Part-22): 2004; RA2019 | <0.002     | 1 (24hrs)        |
| Nickel (Ni)                         | ng/m³             | IS 5182 (Part-26);2020          | ≤6.0       | 20 (Annual)      |
| Arsenic (As)                        | ng/m              | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |

\*\*\*\*End of Report\*\*\*

Reviewed by

Authorised Signatory
On Despendos Kumar Sigha

ELES Pyl Lin Technical Manager

Page 1 of 1

The Department strated as Test Report extended by the Landman's under General Terms and Concidents, city on Company letter beind in proceedings that in the Test Report refers only to the advances once to the advances once to the advances only. The advances mixed on the Test Report reflects the findings that by the Landman only to the offences on the report of the reformation which is proceed by the claims. The Report estimate the entire the findings that provides on the report, except the enformation which is proceed by the claims. The Report estimate the report of the record is not taken out of contest, which provides a appropriate the Laboratory. The Report is full for in part shall not be purposed. Advances the result of the Laboratory Amendon in distinct to the limitation of the handless, conceptation and provides on any large means and interaction to the law and interaction to the limitation of the content or appearance of the Test Report is immediated on the results of the law. All the samples are returned for 3 that for all references of the Test Report is an advanced before time by the first expended to the trial deposit of the compliants regarding the Report is to the part The complex from Regulatory bodies to to be trialled as specified. Only type of Observations or Complaints regarding the Report shall be done within 15 days from the Date of Test Report released/materi. After the proof of the receipted. The error Time schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the schedule mentioned in Test Report of the receipt and the receipt and the schedule mention of the receipt and the receipt and the receipt



PLOT NO-30, MANSAROVAN ENCLAVE. PUNDDANA HATIA, RANCHI-RE4003 (HARKHAND) OST NO-20A45CES7120124

#### ENGINEERING SERVICES PVT. LTD.

Email: (nfo@eleso).co.in eles ranchi@amail.com Phone no.: 0651-2250103 Website - www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2902 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | 1 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DETA              | MLS  | SAMPLE DETAILS   |   |  |
|----------------------------|--|--|---|--|
| Customer Name<br>Address   | Hindalco Industries Limited  Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample | : ELES/RNC/2023/AA/2444<br>: Near Pakri Gada Village<br>: 10.07,2023 to 11,07,2023<br>: 17,07,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02 |  |
| Mines Status : Operational | : Operational  | Sampling Procedure<br>Sample Drawn By                                      | : ELES Pv. Ltd.   |  |
| Period of Analysis         | 7.17.07.2023 to 24.07.2023                               | Sample Condition   | : Scaled & Preserved  |  |

| 1 | Average Temperature (°C) | :27             | 2  | Barometric Pressure (mm | Hg) : 739       |
|---|--------------------------|-----------------|----|-------------------------|-----------------|
|   | Relative Humidity (%)    | : 65            | -4 | Weather Condition       | : Parily Cloudy |
| 5 | Longitude                | : 84°14'52.25'N | 6  | Latitude                | : 23°17'41:21"E |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |
|-----------------------|-------|--------------------------------|--------|------------------|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |
| Benzene*              | µg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1,()  | 05(Annual)       |
| Benzo (a) Pyrene=     | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | < 0.5  | Ol(Amual)        |

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

Reviewed by

\*\*\*\* End of Report\*\*\*\*

Dr. Despendra Rumar Sinha Pn. D. Envenmental Engg. ELES Rvt. Ltd. Technical Manager

Page 1 of 1

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ALDT NO-30 MANSARGVAR EVOLAVE TUTTIDANA NATIA NANGY-\$34003 (INARIHANA) SIT NO-204480897130124

#### INGINEERING SERVICES PUT LTD

Email: infa@elespi.ro.in , sies minor Spind 1 p.a.n. Phone ma (-0651-2290103



Metalite i www.alespi.cu.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2983 | Report Release Date | ± 08.08.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000001750F |                     |              |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS   |   |  |
|--------------------|-------------------------------|--|---|--|
| Customer Name      | : Hindalco industries Limited | Sample Ref. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/2445<br>: Near Pol Pol Village<br>: 10.07.2023 to 11.07.2023 |  |
| Address            | :Lobardaga, Jharkhand-835302  | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : 17.07.2023<br>: Ambient Air<br>: ELES/DOC/SMP1/02                             |  |
| Mines Status       | Operational                   | Sample Drawn By  | : ELES Pvt. Ltd.  |  |
| Period of Analysis | : 17.07.2023 to 24.07.2023    | Sample Condition   | , Sealed & Preserved  |  |

| Mi | ETEOROLOGICAL INFOR      | MATION |    |                            |                 |
|----|--------------------------|--------|----|----------------------------|-----------------|
| I  | Average Temperature (°C) | : 27   | 2  | Barometric Pressure (mmHg) | : 739           |
| 3  | Relative Humidity (%)    | : 65   | -4 | Weather Condition          | : Partly Cloudy |

| NABL Accredited                      |                   |                                 |              |                  |
|--------------------------------------|-------------------|---------------------------------|--------------|------------------|
| Discipline :                         | Chemient          | Group                           | : Atmospheri | e Pollution      |
| Parameter                            | Unit              | Test Protocol                   | Result       | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | 15 5182 (Part-23): 2006; RA2022 | 56           | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³             | 1S 5182 (Part- 24): 2019        | 26           | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 5.9          | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 14.5         | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | µg/m²             | 15-5182 (Part-9): 1974; RA2019  | <20.0        | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m              | IS 5182 (Part- 25): 2018        | <10.0        | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m²             | IS 5182 (Part-10): 1999; RA2019 | <1.0         | 2 (8hrs)         |
| Lead (Pb)                            | µg/m³             | IS 5182 (Part-22): 2004; RA2019 | <0.002       | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m <sup>4</sup> | (S 5182 (Part-26):2020          | <6.0         | 20 (Annual)      |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0         | 06 (Annual)      |



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Dr. Lieborised Signatory Dr. Despendra Kumar Sinha

Phr. C. Environmental Engg.

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Page 1 of 1

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PLOT NO-30, WANSAROVAR ENCLAVE, TI IFUDANA WATML RANCH-E84003 UHARKHANDI GST NO:- 210AFCEST13D124

### ENGINEERING SERVICES PUT, LTD.

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Website I www.elespl.co.in

#### TEST REPORT

|                 |                      |                     |              | _ |
|-----------------|----------------------|---------------------|--------------|---|
| Test Report No. | ; ELES/RNC/2023/2903 | Report Release Date | : 08.08.2023 |   |
| Work Order No.  | 13612310218          | Work Order Date     | : 21.04.2023 |   |

| CUSTOMER DET         | ILS  | SAMPLE DETAILS   |   |
|----------------------|--|--|---|
| Customer Name        | : Hindateo Industries Limited<br>: Lohardago, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date | : ELES/RNC/2023/AA/2445<br>: Near Pol Pol Village<br>: 10.07.2023 to 11.07.2023<br>: 17.07.2023 |
| Address Mines Status | : Operational  | Type of Sample<br>Sampling Procedure<br>Sample Drawn By              | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvi. Ltd.   |
| Period of Analysis   | : 17.07.2023 to 24.07.2023                                     | Sample Condition   | : Sealed & Preserved  |

| MI | TEOROLOGICAL INFORMATION    |   |                          |                 |
|----|-----------------------------|---|--------------------------|-----------------|
| 1  | Average Temperature (%) :27 | 2 | Barometric Pressure (min | iHg) : 739      |
|    | Relative Humidity (%) : 65  | 4 | Weather Condition        | : Partly Cloudy |

| Discipline : Chemical |                    | Group : Atmospheric Pollution  |        |                  |
|-----------------------|--------------------|--------------------------------|--------|------------------|
| Parameter             | Unit               | Test Protocol                  | Result | Regulatory Limit |
| Benzene*              | sig/m <sup>3</sup> | TS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo (a) Pyrene*     | ng/m³              | IS:5182 (Part-12): 2004;RA2019 | <0.5   | Ol(Annual)       |

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

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\*\*\* End of Report\*\*\*\*

Authorised Signatory

Or Despendra Kumer Sinha

Ph. D. Environmental Enga

ELES Pyr. Ltd. Tachnicki Manager

Page Lof 1

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PUST NO-SC TARRISARIOVAR ENCLAVE TURLIDANA HATTA WAR CHI-534003 (JHATOCKANIT) GOVERN BULLETINGS

Emalin Into Sizisspi, co.hq., eles ranchis annuli, com

Phone no.: 0651-2290103 Website - www.elesnico.in



#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2984 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ; 21,04,2023 |
| ULR No.         | : TC883923000001751F |                     |              |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS   |   |  |
|--------------------|-------------------------------|--|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/2446<br>: Near Shakhuapani Village<br>: 11.07.2023 to 12.07.2023 |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : 17.07,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02                                 |  |
| Mines Status       | : Operational                 | Sample Drawn By<br>Sample Condition                          | : ELES Pvt. Ltd.<br>: Sealed & Preserved  |  |
| Period of Analysis | : 17,07.2023 to 24,07,2023    |  |   |  |

| METEOROLOGICAL INFORMATION      |   |                         |                 |
|---------------------------------|---|-------------------------|-----------------|
| 1 Average Temperature (°C) : 26 | 2 | Barometric Pressure (mm | Hg) : 739       |
| 3 Relative Humidity (%) : 64    | 4 | Weather Condition       | : Partly Cloudy |

| NABL Accredited                      |                   |                                 |            |                  |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline :                         | Chemical          | Group                           | Atmospheri | e Pollution.     |
| Parameter                            | Unit              | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | µg/m³             | IS 5182 (Part-23): 2006; RA2022 | 48         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 20         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | µg/m³             | IS 5182 (Part-2); 2001; RA2022  | 5.2        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>1</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 21.8       | 80 (24tirs)      |
| Ozone (O <sub>3</sub> )              | µg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>2</sub> )           | µg/m²             | 15 5182 (Part- 25): 2018        | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (Blus)         |
| Lead (Ph)                            | µg/m³             | IS 5182 (Part-22): 2004; RA2019 | < 0.002    | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m <sup>7</sup> | IS 5182 (Part-26):2020          | <5,0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m²             | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

Dr. Daepandra Kumar Sinna

Ph D Environmental Enga

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-224003 (IHARKHAND) GET NO. 304420297130174

#### ENGINEERING SERVICES PVT. LTD.

Email: Info@elesol.co.in eles ranchi@gmall.com Phone no.: 0651-2290103

Website: www.niespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2904 | Report Release Date | : 08.08.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21,04,2023 |  |

| CUSTOMER DET.      | AILS                          | SAMPLE DETAILS   |   |  |
|--------------------|-------------------------------|--|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/2446<br>: Near Shakhuapani Village<br>: 11.07.2023 to 12.07.2023<br>: 17.07.2023 |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : Ambient Air<br>ELES/DOC/SMPL/02   |  |
| Mines Status       | : Operational                 | Sample Drawn By Sample Condition                             | : ELES Pvt. Ltd.<br>: Sealed & Preserved  |  |
| Period of Analysis | ; 17,07.2023 to 24.07.2023    | cample condition   |   |  |

| METEOROLOGICAL INFORMATION      |   |                          |                 |
|---------------------------------|---|--------------------------|-----------------|
| 1 Average Temperature (*C) : 26 | 2 | Barometric Pressure (mml | fg) :739        |
| 3 Relative Humidity (%) : 64    | A | Weather Condition        | : Partly Cloudy |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |
|-----------------------|-------|--------------------------------|--------|------------------|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |
| Benzene*              | µg/m³ | (S:5182 (Part-11): 2006(RA2017 | <1.0   | 05(Annual)       |
| Benzo (a) Pyrene*     | ng/m² | IS:5182 (Part-12): 2004;RA2019 | <1).5  | 01(Annual)       |

Remarks; (\*)-Parameters are outsourced to other Lab

Reviewed by

---- End of Report \*\*\*

Anthorised Signatory

Dr. Deepandra Kumar Sinha

Pn D. Emircontend Engo

ELES Pvl. Ltd. Technical Manager

Page 1 of 1

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PLOT NOISE NAMED ARENCLAVE TURNS AND WATER CANCELLEROOF CHERESELANDS GOT NO - 20AASCEB7110104



Email: Into Belespi.co.in , sles, renent Bornan com

Phana no. 0651-2290103 Website-Iwww.elesal.co.in



TEST REPORT

| Test Report No. | ; ELES/RNC/2023/2905 | Report Release Date | : 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000001752F |                     |              |

| CUSTOMER DETAILS                   |   | SAMPLE DETAILS  |   |
|------------------------------------|---|---|---|
| Customer Name Address              | : Hindalco Industries Limited.<br>: Lohardagu, Jharkhand-835302 | Sample Ref. No<br>Location<br>Sampling Date<br>Sample Received Date<br>Type of Sample | : ELES/RNC/2023/AA/2447<br>: Near Dipa Kujam Village<br>: 11,07,2023 to 12,07,2023<br>: 17,07,2023<br>: Ambient Air |
| Mines Status<br>Period of Analysis | : Operational<br>: 17.07.2023 to 24.07.2023                     | Sampling Procedure<br>Sample Drawn By<br>Sample Condition                             | : ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.<br>: Sealed & Preserved  |

| MI | ETEOROLOGICAL INFO       | RMATION |   |                            |                 |
|----|--------------------------|---------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | 226     | 2 | Barometric Pressure (mmHg) | : 739           |
| 3  | Relative Humidity (%)    | : 64    | 4 | Weather Condition          | : Partly Cloudy |

| NABL Accredited                      |                   |                                 |            |                  |
|--------------------------------------|-------------------|---------------------------------|------------|------------------|
| Discipline :                         | Chemical          | Group :                         | Atmospheri | e Pollution      |
| Parameter                            | Unit              | Test Proment                    | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | µg/m³             | IS 5182 (Part-23): 2006; RA2022 | 46         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | µg/m <sup>3</sup> | IS 5182 (Part- 24): 2019        | 22         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | 1S 5182 (Part-2): 2001; RA2032  | 5.8        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m³             | 15 5182 (Part-6): 2006; RA2022  | 13.6       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | µg/m³             | 15 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>2</sub> )           | µg/m²             | IS 5182 (Part-25); 2018         | <10.0      | 400 (24ftrs)     |
| Carbon Monoxide (CO)                 | mg/m²             | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (Shrs)         |
| Lead (Pb)                            | µg/m³             | IS 5182 (Part-22): 2004; RA2019 | < 0.002    | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | 1S 5182 (Part-26):2020          | <6.0       | 20 (Amagal)      |
| Arsenic (As)                         | rig/m             | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |



\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

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Page 1 of 1

Page 1 of I English and the Experiment Stand as Test Report, is asserted by the Exhemitry under General Terms and Conditions, only on Computer September 1 (1994) and the results shown or the Test Report refer in relates only to the jobiumilysis does by the Laboratory acts. The information stated on the Test Report reflects the findings does by the Laboratory at the time of involvement only and within the limits of chent a manuscripts. The Laboratory is responding to the information or date provided on the report. except the inflimination which is provided by the client. The Report execut be reported except in full and any part of the report is not buyon on of context, whose gener scotten toptovel of the Laboratory. The Report is this or in part shall we be published, advertise, used the any legal actions unless prior permission has been secured from the Management of the Laboratory. Amendm is drawn to the inniumon of inhibitor, compensation and puradiction issues. Any unauthorized interation & this illegation of the content or appearance of the Test Report is unlevelal and offenders may be presented to the fallest extens of the law. All the samples are returned for Riches from the Date of resemblished of the Test Report. The samples from Regulatory budges are to be recovered in specified. Any type of Observations or Completes, regarding the Reports shall be done within 15 days from the Little of Test Report refeased assured. After the rittle period stated before, no compliants will be accepted. The entiry Torre actuable montone to ten Repair a a 2 norm farmar Abbayanan and Aba (See Archarde), BDI, (Below Detained Limit, LBL (Lower Detained Limit)



PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-184003 (IHARKHAND) GST NG.-26446CE97110124

#### ENGINEERING SERVICES PVT. LTD.

Emall: info@elespl.co.in , eles,ranchi@gmall.com Phone no.: 0651-2290103 Website : www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/2905 | Report Release Date | 3 08.08.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ; 21.04.2023 |

| CUSTOMER DETAILS         |  | SAMPLE DETAILS   |   |  |
|--------------------------|--|--|---|--|
| Customer Name<br>Address | : Hindalco Industries Limited<br>: Lohardaga, Iharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date<br>Type of Sample<br>Sampling Procedure | : ELES/RNC/2023/AA/2447<br>: Near Dipa Kujam Village<br>: 11,07,2023 to 12,07,2023<br>: 17,07,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02 |  |
| Mines Status             | : Operational  | Sample Drawn By Sample Condition   | : ELES Pvt. Ltd.<br>- Sealed & Preserved  |  |
| Period of Analysis       | : 17.07,2023 to 24.07,2023                                     | Sample Candition   | Scaled of Freserved   |  |

| MI | TEOROLOGICAL INFOR       | MATION |   |                          |                 |
|----|--------------------------|--------|---|--------------------------|-----------------|
| 1  | Average Temperature (°C) | : 26   | 2 | Barometric Pressure (mm) | Hg) 2739        |
| 3  | Relative Humidity (%)    | : 64   | 4 | Weather Condition        | : Partly Cloudy |

| Discipline : Chemical |       | Group ; Atmospheric Pollution  |        |                  |  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |  |
| Henzane*              | µg/m² | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |  |
| Benzo (a) Pyrene*     | ng/m² | IS:5182 (Part-)2): 2004;RA2019 | <0.5   | 01(Annual)       |  |  |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Dr. Authorised Signatory
en D. Environmenter Engg

BLES av., Ltd. Tachnidal Manager

Page 1 of 1

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# ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT.LTD.

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

KujamI Bauxite Mine-Environmental Monitoring Report

August 2023



### CONTENT

| Hind: | alco Industries : Kujam-I Bauxite Mine | Environmental Monitoring Report | August 2023 |
|-------|--|---------------------------------|-------------|
|       | Kujan                                  | 1-I Bauxite Mine                |             |
|       | AMBIENT AIR QUALITY- CORE ZONI         | E                               |             |
| 1     | Kujam Quarry 449                       |                                 |             |
| 2     | Talabkhanta 4A13                       |                                 |             |
| 3     | 4 A11 Football Ground                  |                                 |             |
| 4     | Camp                                   |                                 |             |
|       | AMBIENT AIR QUALITY- BUFFER ZO         | ONE                             |             |
| 1     | Near Pakri Gada Village                |                                 |             |
| 2     | Near Pol Pol Village                   |                                 |             |
| 3     | Near Shakhuapani Village               |                                 |             |
| 4     | Near Dipa Kujam Village                |                                 |             |





PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3357 | Report Release Date | : 09.09.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ; 21.04.2023 |
| ULR No.         | : TC883923000002125F | 2777                |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2854<br>: Kujam Quarry- 449<br>Kujam-I Bauxite Mine (80.87ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 10.08.2023 to 11.08.2023<br>: 14.08.2023                                       |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | ; Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                          |  |
| Period of Analysis | : 14.08.2023 to 21.08.2023    | Sample Condition  | : Sealed & Preserved   |  |

| M | ETEOROLOGICAL INFOR      | RMATION        |   |                          | -              |
|---|--------------------------|----------------|---|--------------------------|----------------|
| 1 | Average Temperature (°C) | : 25           | 2 | Barometric Pressure (mml | Hg) : 735      |
| 3 | Relative Humidity (%)    | : 64           | 4 | Weather Condition        | Partly Cloudy  |
| 5 | Longitude                | : 84°19'9.46"E | 6 | Latitude                 | :23°18'30.17"N |

| Discipline ;                         | Chemical       | Group :                         | Group : Atmospheric Pollution |                  |  |
|--------------------------------------|----------------|---------------------------------|-------------------------------|------------------|--|
| Parameter                            | Unit           | Test Protocol                   | Result                        | Regulatory Limit |  |
| Particulate Matter (PM10)            | μg/m³          | IS 5182 (Part-23): 2006; RA2022 | 45                            | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)           | μg/m³          | IS 5182 (Part- 24): 2019        | 21                            | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³          | 1S 5182 (Part-2): 2001; RA2022  | 5.6                           | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³          | 15 5182 (Part-6): 2006; RA2022  | 18.5                          | 80 (24hrs)       |  |
| Ozone (O <sub>5</sub> )              | µg/m³          | 1S 5182-(Part-9): 1974; RA2019  | <20.0                         | 100 (8hrs)       |  |
| Ammonia (NH <sub>3</sub> )           | µg/m³          | IS 5182 (Part- 25); 2018        | <10.0                         | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m³          | IS 5182 (Part-10): 1999; RA2019 | <1.0                          | 2 (8hrs)         |  |
| Lead (Pb)                            | μ <u>у</u> /m³ | IS 5182 (Part-22): 2004; RA2019 | 0.009                         | 1 (24hrs)        |  |
| Nickel (Ni)                          | ng/m³          | IS 5182 (Part-26):2020          | <6.0                          | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m³          | ELES/AIR/SOP/01                 | <2.0                          | 06 (Annual)      |  |



\*\*\*\*End of Report\*\*\*\*

Page 1 of 1

Authorised Signatory Dr. Deependra Kumar Sinha

ELES PVI. Ltd. Technical Manager

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FLOT NO-30, MANSARDVAR ENCLAVE, TUPUDANA HATIA, IIANCHI-II34003 (JHARKHAND) GST NO:- NAAECE9733D124 INGINEERING SERVICES PYT. LTD.

Email: info@elespl.ca.in , eles.ranchi@gmail.com Phone no.: 0651-2290103 Website : www.elespl.ca.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3357 | Report Release Date | : 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | ; ELES/RNC/2023/AA/2854<br>; Kujam Quarry- 449<br>Kujam-I Bauxite Mine (80.87ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 10.08.2023 to 11.08.2023<br>: 14.08.2023                                       |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                          |  |
| Period of Analysis | : 14.08.2023 to 21.08.2023    | Sample Condition  | : Sealed & Preserved   |  |

| MI | TEOROLOGICAL INFOR       | RMATION        |   |                            |                 |
|----|--------------------------|----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | : 25           | 2 | Barometric Pressure (mmHg) | : 735           |
| 3  | Relative Humidity (%)    | : 64           | 4 | Weather Condition          | : Partly Cloudy |
| 5  | Longitude                | : 84°19'9.46"E | 6 | Latitude                   | : 23°18'30.17"N |

| Discipline        | : Chemical | Group : Atmospheric Pollution  |        |                  |  |  |
|-------------------|------------|--------------------------------|--------|------------------|--|--|
| Parameter         | Unit       | Test Protocol                  | Result | Regulatory Limit |  |  |
| Benzene*          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |  |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |  |  |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Dr. Deependra Kumar Sinha

Ph. D. Environmental Engg ELES Pvi. Ltd. Technical Manager

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#### NGINELBING SERVICES PTT. LTD.

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Phone no.: 0651-2290103 Website: www.elespl.co.in



TC 6838

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3358 | Report Release Date | : 09.09.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | ; TC883923000002126F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |
|--------------------|-------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2855<br>: Talabkhanta 4A13<br>Kujam-I Bauxite Mine (80.87ha |
| Address            | = Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | : 10.08.2023 to 11.08.2023<br>: 14.08.2023<br>: Ambient Air                    |
| Mines Status       | ; Operational                 | Sampling Procedure<br>Sample Drawn By                   | : ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.   |
| Period of Analysis | : 14.08.2023 to 21.08.2023    | Sample Condition  | ; Sealed & Preserved   |

| MI | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (*C) | : 25            | 2 | Barometric Pressure (mmHg) | : 735           |
| 3  | Relative Humidity (%)    | : 64            | 4 | Weather Condition          | : Partly Cloudy |
| _  | Longitude                | : 84°18'56,50"E | 6 | Latitude                   | : 23°18'21.76"N |

| NABL Accredited                      |                   |                                 |        |                  |  |  |
|--------------------------------------|-------------------|---------------------------------|--------|------------------|--|--|
| Discipline :                         | Chemical          | Group : Atmospheric Pollution   |        |                  |  |  |
| Parameter                            | Unit              | Test Protocol                   | Result | Regulatory Limit |  |  |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 41     | 100 (24hrs)      |  |  |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 17     | 60 (24hrs)       |  |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 5.1    | 80 (24hrs)       |  |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-6); 2006; RA2022  | 20.6   | 80 (24hrs)       |  |  |
| Ozone (O <sub>3</sub> )              | μg/m <sup>1</sup> | IS 5182 (Part-9): 1974; RA2019  | <20.0  | 100 (8hrs)       |  |  |
| Ammonia (NH <sub>3</sub> )           | μg/m <sup>7</sup> | IS 5182 (Part- 25): 2018        | <10.0  | 400 (24hrs)      |  |  |
| Carbon Monoxide (CO)                 | mg/m³             | IS 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |  |  |
| Lead (Pb)                            | μg/m³             | IS 5182 (Part-22); 2004; RA2019 | 0.008  | 1 (24hrs)        |  |  |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |  |  |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |  |  |



\*\*\*\*End of Report\*\*\*\*

Dr. Deepersed Signature Sinha

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Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUFUDANA HATIA, RANCHI-E34003 (JHARKHAND) GST NO:- 28AAECE97130124 ENGINEERING SESTVICES PVT, LTD.

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3358 | Report Release Date | : 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                        | SAMPLE DETAILS  |   |
|--------------------|-----------------------------|---|---|
| Customer Name      | Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2855<br>: Talabkhanta 4A13<br>Kujam-I Bauxite Mine (80.87ha) |
| Address            | Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 10.08.2023 to 11.08.2023<br>: 14.08.2023                                      |
| Mines Status       | : Operational               | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                         |
| Period of Analysis | c 14.08.2023 to 21.08.2023  | Sample Condition  | : Sealed & Preserved  |

| MI | ETEOROLOGICAL INFOR      | MATION          |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (4C) | : 25            | 2 | Barometric Pressure (mmHg) | : 735           |
| 3. | Relative Humidity (%)    | : 64            | 4 | Weather Condition          | : Partly Cloudy |
| 5  | Longitude                | : 84°18'56.50"E | 6 | Latitude                   | : 23°18'21,76"N |

| Discipline        | : Chemical | Group                          | : Atmospheri | c Pollution      |
|-------------------|------------|--------------------------------|--------------|------------------|
| Parameter         | Unit       | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene® | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | <0.5         | 01(Annual)       |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

Or. Deependra Kurnar Sinha

Fh. D. Environnessal Enga,

ELES PVI. Lia. Technical Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D1Z4

#### INCINEERING SERVICES PYT. LTD.

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Phone no.: 0651-2290103 Website: www.elespl.co.in



TE-8835

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3359 | Report Release Date | : 09.09.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | ± 13612310218        | Work Order Date     | : 21.04.2023 |
| ULR No.         | : TC883923000002127F |                     |              |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |
|--------------------|-------------------------------|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2856<br>: 4 ATT Football Ground<br>Kujam-I Bauxite Mine (80.87ha) |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date<br>Type of Sample | 10.08.2023 to 11.08.2023<br>: 14.08.2023<br>: Ambient Air                            |
| Mines Status       | Operational                   | Sampling Procedure Sample Drawn By                      | : ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.   |
| Period of Analysis | 14.08.2023 to 21.08.2023      | Sample Condition  | : Sealed & Preserved   |

| M | ETEOROLOGICAL INFOR      | MATION        |   |                            |                 |
|---|--------------------------|---------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | :25           | 2 | Barometric Pressure (mmHg) | : 735           |
| 3 | Relative Humidity (%)    | 164           | 4 | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | 84°18'47.03"E | 6 | Latitude                   | : 23°17'48.77"N |

| NABL Accredited                      |          |                                 |        |                  |  |  |
|--------------------------------------|----------|---------------------------------|--------|------------------|--|--|
| Discipline :                         | Chemical | Group : Atmospheric Pollution   |        |                  |  |  |
| Parameter                            | Unit     | Test Protocol                   | Result | Regulatory Limit |  |  |
| Particulate Matter (PM10)            | μg/m³    | IS 5182 (Part-23): 2006; RA2022 | 43     | 100 (24hrs)      |  |  |
| Particulate Matter (PM2.5)           | μg/m³    | IS 5182 (Part- 24): 2019        | 19     | 60 (24hrs)       |  |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³    | IS 5182 (Part-2): 2001; RA2022  | 5.1    | 80 (24hrs)       |  |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³    | IS 5182 (Part-6): 2006; RA2022  | 18.5   | 80 (24hrs)       |  |  |
| Ozone (O <sub>3</sub> )              | μg/m³    | IS 5182 (Part-9): 1974; RA2019  | <20.0  | 100 (8hrs)       |  |  |
| Ammonia (NH <sub>3</sub> )           | μg/m³    | IS 5182 (Part- 25): 2018        | <10.0  | 400 (24hrs)      |  |  |
| Carbon Monoxide (CO)                 | mg/m²    | 15 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |  |  |
| Lead (Pb)                            | μg/m³    | 1S 5182 (Part-22): 2004; RA2019 | 0.008  | 1 (24hrs)        |  |  |
| Nickel (Ni)                          | ng/m*    | IS 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |  |  |
| Arsenic (As)                         | ng/m²    | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |  |  |



\*\*\*\*End of Report\*\*\*\*

Authorised Signatory Dr. Deependra Kumar Sinha

Page 1 of 1 ELES I'VI. Ltd. Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:-30AAECE87130124 NOINEEBING SERVICES PVT. LTD.

Email: infa@elespl.co.in , eles.ranchi@gmail,com Phone no.: 0651-2290103 Website : www.elesol.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3359 | Report Release Date | : 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | ELES/RNC/2023/AA/2856<br>: 4 A11 Football Ground<br>Kujam-I Bauxite Mine (80.87ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 10.08.2023 to 11.08.2023<br>: 14.08.2023   |  |
| Mines Status       |                               | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                            |  |
| Period of Analysis | = 14.08.2023 to 21:08.2023    | Sample Condition  | : Sealed & Preserved   |  |

| 1 | Average Temperature (°C) | : 25            | 2 | Barometric Pressure (mmHg) | : 735           |
|---|--------------------------|-----------------|---|----------------------------|-----------------|
| _ | Relative Humidity (%)    | : 64            | _ | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | : 84°18'47.03"E | 6 | Latitude                   | : 23°17'48,77"N |

| Discipline : Chemical |       | Group : Atmospheric Pollution  |        |                  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*              | µg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene*     | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | < 0.5  | 01(Annual)       |  |

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

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\*\*\*\*End of Report\*\*\*

Authorised Signatory
Dr. Deependra Kurnar Sinha
Ph. D. Environmental Eogg.
ELES Pv. Ltd. Technical Manager

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124

#### ENGINEERING SERVICES PVT. LTD

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

Phone na.: 0651-2290103 Website : www.elespl.co.in



10-035

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3360 | Report Release Date : 09.09.2023 |
|-----------------|----------------------|----------------------------------|
| Work Order No.  | : 13612310218        | Work Order Date : 21.04.2023     |
| ULR No.         | : TC883923000002128F |                                  |

| CUSTOMER DETA      | AILS                        | SAMPLE DETAILS   |   |  |
|--------------------|-----------------------------|--|---|--|
| Customer Name      | Hindalco Industries Limited | Sample Ref, No.<br>Location  | : ELES/RNC/2023/AA/2857<br>: Camp; Kujam-I Bauxite Mine<br>(80,87ha)                                  |  |
| Address            | Lohardaga, Jharkhand-835302 | Sampling Date Sample Received Date Type of Sample Sampling Procedure Sample Drawn By | : 10.08.2023 to 11.08.2023<br>: 14.08.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd. |  |
| Mines Status       | Operational                 |  |   |  |
| Period of Analysis | = 14.08.2023 to 21.08.2023  | Sample Condition   | : Sealed & Preserved  |  |

| M | ETEOROLOGICAL INFOR      | RMATION       |   |                            |                 |
|---|--------------------------|---------------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25          | 2 | Barometric Pressure (mmHg) | : 735           |
| 3 | Relative Humidity (%)    | : 64          | 4 | Weather Condition          | : Partly Cloudy |
| 5 | Longitude                | 84°18'42.75"E | 6 | Latitude                   | : 23°17'39,60"N |

| NABL Accredited Discipline:          | Chemical | Group :                         | Atmospheri | c Pollution      |
|--------------------------------------|----------|---------------------------------|------------|------------------|
| Parameter                            | Unit     | Test Protocol                   | Result     | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³    | IS 5182 (Part-23): 2006; RA2022 | 46         | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³    | IS 5182 (Part- 24): 2019        | 21         | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³    | IS 5182 (Part-2): 2001; RA2022  | 5.8        | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³    | IS 5182 (Part-6): 2006; RA2022  | 20,5       | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m³    | IS 5182 (Part-9): 1974; RA2019  | <20.0      | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m³    | IS 5182 (Part-25): 2018         | <10.0      | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³    | IS 5182 (Part-10): 1999; RA2019 | <1.0       | 2 (8hrs)         |
| Lead (Pb)                            | µg/m³    | 1S 5182 (Part-22): 2004; RA2019 | < 0.002    | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³    | IS 5182 (Part-26);2020          | <6.0       | 20 (Annual)      |
| Arsenic (As)                         | ng/m³    | ELES/AIR/SOP/01                 | <2.0       | 06 (Annual)      |

\*\*\*\*End of Report\*\*\*

Reviewed by

Anthorised Signatory Dr. Deependra Kumar Sinha

Page 1 of 1

ELES Pvt, Ltd. Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TURUDANA HATIA, KANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124 INDINEERING SERVICES PYT. LTO.

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/2023/3360 | Report Release Date | : 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/2857<br>: Camp; Kujam-l Bauxite Mine<br>(80.87ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 10.08,2023 to 11.08,2023<br>: 14.08,2023                           |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.              |  |
| Period of Analysis | : 14.08.2023 to 21.08.2023    | Sample Condition  | Sealed & Preserved   |  |

| MI | ETEOROLOGICAL INFOR      | MATION          |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | : 25            | 2 | Barometric Pressure (mmHg) | : 735           |
| 3  | Relative Humidity (%)    | ; 64            | 4 | Weather Condition          | : Partly Cloudy |
| 5  | Longitude                | : 84°18'42.75"E | 6 | Latitude                   | : 23°17'39.60"N |

| Discipline        | : Chemical | Group                          | : Atmospheri | e Pollution      |
|-------------------|------------|--------------------------------|--------------|------------------|
| Parameter         | Unit       | Test Protocol                  | Result       | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0         | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Part-12): 2004;RA2019 | < 0.5        | 01(Annual)       |

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

Reviewed In

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory
Dr. Deependra Kumar Binha
Ph. D Environmental Engg
ELES Pvi Ltd. Technical Manager

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#### TEST REPORT

| Test Report No. | ‡ ELES/RNC/2/23/3349 | Report Release Date | + 09.09.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ± 21.04.2023 |
| ULR No.         | : TC883923000002117F |                     |              |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS   |  |  |
|--------------------|-------------------------------|--|--|--|
| Customer Name      | ; Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date                 | : PLES/RNC/2023/AA/2846<br>: Near Pakri Gada Village<br>: 08.08,2023 to 09.08,2023 |  |
| Address            | : Lohurdaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : 14,08,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02                                |  |
| Mines Status       | : Operational                 | Sample Drawn By  | · ELES Por Lad   |  |
| Period of Analysis | 14.08.2023 to 21.08.2023      | Sample Condition   | Sealed & Preserved   |  |

| W | ETEOROLOGICAL INFOR      | MATION          |     |                            |                 |
|---|--------------------------|-----------------|-----|----------------------------|-----------------|
| 1 | Average Temperature (°C) | - 24            | 2   | Barometric Pressure (mmHg) | 737             |
| 3 | Relative Humidity (%)    | : 65            | - 4 | Weather Condition          | ; Partly Cloudy |
| 5 | Longitude                | : 84°14'52,25"N | 6   | Latitude                   | :23°17'41.21"E  |

| MARE AmesingStarf                    |                         |                                 | AL ELECTRIC | W. W. C.         |
|--------------------------------------|-------------------------|---------------------------------|-------------|------------------|
| Discipline :                         | : Atmospheric Pollution |                                 |             |                  |
| Parameter                            | Unit                    | Test Protocol                   | Result      | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³                   | IS 5182 (Part-23): 2006; RA2022 | 44          | 100 (24hrs)      |
| Particulate Matter (PMZ 5)           | μg/m³                   | IS 5182 (Part-24); 2019         | 19          | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | µg/m³                   | IS 5182 (Part-2): 2001; RA2022  | 5.9         | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³                   | IS 5182 (Part-6): 2006, RA2022  | 16.3        | 80 (24hrs).      |
| Ozone (O <sub>3</sub> )              | µg/m³                   | IS 5182 (Part-9): 1974; RA2019  | <20.0       | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m <sup>†</sup>       | IS 5182 (Part- 25): 2018        | <10.0       | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup>       | IS 5182 (Part-10): 1999; RA2019 | <1.0        | 2 (8hrs)         |
| Lead (Pb)                            | μg/m²                   | IS 5182 (Part-22): 2004; RA2019 | < 0.002     | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³                   | IS 5182 (Part-26):2020          | <6.0        | 20 (Annual)      |
| Arsenic (As)                         | ng/m³                   | ELES/AIR/SOP/01                 | <2.0        | 06 (Annual)      |

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| Test Report No. | : ELES/RNC/2023/3349 | Report Release Date | : 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETAILS     |  | SAMPLE DETAILS   |  |  |
|----------------------|--|--|--|--|
| Customer Name        | : Hindalco Industries Limited                  | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date | : ELES/RNC/2023/AA/2846<br>: Near Pakri Gada Village<br>: 08.08.2023 to 09.08.2023<br>: 14.08.2023 |  |
| Address Mines Status | : Lohardaga, Jharkhand-835302<br>: Operational | Type of Sample<br>Sampling Procedure<br>Sample Drawn By              | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.  |  |
| Period of Analysis   | : 14.08.2023 to 21.08.2023                     | Sample Condition   | ± Sealed & Preserved   |  |

| MI | ETEOROLOGICAL INFO       | EMATION         |    |                         |                 |
|----|--------------------------|-----------------|----|-------------------------|-----------------|
| 1  | Average Temperature ("C) | : 24            | .2 | Barometric Pressure (mm | Hg) 737         |
| 3  | Relative Humidity (%)    | 165             | 4  | Weather Condition       | : Partly Cloudy |
| 3  | Longitude                | : 84°14'52.25"N | 6  | Latitude                | : 23°17'41,21"E |

| Discipline        | : Chemical | Group : Atmospheric Pollution  |        |                  |
|-------------------|------------|--------------------------------|--------|------------------|
| Parameter         | Unit       | Test Protocol                  | Result | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m²      | IS:5182 (Part-12): 2004;RA2019 | < 0.5  | 01(Annual)       |

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

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TEST REPORT

|                 |                      | The state of the s |              |
|-----------------|----------------------|--|--------------|
| Test Report No. | ; ELES/RNC/2023/3350 | Report Release Date  | : 09.09.2023 |
| Work Order No.  | ± 13612310218        | Work Order Date  | : 21.04.2023 |
| ULR No.         | : TC883923000002118F |  |              |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS   |   |  |
|--------------------|-------------------------------|--|---|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/2847<br>: Near Pol Pol Village<br>: 08.08.2023 to 09.08.2023 |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : 14.08.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02                             |  |
| Mines Status       | : Operational                 | Sample Drawn By  | ELES PVI. Ltd.  |  |
| Period of Analysis | : 14.08.2023 to 21.08.2023    | Sample Condition   | : Sealed & Preserved  |  |

| METEOROLOGICAL INFORMATION    |    |                          |               |
|-------------------------------|----|--------------------------|---------------|
| Average Temperature (°C) : 24 | 2  | Barometric Pressure (mm. | Hg) : 737     |
| 3 Relative Humidity (%) : 65  | .4 | Weather Condition        | Partly Cloudy |

| NABL Accredited                      |       |                                 |         | w. 14 C. 15      |
|--------------------------------------|-------|---------------------------------|---------|------------------|
| Disciplina Chemical Group :          |       |                                 |         | e Pollution      |
| Parameter                            | Unit  | Test Protocol                   | Result  | Regulatory Limit |
| Particulate Matter (PM10)            | µg/m³ | 15 5182 (Part-23); 2006; RA2022 | 50      | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | µg/m³ | IS 5182 (Part- 24): 2019        | 22      | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³ | IS 5182 (Part-2): 2001; RA2022  | 5.1     | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³ | IS 5182 (Part-6): 2006; RA2022  | 12.7    | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | µg/m³ | 1S 5182 (Part-9): 1974; RA2019  | <20,0   | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m³ | IS 5182 (Part- 25); 2018        | <10.0   | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³ | IS 5182 (Part-10): 1999; RAZ019 | <1.0    | 2 (8hrs)         |
| Lead (Pb)                            | μg/m³ | IS 5182 (Part-22): 2004; RA2019 | < 0.002 | ! (24hrs)        |
| Nickel (Ni)                          | ng/m³ | 1S 5182 (Part-26):2020          | <6.0    | 20 (Annual)      |
| Arsenic (As)                         | ng/m³ | ELES/AIR/SOP/01                 | <2.0    | 06 (Annual)      |

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Page 1 of 1

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3350 | Report Release Date | 1 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | ± 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS   |   |  |
|--------------------|-------------------------------|--|---|--|
| Customer Name      | ; Hindalco Industries Limited | Sample Rel. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/2847<br>; Near Pol Pol Village<br>; 08.08.2023 to 09.08.2023 |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : 14,08,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02                             |  |
| Mines Status       | : Operational                 | Sample Drawn By  | c ELES Pvt. Ltd.  |  |
| Period of Analysis | ; 14.08.2023 to 21.08.2023    | Sample Condition   | : Sealed & Preserved  |  |

| VIII | ETEOROLOGICAL INFOR      | MATION |   |                            |                 |
|------|--------------------------|--------|---|----------------------------|-----------------|
| İ    | Average Temperature (°C) | ; 24   | 2 | Barometric Pressure (mmHg) | 1,737           |
| 3    | Relative Humidity (%)    | : 65   | 4 | Weather Condition          | : Partly Cloudy |

| Discipline         | : Chemical | Group ; Atmospheric Pollution  |        |                  |  |
|--------------------|------------|--------------------------------|--------|------------------|--|
| Parameter          | Unit       | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene*           | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 95(Annual)       |  |
| Berizo (a) Pyrene* | ng/m³      | 15:5182 (Part-12): 2004;RA2019 | <0.5   | 01(Annual)       |  |

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

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Page 1 of 1

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3351 | Report Release Date | 1 09.09.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | :13612310218         | Work Order Date     | ; 21,04,2023 |
| ULR No.         | TC883923000002119F   |                     |              |

| CUSTOMER DET.      | ATLS  | SAMPLE DETAILS   |   |  |
|--------------------|---|--|---|--|
| Customer Name      | ; Hindelco Industries Limited               | Sample Ref. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/2848<br>: Near Shakhuapani Viltage<br>: 09.08.2023 to 10.08.2023 |  |
| Address            | : Lohardaga, Jharkhand-835302               | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : 14.08.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02                                 |  |
| Mines Status       | : Operational<br>: 14.08.2023 to 21.08.2023 | Sample Drawn By Sample Condition                             | ELES Pvt. Ltd. Sealed & Preserved   |  |
| Period of Analysis |   | Sample Condition   | _ Semen or 1 least and  |  |

| M | ETEOROLOGICAL INFORMATION     |   |                         |                 |
|---|-------------------------------|---|-------------------------|-----------------|
| 1 | Average Temperature (°C) : 25 | 2 | Barometric Pressure (mm | Hg) : 736       |
| 3 | Relative Humidity (%) : 66    | 4 | Weather Condition       | : Partly Cloudy |

| NABL Accredited                     |                   |                                 |        |                  |  |  |
|-------------------------------------|-------------------|---------------------------------|--------|------------------|--|--|
| Discipline -                        | Chemical          | Group : Athrespharts Pollution  |        |                  |  |  |
| Parameter                           | Unit              | Test Protocol                   | Result | Regulatory Limit |  |  |
| Particulate Matter (PM10)           | μg/m <sup>3</sup> | 1S 5182 (Part-23): 2006; RA2022 | 42     | 100 (24hrs)      |  |  |
| Particulate Matter (PM2.5)          | μg/m³             | IS 5182 (Part- 24): 2019        | 18     | 60 (24hrs)       |  |  |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | <5.0   | 80 (24hrs)       |  |  |
| Nitrogen Di-Oxide (NO2)             | µg/m³             | 1S 5182 (Part-6): 2006; RA2022  | 18.3   | 80 (24hrs)       |  |  |
| Ozone (O <sub>1</sub> )             | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0  | 100 (8hrs)       |  |  |
| Ammonia (NH <sub>1</sub> )          | ug/m³             | IS 5182 (Part- 25); 2018        | <10.0  | 400 (24hrs)      |  |  |
| Carbon Monoxide (CO)                | mg/m³             | IS 5182 (Part-10): 1999; RA2019 | <1.0   | 2 (8hrs)         |  |  |
| Lead (Pb)                           | ug/m <sup>5</sup> | 1S 5182 (Part-22): 2004; RA2019 | <0.002 | 1 (24lus)        |  |  |
| Nickel (NI)                         | ng/m³             | IS 5182 (Part-26):2020          | <6.0   | 20 (Annual)      |  |  |
| Arsenic (As)                        | ng/m <sup>3</sup> | ELES/AIR/SOP/01                 | <2.0   | 06 (Annual)      |  |  |

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\*\*\*\*End of Report\*\*\*\*

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Page 1 of 1

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| Test Report No. | TELES/RNC/2023/3351 | Report Release Date | : 09,09,2023 |  |
|-----------------|---------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218       | Work Order Bare     | 1 21.04.2023 |  |

| CUSTOMER DETA        | AILS   | SAMPLE DETAILS   |   |
|----------------------|--|--|---|
| Customer Name        | : Hindalco Industries Limited                  | Sample Ref. No. Location Sampling Date Sample Received Date        | : ELES/RNC/2023/AA/2848<br>Near Shakhuapani Village<br>: 09.08.2023 to 10.08,2023<br>: 14.08.2023 |
| Address Mines Status | : Lohardaga, Jharkhand-835302<br>: Operational | Type of Sample Sampling Procedure Sample Drawn By Sample Condition | - Ambient Air<br>- ELES/DOC/SMPL/02<br>- ELES Pvt. Ltd.<br>- Sealed & Preserved                   |
| Period of Analysis   | : 14,08.2023 to 21.08.2023                     | Sample Condition   | Sealed at Fleserves   |

| AII | ETEOROLOGICAL INFORMATION     |     |                         |                 |
|-----|-------------------------------|-----|-------------------------|-----------------|
| 1   | Average Temperature (°C) : 25 | - 2 | Barometric Pressure (mm | tHg) 736        |
| 3   | Relative Humidity (%) : 66    | 4   | Weather Condition       | : Partly Cloudy |

| Discipline        | : Chemical | Group : Atmospheric Pollution  |        |                  |
|-------------------|------------|--------------------------------|--------|------------------|
| Parameter         | Unit       | Test Protucol                  | Result | Regulatory Limit |
| Benzene*          | μg/m³      | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo (a) Pyrene* | ng/m³      | IS:5182 (Pan-12): 2004;RA2019  | <0.5   | 01(Annual)       |

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

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\*\*\*\*End of Report\*\*\*\*

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3352 | Report Release Date | : 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |
| ULR No.         | : TC883923000002120F |                     |              |  |

| CUSTOMER DETA         | ATLS   | SAMPLE DETAILS   |  |  |
|-----------------------|--|--|--|--|
| Customer Name Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date | : ELES/RNC/2023/AA/2849<br>: Near Dipa Kujam Village<br>: 11.08.2023 to 12.08.2023<br>: 14.08.2023 |  |
| Mines Status          | ; Operational  | Type of Sample Sampling Procedure Sample Drawn By Sample Condition   | : Ambient Air<br>: ELES/DOC/SMPL/02<br>ELES Pvr. Ltd.<br>- Scaled & Preserved                      |  |
| Period of Analysis    | : 14.08.2023 to 21.08.2023                                     | Sangae Comment   |  |  |

| METEOROLOGICAL INFORM         | ATION |   |                            |                 |
|-------------------------------|-------|---|----------------------------|-----------------|
| 1 Average Temperature (°C) :: | 25    | 2 | Barometric Pressure (mmHg) | : 735           |
| 3 Relative Humidity (%)       |       | 4 | Weather Condition          | : Partly Cloudy |

| NABL Accredited                      |                    |                                 | Transcort of | W-11 - 21        |
|--------------------------------------|--------------------|---------------------------------|--------------|------------------|
| Enscipane 2                          | Caemicai           | Street                          | Amaginal     | a Daffindon      |
| Purameter                            | Unit               | Test Protocol                   | Result       | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³              | IS 5182 (Part-23): 2006; RA2022 | 41           | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m³              | 1S 5182 (Part- 24): 2019        | 19           | 60 (24lus)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³              | IS 5182 (Part-2): 2001; RA2022  | 6.5          | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | µg/m³              | IS 5182 (Part-6): 2006; RA2022  | 16.1         | 80 (24hrs)       |
| Ozone (O <sub>5</sub> )              | μg/m²              | IS 5182 (Part-9): 1974; RA2019  | <20,0        | 100 (8hrs)       |
| Ammonia (NH <sub>5</sub> )           | µg/m³              | IS 5182 (Part- 25): 2018        | <10.0        | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m³              | IS 5182 (Pan-10): 1999; RA2019  | <1.0         | 2 (8hrs)         |
| Lead (Pb)                            | µg/in <sup>3</sup> | IS 5182 (Part-22): 2004; RA2019 | < 0.002      | I (24hrs)        |
| Nickel (Ni)                          | ng/m³              | IS 5182 (Part-26):2020          | <6.0         | 20 (Annual)      |
| Arsenic (As)                         | ng/m³              | ELES/AIR/SOP/01                 | <2.0         | 06 (Annual)      |



\*\*\*\*End of Report\*\*\*

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3352 | Report Release Date | : 09.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13512310218        | Work Order Date     | : 21.04.2023 |  |

| USTOMER DETAILS                    |  | SAMPLE DETAILS   |  |  |
|------------------------------------|--|--|--|--|
| Customer Name<br>Address           | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No.<br>Location<br>Sampling Date<br>Sample Received Date<br>Type of Sample | : ELES/RNC/2023/AA/2849<br>: Near Dipa Kujam Village<br>: 11.08.2023 to 12.08.2023<br>: 14.08.2023<br>: American Air |  |
| Mines Status<br>Period of Analysis | : Operational<br>: 14,08,2023 to 21,08,2023                    | Sampling Procedure<br>Sample Drawn By<br>Sample Condition                              | : ELES/DOC/SMPL/02<br>: ELES Pvt, Ltd.<br>: Scaled & Preserved   |  |

| VI. | ETEOROLOGICAL INFORMATION     |    |                         |                 |
|-----|-------------------------------|----|-------------------------|-----------------|
| 1   | Average Temperature (°C) : 25 | 2  | Barometric Pressure (mm | Hg) : 735       |
| 3   | Relative Humidity (%) : 64    | -4 | Weather Condition       | : Partly Cloudy |

| Discipline ; Chemical |       | Group : Atmospheric Pollution  |        |                  |  |
|-----------------------|-------|--------------------------------|--------|------------------|--|
| Parameter             | Unit  | Test Protocol                  | Result | Regulatory Limit |  |
| Benzene <sup>a</sup>  | μg/m³ | IS:5182 (Part-11): 2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo (a) Pyrene*     | ng/m³ | IS:5182 (Part-12): 2004;RA2019 | < 0.5  | 01(Annual)       |  |

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

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\*\*\*\*End of Report\*\*\*\*

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Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-B34003 (MARKHAND) GST NO:-20AAECE9713D1Z4

### ENGINWERING SERVICES PVV. LTD.

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

Phone no.: 0651-2290103 Website: www.elespi.co.in

#### TEST REPORT

| Test Report No. | : ELES/RAN/2023/1717 | Report Release Date | : 10.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DET       | AILS                          | SAMPLE DETAILS   |  |  |
|--------------------|-------------------------------|--|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Sampling Date<br>Sample Received Date | ELES/RAN/2023/DW/1604<br>07.08.2023<br>28.08.2023          |  |
| Address            | : Lohardaga, Jharkhand-835302 | Type of Sample<br>Source/Location of Sample              | : Drinking Water<br>: Kujam I- Bauxite Mines<br>(80.87 ha) |  |
| Mines Status       | : Operational                 | Sampling Procedure<br>Sample Collected By                | : ELES/DOC/SMPL/01<br>: ELES Pvt, Ltd.                     |  |
| Period of Analysis | : 28.08.2023 to 09.09.2023    | Sample Condition   | ; Sealed & Preserved                                       |  |

| Discipline : Chem  | ical  | Group : Water  |                     |                     | ory Limit<br>10500:2012 |
|--|-------|--|---------------------|---------------------|-------------------------|
| Parameter  | Unit  | Test Protocol  | Result              | Acceptable<br>Limit | Permissible<br>Limit    |
| pH (at 24.7°C)   | ě     | APHA 23 <sup>rd</sup> Ed,2017, 4500-H                  | 6.68                | 6,5-8.5             | No<br>Relaxation        |
| Turbidity  | NTU   | APHA 23 <sup>rd</sup> Ed.2017, 2130 B                  | 0.28                | 1.0                 | 5.0                     |
| Taste  | -     | APHA 23rd Ed.2017, 2160 C                              | Agrecable           | Agreeable           | Agreeable               |
| Odour  | -16-4 | IS 3025 (Part-5) :2018                                 | Agreeable           | Agreeable           | Agreeable               |
| Colour   | Hazen | APHA 23rd Ed.2017, 2120B&D                             | 1.0                 | -5                  | 15                      |
| Total Dissolved Solids<br>(TDS)                            | mg/L  | APHA 23 <sup>rt</sup> Ed.2017, 2540B,C&D               | 396                 | 500                 | 2000                    |
| Chloride (as Cl)   | mg/L  | APHA 23rd Ed.2017, 4500 CI B                           | 80.4                | 250                 | 1000                    |
| Fluoride (as F)  | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 F-D                | BDL<br>(DL: 0.1)    | 1.0                 | 1.5                     |
| Total Alkalinity (as CaCO <sub>3</sub> )                   | mg/L  | APHA 23rd Ed,2017, 2320 B                              | 112                 | 200                 | 600                     |
| Total Hardness (as CaCO <sub>3</sub> )                     | mg/L  | APHA 23 <sup>rd</sup> Ed,2017, 2340 C                  | 169                 | 200                 | 600                     |
| Sulphate (as SO <sub>4</sub> )                             | mg/L  | APHA 23rd Ed.2017, 4500 SO <sub>4</sub> -2-E           | 26.8                | 200                 | 400                     |
| Nitrate (as NO <sub>2</sub> )                              | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 NO <sub>3</sub> -B | 3.42                | 45                  | No<br>Relaxation        |
| Phenolic Compound<br>(as C <sub>6</sub> H <sub>5</sub> OH) | mg/L  | IS 3025 (Part-43):1992;RA2019                          | BDL<br>(DL: 0.0005) | 0.001               | 0.002                   |

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:-20AAECE9713D1Z4

### ENGINEERING SERVICES PYT. LTD.

Emall: info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290103 Website : www.elespl.co.in

### TEST REPORT

 Test Report No.
 : ELES/RAN/2023/1717
 Report Release Date
 : 10.09.2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21.04.2023

| Discipl                         | ine : Che | mical Group: W                           | Vater              |                     | tory Limit<br>10500:2012 |
|---------------------------------|-----------|--|--------------------|---------------------|--------------------------|
| Parameter                       | Unit      | Test Protocol                            | Result             | Acceptable<br>Limit | Permissible<br>Limit     |
| Cyanide (as CN)                 | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 4500 CN-E | BDL<br>(DL; 0.012) | 0.05                | No<br>Relaxation         |
| Residual Free Chlorine<br>(RFC) | mg/L      | IS 3025 (Part-26):2021                   | BDL<br>(DL: 0.1)   | 0.02                | 1.0                      |
| Calcium (as Ca)                 | mg/L      | APHA 23rd Ed.2017, 3500 Ca B             | 41.8               | 75                  | 200                      |
| Discipl                         | ine: Che  | mical Group                              | : Residues in      | Water               |                          |
| Aluminum (as Al)                | mg/L      | IS 3025 (Part-55); 2003; RA2019          | BDL<br>(DL: 0.02)  | 0.03                | 0.2                      |
| Arsenic (as As)                 | mg/L      | IS 3025 (Part 37): 2022                  | BDL<br>(DL: 0.005) | 0.01                | No<br>Relaxation         |
| Boron (as B)                    | mg/L      | IS 3025(Part-57): 2005; RA2021           | BDL<br>(DL: 0.2)   | 0.5                 | 1.0                      |
| Cadmium (as Cd)                 | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | BDL<br>(DL: 0.003) | 0.003               | No<br>Relaxation         |
| Total Chromium (as Cr)          | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | BDL<br>(DL: 0.03)  | 0.05                | No<br>Relaxation         |
| Copper (as Cu)                  | mg/L      | APHA 23rd Ed.2017, 3111B                 | BDL<br>(DL: 0.03)  | 0.05                | 1.5                      |
| Iron (as Fe)                    | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | 0.198              | 1.0                 | 1.0                      |
| Lead (as Pb)                    | mg/L      | APHA 23 <sup>rd</sup> Ed.2017, 3111B     | BDI.<br>(DL: 0.01) | 0.01                | No<br>Relaxation         |
| Manganese (as Mn)               | mg/L      | APHA 23rd Ed.2017, 3111B                 | BDL<br>(DL: 0.05)  | 0.1                 | 0.3                      |
| Mercury (as Hg)                 | mg/L      | IS 3025 (Part-48): 1994; RA2019          | BDL<br>(DL: 0.001) | 0.001               | No<br>Relaxation         |
| Selenium (as Se)                | mg/L      | 1S 3025 (Part-56): 2003; RA2019          | BDL<br>(DL: 0.01)  | 0.01                | No<br>Relaxation         |
| Zinc (as Zn)                    | mg/L      | APHA 23 <sup>rd</sup> Ed,2017, 3111B     | BDL<br>(DL: 0.1)   | .5                  | 15                       |

Remarks: L. pH & RFC done at Lab.

Page 2 of 4

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:-20AAECE9713D124

### ENGINEERING SERVICES PVT. LTD.

Emall: info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290103 Website : www.elespl.co.in

### TEST REPORT

 Test Report No.
 : ELES/RAN/2023/1717
 Report Release Date
 : 10.09,2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21.04,2023

| Discipline: Che                                 | mical |               | Group: Water       |  |
|---|-------|---------------|--------------------|--|
| Parameter                                       | Unit  | Test Protocol | Result             | Regulatory Limit<br>as per IS 10500:2012 |
| Pesticides                                      |       |               |                    |  |
| Alachlor*                                       | μg/L  | APHA          | BDL<br>(DL: 1.0)   | 20                                       |
| Atrazine*                                       | µg/L  | АРНА          | BDL<br>(DL: 1.0)   | 2  |
| Aldrin/Dieldrin*                                | μg/L  | АРНА          | BDL<br>(DL: 0.01)  | 0.03                                     |
| Alpha HCH*                                      | µg/L  | АРНА          | BDL<br>(DL: 0.001) | 0.01                                     |
| Beta HCH*                                       | μg/L  | APHA          | BDL<br>(DL: 0.01)  | 0.04                                     |
| Butachlor*                                      | μg/L  | АРНА          | BDL<br>(DL: 10)    | 125                                      |
| Chlorpyriphos*                                  | µg/L  | АРНА          | BDL<br>(DL: 10)    | 30                                       |
| Delta HCH*                                      | μg/L  | АРНА          | BDL<br>(DL: 0.01)  | 0.04                                     |
| 2,4 dichlorophenoxyacetic acid*                 | μg/L  | АРНА          | BDL<br>(DL: 10)    | 30                                       |
| DDT(o,p and p,p-isomers of<br>DDT,DDE and DDD)* | μg/L  | APHA          | BDL<br>(DL: 0.5)   | 1  |
| Endosulfan<br>(alpha, beta, and sulphate)*      | μg/L  | APHA          | BDL<br>(DL: 0.1)   | 0.4                                      |
| Ethion*   | μg/L  | АРНА          | BDL<br>(DL: 0,5)   | 3  |
| Gamma HCH (Lindane)*                            | μg/L  | АРНА          | BDL<br>(DL: 0.5)   | 2  |
| Isoproturon*                                    | μg/L  | APHA          | BDL<br>(DL: 0.5)   | 9  |

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124

### ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in , eles.ranchi@gmail.com Phone na.: 0651-2290103 Website : www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RAN/2023/1717 | Report Release Date | ± 10.09.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| Manualla . Di                               | Madiat     | Conne : 1                     | Votor                | Regulate             | ry Limit             |
|---|------------|-------------------------------|----------------------|----------------------|----------------------|
| Discipline : Bi                             | ologicai   | Group:                        | Group: Water         |                      | 10500:2012           |
| Parameter                                   | Unit       | Test Protocol                 | Result               | Acceptable<br>Limit  | Permissible<br>Limit |
| Total Coliform                              | Per 100 mL | 18 15185:2016; RA 2021        | Not Detected         | Shall not be detecte |                      |
| Escherichia Coli (E. Coli)                  | Per 100 mL | 18 15185:2016; RA 2021        | Not Detected         | Share nor i          | e detected           |
| No. of the con-                             | Ch and out | Province                      | Water                | Regulatory Limit     |                      |
| Discipline :                                | Chemical   | Group: Water                  |                      | as per IS 10500:2012 |                      |
| Parameter                                   | Unit       | Test Protocol                 | Result               | Acceptable<br>Limit  | Permissible<br>Limit |
| Anionic Surfactants<br>(as MBAS)*           | mg/L       | 1S 3025 Part 68               | BDL<br>(DL: 0.1)     | 0.2                  | 1.0                  |
| Mineral Oil*                                | mg/L       | CL-6, IS: 3025 (P-39)         | BDL<br>(DL: 0.1)     | 1.0                  | No<br>relaxation     |
| Polynuclear Aromatic<br>Hydrocarbons (PAH)* | mg/L       | APHA 23 <sup>rd</sup> Edition | BDL.<br>(DL: 0.0001) | 0.0001               | No<br>relaxation     |
| Polychlorinated Biphenyls<br>(PCB)*         | mg/L       | APHA 23 <sup>rd</sup> Edition | BDL<br>(DL: 0.0005)  | 0,0005               | No<br>relaxation     |

Remarks: 1, (\*) Parameters are outsourced to other Lab.

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory Rekha Saxena B. Sc. M. Sc. (Botany) Elifector ELES Pvt. Ltd.

Rokha Saxena

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# ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT.LTD.

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

Kujam II Bauxite Mine-Environmental Monitoring Report

September- 2023

### CONTENT

| Hind | alco Industries : Kujam-II Bauxite Mine Environmental Monitoring Report September- 2023 |
|------|---|
|      | Kujam-II Bauxite Mine   |
|      | AMBIENT AIR QUALITY- CORE ZONE  |
| 1    | Kujam-II Weigh Bridge   |
| 2    | Nawatoli Quarry   |
| 3    | Quarry 195  |
| 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 NOISE  |
|      | STREAM WATER  |
| 1    | Dhardhri Nadi (Upstream)  |
| 2    | Dhardhri Nadi (Downstream)  |
|      |   |





PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-R34003 (JHARKHAND) GST ND:- 20AAECE9723D124

### ENGINEERING SERVICES PUT. LTD.

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Phane no.: 0651-2290103 Website: www.elespi.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3969 | Report Release Date | : 28.10,2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETAILS   |                               | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/3206<br>: Kujam-II Weigh Bridge<br>Kujam-II Bauxite Mine (157,38ha) |  |
| Address : Loh      | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 08.09.2023 to 09.09.2023   |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt, Ltd.                                |  |
| Period of Analysis | : 12.09.2023 to 23.09.2023    | Sample Condition  | : Scaled & Preserved   |  |

| MI | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | : 25            | 2 | Barometric Pressure (mmHg) | 734             |
| 3  | Relative Humidity (%)    | : 66            | 4 | Weather Condition          | Partly Cloudy   |
| 5  | Longitude                | : 84°17'30.39"E | 6 | Latitude                   | = 23°18'50.59"N |

| Discipline : Chemica                 | ıl                | Group: Atmospheric Pollution    |         |                  |
|--------------------------------------|-------------------|---------------------------------|---------|------------------|
| Parameter                            | Unit              | Test Protocol                   | Result  | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 47      | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | μg/m <sup>3</sup> | IS 5182 (Part- 24): 2019        | 20      | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 5,1     | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 18.2    | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0   | 100 (8hrs)       |
| Ammonta (NH <sub>3</sub> )           | µg/m³             | IS 5182 (Part- 25): 2018        | <10.0   | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>2</sup> | IS 5182 (Part-10); 1999; RA2019 | <1.0    | 2 (8hrs)         |
| Lead (Pb)                            | µg/m²             | 1S 5182 (Part-22); 2004; RA2019 | < 0.002 | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0    | 20 (Annual)      |
| Arsenic (As)                         | ng/m²             | ELES/AIR/SOP/01                 | <2.0    | 06 (Annual)      |

Page 1 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124 NGINEERING 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/2023/3969 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| Discipline : Chemi                        | ical  | Group: Atmospheric Pollution |        |                  |
|---|-------|------------------------------|--------|------------------|
| Parameter                                 | Unit  | Test Protocol                | Result | Regulatory Limit |
| Benzene (C <sub>6</sub> H <sub>6</sub> )* | μg/m³ | IS 5182 (Part-11)2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo-(a)-Pyrene*                         | ng/m³ | IS 5182 (Part-12)2004;RA2019 | <0.5   | O1(Annual)       |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory
Dr. Deependra Kurnar 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, NANCHI-834003 (JHARKHAND) G5T NO:- 30AAECE9713D174

GINEERING SERVICES PVT, LTD.

Email: info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290103 Website: www.alespl.co.in

### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3970 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | CUSTOMER DETAILS              |   |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/3207<br>: Nawatoli Quarry<br>Kujam-II Bauxite Mine (157,38ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 08.09.2023 to 09.09.2023   |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | ELES/DOC/SMPL/02<br>ELES Pvt. Ltd.   |  |
| Period of Analysis | : 42.09.2023 to 23.09.2023    | Sample Condition  | : Sealed & Preserved   |  |

| MI | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) | : 25            | 2 | Barometric Pressure (mmHg) | : 734           |
| 3  | Relative Humidity (%)    | : 66            | 4 | Weather Condition          | : Partly Cloudy |
| 5  | Longitude                | : 84°17'38.67"E | 6 | Latitude                   | : 23°18'20.87"N |

| Discipline : Chemica                 | il                | Group: A                        | Group: Atmospheric Pollution |                  |  |
|--------------------------------------|-------------------|---------------------------------|------------------------------|------------------|--|
| Parameter                            | Unit              | Test Protocol                   | Result                       | Regulatory Limit |  |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23); 2006; RA2022 | 43                           | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 19                           | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m²             | 15 5182 (Part-2): 2001; RA2022  | 5.7                          | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 16.1                         | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )              | μg/m³             | 1S 5182 (Part-9): 1974; RA2019  | <20.0                        | 100 (8hrs)       |  |
| Ammonia (NH <sub>3</sub> )           | μg/m <sup>§</sup> | 1S 5182 (Part- 25): 2018        | <10.0                        | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m³             | 1S 5182 (Part-10): 1999; RA2019 | <1.0                         | 2 (8hrs)         |  |
| Lead (Pb)                            | μg/m³             | IS 5182 (Part-22): 2004; RA2019 | 0.004                        | 1 (24hrs)        |  |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0                         | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0                         | 06 (Annual)      |  |

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124

### ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290103

Website: www.elespl.co.in

### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3970 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| Discipline : Chemi                        | ical  | Group: Atmospheric Pollution |        |                  |
|---|-------|------------------------------|--------|------------------|
| Parameter                                 | Unit  | Test Protocol                | Result | Regulatory Limit |
| Benzene (C <sub>6</sub> H <sub>6</sub> )* | μg/m³ | 1S 5182 (Part-I1)2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo-(a)-Pyrene*                         | ng/m³ | IS 5182 (Part-12)2004;RA2019 | <0.5   | 01(Annual)       |

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

\*\*\*\*End of Report\*\*\*\*

Authorised 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, MANSAROVAN ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO.-2014ECE9713D1Z4 ENGINEERING SERVICES PYT. STD.

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/2023/3971 | Report Release Date | : 28.10.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET       | MLS                           | SAMPLE DETAILS  |  |
|--------------------|-------------------------------|---|--|
| Customer Name      | ; Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/3208<br>: Quarry- 195<br>Kujam-II Bauxite Mine (†57.38ha) |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 08.09,2023 to 09.09,2023<br>: 12.09,2023                                   |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                      |
| Period of Analysis | : 12.09.2023 to 23.09.2023    | Sample Condition  | : Sealed & Preserved   |

| MI | ETEOROLOGICAL INFOR      | RMATION         |   |                            |                 |
|----|--------------------------|-----------------|---|----------------------------|-----------------|
| I  | Average Temperature (°C) | : 25            | 2 | Barometric Pressure (mmHg) | : 734           |
| 3  | Relative Humidity (%)    | : 66            | 4 | Weather Condition          | : Partly Cloudy |
| 5  | Longitude                | : 84°17'30.27"E | 6 | Latitude                   | : 23°18'56.89"N |

| Discipline : Chemica                 | d                 | Group : A                       | Group: Atmospheric Pollution |                  |  |
|--------------------------------------|-------------------|---------------------------------|------------------------------|------------------|--|
| Parameter                            | Unit              | Test Protocol                   | Result                       | Regulatory Limit |  |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 40                           | 100 (24hrs)      |  |
| Particulate Matter (PM2,5)           | μg/m³             | IS 5182 (Part- 24); 2019        | 18                           | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 5.1                          | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m <sup>3</sup> | IS 5182 (Part-6): 2006; RA2022  | 12.2                         | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )              | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0                        | 100 (8hrs)       |  |
| Ammonia (NH <sub>3</sub> )           | μg/m³             | IS 5182 (Part- 25): 2018        | <10.0                        | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m³             | 1S 5182 (Part-10): 1999; RA2019 | <1.0                         | 2 (8hrs)         |  |
| Lead (Pb)                            | μg/m³             | IS 5182 (Part-22): 2004; RA2019 | < 0.002                      | 1 (24hrs)        |  |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26);2020          | <6.0                         | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0                         | 06 (Annual)      |  |

Page 1 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- ZUAAECE9713D1Z4

### RING SERVICES PVT. LTD.

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3971 | Report Release Date | : 28.10.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| Discipline : Chemi                        | cal               | Group: Atmospheric Pollution |        |                  |
|---|-------------------|------------------------------|--------|------------------|
| Parameter                                 | Unit              | Test Protocol                | Result | Regulatory Limit |
| Benzene (C <sub>6</sub> H <sub>6</sub> )* | μg/m³             | IS 5182 (Part-11)2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo-(a)-Pyrene*                         | ng/m <sup>3</sup> | IS 5182 (Part-12)2004;RA2019 | <0.5   | 01(Annual)       |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Authorised 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) 65T NO:- 20AAECE97130124 ENGINEERING SERVICES PVT. LTD.

Email: info@elespl.co.in , eles.ranchi@gmall.com Phone no.: 0651-2290103 Website: www.elespl.co.in

#### TEST REPORT

| Test Report No. | ; ELES/RNC/2023/3972 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS  |  |  |
|--------------------|-------------------------------|---|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location                             | : ELES/RNC/2023/AA/3209<br>: Bhattipat<br>Kujam-II Bauxite Mine (157/38ha) |  |
| Address            | : Lohardaga, Jharkhand-835302 | Sampling Date<br>Sample Received Date                   | : 08.09.2023 to 09.09.2023<br>: 12.09.2023                                 |  |
| Mines Status       | : Operational                 | Type of Sample<br>Sampling Procedure<br>Sample Drawn By | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                    |  |
| Period of Analysis | ; 12.09.2023 to 23.09.2023    | Sample Condition  | : Sealed & Preserved   |  |

| MI | ETEOROLOGICAL INFORMATION     |   |                            |                 |
|----|-------------------------------|---|----------------------------|-----------------|
| 1  | Average Temperature (°C) : 25 | 2 | Barometric Pressure (mmHg) | : 734           |
| 3  | Relative Humidity (%) : 66    | 4 | Weather Condition          | : Partly Cloudy |
| 5  | Longitude : 84°17'54.25"E     | 6 | Latitude                   | ; 23"18'34.89"N |

| Discipline : Chemica                 | 1                 | Group : A                       | Group: Atmospheric Pollution |                  |  |
|--------------------------------------|-------------------|---------------------------------|------------------------------|------------------|--|
| Parameter                            | Unit              | Test Protocol                   | Result                       | Regulatory Limit |  |
| Particulate Matter (PM10)            | μg/m³             | 15 5182 (Part-23): 2006; RA2022 | 40                           | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)           | μg/m³             | IS 5182 (Part- 24): 2019        | 18                           | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | µg/m³             | IS 5182 (Part-2); 2001; RA2022  | 5,4                          | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>1</sub> ) | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 17.2                         | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )              | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0                        | 100 (8hrs)       |  |
| Ammonia (NH <sub>1</sub> )           | μg/m³             | IS 5182 (Part- 25): 2018        | <10.0                        | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | IS 5182 (Part-10): 1999; RA2019 | <1.0                         | 2 (8hrs)         |  |
| Lead (Pb)                            | μg/m³             | IS 5182 (Part-22); 2004; RA2019 | 0.005                        | 1 (24hrs)        |  |
| Nickel (Ni)                          | ng/m <sup>1</sup> | IS 5182 (Part-26):2020          | <6.0                         | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m <sup>3</sup> | ELES/AIR/SOP/01                 | <2.0                         | D6 (Annual)      |  |

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PLOT NO-30, MANSAROVAR ENCLAVE, TUFUDANA HATIA, RANCHI-834003 (JHARKHAND) 65T NO:- 20AAECE9713D1Z4

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3972 | Report Release Date | : 28,10.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| Discipline : Chemi                        | cal               | Group: Atmospheric Pollution |        |                  |  |
|---|-------------------|------------------------------|--------|------------------|--|
| Parameter                                 | Unit              | Test Protocol                | Result | Regulatory Limit |  |
| Benzene (C <sub>6</sub> H <sub>6</sub> )* | µg/m <sup>2</sup> | IS 5182 (Part-11)2006;RA2017 | <1.0   | 05(Annual)       |  |
| Benzo-(a)-Pyrene*                         | ng/m³             | IS 5182 (Part-12)2004;RA2019 | <0.5   | 01(Annual)       |  |

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

Reviewed by

\*\*\*\*End of Report\*\*\*\*

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

Page 2 of 2

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Phane no.: 0651-3290103 Website www.elesgi.com

### TEST REPORT

| Test Report No. | ELES/RNC/2023/3957 | Report Release Date | ; 28.10.2023 |
|-----------------|--------------------|---------------------|--------------|
| Work Order No.  | : 13612310218      | Work Order Date     | : 21.04.2023 |

| CUSTOMER DETA      | AILS  | SAMPLE DETAILS  |  |
|--------------------|---|---|--|
| Customer Name      | : Hindalco Industries Limited : Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date | ELES/RNC/2023/AA/3192<br>Near Pakri Gada Village<br>05.09.2023 to 06.09.2023<br>12.09.2023 |
| Mines Status       | : Operational   | Type of Sample<br>Sampling Procedure<br>Sample Drawn By     | : Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.                                    |
| Period of Analysis | : 12.09.2023 to 23.09.2023                                  | Sample Condition  | : Sealed & Preserved   |

|   | Average Temperature (°C) : 25 | 2 | Barometrie Pressure (mm | Hg) : 742       |
|---|-------------------------------|---|-------------------------|-----------------|
| _ | Relative Humidity (%) : 74    | 4 | Weather Condition       | : Cloudy        |
| 5 | Longitude : 84°14'52.25"N     | 6 | Latitude                | : 23°17'41.21"E |

| Discipline: Chemica                 | al                | Group : Atmospheric Pollution   |         |                  |  |
|-------------------------------------|-------------------|---------------------------------|---------|------------------|--|
| Parameter                           | Unit              | Test Protocol                   | Result  | Regulatory Limit |  |
| Particulate Matter (PM10)           | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 39      | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)          | μg/m³             | IS 5182 (Part- 24); 2019        | 22      | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | 5.1     | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO2)             | μg/m³             | 1S 5182 (Part-6): 2006; RA2022  | 18.7    | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )             | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0   | 100 (8hrs)       |  |
| Ammonia (NH <sub>3</sub> )          | µg/m <sup>3</sup> | IS 5182 (Part- 25); 2018        | <10.0   | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                | mg/m³             | 1S 5182 (Part-10): 1999; RA2019 | <1.0    | 2 (8hrs)         |  |
| Lead (Pb)                           | µg/m²             | 15 5182 (Part-22): 2004; RA2019 | < 0.002 | 1 (24hrs)        |  |
| Nickel (Ni)                         | ng/m³             | IS-5182 (Part-26):2020          | <6.0    | 20 (Annual)      |  |
| Arsenic (As)                        | ng/m²             | ELES/AIR/SOP/01                 | <2.0    | 06 (Annual)      |  |

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Pitone no.: 9551-2290103 Website www.elespi.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3957 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| Discipline: Chemical                      |       | Group: Atmospheric Pollution |        |                  |
|---|-------|------------------------------|--------|------------------|
| Parameter                                 | Unit  | Test Protocol                | Result | Regulatory Limit |
| Benzene (C <sub>c</sub> H <sub>6</sub> )* | μg/m³ | IS 5182 (Part-11)2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo-(a)-Pyrene*                         | ng/m1 | IS 5182 (Part-12)2004;RA2019 | < 0.5  | 01(Annual)       |

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

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\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

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Page 2 of 2

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3958 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04,2023 |  |

| CUSTOMER DETA      | AILS                          | SAMPLE DETAILS   |   |
|--------------------|-------------------------------|--|---|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Location<br>Sampling Date                 | : ELES/RNC/2023/AA/3193<br>: Near Pol Pol Village<br>: 05.09.2023 to 06.09,2023 |
| Address            | : Lohardaga, Jharkhand-835302 | Sample Received Date<br>Type of Sample<br>Sampling Procedure | : 12.09.2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02                             |
| Mines Status       | : Operational                 | Sample Drawn By  | : ELES Pvt. Ltd.  |
| Period of Analysis | : 12.09.2023 to 23.09.2023    | Sample Condition   | : Sealed & Preserved  |

| MI | ETEOROLOGICAL INFORMATION     |     |                         |           |
|----|-------------------------------|-----|-------------------------|-----------|
| 1  | Average Temperature (°C) : 25 | - 2 | Barometric Pressure (mm | Hg) : 742 |
| 3  | Relative Humidity (%) : 74    | 4   | Weather Condition       | : Cloudy  |

| Discipline: Chemica                  | al                | Group : A                       | Atmospheric l | Pollution        |
|--------------------------------------|-------------------|---------------------------------|---------------|------------------|
| Parameter                            | Unit              | Test Protocol                   | Result        | Regulatory Limit |
| Particulate Matter (PM10)            | μg/m³             | IS 5182 (Part-23): 2006; RA2022 | 43            | 100 (24hrs)      |
| Particulate Matter (PM2.5)           | µg/m³             | IS 5182 (Part- 24): 2019        | 20            | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | <5.0          | 80 (24hrs)       |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-6); 2006; RA2022  | 15.5          | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )              | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0         | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )           | μg/m³             | 1S 5182 (Part- 25): 2018        | <10.0         | 400 (24hrs)      |
| Carbon Monoxide (CO)                 | mg/m <sup>3</sup> | JS 5182 (Part-10): 1999; RA2019 | <1.0          | 2 (8hrs)         |
| Lead (Pb)                            | µg/m <sup>†</sup> | IS 5182 (Part-22): 2004; RA2019 | < 0.002       | 1 (24hrs)        |
| Nickel (Ni)                          | ng/m³             | IS 5182 (Part-26):2020          | <6.0          | 20 (Annual)      |
| Arsenic (As)                         | ng/m³             | ELES/AIR/SOP/01                 | <2.0          | 06 (Annual)      |

Page 1 of 2

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Wehalte: www.elegal.co.le

### TEST REPORT

| Test Report No. | ; ELES/RNC/2023/3958 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| Discipline : Chemi                         | cal   | Group:                       | Atmospheric | Pollation        |
|--|-------|------------------------------|-------------|------------------|
| Parameter                                  | Unit  | Test Protocol                | Result      | Regulatory Limit |
| Berizene (C <sub>6</sub> H <sub>6</sub> )* | μg/m³ | IS 5182 (Part-11)2006;RA2017 | <1.0        | 05(Annual)       |
| Benzo-(a)-Pyrene*                          | ng/m³ | IS 5182 (Part-12)2004;RA2019 | <0.5        | 01(Annual)       |

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

\*\*\*\*End of Report\*\*\*\*

Authorised Signatory
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Page 2 of 2

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PLOT INC.-30, MANSAROWAR EVOLAVE, TUPUDANA NATIA, RANCHI-434093 (JMARIMANII) ENTINO.-70045-697130171

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3959 | Report Release Date | : 28.10.2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DETA            | AILS   | SAMPLE DETAILS  |  |
|--------------------------|--|---|--|
| Customer Name<br>Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample Sampling Procedure | ELES/RNC/2023/AA/3194  Near Shakhuapani Village  06.09.2023 to 07.09.2023  12.09.2023  Ambient Air  ELES/DOC/SMPL/02  ELES Pvt. Ltd.   |
| Mines Status             | : Operational  | Sample Drawn By   | A Marie Committee of the Committee of th |
| Period of Analysis       | : 12.09.2023 to 23.09.2023                                     | Sample Condition  | : Sealed & Preserved   |

| M | ETEOROLOGICAL INFORMATION     |   |                         |           |
|---|-------------------------------|---|-------------------------|-----------|
| t | Average Temperature (°C) : 26 | 2 | Barometric Pressure (mm | Hg) : 742 |
| _ | Relative Humidity (%) = 68    | 4 | Weather Condition       | ; Cloudy  |

| Discipline: Chemica                  | il    | Group: Atmospheric Pollution    |         |                  |  |
|--------------------------------------|-------|---------------------------------|---------|------------------|--|
| Parameter                            | Unit  | Test Protocol                   | Result  | Regulatory Limit |  |
| Particulate Matter (PM10)            | μg/m³ | IS 5182 (Part-23): 2006; RA2022 | 42      | 100 (24hrs)      |  |
| Particulate Matter (PM2.5)           | μg/m³ | IS 5182 (Part- 24): 2019        | 17      | 60 (24hrs)       |  |
| Sulphur Di-Oxide (SO <sub>2</sub> )  | μg/m³ | IS 5182 (Part-2); 2001; RA2022  | <5.0    | 80 (24hrs)       |  |
| Nitrogen Di-Oxide (NO <sub>2</sub> ) | μg/m³ | IS 5182 (Part-6): 2006; RA2022  | 18.2    | 80 (24hrs)       |  |
| Ozone (O <sub>3</sub> )              | μg/m³ | IS 5182 (Part-9): 1974; RA2019  | <20.0   | 100 (8hrs)       |  |
| Ammonia (NH <sub>2</sub> )           | µg/m³ | JS 5182 (Part-25): 2018         | <10.0   | 400 (24hrs)      |  |
| Carbon Monoxide (CO)                 | mg/m³ | IS 5182 (Part-10); 1999; RA2019 | <1.0    | 2 (8hrs)         |  |
| Lead (Pb)                            | μg/m² | IS 5182 (Part-22): 2004; RA2019 | < 0.002 | I (24hrs)        |  |
| Nickel (Ni)                          | ng/m³ | IS 5182 (Part-26):2020          | <6.0    | 20 (Annual)      |  |
| Arsenic (As)                         | ng/m³ | ELES/AIR/SOP/01                 | <2.0    | 06 (Annual)      |  |

Page 1 of 2

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3959 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| Discipline: Chemi                                      | ical  | Group: Atmospheric Pollution |        |                  |
|--|-------|------------------------------|--------|------------------|
| Parameter  | Unit  | Test Protocol                | Result | Regulatory Limit |
| Benzene (C <sub>6</sub> H <sub>6</sub> ) <sup>2e</sup> | μg/m³ | IS 5182 (Part-11)2006;RA2017 | <1.0   | 05(Annual)       |
| Benzo-(a)-Pyrene+                                      | ng/m³ | IS 5182 (Part-12)2004;RA2019 | <0,5   | 01(Annual)       |

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

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\*\*\*\*End of Report\*\*\*\*

Authorised Signatory

T. L'excendra (Cumer Sin idi Ph. Environmental Engg. B. 60 P./r. Lig. Transcel Manager

Page 2 of 2

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# ENTERONMENTAL LABORATORIES.

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3960 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DETA        | AILS   | SAMPLE DETAILS   |  |
|----------------------|--|--|--|
| Customer Name        | : Hindaleo Industries Limited  | Sample Ref. No.<br>Location<br>Sampling Date                           | : ELES/RNC/2023/AA/3195<br>: Near Dipa Kujam Village<br>: 07.09.2023 to 08,09,2023 |
| Address Mines Status | : Lohardaga, Jharkhand-835302<br>: Operational   | Sample Received Date Type of Sample Sampling Procedure Sample Drawn By | : 12,09,2023<br>: Ambient Air<br>: ELES/DOC/SMPL/02<br>: ELES Pvt. Ltd.            |
|                      | 1 - April - Ap |  | : Sealed & Preserved   |
| Period of Analysis   | : 12.09.2023 to 23.09.2023   | Sample Condition   | , Scared be Freserved  |

| M | ETEOROLOGICAL INFORMATION     |   |                          |           |
|---|-------------------------------|---|--------------------------|-----------|
| 1 | Average Temperature (°C) : 25 | 2 | Barometric Pressure (mm. | Hg) : 742 |
| 3 | Relative Humidity (%) : 70    | 4 | Weather Condition        | : Cloudy  |

| Discipline : Chemics                | it                | Group: A                        | Atmospheric | Pollution        |
|-------------------------------------|-------------------|---------------------------------|-------------|------------------|
| Parameter                           | Unit              | Test Protocol                   | Result      | Regulatory Limit |
| Particulate Matter (PM10)           | µg/m³             | IS 5182 (Part-23): 2006; RA2022 | 48          | 100 (24hrs)      |
| Particulate Matter (PM2.5)          | µg/m³             | IS 5182 (Part- 24): 2019        | 24          | 60 (24hrs)       |
| Sulphur Di-Oxide (SO <sub>2</sub> ) | μg/m³             | IS 5182 (Part-2): 2001; RA2022  | <5.0        | 30 (24hrs)       |
| Nitrogen Di-Oxide (NO2)             | μg/m³             | IS 5182 (Part-6): 2006; RA2022  | 17.3        | 80 (24hrs)       |
| Ozone (O <sub>3</sub> )             | μg/m³             | IS 5182 (Part-9): 1974; RA2019  | <20.0       | 100 (8hrs)       |
| Ammonia (NH <sub>3</sub> )          | µg/m³             | IS 5182 (Part- 25); 2018        | <10.0       | 400 (24hrs)      |
| Carbon Monoxide (CO)                | mg/m²             | IS 5182 (Part-10); 1999; RA2019 | <1.0        | 2 (8hrs)         |
| Lead (Pb)                           | μg/m³             | IS 5182 (Pan-22): 2004; RA2019  | < 0.002     | 1 (24hrs)        |
| Nickel (Ni)                         | ng/m <sup>3</sup> | 1S 5182 (Part-26):2020          | <6.0        | 20 (Annual)      |
| Arsenic (As)                        | ng/m³             | ELES/AIR/SOP/01                 | <2.0        | 06 (Annual)      |

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/3960 | Report Release Date | : 28.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| Discipline : Chemi                                    | ical  | Group: Atmospheric Pollution |        |                  |  |  |
|---|-------|------------------------------|--------|------------------|--|--|
| Parameter   | Unit  | Test Protocol                | Result | Regulatory Limit |  |  |
| Benzene (C <sub>0</sub> H <sub>0</sub> ) <sup>®</sup> | μg/m³ | IS 5182 (Part-11)2006;RA2017 | <1.0   | 05(Annual)       |  |  |
| Benzo-(a)-Pyrene*                                     | ng/m³ | IS 5182 (Part-12)2004;RA2019 | <0.5   | 01(Annuai)       |  |  |

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

Reviewed by

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\*\*\*\*End of Report\*\*\*\*

Authorised SignatorZinha

The D. Environmental English CLPS PVI Ltd Tachnical Manager

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/4137 | Report Release Date | : 31.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DE           | TAILS  | SAMPLE DETAILS   |   |  |
|-----------------------|--|--|---|--|
| Customer Name Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sampling Date Sampling Received Date Type of Sample Sampling procedure Sample Drawn By | : 08.09.2023 to 09.09.2023<br>: 30,09,2023<br>: Ambient Noise<br>: ELES/DOC/SMPL/03<br>: ELES Pvt. Ltd. |  |
| Mines Status          | Operational  | Period of Analysis   | 130.09.2023 to 10.10.2023   |  |

| M | ETEOROLOGICAL INFO       | RMATION |   |                            |                 |
|---|--------------------------|---------|---|----------------------------|-----------------|
| 1 | Average Temperature (°C) | : 25    | 2 | Barometric Pressure (mmHg) | : 736           |
| 3 | Relative Humidity (%)    | : 66    | 4 | Weather Condition          | : Partly Cloudy |

| Location   | Unit  | Test Protocol | Result     |     | Regulatory Limit<br>(Industrial Zone) |
|--|-------|---------------|------------|-----|---------------------------------------|
| 734 7757   |       |               | Time       | Leq |                                       |
| Near Mine Office<br>Kujam-II Bauxite Mine (157.38ha) | dB(A) | RA 2020       | Day Time   | 63  | 75 dB(A)<br>Day Time<br>&             |
| Sample ID:<br>ELES/RNC/2023/AN/3529                  | 3200  |               | Night Time | 49  | 70 dB(A)<br>Night Time                |

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Reviewed by

\*\*\*\*End of Report\*\*\*

Authorised Signatory

Dr. Deependra Kumer Sinhis Ph. D. Environmental Enga BLES PVL Ltd. Technical Manager

Page 1 of 1

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#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/4159 | Report Release Date | : 31.10.2023 |  |
|-----------------|----------------------|---------------------|--------------|--|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |  |

| CUSTOMER DE              | TAILS  | SAMPLE DETAILS   |  |  |
|--------------------------|--|--|--|--|
| Customer Name<br>Address | : Hindalco Industries Limited<br>: Lohardaga, Jharkhand-835302 | Sampling Date Sampling Received Date Type of Sample Sampling procedure Sample Drawn By | : 08.09.2023<br>: 30.09.2023<br>: Workzone Noise<br>: ELES/DOC/SMPL/03<br>: ELES Pvt. Ltd. |  |
| Mines Status             | : Operational  | Period of Analysis   | : 30.09.2023 to 11.10,2023   |  |

| M | ETEOROLOGICAL INFORMATION     |    |                            |                 |
|---|-------------------------------|----|----------------------------|-----------------|
| 1 | Average Temperature (°C) : 26 | .2 | Barometric Pressure (mmHg) | : 738           |
| 3 | Relative Humidity (%) : 65    | 4  | Weather Condition          | : Partly Cloudy |

| Location  | Unit   | Lort Protocol Result     | Result   |     | Regulatory Limit<br>(Industrial Zone) |
|---|--|--------------------------|----------|-----|---------------------------------------|
| Commerces at Owner, No.2.                                       |  |                          | Time     | Leq |                                       |
| Compressor at Quarry No.2 –<br>Kujam-II Bauxite Mine (157.38ha) | m-II Bauxite Mine (157.38ha)  ole ID:  dB(A) | IS 4758:1968;<br>RA 2017 | Day Time | 78  | 90 dB (A)                             |
| Sample ID:<br>ELES/RNC/2023/WN/3551                             |  |                          | Day Time | 70  |                                       |

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Ph. D. Environne al Engli.
ELES Pvt. Ltd. Technical Manage

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### TEST REPORT

| Test Report No. | : ELES/RNC/2023/4117 | Report Release Date | : 31.10,2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | ÷ 21.04.2023 |

| CUSTOMER DET       | AILS                          | SAMPLE DETAILS   |  |  |
|--------------------|-------------------------------|--|--|--|
| Customer Name      | Hindalco Industries Limited   | Sample Ref. No.<br>Sampling Date<br>Sample Received Date | : ELES/RNC/2023/SW/3509<br>: 08.09.2023<br>: 29.09.2023              |  |
| Address            | : Lohardaga, Jharkhand-835302 | Type of Sample<br>Source of Sample<br>Location of Sample | : Surface Water<br>: Up Stream<br>: Dhardhari Nadi, Kujam-Il Bauxite |  |
| Mines Status       | : Operational                 | Sampling Procedure                                       | Mine (157,38ha)<br>: ELES/DOC/SMPL/01                                |  |
| Period of Analysis | : 29.09.2023 to 17.10.2023    | Sample Collected By<br>Sample Condition                  | : ELES Pvt. Ltd.<br>: Sealed & Preserved                             |  |

| Discipline: Chemica                    | d     | Group: Water                               |                    | Tolerance Limits   |  |
|--|-------|--|--------------------|--|--|
| Parameter Unit                         |       | Test Protocol                              | Result             | us per IS 2296-1992<br>Class C<br>(Inland Surface Water) |  |
| pH (at 24.7 °C)                        | Tel   | IS 3025 (Part 11): 2022                    | 6.79               | 6.5-8.5  |  |
| Colour                                 | Hazen | IS 3025 (Part -4): 2021                    | 57                 | 300  |  |
| Odour                                  | -     | IS 3025 (Part-5) : 2018                    | Unobjectionable    | line   |  |
| Taste                                  | -     | APHA 23rd Ed.2017, 2160 C                  | N/A                | -  |  |
| Turbidity                              | mg/L  | 1S 3025 (Part-10) 1984;RA2017              | 94                 | 5  |  |
| Total Dissolved Solids (TDS)           | mg/L  | IS 3025 (Part 16):1984; RA2017             | 318                | 1500   |  |
| Total Alkalinity (as CaCOs)            | mg/L  | IS 3025 (Part-23) :1986; RA2019            | 95.8               | -  |  |
| Total Hardness (as CaCO <sub>1</sub> ) | mg/L  | IS 3025 (Part-21): 2009; RA2019            | 120.5              |  |  |
| Sulphate (as SO <sub>4</sub> )         | mg/L  | IS 3025 (Part 24): 1986; RA2019            | 23.2               | 400  |  |
| Nitrate (as NO <sub>2</sub> )          | mg/L  | APHA 23rd Ed.2017, 4500 NO <sub>3</sub> -B | 2.18               | 50   |  |
| Chloride (as Cl)                       | mg/L  | IS 3025 (Part-32) :1988; RA2019            | 46.5               | 600  |  |
| Fluoride (as F)                        | mg/L  | IS 3025 (Part-60) :2008; RA2019            | 0.218              | 1,5  |  |
| Cyanide (as CN)                        | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 CN-E   | BDL<br>(DL: 0.012) | 0.05   |  |

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### TEST REPORT

 Test Report No.
 : ELES/RNC/2023/4117
 Report Release Date
 : 31.10.2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21,04.2023

| Discipline: (  | Chemical   | Group: Wat                            | er   | Tolerance Limits  |
|--|--|---------------------------------------|--|---|
| Parameter  | Unit   | Test Protocol                         | Result   | as per IS 2296-1992<br>Class C<br>(Inland Surface Water |
| Phenols Compounds<br>(ns C <sub>4</sub> H <sub>2</sub> OH)   | mg/L   | IS 3025 (Part-43): 1992;RA2019        | BDL<br>(DL: 0.0005)  | 0.005   |
| Calcium (as Ca)  | mg/L   | IS 3025 (Part-40): 1991;RA2019        | 32.1   | ++  |
| Free Residual Chlorine<br>(RFC)  | mg/L   | IS 3025 (Part-26) :2021               | BDL,<br>(DL: 0.1)  | -   |
| Discipline: Ci   | hemical  | Group: Residu                         | es in Water  |   |
| Aluminium (as Al)  | mg/L   | IS 3025 (Part-55) :2003; RA2019       | BDL<br>(DL: 0.02)  | **  |
| Arsenic (as As)  | mg/L   | IS 3025 (Part 37): 2022               | BDL<br>(DL: 0.005)   | 0.2   |
| Boron (as B)   | mg/L   | IS 3025 (Part-57) :2021               | BDL<br>(DL: 0.2)   | =   |
| Cadmium (as Cd)  | ing/L  | APHA23 <sup>rd</sup> Ed.2017; 3111B   | BDL<br>(DL: 0.003)   | 0.01  |
| Total Chromium (as Cr)   | mg/L   | APHA 23 <sup>rd</sup> Ed.2017; 3111B  | BDL<br>(DL: 0.03)  | -   |
| Copper (as Cu)   | mg/L   | APHA 23rd Ed.2017; 3111B              | BDL<br>(DL: 0.03)  | 1.5   |
| Iron (as Fe)   | mg/L   | APHA 23rd Ed.2017; 3111B              | 0.426  | 50  |
| Lead (as Pb)   | mg/L   | APHA 23 <sup>rd</sup> Ed.2017, 3111 B | BDL<br>(DL: 0.01)  | 0.1   |
| Manganese (as Mn)  | mg/L   | APHA 23 <sup>rd</sup> Ed.2017; 3111 B | BDL<br>(DL: 0.05)  | Ħ   |
| Mercury (as Hg)  | mg/L   | IS 3025 (Part-48) :1994; RA2019       | BDL<br>(DL: 0.001)   | 4-  |
| Selenium (as Se)   | mg/L   | IS 3025 (Part-56) :2003; RA2019       | BDL<br>(DL: 0.01)  | 0.05  |
| Zine (as Zn)   | mg/L   | APHA 23 <sup>rd</sup> Ed.2017, 3111 B | BDL<br>(DL: 0.1)   | 15  |
| Discipline: Bi   | THE RESERVE OF THE PARTY OF THE | Group: Wate                           | the same of the sa |   |
| Total Coliform   | CFU/100 mL   | IS 15185; 2016, RA2021                | 5.09×10 <sup>3</sup>   | 5000  |
| Escherichia Coli   | CFU/100 mL   | IS 15185:2016; RA2021                 | 1.27×10 <sup>3</sup>   | H   |
| and the state of t | 12.74  |                                       |  |   |

Remarks: 1. pH & RFC done at Lah.

Page 2 of 3

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND). GST NO:- 20AAECE9713D124

### ENGINEERING SERVICES PVT. LTD

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

Phone no.: 0651-2290103 Website: www.elespl.co.in

### TEST REPORT

: ELES/RNC/2023/4117 Test Report No. Report Release Date : 31.10.2023 Work Order No. : 13612310218 Work Order Date : 21.04.2023

| Discipline: Ch                                  | emical | Group:                        | Water   |
|---|--------|-------------------------------|---------|
| Parameter                                       | Unit   | Test Protocol                 | Result  |
| Anionic Surfactants<br>(as MBAS)*               | mg/L   | IS 3025 Part 68               | <0.1    |
| Mineral Oil*                                    | mg/L   | CL-6, IS: 3025 (P-39)         | <0.1    |
| Polynuclear Aromatic Hydrocarbons<br>(PAH)*     | mg/L   | APHA 23 <sup>rd</sup> Edition | <0.0001 |
| Pesticides                                      |        |                               |         |
| Alachlor*                                       | μg/L.  | APHA                          | <1.0    |
| Atrazine*                                       | µg/L   | АРНА                          | <1.0    |
| Aldrin/Dieldrin*                                | µg/L   | АРНА                          | <0.01   |
| Alpha HCH*                                      | μg/L   | APHA                          | < 0.001 |
| Beta HCH*                                       | µg/L   | APHA                          | <0.01   |
| Butachlor*                                      | µg/L   | АРНА                          | <10     |
| Chlorpyriphos*                                  | μg/L   | APHA                          |         |
| Delta HCH*                                      | µg/L   | APHA                          | <10     |
| 2,4 dichlorophenoxyacetic acid*                 | μg/L   | APHA                          | < 0.01  |
| DDT(o,p and p,p-isomers of<br>DDT,DDE and DDD)* | μg/L   | APHA                          | <10     |
| Endosulfan<br>(alpha, beta, and sulphate)*      | μg/L   | АРНА                          | <0.1    |
| Ethion*   | µg/L   | APHA                          | <0.5    |
| Gamma HCH (Lindane)*                            | μg/L   | APHA                          | 3180    |
| soproturon*                                     | µg/L   | APHA                          | <0.5    |

Remarks: 1. (\*) Parameters are outsourced to other Lab.

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Dr. Authorised Signatory

Ph. D. Environmental Engg. ELES Pyl. Ltd. Technical Manager

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Phane no.: 0651-2290103 Website: www.elespl.co.in

#### TEST REPORT

| Test Report No. | : ELES/RNC/2023/4126 | Report Release Date | : 31.10,2023 |
|-----------------|----------------------|---------------------|--------------|
| Work Order No.  | : 13612310218        | Work Order Date     | : 21.04.2023 |

| CUSTOMER DET       | TAILS                         | SAMPLE DETAILS   |  |  |
|--------------------|-------------------------------|--|--|--|
| Customer Name      | : Hindalco Industries Limited | Sample Ref. No.<br>Sampling Date<br>Sample Received Date<br>Type of Sample | : ELES/RNC/2023/SW/3518<br>: 08.09.2023<br>: 29.09.2023<br>: Surface Water |  |
| Address            | : Lohardaga, Jharkhand-835302 | Source of Sample<br>Location of Sample                                     | : Down Stream<br>: Dhardhari Nadi, Kujam-II Bauxite                        |  |
| Mines Status       | : Operational                 | Sampling Procedure   | Mine (157:38ha)<br>: BLES/DOC/SMPL/01                                      |  |
| Period of Analysis | £29.09,2023 to 17,10,2023     | Sample Collected By<br>Sample Condition                                    | : BLES Pvt. Ltd.<br>: Sealed & Preserved                                   |  |

| Discipline: Chemic                       | al    | Group: Water   |                    | Tolerance Limits  |
|--|-------|--|--------------------|---|
| Parameter                                | Unit  | Test Protocol  | Result             | as per IS 2296-1992<br>Class C<br>(Inland Surface Water |
| pH (at 24.7 °C)                          | 4.0   | IS 3025 (Part 11): 2022                                | 6.76               | 6.5-8.5   |
| Colour                                   | Hazen | IS 3025 (Part -4): 2021                                | 18                 | 300   |
| Odour                                    | *     | IS 3025 (Part-5): 2018                                 | Unobjectionable    |   |
| Taste                                    |       | APHA 23 <sup>rd</sup> Ed.2017, 2160 C                  | N/A                |   |
| Turbidity                                | mg/L  | IS 3025 (Part-10):1984;RA2017                          | 82                 |   |
| Total Dissolved Solids (TDS)             | mg/L  | IS 3025 (Part 16):1984; RA2017                         | 328                | 1500  |
| Total Alkalinity (as CaCO <sub>3</sub> ) | mg/L  | IS 3025 (Part-23):1986; RA2019                         | 95.8               | 1300  |
| Total Hardness (as CaCO <sub>3</sub> )   | mg/L  | IS 3025 (Part-21): 2009; RA2019                        | 136                |   |
| Sulphate (as SO <sub>4</sub> )           | mg/L  | IS 3025 (Part 24): 1986; RA2019                        | 22.2               | 400   |
| Nitrate (as NO <sub>3</sub> )            | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 NO <sub>3</sub> -B | 2.48               | 50  |
| Chloride (as CI)                         | mg/L  | IS 3025 (Part-32) :1988; RA2019                        | 49.4               |   |
| Fluoride (as F)                          | mg/L  | IS 3025 (Part-60) :2008; RA2019                        | 0.218              | 600   |
| Cyanide (as CN)                          | mg/L  | APHA 23 <sup>rd</sup> Ed.2017, 4500 CN-E               | BDL<br>(DL: 0,012) | 0.05  |

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:-2014ECE9713D124

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Email: info@elespl.co.in , eles.ranchi@gmail.com Phone na : 0651-2290103

Phone no.: 0651-2290103 Website: www.elespi.co.in

### TEST REPORT

 Test Report No.
 : ELES/RNC/2023/4126
 Report Release Date
 : 31.10.2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21.04.2023

| Discipline: (  | hemical    | Group: Wat                            | er                   | Tolerance Limits   |
|--|------------|---------------------------------------|----------------------|--|
| Parameter  | Unit       | Test Protocol                         | Result               | as per IS 2296-1992<br>Class C<br>(Inland Surface Water) |
| Phenols Compounds<br>(as C <sub>0</sub> H <sub>2</sub> OH) | mg/L       | IS 3025 (Part-43): 1992;RA2019        | BDL<br>(DL: 0.0005)  | 0.005  |
| Calcium (as Ca)  | mg/L       | IS 3025 (Part-40): 1991;RA2019        | 36                   | +  |
| Free Residual Chlorine<br>(RFC)                            | mg/L       | IS 3025 (Part-26) :2021               | BDL<br>(DL: 0.1)     | an .   |
| Discipline: Cl   | nemical    | Group: Residu                         |                      |  |
| Aluminium (as Al)  | mg/L       | IS 3025 (Part-55) :2003; RA2019       | BDL<br>(DL: 0.02)    | -  |
| Arsenic (as As)  | mg/L       | IS 3025 (Part 37): 2022               | BDL<br>(DL: 0.005)   | 0.2  |
| Boron (as B)   | mg/L       | IS 3025 (Part-57) :2021               | BDL<br>(DL: 0.2)     | (m)  |
| Cadmium (as Cd)  | mg/L       | APHA23 <sup>rd</sup> Ed.2017; 3111B   | BDL<br>(DL: 0.003)   | 10.0   |
| Total Chromium (as Cr)                                     | mg/L       | APHA 23rd Ed 2017; 3111B              | BDL<br>(DL: 0.03)    | ė  |
| Copper (as Cu)   | mg/L       | APHA 23 <sup>rd</sup> Ed.2017; 3111B  | BDL<br>(DL: 0.03)    | 1.5  |
| Iron (as Fe)   | mg/L       | APHA 23rd Ed.2017; 3111B              | 0.401                | 50   |
| Lead (as Pb)   | mg/L       | APHA 23 <sup>rd</sup> Ed.2017, 3111 B | BDL<br>(DL: 0.01)    | 0.1  |
| Manganese (as Mn)  | mg/L:      | APHA 23 <sup>rd</sup> Ed,2017; 3111 B | BDL<br>(DL: 0.05)    | 0.0  |
| Mercury (as Hg)  | mg/L       | IS 3025 (Part-48) :1994; RA2019       | BDL<br>(DL: 0.001)   | 9-   |
| Selenium (as Se)   | mg/L       | IS 3025 (Part-56) :2003; RA2019       | BDL<br>(DL: 0.01)    | 0.05   |
| Zinc (as Zn)   | mg/L       | APHA 23 <sup>rd</sup> Ed.2017, 3111 B | BDL<br>(DL: 0.1)     | 15   |
| Discipline: Bio  | 1          | Group: Water                          | ег                   |  |
| Total Coliform   | CFU/100 mL | IS 15185: 2016, RA2021                | 4.63×10 <sup>3</sup> | 5000   |
| Escherichia Coli   | CFU/100 mL | IS 15185:2016; RA2021                 | 3.63×10 <sup>3</sup> |  |

Remarks:1. pH & RFC done at Lab.

Page 2 of 3

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Phone no.: 0651-2290103 Website: www.elespi.co.in

### TEST REPORT

 Test Report No.
 : ELES/RNC/2023/4126
 Report Release Date
 : 31.10.2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21.04.2023

| Discipline: Che                                 | emical | Group: Water          |         |  |
|---|--------|-----------------------|---------|--|
| Parameter                                       | Unit   | Test Protocol         | Result  |  |
| Anionic Surfactants (as MBAS)*                  | mg/t.  | IS 3025 Part 68       | <0.1    |  |
| Mineral Oil*                                    | mg/L   | CL-6, IS: 3025 (P-39) | < 0.1   |  |
| Polynuclear Aromatic Hydrocarbons<br>(PAH)*     | mg/L   | APHA 23rd Edition     | <0.0001 |  |
| Pesticides                                      |        |                       |         |  |
| Alachlor*                                       | μg/L   | APHA                  | <1.0    |  |
| Atrazine*                                       | μg/L   | APHA                  | <1.0    |  |
| Aldrin/Dieldrin*                                | μg/L   | APHA                  | < 0.01  |  |
| Alpha HCH*                                      | μg/L   | APHA                  | < 0.001 |  |
| Beta HCH*                                       | μg/L   | APHA                  | <0.01   |  |
| Butachlor*                                      | μg/L   | APHA                  | <10     |  |
| Chlorpyriphos*                                  | μg/L   | АРНА                  | <10     |  |
| Delta HCH*                                      | μg/L   | APHA                  | <0.01   |  |
| 2,4 dichlorophenoxyacetic acid*                 | μg/L   | APHA                  | <10     |  |
| DDT(o,p and p.p-isomers of<br>DDT,DDE and DDD)* | μg/L   | АРНА                  | <0.5    |  |
| Endosulfan<br>(alpha, beta, and sulphate)*      | μg/L   | АРНА                  | <0.1    |  |
| Ethion*   | μg/L   | APHA                  | <0.5    |  |
| Gamma HCH (Lindane)*                            | µg/L   | APHA                  | <0.5    |  |
| Isopreturen*                                    | µg/L   | APHA                  | < 0.5   |  |

Remarks: 1. (\*) Parameters are outsourced to other Lab.

Reviewed by

\*\*\*\*End of Report\*\*\*\*

Dr. De Chelleris Rd Signaturos
Ph. D. Environmental Engo.

Ph. D. Environmental Engg. ELES Pvl. Ltd. Technical Manager

Page 3 of 3

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Annexure 3

Date - 01.11.2023

### 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 with the Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

- 1. Mr. Jitendra Kumar Sahoo (Coordinator)
- 2. Mr. Shubham Kumar (Geologist)
- 3. Ms. Swetapadma Nanda Environment Engineer
- 4. Mr. Anand Prakash Tiwari 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.

Basudev Gangopadhyay

AVP (Planning, Environment & Compliance)

# **Annexure 4**

|      | Production, Mil                | ned Out, Ba                  | ck Filled and                   | Over Burden                 | removal fron       | n April'23 to          | September <sup>4</sup>   | 23                    |
|------|--------------------------------|------------------------------|---------------------------------|-----------------------------|--------------------|------------------------|--------------------------|-----------------------|
| S No | Name of the Mines              | Mining<br>lease area<br>(ha) | Production<br>Capacity<br>(MT)* | Lease<br>Period*            | Production<br>(MT) | Mined out<br>area (ha) | Back filled<br>area (ha) | Over burden<br>(Cu.M) |
| 1    | Bagru bauxite Mine             | 75.41                        | 85000                           | 22.01.1974 to<br>31.03.2030 | 0                  | 0                      | 0.00                     | 0.00                  |
| 2    | Bhusar Bauxite Mine            | 65.31                        | 280000                          | 11.07.1981 to<br>31.03.2030 | 148918             | 0.92                   | 0.45                     | 163157.26             |
| 3    | Hisri (New) Bauxite<br>Mine    | 14.55                        | 100000                          | 19.07.1981 to<br>31.03.2030 | 56738              | 0.4                    | 0.49                     | 27329.28              |
| 4    | Kujam - I Bauxite Mine         | 80.87                        | 150000                          | 13.03.2006 to<br>12.03.2056 | 102270             | 2.1                    | 1.61                     | 157784.02             |
| 5    | Kujam - II Bauxite Mine        | 157.38                       | 300000                          | 24.03.2006 to<br>23.03.2056 | 61110              | 3.02                   | 1.21                     | 134785.10             |
| 6    | Amtipani Bauxite Mine          | 190.95                       | 150000                          | 13.03.2006 to<br>12.03.2056 | 100700             | 2.91                   | 1.00                     | 125875.50             |
| 7    | Gurdari Bauxite Mine           | 584.19                       | 325000                          | 23.03.1985 to<br>22.03.2035 | 78106              | 3.07                   | 2.38                     | 242675.00             |
| 8    | Shrengdag A Bauxite<br>Mine    | 155.81                       | 260000                          | 16.10.1974 to<br>31.03.2030 | 14860              | 0.39                   | 0.35                     | 14280                 |
| 9    | Shrengdag B Bauxite<br>Mine    | 140.07                       | 100000                          | 04.10.1978 to<br>31.03.2030 | 43320              | 1.12                   | 1.15                     | 77170                 |
| 10   | Jalim & Sanai Bauxite<br>'Mine | 12.14                        | 50000                           | 16.10.1974 to<br>31.03.2030 | 26725              | 0.21                   | 0.2                      | 8750                  |
| 11   | Orsapat Bauxite Mine           | 196.36                       | 200000                          | 17.07.1986 to<br>16.07.2036 | NIL                | NIL                    | NIL                      | NIL                   |
| 12   | Chiro Kukud bauxite<br>Mine    | 152.57                       | 100000                          | 29.01.1985 to<br>28.01.2035 | NIL                | NIL                    | NIL                      | NIL                   |
| 13   | Pakhar (8.09)                  | 8.09                         | 80000                           | 16.05.1973 to<br>31.03.2030 | NIL                | NIL                    | NIL                      | NIL                   |
| 14   | Pakhar (35.12)                 | 35.12                        | 200000                          | 17.04.1975 to<br>31.03.2030 | NIL                | NIL                    | NIL                      | NIL                   |

# Annexure 4

| 15 | Pakhar (115.13)      |         |        | 19.07.1996 to |                   |       |      |           |
|----|----------------------|---------|--------|---------------|-------------------|-------|------|-----------|
|    |                      | 115.13  | 300000 | 31.03.2030    | 147508.00         | 2.29  | 0.4  | 532571.87 |
|    |                      |         |        | Miner         | als & Minerals Li | mited |      |           |
| 16 | Pakhar (15.58)       |         |        | 28.04.1965 to | 80.00             | 0.00  | 0.00 | 0.00      |
|    |                      | 15.58   | 60000  | 31.03.2030    |                   | 0.00  | 0.00 | 0.00      |
| 17 | Pakhar (109.507)     |         |        | 26.07.2008 to | 97720.00          |       |      |           |
|    |                      | 109.507 | 280000 | 25.07.2058    |                   | 1.93  | 0.71 | 237280.85 |
| 18 | Bimarla Bauxite Mine |         |        | 18.07.2009 to |                   |       |      |           |
|    |                      | 134.37  | 300000 | 17.07.2059    | 39550             | 2.21  | 0.8  | 64913.65  |
| 19 | Amtipani Chirodih    |         |        | 11.01.2017 to |                   |       |      |           |
|    | Bauxite Mines        | 130.01  | 450000 | 10.01.2067    | 84678             | 3.96  | 1.15 | 98519.66  |

<sup>\*</sup>Static information about the mines included in the above table



Basudev Gangopadhyay

AVP (Planning, Environment and Compliance)

### **Annexure-5**

#### BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2023-24

The composite cost during the year 2023-24 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 2023-24 | Actual (in Rupees) FY 2023-24 (From April'23 to September'23) |
|------|---|-------------------------------|---|
| 1    | Pollution Control & Environment monitoring                  | 1,57,41,102.00                | 82,15,825.36  |
| 2    | Reclamation/ Back filing & Rehabilitation**                 | 1,36,62,095.00                | 6,66,42,814.70  |
| 3    | Green belt, Plantation<br>& Water sprinkling<br>arrangement | 67,45,898.00                  | 19,34,590.20  |
| 4    | Rural Development   | 6,19,33,534.00                | 1,83,73,453.27  |

<sup>\*\*</sup>Part of OB removed cost.

Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)