

HIL/LHD/ENV/MoEF/715

Date: 23.05.2024

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 October'23 to March'24.

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 October'23 to March'24. 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 October 2023 to 31st March 2024

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 – Already Implemented. Certified compliance reports duly submitted to MoEF&CC, New Delhi by its 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.

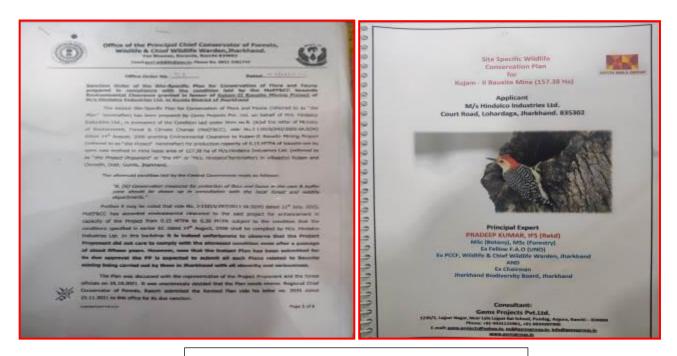
Reply to Condition 3- Noted. This may be extended subject to the enhancement of reserves in due course of mining, in line with the applicable EIA notification.

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. The Mine is located outside an eco-sensitive zone.

However, we have prepared Site-Specific Wildlife Conservation Plan (WLCP) in consultation with State Forest Department and also obtained approval letter from Principal Chief Conservator of Forest, Wildlife & Chief Wildlife Warden, Jharkhand via Office Order No. 51 dated 03.12.2021 for conservation and protection of flora and fauna in the core and buffer zone for Kujam II Bauxite Mine.

A copy of same Approval letter has been submitted to your good office on 21.02.2022



Site Specific Wildlife Conservation Plan

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 - We have obtained Consent to Operate (CTO) from the State Pollution Control Board, Jharkhand, and its stipulated conditions have been implemented effectively. Our existing Consent to Operate (CTO) 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- Noted. There is no forest area involved within the lease. Therefore, there is no need for forest clearance.

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- As per recommendations, occupational health surveillance is being conducted periodically by specialized doctors and nurses. Regular training is being conducted on occupational health and work safety environments.

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

Reply to Condition 10- We are using rock breakers as mechanical devices to minimize the use of explosives. Soft strata are being completely excavated without use of any explosives. We are using Nonel for blasting and ensuring the optimal use of explosives. Additionally, we are exploring the use of eccentric rippers for excavating hard strata to further reduce the use of explosives.

Condition 11- Concurrent reclamation of mined out areas.

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



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.

Concurrent reclamation

Reply to Condition 12- Effective water sprinkling is being done to suppress fugitive dust on haul road and other transport roads by mobile water tanker. The Mining Plan has already been approved by IBM, Ranchi and safety measures like benches height and slope are being maintained as per the guidelines issued by DGMS. Currently, there is no OB dump present in the mine lease area.



Mobile Water sprinkler.

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- Noted. The issues raised during the Public Hearing dated 11.07.2013 are being implemented as per the budgetary provisions.

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

Reply to Condition 14- Recommendations of Compliance Report by Regional Office, Ranchi are being implemented.

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

Reply to Condition 15- Being complied. Washing Ramp with Oil & Grease Trap system has been made for Washing of all transport vehicles within mining lease.



Washing Ramp with Oil and Grease Trap

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- Ore evacuation plan has been prepared, and the transport of ore has been streamlined based on study. The SOP for transport is 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 by Medical Officer. Occupational health surveillance is being conducted periodically by specialized doctors and nurses.

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, which are being carried out in and around the area. Regular monitoring the ground water table is being carried out through installation of piezometer. The copy of the same report is attached herewith as **Annexure-1.**



Piezometer installed at mines.

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- Effective safeguard measures, such as regular water sprinkling is being carried out in critical areas such as haul roads, loading and unloading points and transfer points.

Regular Ambient Air Quality (AAQ) monitoring is being carried out by NABL accredited Laboratory and all parameters are found within the norms prescribed by the Central Pollution Control Board. Monitoring report of AAQ is attached herewith as **Annexure-2**. Photographs of Water Tanker is attached herewith below.



Water Tanker used for dust suppression.

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 of native species is being carried out in and around mining lease, reclaimed area etc. in consultation with local forest department on regular basis. Total 7474 nos. of saplings have been planted during FY 2023-24 within this lease. A total of 10.14 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.

However, No Objection Certificate (NOC) for ground water abstraction has been obtained for drinking purposes only from CGWB/CGWA. The Photograph of Rainwater pond and Ground Water NOC are attached below.



Rainwater Harvesting Pond with fencing.



মাধন থকেচাৰ ভাল প্ৰভিন্ন নিজনৰ ভাল প্ৰভিন্ন নিজনৰ ভাল কৰিছিল নামান ভালী পুলি ভাল 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 (157.38 Ha)						
Project Address:	Kujam li Bauxite Min	ujam li Bauxite Mine, Vill - Kujam And Chirodih, Diat - Gumla					
Village:	Kujam	Block:	Bishunpur				
District:	Gumla	State:	Jharkhand				
Pin Code:							
Commu <mark>n</mark> ication Address:	Kujam li Bauxite Min Gumla, Jharkhand -		nirodih, Dist - Gumla, Bishunpur,				
Address of CGWB Regional Office:			Region, 6th & Samp; amp; 7th Floor, Dak Banglow, Patna, Bihar - 8000				

1.	NOC No.:		CGWA/NO	C/MIN/R	EN/1/2	022/72	275							
2	Application	No.:	21-4/496/J	1-4/496/JH/MIN/2019			3.	Category: (GWRE 2020)		Sa	Safe			
4.	Project Sta	atus:	Existing Gr	xisting Ground Water			5.	NOC Type: Renewal						
6.	Valid from	1:	18/09/2022	18/09/2022			7.	Valid u	Valid up to: 17/09/2024			4		
8.	Ground W	ater Abs	straction Pern	itted:										
	Fresh	Water		Saline	e Water			De	waterin	9		7	Total	
	m³/day m³/year		year m	²/day	mº/year		, r	mº/day		nº/year	m	º/day	m ^a	/year
	9.50	346	7.50											
9.	Details of	ground v	water abstrac	ion /Dev	vatering	struct	tures							
			Total Exi	sting No	Left.					To	tal Prop	osed N	10.:0	
			DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu
	Abstraction	Structu	ire" 0	0	1	0	0	0	0	0	0	0	0	0
"DV	W- Dug Well; D	CB-Dug-c	um Bore Welt B	W-Bore We	ell; TW-T	ube Wel	I; MP-Mir	e PILMP	u-Mine Pu	umps				
10.	Ground W	ater Abs	straction/Rest	pration C	harges	paid i	Rs.):				489	2.50		

(Compliance Conditions given overleaf)

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NOC for Ground water

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- Noted. Since shallow depth mining is being carried out, hence there is no intersection with the groundwater table. In future also, working zones will be restricted to above ground water table. We undertake that no mining is/was carried out below ground water table and the same status will be maintain in future also.

However, we are regularly monitoring the ground water table through installation of piezometer. The copy of the same report is attached herewith as **Annexure-1**.

As the water table is not intersecting during mining operation, the detailed hydro-geological study is not applicable for this mine.

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- Regular water sprinkling is being carried out along haul roads, loading and unloading points and transfer points to suppress the dust pollution. All measures are being taken to control vehicular emission. Regular maintenance of vehicles is undertaken to minimize vehicular emission. Vehicles with valid PUC certificates are allowed to transport the mineral. All vehicles are covered with tarpaulins, and non-overloading guidelines are being followed during transportation of mineral.





Tarpaulin covered Truck

PUC Certificate



Water Sprinkling for dust suppression.

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 plan to augment groundwater has been prepared, and suitable measures like the creation of water harvesting ponds, etc., are being taken for the augmentation of groundwater in the area, in consultation with the Central Ground Water Board.

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- Regular monitoring the ground water table is being carried out through installation of piezometer. The copy of the same report is attached herewith as **Annexure-1.**

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- 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. Monitoring 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- As shallow depth mining is being carried out, there is no intersection of the groundwater table during the mining operation at present and in the future. No natural watercourse and/or water resource is being and will be obstructed due to 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 (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The maximum height of the dumps shall not exceed 8m and width 20 m and overall slope of the dumps shall be maintained to 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 properly with proper slope as and when required for reclamation and rehabilitation. Sequential backfilling and reclamation of the mined-out area are being exercised for which topsoil is being spread on backfilled area for reclamation. Currently, there is no OB dump present in the mine lease area.

The mining is being carried out as per the approved mining plan. Monitoring and management of rehabilitated areas is being done through effective supervision. Data pertaining to backfilling is enclosed as **Annexure 4**. Compliance status is being submitted to MoEF&CC on six monthly basis.

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- 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. Currently, there is no OB dump present in the mine lease area.



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.

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.

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.

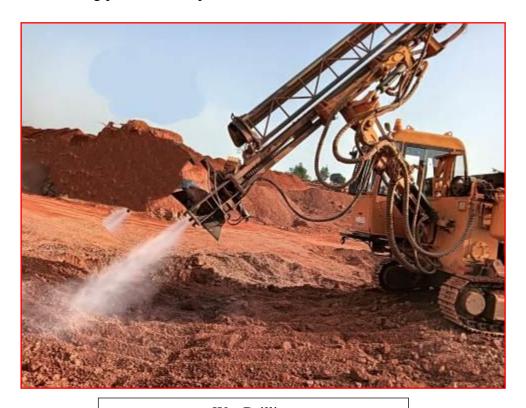
Reply to Condition 33- Regular water sprinkling is being carried out in critical areas prone to air pollution such as haul road, loading and unloading point and transfer points. Regular Ambient Air Quality (AAQ) monitoring is being carried out by NABL accredited Laboratory and all parameters found within the norms prescribed by the Central Pollution Control Board.

Regular monitoring of surface water (springs/perennial nallahs) is being conducted.

Monitoring report of AAQ and water quality are attached herewith 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. We have control blasting permission. Controlled blasting method is in practice. Ground vibration study has been conducted periodically. Efforts and mitigative measures are being taken to reduce the impact of the blast. 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 villages. However, Safe Drinking water, mobile health care facilities etc. are being provided in nearby villages under CSR programmes. Necessary infrastructures and facilities for office staff are in place at Netarhat plateau.

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 mineral bauxite and waste is being done as per IBM approved mining plan and in scientific manner. Data pertaining to excavation, quantum of mineral bauxite etc. are mentioned in report attached 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. Monitoring reports are 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. Monitoring 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 suppress the dust generation.



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- Measures are being taken for control of noise levels below 85 dB (A) in the work environment. Workers engaged in operation of HEMM, etc. has been provided with ear plug / muffs. The noise level monitoring is being conducted at a regular interval. The noise level is within the prescribed norms. Report is attached as **Annexure 2.**

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- Regular monitoring of Water quality upstream and downstream of water bodies are being carried and reported to reported to the concerned authorities. Monitoring 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 mining purposes. Shallow depth mining is being carried out, hence there is no intersection of ground water table during the mining operation at present and in future. A piezometer has been installed for monitoring of ground water level. The ground water level and water quality reports are being sent regular to regional office of Ministry, CGWA and JSPCB. The same is attached herewith as **Annexure 1 & 2**.

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 from mining operation. We are not discharging any wastewater outside the mine lease area. However, negligible amount of wastewater is generated in workshop from washing of vehicles and Oil & grease trap system is already installed for treatment of this effluent. The treated water is in close circuit and being reused for washing of vehicles in the workshop.

Furthermore, the quality of this treated water is being monitored regularly and all water parameters are within permissible limits. The monitoring report is attached herewith as **Annexure- 2.** Photograph of Oil and grease traps is attached below.



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- All the workers have been provided with PPEs including dust mask and dust respirators. Apart from PPEs distribution to all workers, we are also providing adequate safety training and conducting awareness session on Safety and health aspects on regular basis.

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 has been set up under the control of a Senior Executive, who is reporting directly to the Head of the Organization. The same is attached herewith as **Annexure 3.**

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- Every year, the funds earmarked for environmental protection measures is being budgeted separately and its expenditure is being reported to the Ministry. The copy of the same 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 implementation status of the stipulated environmental safeguards, as per EC conditions, are being submitted regularly.

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 reports on the implementation status of the stipulated environmental safeguards, as per EC conditions, are being submitted to the MoEF&CC, CPCB and JSPCB, Ranchi.

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- Complied. A copy of clearance letter has already been submitted.

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- Noted. The EC Letter has been submitted to JSPCB for display of same at its Regional office and other government 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- Noted and complied. The information on grant of the EC has been published in two local newspapers (Hindustan and Dainik Jagran) on 27.07.2015. The copy of the advertisement has already been submitted to the Regional Office of the MoEF&CC.

Annexure 1

Piezometer Reading - Kujam -II Bauxite Mine					
S No	Month	Depth (meter)			
1	Oct-23	32.94			
2	Nov-23	33.29			
3	Dec-23	33.75			
4	Jan-24	34.12			
5	Feb-24	34.88			
6	Mar-24	35.52			

ENVIRONMENTAL LABORATORIES & ENGINEERING SERVICES PVT.LTD.

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

Kujam II Bauxite Mine-Environmental Monitoring Report

October 2023



CONTENT

Hind	alco Industries : Kujam-H Bauxite Mine	Environmental Monitoring Report	October 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 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

ENGINEERING SERVICES PVT. LTD.

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

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

TEST REPORT

Test Report No.	: ELES/RNC/2023/4381	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/3812 : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
Address : Lohardaga, Jhark	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 08.10.2023 to 09.10.2023 : 17.10.2023
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 17.10.2023 to 23.10,2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear
5	Longitude	:: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemica	al	Group: Atmospheric 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	31	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6.8	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	24.5	80 (24hrs)		
Ozone (O ₃)	μg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	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)		

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ENGINEERING SERVICES PVT. LTD.

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

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

TEST REPORT

Test Report No.	: ELES/RNC/2023/4381	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline : Chemical		Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	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 Pvi. Ltd. Technical Manager

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ENGINEERING SERVICES PVT. LTD.

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

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

TEST REPORT

Test Report No.	: ELES/RNC/2023/4382	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/3813 : Nawatoli Quarry
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	Kujam-II Bauxite Mine (157,38ha) 3 08.10.2023 to 09.10.2023 3 17,10.2023
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02
Period of Analysis	: 17.10.2023 to 23.10.2023	Sample Condition	: ELES Pvt. Ltd. : Sealed & Preserved

M	ETEOROLOGICAL INFOI	RMATION			
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mm	Hg) : 734
3	Relative Humidity (%)	: 59	_	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	c 23°18'20.87"N

Discipline: Chemica	al	Group:	Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	51	100 (24hrs)	
Particulate Matter (PM2.5)	μg/m ²	IS 5182 (Part- 24); 2019	30	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6,5	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	20.8	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₂)	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	0.009	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)	

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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/2023/4382	Report Release Date	: 22.11.2023	
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 ₆ H ₆)*	μg/m³	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 Lab.

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****End of Report****

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

ELES Pvt. Ltd. Technical Manager

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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/2023/4383	Report Release Date	; 22.11.2023
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/3814 : Quarry- 195
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	Kujam-II Bauxite Mine (157.38ha) : 08.10.2023 to 09.10.2023 : 17.10.2023
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02
Period of Analysis	: 17.10.2023 to 23.10.2023	Sample Condition	: ELES Pvt. Ltd. : Sealed & Preserved

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mm	Hg) : 734
3	Relative Humidity (%)	: 59	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemica	al	Group:	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/m³	IS 5182 (Part- 24): 2019	23	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	5.8	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	15 5182 (Part-6): 2006; RA2022	16.5	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9); 1974; RA2019	<20,0	100 (8hrs)	
Ammonia (NH ₃)	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)	

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ENGINEERING SERVICES PVT. LTD.

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

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

TEST REPORT

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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 ₆ H ₆)*	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

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

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

TEST REPORT

Test Report No.	: ELES/RNC/2023/4384	Report Release Date	; 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	-

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/3815 : Bhattipat Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 08.10.2023 to 09.10.2023 : 17.10.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 17.10.2023 to 23.10.2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOI	RMATION			
1	Average Temperature (°C)	225	2	Barometric Pressure (mm	Hg) : 734
3	Relative Humidity (%)	: 59	_	Weather Condition	: Cléar
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline: Chemica	al	Group:	Group : Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	51	100 (24hrs)	
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	30	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6.5	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	20.3	80 (24hrs)	
Ozone (O ₅)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₅)	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	0.008	1 (24hrs)	
Nickel (Ni)	ng/m²	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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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/2023/4384	Report Release Date	: 22.11.2023	
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 ₆ H ₆)*	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
Dr. Deependra Kumar Sinha
Ph. D. Erwinnmental Engg
ELES Pvt. Ltd. Technical Manager

Page 2 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE. TURUDANA HATTA, RANCHI-834003 [JHARIIHAND] GST NO.-20448CESTISOLE ENGINEERING SERVICES PUT. LPD.

Emall: Info@elespl.co.in , eles.ranchi@amail.com Plane no: 0651-2290103 Websile: www.elespl.eb.in

TEST REPORT

Test Report No.	: ELES/RNC/2023/4369	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/3800 : Near Pakri Gada Village : 05,10,2023 to 06,10,2023
Address.	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 17,10,2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sample Drawn By	: ELES Pvt. Ltd.
Period of Analysis	: 17.10.2023 to 23.10.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmH	(g) : 742
3	Relative Humidity (%)	: 58	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline: Chemica	ıĭ	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
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	31	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	µg/m³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)		
Nitrogen Di-Oxide (NO2)	µg/m³	IS 5182 (Part-6): 2006; RA2022	23.8	80 (24hrs)		
Ozone (O ₃)	µy/m²	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	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/m²	ELES/AIR/SOP/01	<2.0	06 (Annoal)		

Page 1 of 2

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

ENGINEERING SERVICES PTT. LTD.

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

TEST REPORT

Test Report No.	: ELES/RNC/2023/4369	Report Release Date	: 22,11,2023
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 ₆ H ₆)*	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

T Deepenora Kunnur sinha Par Tarangal Managal

Page 2 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPLIDANA HATTA, RANCHI-834003 (JHARKHAND) 65T NO:- 20AAECESTISOLIN INGINEERING SERVICES DYT. ATB.

Emall: Info@elespl.co.in , eles.ranchi@amall.com Phone no.: 0651-2290103 Website: www.kiespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2023/4370	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/3801 : Near Pol Pol Village : 05.10.2023 to 06.10.2023	
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 17.10.2023 : Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sample Drawn By	: ELES Pvt. Ltd.	
Period of Analysis	: 17.10.2023 to 23.10.2023	Sample Condition	: Sealed & Preserved	

MI	ETEOROLOGICAL INFOR	MATION				
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mml	Hg) : 742	
3	Relative Humidity (%)	: 58	4	Weather Condition	: Clear	

Discipline: Chemica	al	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	49	100 (24hrs)	
Particulate Matter (PM2.5)	µg/m³	IS 5182 (Part- 34): 2019	29	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	µg/m³	IS 5182 (Part-2): 2001; RA2022	6.2	80 (24hrs)	
Nitrogen Di-Oxide (NO2)	μg/m³	IS 5182 (Part-6): 2006; RA2022	19.1	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	µg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ³	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)	rig/m³	ELES/AIR/SOP/01	<2.0	06 (Annual)	

Page 1 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDAMA HATIA, RANCHI-834003 (JHARKHAND) GST NO.-20445/E9713DLT0 ENGINEERING SERVICES PYT. ATE.

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

Website : www.elespi.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2023/4370	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline: Chemi	eal	Group:	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m²	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)		
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12)2004;RA2019	< 0.5	01(Annual)		

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

Reviewed by

****End of Report****

Authorised Signatory

ir Deepandra Kumar Zinha.

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Page 2 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST.NO: 20AAECEST13D12N

ENGINEERING SERVICES PIT. LCD.

Email: lafa@alespi.co.in , eles.ranchi@gmail.com Phone no.: 0651-2290103 Website: wornv.elespi.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2023/4371	Report Release Date	: 22.11.2023
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/3802 ; Near Shakhuapani Village ; 06.10.2023 to 07.10.2023	
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample	: 17.10.2023 : Ambient Air	
Mines Status	: Operational	Sampling Procedure Sample Drawn By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 17.10.2023 to 23.10.2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFORMATION				
1	Average Temperature (°C) : 25	2	Barometric Pressure (mm	Hg) : 742	
3	Relative Humidity (%) : 58	4	Weather Condition	: Clear	

Discipline: Chemica	al	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	49	100 (24hrs)		
Particulate Matter (PM2.5)	µg/m³	1S 5182 (Part- 24): 2019	22	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m ³	IS 5182 (Part-2): 2001; RA2022	5.9	80 (24hrs)		
Nitrogen Di-Oxide (NO2)	μg/m ³	IS 5182 (Part-6): 2006; RA2022	22.7	80 (24hrs)		
Ozone (O ₃)	µg/m²	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	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	0.008	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-R34003 (INARKHANO) GST NO:- 20AAECE9713D124 ENGINEERING SERVICES PVT. LTD.

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

TEST REPORT

Test Report No.	: ELES/RNC/2023/4371	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline : Chemical Group :			Group: Atmospheric Pollution	
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C₄H₀)*	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 Lub.

Reviewed by

****End of Report****

Authorised Signatory

The American Section 2015 Selection of Tachydral Manager

Page 2 of 2

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPLIDANA HATIA, RANCHI-834003 (IHARKHANO) GST NO:-20A42CE971101ZA

ENGINEERING SERVICES PAT. 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/2023/4372	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/3803 : Near Dipa Kujam Village : 06.10.2023 to 07.10.2023
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 17.10.2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sample Drawn By	: ELES Pvt. Ltd.
Period of Analysis	: 17.10.2023 to 23.10.2023	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFORMATION			
1	Average Temperature (°C) : 25	2	Barometric Pressure (mm	Hg) :742
3:	Relative Humidity (%) : 58	4	Weather Condition	: Clear

Discipline: Chemica	r.l	Group:	Group: 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	1S 5182 (Part- 24): 2019	24	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	<5.0	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	17.3	80 (24hrs)		
Ozone (O ₃)	μg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₅)	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	< 0.002	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-838003 (JHARKHAND) GST NO-204460257150124

ENCINECRUNG SERVICES FVT. 510.

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

Website Livww.elesol.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2023/4372	Report Release Date	: 22.11.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline: Chemi	cal	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzenc (C ₆ H ₆) ⁴	μg/m ²	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

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Page 2 of 2

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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

November- 2023



CONTENT

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





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

ENGINEERING SERVICES PVT. LTD

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

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



10-8839

TEST REPORT

Test Report No.	: ELES/RNC/2023/4724	Report Release Date	: 21.12.2023	
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/4127
	The state of the s	Location	: Kujam-II Weigh Bridge
	I was a second		Kujam-II Bauxite Mine (157.38ha
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 06.11,2023 to 07.11,2023
	1 avianges - management - page -	Sample Received Date	: 16.11.2023
		Type of Sample	: Ambient Air
Mines Status	: Operational	Sampling Procedure Sample Drawn By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	± 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50,59"N

Discipline : Chemica	d	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	34	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.5	80 (24hrs)	
Nitrogen Di-Oxide (NO _z)	μg/m³	IS 5182 (Part-6): 2006; RA2022	22.8	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	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/m ¹	1S 5182 (Part-22): 2004; RA2019	0.011	1 (24hrs)	
Nickel (Ni)	ng/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)	
Arsenic (As)	ng/m³	ELES/AIR/SOP/01	<2.0	06 (Annual)	
Arsenic (As)	ng/m	ELES/AIROSOP/01	74.0	OG (Atmis	

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Dr. Deependra Kumar Sinha

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

ENGINEERING SERVICES PVT. LTD.

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/2023/4724	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	CUSTOMER DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4127 : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.11.2023 to 07.11.2023
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	:21	-2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53		Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemi	cal	Group:	Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzene (C ₆ H ₆)*	μg/m ³	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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ENGINEERING SERVICES PVT. LTD

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

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



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TEST REPORT

Test Report No.	: ELES/RNC/2023/4725	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4128 : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.11.2023 to 07.11.2023 : 16.11.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemica	il	Group: Atmospheric 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	32	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6,9	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	22.2	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9); 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	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	0.013	1 (24hrs)	
Nickel (Ni)	ng/m ³	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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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/2023/4725	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET	CUSTOMER DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4128 : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.11.2023 to 07.11.2023 : 16.11.2023
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemi	cal	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m²	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 Sinha
Ph. D Environmental Engg.
ELES Pvt. Ltd. Technical Manage

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GINEENING 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/2023/4726	Report Release Date	: 21.12.2023				
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023				

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4129 : Quarry- 195	
Address : Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	Kujam-II Bauxite Mine (157.38h; : 06.11.2023 to 07.11.2023 : 16.11.2023		
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	RMATION			
T	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	; 53	- 4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemica	al .	Group: A	Group: Atmospheric 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/m³	IS-5182 (Part- 24); 2019	27	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	19.1	80 (24hrs)		
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	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)		

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ENGINEERING SERVICES PVT. LTD.

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

Website : www.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2023/4726	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	; 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4129 : Quarry- 195 Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.11.2023 to 07.11.2023 : 16.11.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	-4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemi	cal	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzene (C ₆ H ₆)*	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****

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 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/2023/4727	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	2 Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4130 : Bhattipat Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.11.2023 to 07.11.2023 : 16.11.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure Sample Drawn By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.11.2023 to 22:11.2023	Sample Condition	: Sealed & Preserved	

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemica	ıl	Group : A	Group: Atmospheric 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	34	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.1	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	23.6	80 (24hrs)		
Ozone (O ₃)	μg/m³	IS 5182 (Part-9); 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	µg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)		
Lead (Pb)	μg/m³	IS 5182 (Part-22); 2004; RA2019	0.011	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)		

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Dr. Deependra Kumar Sinha

Page 1 of 1 Ph. D Environmental Engg

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Save Epvironnami, Save Future



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

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

TEST REPORT

Test Report No.	: ELES/RNC/2023/4727	Report Release Date	: 21.12.2023	
	: ELES/RIC/2023/4/2/	Report Resease Date	. Plilandas	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4130 : Bhattipat Kujam-II Bauxite Mine (157.38ha	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.11.2023 to 07.11.2023 : 16.11.2023	
Mines Štatus	: Operational	Type of Sample Sampling Procedure	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.11,2023 to 22,11.2023	Sample Drawn By Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOI	RMATION			
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 53	- 4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemi	cal	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)		
Benzo-(a)-Pyrene*	ng/m³	1S 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 Environmental Engg.
ES Pvt. Ltd. Technical Manar

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



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

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



TEST REPORT

Test Report No.	: ELES/RNC/2023/4712	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04,2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name Address	: Hindalco Industries Limitéd : Lohardaga, Jharkhand-835302	Sample Ref. No. Location Sampling Date Sample Received Date Type of Sample Sampling Procedure	: ELES/RNC/2023/AA/4115 : Near Pakri Gada Village : 05,11,2023 to 06,11,2023 : 16,11,2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sample Drawn By	ELES Pvt. Ltd.
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	:53	4	Weather Condition	: Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	±23°17'41.21"E

Discipline: Chemica	ıl	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	59	100 (24hrs)	
Particulate Matter (PM2.5)	µg/m³	IS 5182 (Part- 24): 2019	34	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.1	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	1S 5182 (Part-6): 2006; RA2022	24.3	80 (24hrs)	
Ozone (O ₃)	μg/m ²	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ²	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)	
Lead (Pb)	μg/m ²	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/m²	ELES/AIR/SOP/01	<2.0	06 (Annual)	

****End of Report***

Page 1 of 1

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Authorised Signatory
Dr. Deependra Kumar Sinha

Ph. D Environmental Engg

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PLOT NO-30, MANSAROYAR ENCLAVE, TUPUDANA HATIA. RANCHI-834003 (JHARKHAND) GST NO:-20AAECE9713D1Z4 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/2023/4712	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET.	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4115 : Near Pakri Gada Village : 05.11.2023 to 06.11.2023
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.11.2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sample Drawn By	: ELES Pvt. Ltd.
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	TEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	- 4	Weather Condition	: Clear
5	Longitude	: 84°14'52,25"N	6	Latitude	: 23°17'41,21"E

Discipline: Chemi	cal	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C _s H _s)*	µg/m³	IS 5182 (Part-11)2006; RA2017	<1.0	05(Annual)		
Benzo-(a)-Pyrene*	ng/m²	15 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 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:- 20AAECE9718D1ZA

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



TEST REPORT

Test Report No.	; ELES/RNC/2023/4713	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	; 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4116 : Near Pol Pol Village : 05.11.2023 to 06.11.2023
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.11.2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	; Operational	Sample Drawn By	: ELES Pvt. Ltd.
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFORMATION			
1	Average Temperature (°C) : 21	2	Barometric Pressure (mml	Hg) : 742
3	Relative Humidity (%) : 53	4	Weather Condition	: Clear

Discipline : Chemica	ai	Group:	Atmospheric	Pollution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	μg/m³	1S 5182 (Part-23); 2006; RA2022	54	100 (24hrs)
Particulate Matter (PM2.5)	µg/m³	IS 5182 (Part- 24): 2019	27	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6.8	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	22.5	80 (24hrs)
Ozone (O ₂)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₁)	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	<0.002	I (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)

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Page 1 of 1

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n: D Environmental Engg

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RLDT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D124 ENGINEERING SERVICES PVI. 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/2023/4713	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	-

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4116 : Near Pol Pol Village : 05.11.2023 to 06.11.2023
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample	: 16.11.2023 : Ambient Air
Mines Status	: Operational	Sampling Procedure Sample Drawn By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	(21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	; 53	4	Weather Condition	: Clear

Discipline: Chemi	cal	Group:	Atmospheric	Pollution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₀ H ₀)*	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. Deependra Kumar Sinha
Ph. D Environmental Engg
ELES Pvt. Ltd. Technical Manar

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



TEST REPORT

Test Report No.	: ELES/RNC/2023/4714	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4117 : Near Shakhuapani Village : 06,11,2023 to 07,11,2023
Address Mines Status	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.11.2023 : Ambient Air : ELES/DOC/SMPL/02
Writtes Status	Mark Mark Comments	Sample Drawn By	: ELES Pvt Ltd.
Period of Analysis	± 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C')	:21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	4	Weather Condition	: Clear

Discipline: Chemica	al.	Group: A	tmospheric)	Pollution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	μg/m³	1S 5182 (Part-23): 2006; RA2022	55	100 (24hrs)
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	26	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	μg/m ³	IS 5182 (Part-6): 2006; RA2022	24.1	80 (24hrs)
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	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	0.005	1 (24hrs)
Nickel (Ni)	ng/m³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ¹	ELES/AIR/SOP/01	<2.0	06 (Annual)

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Dr. Deependra Kumar Sinha

Page 1 of 1 SI SS Due Ltd. Temporary Man

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

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/RNC/2023/4714	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	; Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4117 : Near Shakhuapani Village : 06.11.2023 to 07.11.2023	
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample	: 16.11.2023 : Ambient Air	
Mines Status	: Operational	Sampling Procedure Sample Drawn By	: ELES/DOC/SMPL/02 : ELES Pvl. Ltd.	
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved	

MI	ETEOROLOGICAL INFORT	MATION			
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	4	Weather Condition	; Clear

Discipline: Chemical		Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (CsH ₆)*	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. BLES Pvt. Ltd. Technical Manager

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

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

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



TEST REPORT

Test Report No.	: ELES/RNC/2023/4715	Report Release Date	: 21.12.2023	
Work Order No.	; 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4118 : Near Dipa Kujam Village : 06.11.2023 to 07.11.2023
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.11.2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sample Drawn By	: ELES Pvt. Ltd.
Period of Analysis	: 16.11,2023 to 22.11,2023	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 53	- 4	Weather Condition	: Clear

Discipline: Chemica	al	Group:	Group : Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Particulate Matter (PM10)	μg/m³	1S 5182 (Part-23): 2006; RA2022	54	100 (24hrs)		
Particulate Matter (PM2,5)	μg/m³	IS 5182 (Part- 24): 2019	29	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2); 2001; RA2022	6.4	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	μg/m ¹	IS 5182 (Part-6); 2006; RA2022	19.7	80 (24hrs)		
Ozone (O ₂)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₂)	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	< 0.002	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)		

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185 B

****End of Report****

Dr. Deellerista Wellersinha

Dis D Environmental Engo

Page 1 of 1

FLES Pvt. Ltd. Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D1Z4 ENGINEERUNG SERVICES PYT, 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/2023/4715	Report Release Date	: 21.12.2023	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4118 : Near Dipa Kujam Village : 06.11.2023 to 07.11.2023	
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample	: 16.11.2023 : Ambient Air	
Mines Status	: Operational	Sampling Procedure Sample Drawn By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.11.2023 to 22.11.2023	Sample Condition	: Sealed & Preserved	

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg	3) : 742
3	Relative Humidity (%)	; 53	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m³	IS 5182 (Pan-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.

Engl

Reviewed by

****End of Report****

Dr. Deependra Kuniar Sinha
Ph. D Environmental Engg
ELES Pvt. Ltd. Technical Manage

Page 1 of 1

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

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/2023/3118	Report Release Date	: 21.12.2023
Work Order No.	: 13612310218	Work Order Date	± 21.04.2023

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Sampling Date Sample Received Date	: ELES/RAN/2023/DW/3005 : 06.11.2023 : 16.11.2023	
Address	: Lohardaga, Jharkhand-835302	Type of Sample Source/Location of Sample	: Drinking Water : Kujam II- Bauxite Mines (157.38 ha)	
Mines Status	: Operational	Sampling Procedure Sample Collected By	: ELES/DOC/SMPL/01 : ELES Pvt. Ltd.	
Period of Analysis	: 16.11.2023 to 05.12.2023	Sample Condition	: Sealed & Preserved	

Discipline : Chem	ical	Group : Water	r)		ory Limit 10500:2012
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
pH (at 24.7°C)	- 1	APHA 23 nd Ed.2017, 4500-H	6.70	6.5-8.5	No Relaxation
Turbidity	NTU	APHA 23 rd Ed.2017, 2130 B	0.38	1.0	5.0
Taste		APHA 23rd Ed.2017, 2160 C	Agreeable	Agreeable	Agreeable
Odour	4	IS 3025 (Part-5) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 23 rd Ed.2017, 2120B&D	1.0	5	15
Total Dissolved Solids (TDS)	mg/L	APHA 23 rd Ed.2017, 2540B,C&D	112	500	2000
Chloride (as CI)	mg/L	APHA 23 rd Ed.2017, 4500 CI B	24.8	250	1000
Fluoride (as F)	mg/L	APHA 23rd Ed.2017, 4500 F-D	BDL (DL: 0,1)	1.0	1.5
Total Alkalinity (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2320 B	50.4	200	600
Total Hardness (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2340 C	58.6	200	600
Sulphate (as SO ₄)	mg/L	APHA 23 rd Ed.2017, 4500 SO ₄ -2-E	7.66	200	400
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	BDL (DL: 0.5)	45	No Relaxation
Phenolic Compound (as C ₀ H ₂ OH)	mg/L	IS 3025 (Part-43):1992;RA2019	BDL (DL: 0.0005)	0.001	0.002

Page 1 of 4

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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/RAN/2023/3118 Report Release Date : 21.12.2023

Work Order No. : 13612310218 Work Order Date : 21.04.2023

Discipl	ine : Che	mical Group: V	Vater		tory Limit
Parameter Unit		Test Protocol	Result	Acceptable Limit	Permissible Limit
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05	No Relaxation
Residual Free Chlorine (RFC)	mg/L	IS 3025 (Part-26):2021	BDL (DL: 0.1)	0.02	1.0
Calcium (as Ca)	mg/L	APHA 23 rd Ed.2017, 3500 Ca B	16.2	75	200
Discipl	ine : Che	mical Group	: Residues in	Water	
Aluminum (as Al)	mg/L	IS 3025 (Part-55): 2003; RA2019	BDL (DL: 0.02)	0.03	0.2
Arsenic (as As)	mg/L	IS 3025 (Part 37): 2022	BDL (DL: 0.005)	0.01	No Relaxation
Boroa (as B)	mg/L	IS 3025(Part-57): 2005; RA2021	BDL (DL: 0.2)	0.5	1.0
Cadmium (as Cd)	mg/L	APHA 23rd Ed.2017, 3111B	BDL (DL: 0.003)	0.003	No Relaxation
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	1.5
Iron (as Fe)	mg/L	APHA 23rd Ed.2017, 3111B	0.376	1.0	1.0
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.01)	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.05)	0.1	0.3
Mercury (as Hg)	mg/L	IS 3025 (Part-48); 1994; RA2019	BDL (DL: 0.001)	0.001	No Relaxation
Selenium (as Se)	mg/L	IS 3025 (Part-56): 2003; RA2019	BDL (DL: 0.01)	0.01	No Relaxation
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.1)	.5	15

Remarks: L pH & RFC done at Lab.

Page 2 of 4

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ENGINEERING SERVICES PVT. LTD.

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

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

TEST REPORT

 Test Report No.
 : ELES/RAN/2023/3118
 Report Release Date
 : 21.12.2023

 Work Order No.
 : 13612310218
 Work Order Date
 : 21.04.2023

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

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

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

TEST REPORT

Test Report No. : ELES/RAN/2023/3118 Report Release Date : 21.12.2023

Work Order No. : 13612310218 Work Order Date : 21.04.2023

Discipline : Biological		Group:	Water	Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Total Coliform	Per 100 mL	IS 15185:2016; RA 2021	Not Detected	CUAN SEA	
Escherichia Coli (E. Coli)	Per 100 mL	IS 15185:2016; RA 2021	Not Detected	Shall not	be detected
Discipline : Chemical		Group: Water		Regulatory Limit as per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Anionic Surfactants (as MBAS)*	mg/L	IS 3025 Part 68	BDL (DL: 0.1)	0.2	1.0
Mineral Oil*	mg/L	CL-6, IS: 3025 (P-39)	BDL (DL: 0.1)	1.0	No relaxation
Polynuclear Aromatic Hydrocarbons (PAH)*	mg/L	APHA 23 rd Edition	BDL (DL: 0.0001)	0.0001	No relaxation
Polychlorinated Biphenyls (PCB)*	mg/L	APHA 23rd Edition	BDL (DL: 0.0005)	0.0005	No relaxation

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

Reviewed by

*

****End of Report****

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

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

December 2023



CONTENT

Hind	alco Industries : Kujam-II Bauxite Mine	Environmental Monitoring Report	December 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 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:- 20AAECE9713D174

ENGINEERING SERVICES PVT. LTD.

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

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



TE-8839

TEST REPORT

Test Report No.	: ELES/RNC/2024/0167	Report Release Date	: 15.01.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000150F		

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	Hindalco Industries Limited	Sample Ref. No. Location	ELES/RNC/2023/AA/4490 Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	; 07.12.2023 to 08.12.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.12.2023 to 28.12.2023	Sampling Done By Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'30,39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chemica	il	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	68	100 (24hrs)	
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part-24): 2019	39	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m ³	IS 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	24.5	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	μg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)	
Lead (Pb)	μg/m³	IS 5182 (Part-22): 2004; RA2019	0.015	1 (24hrs)	
Nickel (Ni)	ng/m ³	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****

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/2024/0167	Report Release Date	: 15.01.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4490 : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)	
Address : Lot	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	± 07.12.2023 to 08.12.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	÷16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved	

M	TEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.39"E	6	Latitude	: 23°18'50.59"N

Discipline : Chem	ical	Group:	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m³	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 Lab.

Reviewed by

****End of Report****

Authorised Signatory
Dr. Deependra Kumar 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:- 20A4ECE97130124

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

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



TC-8839

TEST REPORT

Test Report No.	: ELES/RNC/2024/0168	Report Release Date	: 15,01.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000151F		

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	; Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4491 : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 07.12.2023 to 08.12.2023 : 16.12.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemica	al .	Group : A	Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Particulate Matter (PM10)	μg/m ³	IS 5182 (Part-23): 2006; RA2022	62	100 (24hrs)	
Particulate Matter (PM2.5)	μg/m ¹	IS 5182 (Part- 24): 2019	35	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2); 2001; RA2022	7.4	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	24.3	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25); 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)	
Lead (Pb)	μg/m³	IS 5182 (Part-22): 2004; RA2019	0.017	1 (24hrs)	
Nickel (Ni)	ng/m³	IS 5182 (Part-26);2020	<6.0	20 (Annual)	
Arsenic (As)	ng/m³	ELES/AJR/SOP/01	<2.0	06 (Annual)	

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****End of Report****

And Delegional Kumar Sinha

Ph. D Environmental En

Page 1 of 1 ELES Pvt. Ltd. Technical Manager Tems and Conditions, only on Company letter head in pre-approved testilat. The results shown in the Test Report refer or regimes only to the job/analysis done by the Laboratory only. The information stated on the Test Report reflects the findings done by the Laboratory at the sime 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 to full or in part shall not be published, advertise, used for any legal actions unless prior permission has been seesized from the Management of the Laboratory. Attention is drawn to the limitation of liability, compensation and paradiction issues. Any unauthorized alteration & falsification in the content or appearance of the Test Report is unlawful and offenders may be prosecuted to the fullest extent of the law. All the samples are retained for 30days from the Date

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

VGINEERING 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/2024/0168	Report Release Date	: 15.01.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET.	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4491 : Nawatoli Quarry	
Address	: Lohardaga, Jharkhand-835302	Sampling Date	Kujam-II Bauxite Mine (157,38ha) : 07.12,2023 to 08.12,2023	
	. Londonga, marking 522702	Sample Received Date Type of Sample	: 16.12.2023 : Ambient Air	
lines Status : Operational		Sampling Procedure Sampling Done By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.12,2023 to 28,12,2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67°E	6	Latitude	: 23°18'20.87"N

Discipline : Chem	ical	Group:	Group : Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	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 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:- 20AAECE9713D1Z4

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/2024/0169	Report Release Date	: 15.01.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	
III.R No	· TC883924000000152F			

CUSTOMER DETA			
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2023/AA/4492
y 4.2; and 2,	100 -420 100 00 (-220)	Location	: Quarry- 195
			Kujam-II Bauxite Mine (157.38ha)
Address	: Lohardaya, Jharkhand-835302	Sampling Date	: 07.12.2023 to 08.12.2023
: Lohardaga, Jharkhand-835302	Sample Received Date	: 16,12,2023	
		Type of Sample	: Ambient Air
A December 1	Tax and the	Sampling Procedure	: ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt, Ltd.
Period of Analysis	: 16.12,2023 to 28,12.2023	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	; 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84"17'30.27"E	6	Latitude	: 23°18'56.89"N

1	Group : A	tmospheric	Pollution
Unit	Test Protocol	Result	Regulatory Limit
μg/m³	IS 5182 (Part-23): 2006; RA2022	57	100 (24hrs)
μg/m³	IS 5182 (Part- 24); 2019	30	60 (24hrs)
μg/m³	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)
μg/m³	IS 5182 (Part-6): 2006; RA2022	20.5	80 (24hrs)
µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
μg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
mg/m³	IS 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)
μg/m³	IS 5182 (Part-22): 2004; RA2019	0.007	1 (24hrs)
ng/m³	1S 5182 (Part-26):2020	<6.0	20 (Annual)
ng/m³	ELES/AIR/SOP/01	<2.0	06 (Annual)
	μg/m ³ ng/m ³	Unit Test Protocol μg/m³ IS 5182 (Part-23): 2006; RA2022 μg/m³ IS 5182 (Part-24): 2019 μg/m³ IS 5182 (Part-2): 2001; RA2022 μg/m³ IS 5182 (Part-6): 2006; RA2022 μg/m³ IS 5182 (Part-6): 1974; RA2019 μg/m³ IS 5182 (Part-25): 2018 mg/m³ IS 5182 (Part-10): 1999; RA2019 μg/m³ IS 5182 (Part-22): 2004; RA2019 μg/m³ IS 5182 (Part-22): 2004; RA2019 ng/m³ IS 5182 (Part-26): 2020	Unit Test Protocol Result μg/m³ IS 5182 (Part-23): 2006; RA2022 57 μg/m³ IS 5182 (Part-24): 2019 30 μg/m³ IS 5182 (Part-2): 2001; RA2022 6.9 μg/m³ IS 5182 (Part-6): 2006; RA2022 20.5 μg/m³ IS 5182 (Part-9): 1974; RA2019 <20.0

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Df. Deependra Kumar Sinha

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

GINEERING 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/2024/0169	Report Release Date	: 15.01.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4492 : Quarry- 195 Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 07.12.2023 to 08.12.2023 : 16.12.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.12.2023 to 28.12,2023	Sampling Done By Sample Condition	: Sealed & Preserved	

MI	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	±734
3	Relative Humidity (%)	: 48	4	Weather Condition	; Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chem	ical	Group:	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	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 Dr. Deependra Kumar Sinha Pr. D Environmental Engg. ELES Pvt. Ltd. Technical Manager

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CINEERING SERVICES PUT. LTD.

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/2024/0170	Report Release Date Work Order Date	: 15.01.2024 : 21.04.2023	
Work Order No.	: 13612310218 : TC883924000000153F	Work Order Date	: 21.04.2025	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4493 : Bhattipat Kujam-II Bauxite Mine (157.38ha)
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 07.12,2023 to 08.12.2023 : 16.12,2023
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	3 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	- 4	Weather Condition	; Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemica	I I	Group : A	Group: Atmospheric 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/m ³	IS 5182 (Part- 24): 2019	28	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7,8	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	22.3	80 (24hrs)	
Ozone (O ₁)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25); 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ³	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/m ¹	ELES/AIR/SOP/01	<2.0	06 (Annual)	

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Dar Debpékiste Kumar Sinha

Ph. D Environmental Engl

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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/2024/0170	Report Release Date	: 15.01.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2023/AA/4493 : Bhattipat Kujam-II Bauxite Mine (157,38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 07.12.2023 to 08.12.2023 : 16.12.2023	
Mines Status	: Operational	Type of Sample Sampling Procedure	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.12.2023 to 28.12.2023	Sampling Done By Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	; Clear
5		: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chem	ical	Group:	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit			
Benzene (C ₆ H ₆)*	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
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 (JHARKHANDI GST NO:- 20AAECE9713D124

Email: Info@elespl.co.in , eles.ranch(@gmail.com Phone no.: 0651-2290103

Website; www.alespi.co.in



TEST REPORT

Test Report No.	: ELES/RNC/2024/0179	Report Release Date	: 15.01.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	
ULR No.	: TC883924000000162F			

CUSTOMER DETA	AILS .	SAMPLE DETAILS			
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4502 : Near Pakri Gada Village : 09,12,2023 to 10,12,2023		
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.12.2023 : Ambient Air : ELES/DOC/SMPL/02		
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.		
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved		

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	; Clear
5	Longitude	: 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline: Chemica	t i	Group: Atmospheric 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	30	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	µg/m³	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	µg/m³	IS 5182 (Part-6): 2006; RA2022	22.5	80 (24hrs)		
Ozone (O ₃)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	µg/m³	1S 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 ¹	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 ¹	ELES/AIR/SOP/01	<2.0	06 (Annual)		

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****End of Report****

Dr. Deependra Kumar Sinha

Ph D Environmental Engl

Page 1 of 1 ELES PVI. Ltd. Technical Managers
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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST NO:- 20448CE9713D124 ENGINEERING SERVICES PYT. LTD.

Email: Info@elespl.co.in , eles.ranchi@amail.com Phone no.: 0651-2230103

Website: www.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/0179	Report Release Date	: 15.01.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4502 : Near Pakri Gada Village : 09.12,2023 to 10.12,2023	
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.12.2023 : Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 16.12,2023 to 28,12,2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	118	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	; 84°14'52.25"N	6	Latitude	: 23°17'41.21"E

Discipline : Chem	ical	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	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

Dr. Deependra Kumar Sinha

Ph D Environmental Engg.

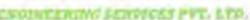
ELES Pvt. Ltd. Technical Manager

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



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

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/0180	Report Release Date	: 15.01.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000163F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4503 : Near Pol Pol Village : 09.12.2023 to 10.12.2023
Address	; Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.12.2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	; ELES Pvt. Ltd.
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOI	RMATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
-	Relative Humidity (%)	: 48	4	Weather Condition	; Clear

Discipline : Chemica	it	Group: Atmospheric 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	29	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	µg/m³	IS 5182 (Part-2): 2001; RA2022	7.3	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	24.1	80 (24hrs)		
Ozone (O ₃)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	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)		

Reviewed by

****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha

Ph D Environmental Engg.

FLES Dut Ltd Tooksies Manag

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST NO:- 20A4ECE97130124

ENGENEERING SERVICES PYT. LYD.

Empil: Info@eiespl.co.in , eles.ranchi@amail.com Phone no.: 0651-2290103 Website : www.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/0180	Report Release Date	: 15.01,2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4503 : Near Pol Pol Village : 09.12.2023 to 10.12.2023
Address Mines Status	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure Sampling Done By	: 16.12.2023 : Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Millies Status	The state of the s		
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	:18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	- 4	Weather Condition	: Clear

Discipline: Chem	ical	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆) th	μg/m³	IS 5182 (Part-11)2006;RA2017	<1.0	05(Annual)		
Benzo-(a)-Pyrene*	ng/m ³	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 Sinna Ph. D Environmental Enga.

ELES PVI. Ltd. Technical Manager:

Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) 6ST NO-2044ECE97130124

DEGENERATE SERVICES PVT. ATB.

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

Phane na.: 0651-2290103 Website: www.niespl.co.in



TEST REPORT

Test Report No.	: ELES/RNC/2024/0181	Report Release Date	: 15.01.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000164F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4504 : Near Shakhuapani Village : 09.12.2023 to 10.12.2023
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.12.2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline : Chemica	ıl	Group: /	tmospheric	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	1S 5182 (Part- 24): 2019	31	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	26.3	80 (24hrs)
Ozone (O ₃)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	µg/m ³	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 ³	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)

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****End of Report****

Dr. Deependra Kumar Sinha

Ph. D Environmental Engg.

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PLOT NO-30, MANSAROVAR ENCLAYE, TUPUDANA HATIA, RANCHI-834003 (HARKHAND) GST NO:- 20AAECE97130174

MOINEERING RESUICES PUT, LTD.

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

TEST REPORT

Test Report No.	: ELES/RNC/2024/0181	Report Release Date	: 15.01.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04,2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4504 : Near Shakhuapani Village : 09.12.2023 to 10.12.2023	
Address Mines Status	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure Sampling Done By	: 16,12,2023 : Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline : Chem	ical	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C _t H _t)*	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

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:- 20AAECE97130124

ENGINEERING SERVICES PUT. LED

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

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/0182	Report Release Date	: 15.01.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000165F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	; Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4505 : Near Dipa Kujam Village : 09.12.2023 to 10.12.2023
Address	Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 16.12,2023 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 16.12.2023 to 28.12.2023	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFORMATION			
1	Average Temperature (°C) : 18	2	Barometric Pressure (mmHg)	:742
	Relative Humidity (%) : 48	4	Weather Condition	: Clear

Discipline : Chemica	ıl	Group: A	Group: Atmospheric 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/m ³	IS 5182 (Part- 24): 2019	32	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m ³	1S 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)		
Nitrogen Di-Oxide (NO2)	μg/m³	IS 5182 (Part-6): 2006; RA2022	22.1	80 (24hrs)		
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	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)	pg/m³	IS 5182 (Part-22): 2004; RA2019	0.008	1 (24hrs)		
Nickel (Ni)	ng/m³	1S 5182 (Part-26):2020	<6.0	20 (Annual)		
Arsenic (As)	ng/m²	ELES/AIR/SOP/01	<2.0	06 (Annual)		

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****End of Report****

Authorised Signatory

Dr. Deependra Kumar Sinha

Ph D Environmental Engg.

ES Can Ltd Tanhalas Hann

Page I of 1

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PLOT NO-SO, MANSARDVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE97.130124 ENGINEERING SERVICES PVY. LYD.

Email: info@elespl.co.in , eles.ranchi@gmail.com Phone no.: 0631-2290103

Website: www.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/0182	Report Release Date	: 15.01.2024	
Work Order No.	; 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2023/AA/4505 : Near Dipa Kujam Village : 09:12.2023 to 10.12,2023
Address Mines Status	: Lohardaga, Jharkhand-835302 : Operational	Sample Received Date Type of Sample Sampling Procedure Sampling Done By	: 16.12.2023 : Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 16.12,2023 to 28.12.2023	Sample Condition	; Sealed & Preserved

M	ETEOROLOGICAL INFOR	MATION			× 7×
1	Average Temperature (°C)	; 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	-4	Weather Condition	: Clear

Discipline: Chem	ical	Group:	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit			
Benzene (C ₆ H ₈)*	μg/m³	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: (a)-Parameters are outsourced to other Lab.

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****End of Report****

Authorised Signatory

Pr. Deependra Kumar Siniu Pr. D Environmental Engg. ELES Pvt. Ltd. Technical Mana

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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

January 2024



CONTENT

Hind:	alco Industries : Kujam-II Bauxite Mine	Environmental Monitoring Report	January 2024
	Kujam	-II Bauxite Mine	
	AMBIENT AIR QUALITY- CORE ZONE	3	
1	Kujam-II Weigh Bridge		
2	Nawatoli Quarry		
3	Quarry 195		
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		
	Surface Water		
	Soil		





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

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

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



TC-8839

TEST REPORT

Test Report No.	; ELES/RNC/2024/0489	Report Release Date	: 05.02,2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000460F		

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0180 : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 11.01,2024 to 12.01,2024 : 15.01,2024	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
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	74	100 (24hrs)	
Particulate Matter (PM2.5)	μg/m³	1S 5182 (Part- 24): 2019	43	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	9.5	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m ⁹	IS 5182 (Part-6): 2006; RA2022	26.7	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonía (NH ₅)	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	0.008	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***

Reviewed by

Authorised Signatory Dr. Deependra Kumar Sinha

Page I of I

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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/2024/0489	Report Release Date	: 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21,04,2023

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0180 : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 11.01.2024 to 12.01.2024 : 15.01.2024	
Mines Status	: Operational	Type of Sample Sampling Procedure	: Ambient Air : ELES/DOC/SMPL/02	
Period of Analysis	: 15.01.2024 to 25.01.2024	Sampling Done By Sample Condition	: ELES Pvt. Ltd. : Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	†734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17°30,39°E	6	Latitude	: 23°18'50.59"N

Discipline : Chem	ical	Group:	Atmospheric :	Pollution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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 1 of 1

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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/2024/0490	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	; 21.04.2023	
III P No.	· TC883924000000461F			

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0181 : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 11.01,2024 to 12.01,2024 : 15.01,2024	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION	-27.5		
1	Average Temperature (°C)	; 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	: 23°18'20.87"N

Discipline : Chemic:	at	Group:	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit			
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	65	100 (24hrs)			
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	38	60 (24hrs)			
Sulphur Di-Oxide (SO ₂)	μg/m³	1S 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)			
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	26.5	80 (24hrs)			
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)			
Ammonia (NH ₃)	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	0.019	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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Authorised Signatory Dr. Deependra Kumar Sinha

Page 1 of 1 Ph. D Environmental Eng.

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ENGINEERING SERVICES PVT. LTD.

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

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

TEST REPORT

Test Report No.	: ELES/RNC/2024/0490	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0181 : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 11.01.2024 to 12.01.2024 : 15.01.2024	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'38.67"E	6	Latitude	; 23°18'20.87"N

Discipline: Chemical		Group:	Group: Atmospheric Pollution		
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzene (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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. Deeperford Signatur Siriha Ph. D Environmental Engg-ELES PVI. Ltd. Technical Manager

Page 1 of 1

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

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/2024/0491	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	
ULR No.	: TC883924000000462F			

CUSTOMER DET/	AILS	SAMPLE DETAILS		
Customer Name	1 Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0182	
		Location	: Quarry- 195	
			Kujam-II Bauxite Mine (157,38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 11.01.2024 to 12.01.2024	
	The same of the same of the same of	Sample Received Date	: 15.01.2024	
		Type of Sample	: Ambient Air	
Mines Status	Operational	Sampling Procedure	: ELES/DOC/SMPL/02	
		Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 15.01,2024 to 25.01,2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline : Chemica	al	Group:	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 ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.4	80 (24hrs)			
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6); 2006; RA2022	22.1	80 (24hrs)			
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)			
Ammonia (NH ₃)	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	0.009	1 (24hrs)			
Nickel (Ni)	ng/m³	IS 5182 (Part-26):2020	<6.0	20 (Annual)			
Arsenic (As) Initias & Eno.	ng/m³	ELES/AIR/SOP/01	<2.0	06 (Annual)			

****End of Report****

Reviewed by

Dr. Deependra Kumar Sinha

Page 1 of (

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

GINEERING 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/2024/0491	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	; 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0182 : Quarry- 195 Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 11.01.2024 to 12.01.2024 : 15.01.2024	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:19	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23°18'56.89"N

Discipline ; Chem	ical	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzene (C _t H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022.	<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.

NES & Engin Reviewed by

****End of Report****

Authorised Signatory Dr. Deependra Kumar 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:-20AAECE9713D1Z4

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/2024/0492	Report Release Date	: 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000463F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0183 : Bhattipat Kujam-II Bauxite Mine (157,38ha)
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 11.01.2024 to 12.01.2024 : 15.01.2024
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 19	2	Barometric Pressure (mmHg)	1734
3	Relative Humidity (%)	; 45	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline : Chemica	al.	Group: Atmospheric 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	38	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	µg/m³	IS 5182 (Part-2): 2001; RA2022	8.5	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	25.6	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	μg/m³	1S 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	0.013	1 (24hrs)	
Nickel (Ni)	ng/m ¹	IS 5182 (Part-26):2020	<6.0	20 (Annual)	
Arsenic (As)	ng/m	ELES/AIR/SOP/01	<2.0	06 (Annual)	
11 20	11.0		1		

****End of Report****

Reviewed by

Authorised Signatory Dr. Deependra Kumar Sinha

Page 1 of 1 Pri. D Environmental Eng.

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

ENGINEERING SERVICES PVT. LTD.

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

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

TEST REPORT

Test Report No.	; ELES/RNC/2024/0492	Report Release Date	: 05.02,2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0183 : Bhattipat Kujam-II Bauxite Mine (157,38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 11.01.2024 to 12.01.2024 : 15.01.2024	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	119	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear
5	Longitude	: 84°17'54.25"E	6	Latitude	+23°18'34.89"N

Discipline : Chem	ical	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzene (C ₆ H ₆)*	μg/m ¹	IS 5182 (Part-11): 2006; RA2022	<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 I of 1

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



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

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/0481	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	
ULR No.	: TC883924000000452F			

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0172 : Near Pakri Gada Village ; 09.01.2024 to 10.01.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 15.01.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sumpling Done By	: ELES Pvt. Ltd.
Period of Analysis	=15,01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear
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	60	100 (24hrs)	
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	35	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	8.2	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	25.8	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	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)	hg/m ₃	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****

Reviewed by

Authorised Signatory Dr. Deependra Kumar Sinha

Ph D.Fovimomental Frigo.

Page 1 of 1 ELES Pvt. Ltd. Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPLIDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20146CE9733D174

ENGINEERING SERVICES PVT. LTD.

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

TEST REPORT

Test Report No.	: ELES/RNC/2024/0481	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	; 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name.	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0172 : Near Pakri Gada Village : 09.01.2024 to 10.01.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 15.01.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	- 4	Weather Condition	: Clear
5	1.ongitude	: 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 (C ₆ H ₆)*	μg/m³	15 5182 (Part-11): 2006; RA2022	<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.

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****End of Report****

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Dr. Deependra Kumar Sinhu Ph. D Environmentol Engg ELES Pvt. Ltd. Technical Manager

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST ND:- 10AAE0E9713D11A



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

Website : www.elespl.co.in



TEST REPORT

Test Report No.	: ELES/RNC/2024/0482	Report Release Date	± 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000453F		

CUSTOMER DET/	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0173 : Near Pol Pol Village : 09.01.2024 to 10.01.2024
Address.	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 15.01.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	:18	2.	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	-4	Weather Condition	: Clear

Discipline: Chemica	il.	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Particulate Matter (PM10)	μg/m ³	IS 5182 (Part-23): 2006; RA2022	59	100 (24hrs)	
Particulate Matter (PM2.5)	µg/m³	IS 5182 (Part- 24): 2019	33	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	8.8	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	µg/m³	IS 5182 (Part-6): 2006; RA2022	26.7	80 (24hrs)	
Ozone (O _x)	μg/m³	1S 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	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/m ³	IS 5182 (Part-26):2020	<6.0	20 (Annual)	
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)	

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*** End of Report ***

Authorised Signatory

Dr. Deepandra Kumar Sinha

Ph D Environmental Engg

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA KATIA, RANCHI-834003 (KARKHANO) GST NO:- 20A&ECE97(320)24 WOINEERING SERVICES PUT LIFE.

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/2024/0482	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04,2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0173 : Near Pol Pol Village : 09.01.2024 to 10.01.2024	
Address	: Lohurdaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 15.01.2024 : Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Scaled & Preserved	

MI	TEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear

Discipline: Chem	ical	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzene (C ₄ H ₆) ^a	μg/m³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)	
Benzo-(a)-Pyrene*	ng/m³	1S 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 Manacim

Page I of I

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST NO - YOAAGCESTI3012N

WOLWELRING SERVICES PVT. LTD.

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



70 0000

TEST REPORT

Test Report No.	: ELES/RNC/2024/0483	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21,04.2023	
ULR No.	: TC883924000000454F			

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0174 : Near Shakhuapani Viltage : 09.01.2024 to 10.01.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 15.01.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742.
3	Relative Humidity (%)	: 45	4	Weather Condition	: Clear

Discipline: Chemica	al	Group: Atmospheric 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/m ³	IS 5182 (Part- 24): 2019	35	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.9	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	28.1	80 (24hrs)	
Ozone (O ₃)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	µg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ³	15 5182 (Part-10): 1999; RA2019	<1.0	2 (8hrs)	
Lead (Pb)	µg/m³	IS 5182 (Part-22): 2004; RA2019	0.012	1 (24hrs)	
Nickel (Ni)	ng/m ^T	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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Dr. Deependra Kumar Sinha

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The appear of the Test Report is not Date of Test Report released/issued. After the two privide stated before, no compliants will be accepted. The antifer Time schooled materials in Test Report is in 2-leased format. Althorized used, N/A (Nin Applicable), EEA. (Below Detection Limit), LDL (Lover Detection Limit).



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Email: Info@elespl.co.in , eles.ranchi@gmail.com Phane no.: 0651-2290103 Website: www.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/0483	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET.	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0174 : Near Shakhuapani Village : 09.01.2024 to 10.01.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 15,01,2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	; 45	- 4	Weather Condition	: Clear

Discipline: Chem	ical	Group: Atmospheric Pollution			
Parameter	Unit	Test Protocol	Result	Regulatory Limit	
Benzene (C ₅ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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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****End of Report****

Authorised Signatory

Dr. Deependra Kumar Sinha
Ph. D Environmental Engg.

ELES PVI, Ltd. Technical Menants

Page I of 1

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FLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, KANCHI-834003 (HARKHAND) 057 NO:- 704AECE9713D1Z4

Email: Info@elesol.co.in , eles mnchi@amail.com

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/0484	Report Release Date	: 05.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04,2023
ULR No.	: TC883924000000455F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0175 : Near Dipa Kujam Village : 09.01.2024 to 10.01.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 15.01.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 15.01.2024 to 25.01.2024	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (*C)	: 18	2	Barometric Pressure (mmHg)	; 742
3	Relative Humidity (%)	:45	4	Weather Condition	: Clear

Discipline: Chemica	al	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/m²	IS 5182 (Part- 24): 2019	34	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.2	80 (24hrs)
Nitrogen Di-Oxide (NO2)	μg/m³	1S 5182 (Part-6): 2006; RA2022	24.7	80 (24hrs)
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₂)	ug/m³	IS 5182 (Pari-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	0.06	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****

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Authorised Signatory

Dr. Deependra Kumar Sinha

Ph. D Environmental Engg

er ES PVI. Ltd. reordingar Waltag C Page 1 of 1

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPLIDANA HATIA, RANCHI-834003 UHARIKHAND) EST NO:- 20AAECE9713D1Z4 NGINEERING SERVICES PV7. LTD.

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

TEST REPORT

Test Report No.	: ELES/RNC/2024/0484	Report Release Date	: 05.02.2024	
Work Order No.	: 13612310218	Work Order Date	; 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0175 : Near Dipa Kujam Village : 09.01,2024 to 10,01,2024	
Address Mines Status	: Lohardaga, Jharkhand-835302 : Operational	Sample Received Date Type of Sample Sampling Procedure Sampling Done By	: 15.01.2024 : Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
400-6-200-0000	A			
Period of Analysis	: 15.01.2024 to 25.01,2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 18	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 45	-4	Weather Condition	; Clear

Discipline: Chem	ical	Group:	Atmospheric	Pollution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Benzene (CaHa)*	μg/m³	IS 5182 (Part-11); 2006; RA2022	<1.0	05(Annual)
Benzo-(a)-Pyrene*	ng/m ³	IS 5182 (Part-12): 2004; RA2019	<0.5	01(Annual)

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

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ELES Pvt. Ltd. Technical Man

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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/2024/0582	Report Release Date	: 06.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000000553F		

CUSTOMER DET	AILS	SAMPLE DETAILS	THE PERSON NAMED AND POST OF
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/SW/0617
		Sampling Date	: 12.01.2024
		Sample Received Date	: 31.01.2024
Address	: Lohardaga, Jharkhand-835302	Type of Sample	: Surface Water
		Source of Sample	: Near Nawatoli, Kujam-II Bauxite Mine (157.38ha)
		Sampling Procedure	: ELES/DOC/SMPL/01
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 31.01.2024 to 05.02.2024	Sample Condition	: Sealed & Preserved

Discipline: Chemical		Group	Water	Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water
pH (at 24.5°C)		IS 3025 (Part 11): 2022	6.93	6.5-8.5
Temperature	°C	IS 3025 (Part 9):1984; RA2017	24.5	~
Chemical Oxygen Demand (COD)	1.0	IS 3025 (Part-58) :2006; RA2017	4.0	98.
Biochemical Oxygen Demand (BOD) (@ 20°C for 5 days)	mg/L	APHA 23 rd Ed.2017; 5210B	BDL (DL: 1.0)	3.0
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	98	1500
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17):2022	7.8	1
Oil & Grease	mg/L	IS 3025 (Part-39): 2021	BDL (DL: 0.1)	0.1
Calcium (as Ca)	mg/L	IS 3025 (Part-40) :1991, RA2019	6.2	*
Discipline : Cher	nical	Group:	Residues in W	ater
Aluminium (Al)	mg/L	IS 3025 (Part-55) :2003; RA2019	BDL (DL: 0.02)	0.03
Iron (as Fe)	mg/L	APHA23rd Ed 2017; 3111B	0.109	50

Remarks: LepH done at Lab.

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

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/0597	Report Release Date	: 06.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	
ULR No.	: TC883924000000568F			

CUSTOMER DET	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Sampling Date Sample Received Date	: ELES/RNC/2024/SL/0632 : 12.01.2024 : 31.01.2024	
Address	: Lohardaga, Jharkhand-835302	Type of Sample Location of Sample	: Soil : Kujam II- Bauxite Mines Near Quarry Bhattipat	
Mines Status	: Operational	Sampling Procedure Sampling Done By	: ELES/DOC/SMPL/05 : ELES Pvt. Ltd.	
Period of Analysis	; 31.01.2024 to 05.02.2024	Sample Condition	: Sealed	

Discipline : Chemical		Group: Pollution & En	vironment
Parameter	Unit	Test Protocol	Result
pH (1:2) at 24.6 °C	-	IS 2720 (Part 26):1987; RA2021	5.16
Conductivity (1:2) at 24.6 °C	μS/cm	IS 14767; 2000; RA2021	176
Total Organic Carbon (TOC)	%	Soil Testing in India: 2011 (Walkley & Black Method)	0.64
Available Phosphorus (as P) (1:10)	kg/ha	Soil Testing in India; 2011	3.32
Potassium (as K)	mg/kg	IS 9497:1980; RA 2020	1950
Available Nitrogen	%	Soil Testing in India: 2011	0.26
Chloride (1:2)	%	ELES/SOIL/SOP/01	0.04
Lead (as Pb)	mg/kg	US EPA 3050 A&B: 1996	BDL (DL: 0.1)
Cadmium (as Cd)	mg/kg	US EPA 3050 A&B : 1996	BDL (DL: 0.1)
Mercury (as Hg)	mg/kg	US EPA 7473 : 2007	BDL (DL: 0.01)
Magnesium (as Mg)	mg/kg	Soil Testing in India: 2011	302

Remarks: 1. pH done at Lab.

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Page 1 of 1

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

TEST REPORT

Test Report No.	: ELES/RNC/2024/0597	Report Release Date	± 06.02.2024	
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/2024/SL/0632	
		Sampling Date Sample Received Date	: 12.01.2024 : 31.01.2024	
Address	: Lohardaga, Jharkhand-835302	Type of Sample	(Soil	
riouress	, Lonasvaga, Junikilanu-0333502	Location of Sample	: Kujam II- Bauxite Mines Near Quarry Bhattipat	
		Sampling Procedure	: ELES/DOC/SMPL/05	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 31.01.2024 to 05.02.2024	Sample Condition	: Sealed	

Discipline: Chemical		Group: Pollution & Environment	
Parameter	Unit	Test Protocol	Result
Arsenic (as As)	mg/kg	IS 3025 (Part 37): 2022	BDL (DL: 0,005)
Selenium (as Se)	mg/kg	IS 3025 (Part-56) :2003; RA 2019	BDL (DL: 0.01)

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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

February 2024



CONTENT

Hind	alco Industries :Kujam-II Bauxite MineEnvironmental Monitoring Report February 2024
	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 PakriGada Village
2	Near Pol Pol Village
3	Near Shakhuapani Village
4	Near DipaKujam Village
	Drinking Water
	Ambient Noise
	Workzone Noise





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

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



TC-SERV

TEST REPORT

Test Report No.	: ELES/RNC/2024/1160	Report Release Date	: 13.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	
ULR No.	: TC883924000001096F			

CUSTOMER DETA	MILS	SAMPLE DETAILS		
Customer Name	Hindalco Industries Limited	Sample Ref. No.	s ELES/RNC/2024/AA/0899	
		Location	: Kujam-II Weigh Bridge	
-30	SANTE OF BUILDING		Kujam-Il Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 06.02.2024 to 07.02.2024	
		Sample Received Date	: 07.02.2024	
		Type of Sample	3 Ambient Air	
		Sampling Procedure	: ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFO	RMATION			
T	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	734
3	Relative Humidity (%)	: 50	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/m ³	IS 5182 (Part-23): 2006; RA2022	79	100 (24hrs)		
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	47	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	11.8	80 (24hrs)		
Nitrogen Di-Oxide (NO2)	μg/m³	IS 5182 (Part-6): 2006; RA2022	29.3	80 (24hrs)		
Ozone (O ₃)	μg/m [*]	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	μg/m ²	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/m³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)		
Lead (Pb)	μg/m³	IS 5182 (Part-22): 2004; RA2019	0.014	1 (24hrs)		
Nickel (Ni)	ng/m³	1S 5182 (Part-26):2020	<6.0	20 (Annual)		
Arsenic (As)	ng/m²	ELES/AIR/SOP/01	>2.0	06 (Annual)		

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Dr. Deependra Kurnar Sinha

Page 1 of 1 Ph. D EnvironmemarEng

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ENGINEERING SERVICES PVT. LTD.

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

TEST REPORT

Test Report No.	: ELES/RNC/2024/1160	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DET.	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0899 : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157,38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.02.2024 to 07.02.2024 : 07.02.2024	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved	

MI	ETEOROLOGICAL INFOR	MATION			
_	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	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 (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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 Sin. J Ph. D Environmental Engg.

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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.elespl.co.in



TC-8839

TEST REPORT

Test Report No.	; ELES/RNC/2024/1161	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001097F		

CUSTOMER DETA	M. P. C.	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0900
		Location	: Nawatoli Quarry
			Kujam-II Bauxite Mine (157,38ha)
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 06.02.2024 to 07.02.2024
	10.00	Sample Received Date	: 07.02.2024
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFO	RMATION			
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	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	
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	68	100 (24hrs)	
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	34	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	10.3	80 (24hrs)	
Nitrogen Di-Oxide (NO2)	μg/m ³	IS 5182 (Part-6); 2006; RA2022	28.8	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ¹	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)	
Lead (Pb)	µg/m³	1S 5182 (Part-22): 2004; RA2019	0.022	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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Dr. Deependra Kumar Sinha

Page I of I

Ph. D Environmental Engg

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

Website: www.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/1161	Report Release Date	: 13.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0900 : Nawatoli Quarry Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.02.2024 to 07.02.2024 : 07.02.2024	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	: Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	
Period of Analysis	: 07.02.2024 to 13.02.2024	Sampling Done By	: Sealed & Preserved	

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	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 (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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 Sintis
Ph. D Environmental Engg.
ELES Pvt. Ltd. Technical Menag.

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GINEERING 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/2024/1162	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001098F		

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2024/AA/0901	
		Location	: Quarry- 195	
			Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date	: 06.02.2024 to 07.02.2024	
	the first of the second	Sample Received Date	: 07.02.2024	
		Type of Sample	: Ambient Air	
		Sampling Procedure	: ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 07.02.2024 to 13.02,2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
5	Longitude	: 84°17'30.27"E	6	Latitude	: 23º18'56.89"N

Discipline: 0	Chemical	Group: Atmospheric 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	38	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	9.1	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m ³	IS 5182 (Part-6): 2006; RA2022	24.4	80 (24hrs)	
Ozone (O ₃)	μg/m ⁷	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	µg/m³	1S 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)	
Lead (Pb)	щу/m³	IS 5182 (Part-22): 2004; RA2019	0.011	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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ENGINEERING SERVICES PVT. LTD.

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

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TEST REPORT

Test Report No.	: ELES/RNC/2024/1162	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0901 : Quarry- 195 Kujam-II Bauxite Mine (157.38ha)	
Address	; Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.02.2024 to 07.02.2024 : 07.02.2024	
		Type of Sample Sampling Procedure	: Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	; 07.02,2024 to 13.02,2024	Sample Condition	: Sealed & Preserved	

MI	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	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 (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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.

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ENGINEERING SERVICES PVT. LTD.

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

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/1163	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001099F		

CUSTOMER DET	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0902 : Bhattipat Kujam-II Bauxite Mine (157,38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date Type of Sample Sampling Procedure	: 06.02.2024 to 07.02.2024 : 07.02.2024 : Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 07.02,2024 to 13,02,2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	- 4	Weather Condition	: Clear
5	Longitude	= 84°17'54.25"E	6	Latitude	: 23°18'34.89"N

Discipline: 0	Chemical	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23); 2006; RA2022	70	100 (24hrs)		
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	41	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	1S 5182 (Part-2); 2001; RA2022	10.3	80 (24hrs)		
Nitrogen Di-Oxide (NO2)	μg/m³	IS 5182 (Part-6): 2006; RA2022	23.2	80 (24hrs)		
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<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/m³	ELES/AIR/SOP/01	<2.0	06 (Annual)		

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Dr. Deependra Kumar Sinh

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ENGINEERING SERVICES PVT. LTD.

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

TEST REPORT

Test Report No.	: ELES/RNC/2024/1163	Report Release Date	: 13.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/0902 : Bhattipat Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 06.02.2024 to 07.02.2024 : 07.02.2024	
		Type of Sample Sampling Procedure	: Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	ELES Pvt. Ltd.	
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Scaled & Preserved	

MI	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 734
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear
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 (C _s H _s)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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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Email: info@elesal.co.in , eles.runch/@gmail.com Phane no.: 0651-2290103 Website: www.elespl.ca.in



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TEST REPORT

Test Report No.	: ELES/RNC/2024/1148	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001084F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	; Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0887 : Near Pakri Gada Village : 02.02.2024 to 03.02.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure Sampling Done By	: 07,02,2024 : Ambient Air : ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Mines Status	: Operational		
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	: 21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	; 48	4	Weather Condition	: Clear
5	Longitude	: 84°14'52,25"N	6	Latitude	: 23°17'41.21"E

Discipline: 0	Chemical	Group: Atmo	Group: Atmospheric 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/m³	IS 5182 (Part- 24): 2019	31	60 (24hrs)			
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.2	80 (24hrs)			
Nitrogen Di-Oxide (NOz)	μg/m³	1S 5182 (Part-6): 2006; RA2022	22.5	80 (24hrs)			
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)			
Ammonia (NH ₃)	μg/m²	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)			
Carbon Monoxide (CO)	mg/m³	IS 5182 (Part-10); 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)			
Lead (Pb)	µg/m³	1S 5182 (Part-22): 2004; RA2019	< 0.002	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)			

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PLOT NO-30, MANSAROVAR ENCLAVE, TUPURARA HATIA, RANCHI-834003 (JHARKHANO) GIT NO-30A4FG97130124

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

ERING SERVICES PVT. LTD.

Phone no.: 0551-2290103 Website::www.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/1148	Report Release Date	: 13.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET.	AILS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0887 : Near Pakri Gada Village : 02.02.2024 to 03.02.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 07.02.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 07.02,2024 to 13.02,2024	Sample Condition	: Sealed & Preserved

M	ETEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	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		
Henzene (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<1.0	05(Annual)		
Benzo-(a)-Pyrene*	ng/m ¹	IS 5182 (Part-12): 2004; RA2019	< 0.5	01(Annual)		

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

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



TC-0899

TEST REPORT

Test Report No.	: ELES/RNC/2024/1149	Report Release Date	: 13,02,2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001085F		

CUSTOMER DETA	MLS	SAMPLE DETAILS		
Customer Name	; Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0888 : Near Pol Pol Village : 02.02.2024 to 03.02.2024	
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 07.02.2024 : Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFORMATION				
1	Average Temperature (°C) :21	2	Barometric Pressure (mmF	(e) : 742	
3	Relative Humidity (%) : 48		Weather Condition	: Clear	

Discipline:	Chemical	Group: Atmospheric 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/m ³	1S 5182 (Part- 24); 2019	29	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m ³	IS 5182 (Part-2): 2001; RA2022	6.9	80 (24hrs)		
Nitrogen Di-Oxide (NO2)	μg/m³	IS 5182 (Part-6): 2006; RAZ022	21.2	80 (24hrs)		
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₂)	µg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/m²	1S 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)		
Lead (Pb)	μg/m³	IS 5182 (Part-22): 2004; RA2019	< 0.002	1 (24hrs)		
Nickel (Ni)	ng/m ¹	IS 5182 (Pari-26):2020	<6.0	20 (Annual)		
Arsenic (As)	ng/m³	ELES/AIR/SOP/01	<2.0	06 (Annual)		

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CIN: U745993H2Q18PTCC11125

ENVIRONMENTAL LABORATORIES &

PLOT NO-SO, MANSAROVAR ENCLAVE, TUPLIDANA HATIA, RANCHIAS-1008 DHARKHANDI 65T NO:- 204AECE97130124

CINEERING SERVICES ANT. LTD.

Email: info@elesol.co.in , eles.ranchl@gmall.com Phone no.: 0651-2290103 Website : www.elespi.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/1149	Report Release Date	: 13.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETA	AILS	SAMPLE DETAILS		
Customer Name.	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0888 : Near Pol Pol Village : 02,02,2024 to 03.02,2024	
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 07.02.2024 : Ambient Air : ELES/DOC/SMPL/02	
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.	
Period of Analysis	: 07.02.2024 to 13.02,2024	Sample Condition	: Sealed & Preserved	

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m ¹	1S 5182 (Part-11): 2006; RA2022	<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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PLOT NO-SO, MANSAROVAR ENCLAVE TUPUDANA HATIA, RANCHI-834003 (IHARKHAND) GST NG:- 20AAECE9713D124



Email: info@elesol.co.in , eles.ranch(@gmail.com Phane no.: 0651-2290103 Website : www.elesol.co.in



TEST REPORT

Test Report No.	: ELES/RNC/2024/1150	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001086F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	; Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0889 : Near Shakhuapani Village : 02.02.2024 to 03.02.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample	: 07.02.2024 : Ambient Air
Mines Status	: Operational	Sampling Procedure Sampling Done By	: ELES/DOC/SMPL/02 : ELES Pvt, Ltd.
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFORMATION				
1	Average Temperature (°C) : 21	2	Barometric Pressure (mml	Ig) : 742	
3	Relative Humidity (%) : 48	4	Weather Condition	: Clear	

Discipline:	Chemical	Group: Atmospheric 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	31	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6.8	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6): 2006; RA2022	22.6	80 (24hrs)		
Ozone (O ₃)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25); 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/nr ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO-20A4ECERTISDIZ4 ENGINEERING SERVICES PTT. ETD.

Email: Info@elespl.co.in , eles.ranchi@amail.com Plane na.: 0651-2290103 Website : wow.elespl.co.in

TEST REPORT

Test Report No.	: ELES/RNC/2024/1150	Report Release Date	: 13.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET.	CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0889 : Near Shakhuapani Village : 02.02.2024 to 03.02.2024		
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample	: 07.02.2024 : Ambient Air		
Mines Status	: Operational	Sampling Procedure Sampling Done By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.		
Period of Analysis	: 07.02,2024 to 13,02,2024	Sample Condition	: Sealed & Preserved		

M	ETEOROLOGICAL INFOR	MATION			
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline: Chemical		Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m³	IS 5182 (Part-11): 2006; RA2022	<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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 201426597130124

ENGINEERING SERVICES PVT, LTP.

Email: Info@elexal.ca.in . elex.ranchi@gmail.cam

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/1151	Report Release Date	: 13.02,2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001087F		

CUSTOMER DETA	AILS	SAMPLE DETAILS	
Customer Name	; Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0890 : Near DipaKujam Village : 02.02.2024 to 03.02.2024
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample	: 07.02.2024 : Ambient Air
Mines Status	: Operational	Sampling Procedure Sampling Done By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved

MI	TEOROLOGICAL INFOR	RMATION			
1	Average Temperature (°C)	:21	1.2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear

Discipline:	Chemical	Group: Atmospheric 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	28	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	µg/m³	IS 5182 (Part-2): 2001; RA2022	6.2	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	µg/m³	IS 5182 (Part-6): 2006; RA2022	17.8	80 (24hrs)		
Ozone (O ₃)	µg/m	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	µg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/m ²	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)		
Lead (Pb)	µg/m³	IS 5182 (Part-22): 2004; RA2019	0.06	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 MATTA, RANCHI-\$34003 (IHARKHAND) GST NO:- 20AAECE9713D1ZA 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/2024/1151	Report Release Date	: 13.02.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET.	CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/0890 : Near DipaKujam Village : 02.02.2024 to 03.02.2024		
Address	: Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 07.02.2024 : Ambient Air : ELES/DOC/SMPL/02		
Mines Status	± Operational	Sampling Done By	: ELES Pvt. Ltd.		
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Condition	: Sealed & Preserved		

MI	ETEOROLOGICAL INFOR	MATION				
1	Average Temperature (°C)	:21	2	Barometric Pressure (mmHg)	:742	
3	Relative Humidity (%)	: 48	4	Weather Condition	: Clear	

Discipline: Chemical		Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Benzene (C ₆ H ₆)*	μg/m ³	IS 5182 (Part-11): 2006; RA2022	<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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PLOT NO-30, MANSAROVAR ENCLAVE, TUPUDANA HATIA, RANCHI-834003 (JHARKHAND) GST NO:- 20AAECE9713D1Z4

ENGINEERING SERVICES PVT. LTD.

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

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



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TEST REPORT

Test Report No. : ELES/RNC/2024/1179 Report Release Date : 13.02.2024

Work Order No. : 13612310218 Work Order Date : 21.04.2023

ULR No. : TC883924000001115F

CUSTOMER DET	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Sampling Date Sample Received Date	: ELES/RNC/2024/DW/0918 : 06.02,2024 : 07.02,2024	
Address	: Lohardaus, Jharkhand-835302	Type of Sample Source/Location of Sample	: Drinking Water : Kujam II- Bauxite Mines	
Mines Status	: Operational	Sampling Procedure	(157.38ha) : ELES/DOC/SMPL/01	
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Collected By Sample Condition	: ELES Pvt. Ltd. : Sealed & Preserved	

Discipline : Chemic	cal	Group : Water		Regulatory Limit as per 1S 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
pH (at 24.6 °C)	1.5	APHA 23rd Ed.2017, 4500-H	6.62	6.5-8.5	No Relaxation
Turbidity	NTU	APHA 23 rd Ed.2017, 2130 B	0.02	1.0	5.0
Taste		APHA 23 rd Ed.2017, 2160 C	Agreeable	Agreeable	Agreeable
Odour	-	IS 3025 (Part-5) :2018	Agreeable	Agreeable	Agreeable
Colour	Hazen	APHA 23 rd Ed.2017, 2120B&D	1.0	5	15
Total Dissolved Solids (TDS)	mg/L	APHA 23rd Ed.2017, 2540B,C&D	68	500	2000
Chloride (as CI)	mg/L	APHA 23 rd Ed.2017, 4500 Cl B	9,4	250	1000
Fluoride (as F)	mg/L	APHA 23 rd Ed.2017, 4500 F-D	BDL (DL: 0.1)	1.0	1.5
Total Alkalinity (as CaCO ₃)	mg/L	APHA 23 rd Ed.2017, 2320 B	16.0	200	600
Total Hardness (as CaCO ₃)	mg/L	APHA 23 rd Ed,2017, 2340 C	16.7	200	600
Sulphate (as SO ₄)	mg/L	APHA 23 rd Ed,2017, 4500 SO ₄ ⁻² -E	BDL (DL: 1.0)	200	400
Nitrate (as NO ₃)	mg/L	APHA 23 rd Ed.2017, 4500 NO ₃ -B	BDL (DL: 0.5)	45	No Relaxation
Phenolic Compound (as C ₀ H ₁ OH)	mg/L	IS 3025 (Part-43):1992;RA2019	BDL (DL: 0.001)	0.001	0.002
Cyanide (as CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05	No Relaxation

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Save Environment, Save Future



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

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/2024/1179 Report Release Date : 13.02.2024 Work Order No. : 13612310218 Work Order Date : 21.04.2023

ULR No. : TC883924000001115F

Discipline :	Chemic	al Group: Wa	Group: Water		
Parameter	Unit	Test Protocol	Result	Acceptable Limit	S10500:2012 Permissible Limit
Residual Free Chlorine (RFC)	mg/L	IS 3025 (Part-26):2021	BDL (DL: 0.1)	0.02	1.0
Calcium (as Ca)	mg/L	APHA 23rd Ed.2017, 3500 Ca B	5.0	75	200
Discipline :	Chemic	al Group:	Residues in '	Water	
Aluminum (as Al)	mg/L	IS 3025 (Part-55): 2003; RA2019	BDL (DL: 0.02)	0.03	0,2
Arsenic (as As)	mg/L	IS 3025 (Part 37): 2022	BDL (DL: 0.005)	0.01	No Relaxation
Boron (as B)	mg/L	IS 3025(Part-57); 2005; RA2021	BDL (DL: 0.2)	0.5	1.0
Cadmium (as Cd)	mg/L	APHA 23 rd Ed,2017, 3111B	BDL (DL: 0,003)	0.003	No Relaxation
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	No Relaxation
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.03)	0.05	1.5
Iron (as Fe)	mg/L	APHA 23 rd Ed.2017, 3111B	0.109	1.0	1.0
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.01)	0.01	No Relaxation
Manganese (as Mn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.05)	0.1	0.3
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 1994; RA2019	BDL (DL: 0.001)	0.001	No Relaxation
Selenium (as Se)	mg/L	IS 3025 (Part-56): 2003; RA2019	BDL (DL: 0.01)	0.01	No Relaxation
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017, 3111B	BDL (DL: 0.1)	5	15

Reviewed by

****End of Report****

Authorised Signatory Dr. Deependra Kumar Simu

Page 2 of 2

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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/2024/1179	Report Release Date	: 13.02,2024
Work Order No.	: 13612310218	Work Order Date	; 21.04,2023

CUSTOMER DET	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Sampling Date Sample Received Date	: ELES/RNC/2024/DW/0918 : 06.02.2024 : 07.02.2024	
Address	: Lohardaga, Jharkhand-835302	Type of Sample Source/Location of Sample	: Drinking Water : Kujam II- Bauxite Mines (157,38ha)	
Mines Status	: Operational	Sampling Procedure	: ELES/DOC/SMPL/01	
Period of Analysis	: 07.02.2024 to 13.02.2024	Sample Collected By Sample Condition	: ELES Pvt. Ltd. : Sealed & Preserved	

Mantallian - Di	of out and	Commercial W	Make -	Regulate	ory Limit	
Discipline : Biological		Group: Water		as per IS	s per IS 10500:2012	
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit	
Total Coliform	Per 100 mL	IS 15185:2016; RA 2021	Not Detected	Shall not be detecte		
Escherichia Coli (E. Coli)	Per 100 mL	IS 15185:2016; RA 2021	Not Detected	Snau nor	ne detected	
Night	et all a	Manage V	Mario	Regulat	ory Limit	
Discipline :	Chemical	Group : \	vater	as per IS 10500:2012		
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit	
Anionic Surfactants (as MBAS)*	mg/L	IS 3025 (Part- 68) : 2019 (RA2023)	BDL (DL: 0.1)	0.2	1.0	
Polynuclear Aromatic Hydrocarbons (PAH)*	mg/L	APHA 23rd Edition: 6440 B	BDL (DL: 0.0001)	0.0001	No. Relaxation	
Polychlorinated Biphenyls (PCB)*	mg/L	APHA 23 rd Edition: 6431B	BDL (DL: 0.0005)	0.0005	No Relaxation	

Page 1 of 2

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ENGINEERING SERVICES PVT, LTD.

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

Website: www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2024/1179 Report Release Date : 13.02.2024

Work Order No. : 13612310218 Work Order Date : 21.04.2023

Discipline : Cl	nemical	Group :	Water		tory Limit 10500:2012
Parameter	Unit	Test Protocol	Result	Acceptable Limit	Permissible Limit
Pesticides					
Alachlor*	ag/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 1.0)	20	No Relaxation
Atrazine*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 1.0)	2.0	No Relaxation
Aldrin/Dieldrin*	μg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 0.01)	0.03	No Relaxation
Alpha HCH*	µg/L	USEPA 508:1985	BDL (DL: 0.001)	0.01	No Relaxation
Beta HCH*	μg/L	USEPA 508:1985	BDL (DL: 0.01)	0.04	No Relaxation
Butachlor*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 10)	125	No Relaxation
Chlorpyriphos*	μg/L	USEPA 8141 A	BDL (DL: 10)	30	No Relaxation
Delta HCH*	μg/L	USEPA 508:1985	BDL. (DL: 0.01)	0.04	No Relaxation
2,4 dichlorophenoxyacetic acid*	µg/L	APHA 23 rd Edition 6640 B	BDL (DL: 10)	30	No Relaxation
DDT(o,p and p,p-isomers of DDT,DDE and DDD)*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 0.5)	1.0	No Relaxation
Endosulfan (alpha, beta, and sulphate)*	µg/L	APHA 23 rd Edition 6630 B&C	BDL (DL: 0.1)	0.4	No Relaxation
Ethion*	µg/L	USEPA 1657 A	BDL (DL: 0.5)	3.0	No Relaxation
Gamma HCH (Lindane)*	μg/L	USEPA 508;1985	BDL (DL: 0.5)	2.0	No Relaxation
lsoproturon*	μg/L	USEPA 532:2000	BDL (DL: 0.5)	9.0	No Relaxation

Remarks: La Paparities are outsourced to other Lab.

Reviewed by

****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinha

Pn. D Environmental Engg.

Page 2 of 2

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ENGINEERING SERVICES PVT. LTD.

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

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



CM: UV4999UM2018P1CM11123

TEST REPORT

Test Report No.	: ELES/RNC/2024/1169	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001105F		

CUSTOMER DET	TAILS	SAMPLE DETAILS		
Address	: Hindalco Industries Limited : Lohardaga, Jharkhand-835302	Sampling Date Sampling Received Date Type of Sample Sampling procedure Sample Drawn By	† 06.02.2024 to 07.02.2024 : 07.02.2024 : Ambient Noise : ELES/DOC/SMPL/03 : ELES Pvt. Ltd.	
Mines Status	: Operational	Period of Analysis	: 07.02.2024 to 13.02.2024	

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C) : 23	2	Barometric Pressure (mml-	lg) : 736	
3	Relative Humidity (%) : 50	-4	Weather Condition	: Clear	

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)	
occober a de			Time	L_{eq}		
Near Mine Office Kujam-II Bauxite Mine (157.38ha)	ARIAN IS 99	IS 9989:1981, RA 2020	Day Time	64	75 dB(A) Day Time &	
Sample ID: ELES/RNC/2024/AN/0908		*******	Night Time 42		70 dB(A) Night Time	



****End of Report****

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

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ENGINEERING SERVICES PVT. LTD.

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

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



TEST REPORT

Test Report No.	: ELES/RNC/2024/1174	Report Release Date	: 13.02.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
ULR No.	: TC883924000001110F		

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name Address	: Hindalco Industries Limited : Lohardaga, Jharkhand-835302	Sampling Date Sampling Received Date Type of Sample Sampling procedure Sample Drawn By	: 06.02.2024 : 07.02.2024 : Workzone Noise : ELES/DOC/SMPL/03 : ELES Pvt, Ltd.	
Mines Status	: Operational	Period of Analysis	: 07.02.2024 to 13.02.2024	

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 23	2	Barometric Pressure (mmHg)	: 736
3	Relative Humidity (%)	: 50	4	Weather Condition	: Clear

Location	Unit	Test Protocol	Rest	alt	Regulatory Limit (Industrial Zone)
Compressor at Quarry No.2 -			Time	L_{eq}	
Kujam-II Bauxite Mine (157.38ha)	dB(A)	IS 4758:1968; RA 2017	No. of the Co.	72	90 dB (A)
Sample ID: ELES/RNC/2024/WN/0913			Day Time		



****End of Report****

Authorised Signatory
Dr. Deependra Kumar Sinne
Ph. D Environmental Engg
ELES Pvt. Ltd. Technical Manar

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ENVIROCHECK

Lab: MIG, R-3 Housing Colony, Dhanbad, Pin-826001, State- Jharkhand.

Kujam II Bauxite Mine-Environmental Monitoring Report

March 2024

CONTENT

1	lindalco Industries : Kujam-II Bauxite Mine Environmental Monitoring Report March 202-
	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 PakriGada Village
2	Near Pol Pol Village
3	Near Shakhuapani Village
4	Near DipaKujam Village
	Stack
	Stream Water
1	Up Stream (Dhardhari Nadi)
2	Down Stream (Dhardhari Nadi)



: 12.03.2024 to 19.03.2024

Period of Analysis



Lab : MJG, R-3 Housing Coluny, Discolard, Pin -826001, Stary - Hardward \$ 9800067044 / \$ 9304513737

TEST REPORT

1201 101 1711				
Test Report No.	: ELES/RNC/2024/1473	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	÷21.04.2023	
CUSTOMER DET	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/1309 : Kujam-II Weigh Bridge Kujam-II Bauxite Mine (157.38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date Type of Sample	: 09.03.2024 to 10.03,2024 : 12.03.2024 : Ambient Air	
Mines Status	: Operational	Sampling Procedure Sampling Done By	: ELES/DOC/SMPL/02 : ELES Pvt. Ltd.	

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	; 734
3	Relative Humidity (%)	: 47	4.	Weather Condition	: Clear

Sample Condition

Discipline:	Chemical	Group: Atmospheric Pollution				
Parameter	Unit	Test Protocol	Result	Regulatory Limit		
Particulate Matter (PM10)	μg/m³	1S 5182 (Part-23): 2006; RA2022	72	100 (24hrs)		
Particulate Matter (PM2.5)	μg/m ³	IS 5182 (Part- 24): 2019	40	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	8.2	80 (24hrs)		
Nitrogen Di-Oxide (NO2)	µg/m³	IS 5182 (Part-6): 2006; RA2022	31.7	80 (24hrs)		
Ozone (O ₃)	μg/m ³	1S 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/m³	1S 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)		
Lead (Ph)	µg/m³	1S-5182 (Part-22): 2004; RA2019	0.019	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)		
Benzene (C ₆ H ₆)	µg/m²	ELES/GC/SOP/06	<2.5	05(Annual)		
Benzo-(a)-Pyrene	ng/m	ELES/GC/SOP/05	< 0.5	01(Annual)		

Reviewed by:

****End of Report****

Jharkhand

(Saswata Burman Roy, Dy. Quality Manager)

Authorised Signatory:

: Sealed & Preserved

(Bapan Das, Dy. Technical Manager)

Page 1 of 1

Kolkata Office: 63/8, Rastraguru Avenue, Kolkata - 700028 \$ 033-25792891/25497490 - emittechnix50@email.com firmed



: 47

Lab : MIG, R-3 Housing Colony, Dhambad, Pm - 826001, State - Harricand & 9830067044 / & 9304513737



TEST REPORT

Test Report No.	: ELES/RNC/2024/1474	Report Release Date	: 10.04.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/1310 : Nawatoli Quarry
Address	Lohardaga, Jharkhand-835302	Sampling Date	Kujam-II Bauxite Mine (157.38ha) : 09.03.2024 to 10.03.2024

Sample Received Date

Sampling Procedure

Weather Condition

Type of Sample

Sampling Done By : ELES Pvt. Ltd. Mines Status : Operational : Sealed & Preserved : 12.03.2024 to 19.03.2024 Sample Condition Period of Analysis METEOROLOGICAL INFORMATION Barometric Pressure (mmHg) : 734 Average Temperature (°C) : 24

4

Discipline:	Chemical	Group: Atmospheric 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	31	60 (24hrs)		
Sulphur Di-Oxide (SO ₂)	μg/m³	1S 5182 (Part-2): 2001; RA2022	7.1	80 (24hrs)		
Nitrogen Di-Oxide (NO ₂)	µg/m³	IS 5182 (Part-6); 2006; RA2022	25.3	80 (24hrs)		
Ozone (O ₃)	μg/m ³	1S 5182 (Part-9); 1974; RA2019	<20.0	100 (8hrs)		
Ammonia (NH ₁)	μg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)		
Carbon Monoxide (CO)	mg/m³.	1S 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)		
Lead (Pb)	µg/m³	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)		
Benzene (CoH6)	µg/m²	ELES/GC/SOP/06	<2,5	05(Annual)		
Benzo-(a)-Pyrene	ng/m²	ELES/GC/SOP/05	< 0.5	01(Annual)		

Reviewed by :

Relative Humidity (%)

3

**** End of Report****

(Saswata Burman Roy, Dy. Quality Manager)

Authorised Signatory :

: 12.03,2024

: Ambient Air

: ELES/DOC/SMPL/02

: Clear

Zan.

(Bapan Das, Dy. Technical Manager)

Page | of 1

Kolkata Office: 53/6, Rastraguru Avenue, Kolkata - 700028 t 033-25792891/25497490

Jharkhand

i engloucheck\$0@gompil.com





TC-11501

TEST REPORT

Test Report No.	: ELES/RNC/2024/1475	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04,2023	

CUSTOMER DET	AILS	SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	: ELES/RNC/2024/AA/1311 : Quarry- 195 Kujam-II Bauxite Mine (157,38ha)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	: 09,03,2024 to 10.03,2024 : 12,03,2024 : Ambient Air	
Mines Status	: Operational	Type of Sample Sampling Procedure Sampling Done By	ELES/DOC/SMPL/02 ELES Pvt. Ltd.	
Period of Analysis	: 12,03,2024 to 19,03,2024	Sample Condition	; Sealed & Preserved	

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	± 734
3	Relative Humidity (%)	: 47	4	Weather Condition	: Clear

Discipline:	Chemical	Group: Atmospheric 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	31	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	7.7	80 (24hrs)	
Nitrogen Di-Oxide (NO ₂)	μg/m³	IS 5182 (Part-6); 2006; RA2022	21.8	80 (24hrs)	
Ozone (O ₅)	μg/m ³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	µg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)	
Lead (Pb)	µg/m ⁸	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)	
Benzene (C ₆ H ₆)	µg/m ⁱ	ELES/GC/SOP/06	<2.5	05(Annual)	
Benzo-(a)-Pyrene	ng/m	ELES/GC/SOP/05	< 0.5	01(Annual)	

Reviewed by :

Brook

****End of Report****

WIRO/

Jharkhand

(Saswata Burman Roy, Dy. Quality Manager)

Authorised Signatory:

San

(Bapan Das, Dy. Technical Manager)

Page 1 of 1



: Operational

: 12.03.2024 to 19.03.2024



Late-MIG, R-3 Housing Cobory, Dhanbad, Pre-825001, State-Barkhand (9830067044 / 19304513737

TEST REPORT

Test Report No.	: ELES/KNC/2024/14/6	Report Release Date	: 10.04.2024
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023
CUSTOMER DET	AllS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location	; ELES/RNC/2024/AA/1312 : Bhattipat
Address	: Lohardaga, Jharkhand-835302	Sampling Date Sample Received Date	Kujam-II Bauxite Mine (157.38ha) : 09.03.2024 to 10.03.2024 : 12.03.2024

Type of Sample Sampling Procedure

Sampling Done By Sample Condition

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C) : 24	2	Barometric Pressure (mml	Hg) : 734	
3	Relative Humidity (%) : 47	4	Weather Condition	Clear	

Discipline:	Chemical	Group: Atn	ospheric Poli	ution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	μg/m³	18 5182 (Part-23): 2006; RA2022	66	100 (24hrs)
Particulate Matter (PM2.5)	μg/m³	IS 5182 (Part- 24): 2019	35	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)
Nitrogen Di-Oxide (NO:)	µg/m³	IS 5182 (Part-6): 2006; RA2022	20.8	80 (24hrs)
Ozone (O ₁)	µg/m ¹	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (Shrs)
Ammonia (NH ₂)	μg/m³	1S 5182 (Part- 25); 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m ¹	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m	IS 5182 (Part-22): 2004; RA2019	0.015	1 (24hrs)
Nickel (Ni)	ng/m³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ¹	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	μg/m³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m/	ELES/GC/SOP/05	< 0.5	91(Amuai)

Reviewed by :

Mines Status

Period of Analysis

****End of Report****

Authorised Signatory :

: Ambient Air

: ELES Pvt. Ltd.

: Sealed & Preserved

: ELES/DOC/SMPL/02

(Saswata Burman Roy, Dy. Quality Manager)

(Bapan Das, Dy. Technical Manager)

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Jharkhand



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TEST REPORT

Test Report No.	: ELES/RNC/2024/1461	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21,04,2023	

CUSTOMER DETA	AJLS	SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Eate	: ELES/RNC/2024/AA/1297 : Near Pakri Gada Village : 06.03.2024 to 07:03.2024
Address	: Lohardaga, Barkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 12.03,2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	; Operational	Sampling Done By	: ELES Pvr. Ltd.
Period of Analysis	: 12.03.2024 to 19.03.2024	Sample Condition	: Sealed & Preserved

MI	TEOROLOGICAL INFORMATION				
1	Average Temperature (°C) ; 22	2	Barometric Pressure (mml-	(g) : 742	
_	Relative Humidity (%) : 49	4	Weather Condition	; Clear	

Discipline:	Chemical	Group: Ain	tospheric Pol	ution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	μg/m³	IS 5182 (Part-23): 2006; RA2022	69	100 (24hrs)
Particulate Matter (PM2.5)	µg/m³	IS 5182 (Part- 24): 2019	33	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	μg/m ³	IS 5182 (Part-2): 2001; RA2022	8.1	80 (24hrs)
Nitrogen Di-Oxide (NO ₂)	μg/m ³	IS 5182 (Part-6): 2006; RA2022	16.5	80 (24hrs)
Ozone (O ₁)	µg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	µg/m²	IS 5182 (Part-22): 2004; RA2019	0.019	T (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)
Benzene (C ₆ H ₆)	μg/m³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m²	ELES/GC/SOP/05	< 9.5	01(Annual)

Reviewed by:

BRATE

****End of Report***

Authorised Signatory:

(Saswata Burman Roy, Dy. Quality Manager)



(Bapan Das, Dy. Technical Manager)

Page 1 of 1





Test Report No.	: ELES/RNC/2024/1462	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Dave	: 21.04.2023	

CUSTOMER DET.	AILS	SAMPLE DETAILS	
Customer Name	: Hindulca Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/1298 : Near Pot Pot Village : 06.03.2024 to 07.03.2024
Address	: Lohardaga, Jhurkhund-835302	Sample Received Date Type of Sample Sampling Procedure	: 12:03.2024 : Amblent Air : ELES/DOC/SMPL/02
Mines Status	: Operations:	Sampling Done By	: ELES Pvt Ltd.
Period of Analysis	± 12.03.2024 to 19.03.2024	Sample Condition	: Sealed & Preserved

MI	ETEOROLOGICAL INFORMATION			
1	Average Temperature (°C) : 22	2	Barometric Pressure (mml-	lg) : 742
3	Relative Humidity (%) : 49	4	Weather Condition	: Clear

Discipline:	Chemical	Group: Atmospheric Pollution			
Parameter Uni		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	35	60 (24hrs)	
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	9.2	80 (24hrs)	
Nitrogen Di-Oxide (NO2)	μg/m³	1S 5182 (Part-6): 2006; RA2022	25.3	80 (24hrs)	
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)	
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)	
Carbon Monoxide (CO)	mg/m³	1S 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)	
Lead (Pb)	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/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)	
Benzene (C ₆ H ₆)	µg/m³	ELES/GC/SOP/06	<2.5	05(Annual)	
Benzo-(a)-Pyrene	ng/m³	ELES/GC/SOP/05	<0.5	01(Annual)	

Reviewed by:

****End of Report****

Authorised Signatory:

TERA!

(Bapan Das, Dy. Technical Manager)

(Saswata Burman Roy, Dy. Quality Manager)



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TEST REPORT

Test Report No.	: ELES/RNC/2024/1463	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/1299 : New Shakhuapani Vilinge : 06.03.2024 to 07.03.2024
Address	/ Lohardaga, Jharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 12.03.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	: 12.03,2024 to 19.03,2024	Sample Condition	: Sualed & Preserved

MI	ETEOROLOGICAL INFORMATIO	ON		
1	Average Temperature (°C) : 22	2	Barometric Pressure (mm	Hg) 1742
_	Relative Humidity (%) : 49	4	Weather Condition	; Clear

Discipline:	Chemical	Group: Atn	tospheric Poll	ution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	μg/m ³	(S 5182 (Part-23): 2006; RA2022	62	100 (24hrs)
Particulate Matter (PM2.5)	µg/m³	IS 5182 (Part- 24): 2019	30	60 (24lms)
Sulphur Di-Oxide (SO ₂)	µg/m³	IS 5182 (Part-2): 2001; RA2022	6.5	80 (24hrs)
Nitrogen Di-Oxide (NO2)	μg/m ³	IS 5182 (Part-6): 2006; RA2022	25.2	80 (24hrs)
Ozone (O ₅)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₃)	μg/m³	IS 5182 (Part- 25); 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m³	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1.0	2 (8hrs)
Lead (Pb)	μg/m³	IS 5182 (Part-22): 2004; RA2019	0.015	1 (24hrs)
Nickel (Ni)	ng/m ³	IS 5182 (Part-26);2020	<6.0	20 (Annual)
Arsenic (As)	ng/m³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (C ₆ H ₆)	μg/m³	ELES/GC/SOP/06	<2.5	05(Annual)
Велго-(а)-Рутеле	ng/m ³	ELES/GC/SOP/05	< 0.5	01(Annual)

Reviewed by :

****End of Report****

Authorised Signatory :

SKA

(Bapan Das, Dy. Technical Manager)

(Saswata Burman Roy, Dy. Quality Manager)



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Test Report No.	: ELES/RNC/2024/1464	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21,04,2023	

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Location Sampling Date	: ELES/RNC/2024/AA/1300 : Neur Dipa Kujam Village : 06.03.2024 to 07.03,2024
Address	: Lohardaga, Tharkhand-835302	Sample Received Date Type of Sample Sampling Procedure	: 12.03.2024 : Ambient Air : ELES/DOC/SMPL/02
Mines Status	: Operational	Sampling Done By	: ELES Pvt. Ltd.
Period of Analysis	= 72,03.2024 to 19,03.2024	Sample Condition	: Senied & Preserved

MI	ETEOROLOGICAL INFORMAT	ION		
1	Average Temperature (°C) : 22	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%) : 49	4	Weather Condition	: Clear

Discipline:	Chemical	Group: Atm	nospheric Pol	lution
Parameter	Unit	Test Protocol	Result	Regulatory Limit
Particulate Matter (PM10)	μg/m³	1S 5182 (Part-23): 2006; RA2022	51	100 (24hrs)
Particulate Matter (PM2.5)	µg/m³	IS 5182 (Part- 24): 2019	39	60 (24hrs)
Sulphur Di-Oxide (SO ₂)	μg/m³	IS 5182 (Part-2): 2001; RA2022	6.4	80 (24hrs)
Nitrogen Di-Oxide (NO2)	µg/m³	IS 5182 (Part-6): 2006; RA2022	21.5	80 (24hrs)
Ozone (O ₃)	μg/m³	IS 5182 (Part-9): 1974; RA2019	<20.0	100 (8hrs)
Ammonia (NH ₂)	µg/m³	IS 5182 (Part- 25): 2018	<10.0	400 (24hrs)
Carbon Monoxide (CO)	mg/m)	IS 5182 (Part-10): 1999; RA2019 (NDIR Method)	<1,0	2 (8hrs)
Lead (Pb)	μg/m²	IS 5182 (Part-22); 2004; RA2019	0.007	i (24hrs)
Nickel (Ni)	ng/m³	IS 5182 (Part-26):2020	<6.0	20 (Annual)
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01	<2.0	06 (Annual)
Benzene (CsHs)	μg/m³	ELES/GC/SOP/06	<2.5	05(Annual)
Benzo-(a)-Pyrene	ng/m³	ELES/GC/SOP/05	< 0.5	01(Annual)

Reviewed by z

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****End of Report***

(Saswata Burman Roy, Dy. Quality Manager)



Authorised Signatory :

(Bapan Das, Dy. Technical Manager)

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To come 202 (2.30) (2000 - 2000 (2.00) Longuage
Lab : M1G, R-3 Housing Colony, Dhanbad, Pin - 826001, State - Harkband (9830067044 / (9304513737



TEST REPORT

Test Report No.	± ELES/RNC/2024/1557	Report Release Date	: 10.04.2024	
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/2024/SM/1400	
		Location	: Kujam-II(157,38ha) Bauxite Mine DG (20 KVA)	
Address	: Lohardaga, Jharkhand-835302	Sampling Date	; 09.03.2024	
		Sample Received Date	: 15.03.2024	
		Type of Sample	: Flue Gas	
Mines Status	: Operational	Sampling Procedure Sampling Done By	: ELES/DOC/SMPL/02(A) : ELES Pvt, Ltd.	
Period of Analysis	: 15.03.2024 to 23.03.2024	Sample Condition	: Sealed & Preserved	

GE	NERAL INFORMATION	
T.	Particular of the Plant	: Bauxite Mines
2.	Emission Due to	: Burning of HSD
3.	Stack Connected to	: DG 20 KVA
4	Material of Construction of Stack	: MS
5	Stack Height from Ground Level (m)	£3.1
6	Height of Sampling Port from Ground Level (m)	:3.1
7	Inner Diameter of Stack at Sampling Point (m)	: 0.06
8	Shape of the Stack	: Circular
9	Working Load of the Stack	: 20 KVA
10	Pollution Control System	: N/A
11	Ladder & Platform	: Temporary

FU	EL CHARACTERISTICS DETAILS		
1	Type of Fuel Used	: HSD	
2	Fuel Consumption	: N/A	
3	Calorific Value of Fuel (Kcal/Kg)	: N/A	



TC-1150)

Lab : MNG. R-3 Housing Colony: Ohumbad, Pin - 826001, State - Diarkhand (9830067044 / (9304513737

TEST REPORT

Test Report No.	: ELES/RNC/2024/1557	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline : Cl	nemical	Group : Atmospheric	Pollution
Parameter	Unit	Test Protocol	Results
Particulate Matter (PM)	mg/Nm ³	IS 11255 (Part-1): 1985; RA2019	36
Sulphur Di-Oxide (SO ₂)	mg/Nm³	USEPA 6C:2017	24
Oxides of Nitrogen (NOx)	mg/Nm ³	USEPA 7E :2020	118
Carbon Monoxide (CO)	mg/Nm ³	USEPA 10B :2017	33
Carbon Di- Oxide (CO ₂)	%	IS 13270:1992; RA2019	4.5
Flue Gas Temperature	°C	IS 11255 (Part-3): 2008; RA2018	118
Barometric Pressure	mmHg	IS 11255 (Part-3): 2008; RA2018	739
Velocity of Flue Gas	m/sec	IS 11255 (Part-3): 2008; RA2018	10.56
Quantity of Gas Flow	Nm ³ /hr	IS 11255 (Part-3): 2008; RA2018	79

Reviewed by :

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****End of Report****

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Jharkhand

Authorised Signatory:

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(Saswata Burman Roy, Dy. Quality Manager)

(Bapan Das, Dy. Technical Manager)





TC-33503

Lab : MJG, R-3 Housing Colony, Dhamoad, Pin - 826001, State - Barkhand \$ 9830067044 / \$ 9304513737

TEST REPORT

Test Report No.	‡ ELES/RNC/2024/1541	Report Release Date	; 10.04,2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Sampling Date Sample Received Date Type of Sample	: ELES/RNC/2024/SW/1327 : 09.03.2024 : 12.03.2024 : Surface Water	
Address.	: Lohardaga, Jharkhand-835302	Source of Sample Location of Sample	: Down Stream : Dhardhari Nadi, Kujam-II Bauxite Mine (157.38ha)	
Mines Status	- Operational	Sampling Procedure Sample Collected By	: ELES/DOC/SMPL/01 : ELES Pvt. Ltd.	
Period of Analysis	: 12.03.2024 to 29.03.2024	Sample Condition	: Sealed & Preserved	

Discipline: Chemis	al	Group	: Water	Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per 1S 2296-1992 Class C (Inland Surface Water)
pH (at 24.9°C)	71	IS 3025 (Part 11): 2022	6.72	6,5-8,5
Colour	Hazen	IS 3025 (Part 4): 2021	8.0	300
Odour		IS 3025 (Part-5): 2018	Unobjectionable	-
Taste	-	APHA 23 rd Ed.2017, 2160 C	N/A	-
Turbidity	mg/L	IS 3025 (Part-10):1984;RA2017	5.34	-
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	312	1500
Total Alkabinity (as CaCO ₂)	mg/L	IS 3025 (Part-23):1986; RA2019	94.2	-
Total Hardness (as CaCO ₂)	mg/L	IS 3025 (Part-21): 2009; RA2019	130	-
Sulphate (as SO ₄)	mg/L	IS 3025 (Part 24): 1986; RA2019	24.4	400
Nitrate (as NOs)	mg/L	APHA 23rd Ed.2017, 4500 NO ₃ -B	2.68	50
Chloride (as C1)	mg/L	IS 3025 (Part-32) :1988; RA2019	45.5	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) :2008; RA2019	0.192	1.5
Cyanide (as CN)	mg/L	APHA 23rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05
Phenols Compounds (us C ₆ H ₈ OH)	mg/L	1S 3025 (Part-43): 1992;RA2019	BDL (DL; 0,001)	0,005



Late: MIG, R-3 Housing Colony, Dhanbad, Pin - 826001, State - Hearkhand \$ 9830067044 / \$ 9304513737



TEST REPORT

Test Report No. : ELES/RNC/2024/1541 Report Release Date : 10.04.2024

Work Order No. : 13612310218 Work Order Date : 21.04.2023

Discipline: Chem	ical	Group: Wat	er	Tolerance Limits	
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water	
Calcium (as Ca)	mg/L	IS 3025 (Part-40): 1991;RA2019	34.7		
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) ;2021	BDL. (DL: 0.1)	-	
Anionic Surfactants (as MBAS)	mg/L	APHA 24th Ed.2023, 5540-C	BDL (DL; 0.025)	0.1	
Discipline: Chemic	cal	Group: Residu	es in Water		
Aluminium (as Al)	mg/L	IS 3025 (Part-55) :2003; RA2019	BDL, (DL; 0.02)	-	
Arsenic (as As)	mg/L	IS 3025 (Part-37): 2022	BDL (DL: 0.005)	0.2	
Boron (as B)	mg/L	1S 3025 (Part-57) :2021	BDL (DL: 0.2)		
Cadmium (as Cd)	mg/L	APHA23 rd Ed,2017; 3111B	BDL (DL: 0.003)	0.01	
Total Chromium (as Cr)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL. (DL: 0.03)	-	
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.03)	1,5	
fron (as Fe)	mg/L	APHA 23rd Ed.2017; 3111B	0.320	50	
Lead (as Pb)	mg/L	APHA 23 rd Ed.2017, 3111 B	BDL (DL: 0.01)	0.1	
Manganese (as Mn)	mg/L	APHA 23td Ed.2017; 3111 B	BDL (DL: 0.05)	-	
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA2019	BDL (DL: 0.001)		
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA2019	BDL (DL: 0.01)	0.05	
Zinc (as Zn)	mg/L	APHA 23 ⁶⁸ Ed.2017, 3111 B	BDL. (DL: 0.1)	15	
Polynuclear Aromatic Hydrocarbons (PAH)	μg/L	ELES/GC/SOP/04	BDL (DL: 0.05)	**	

Remarks: L. pH & RFC done at Lab.



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TEST REPORT

Test Report No.	: ELES/RNC/2024/1541	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Parameter	Unit	Test Protocol	Result	as per 1S 2296-1992 Class C (Inland Surface Water)
Pesticides				
Alachlor	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Atrazine	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Butachlor	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	- 4.
Chlorpyriphos	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	
Ethion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Malathion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	14
Methyl parathion	µg/L	ELES/GC/SOP/01	BDL (DL: 0.1)	-
Monocrotophos	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Phorate	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	
Phorate Sulphone	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	9
Dieldrin	µg/L	ELES/GC/SOP/02	BDL. (DL: 0.01)	B. B.
Alpha HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.006)	19-
Beta HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	
Delta HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	
Gamma HCH (Lindane)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	
Endosulfan (alpha, beta and sulphate)	µg/L	ELES/GC/SOP/02	BDL. (DL: 0.05)	+-
DDT(o,p and p,p-isomers of DDT,DDEand DDD)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.05)	-



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Lab : MIG, R-3 Housing Colony, Dhanbad, Pin - 826001, State - Ibarkhand (9830067044 / (9304513737

TEST REPORT

Test Report No.	: ELES/RNC/2024/1541	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline : Biological		Group: Wa	Group: Water	
Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Total Coliform	CFL/100 mL	IS 15185; 2016, RA2021	2.63×10 ³	5000
Escherichia Coli	CFU/100 mL	IS 15185: 2016; RA2021	1.63×10 ²	-

Reviewed by :

****End of Report****

Authorised Signatory:

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(Saswata Burman Roy, Dy. Quality Manager)



(Bapan Das, Dy. Technical Manager)



Lab.: MiG. R. 5 Housing Colony, Obunbad, Pin - 626001, State - (bankband (9820067044 / (9304512737



TEST REPORT

Test Report No.	z ELES/RNC/2024/1540	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

CUSTOMER DET.	CUSTOMER DETAILS		SAMPLE DETAILS		
Customer Name	: Hindalco Industries Limited	Sample Ref. No. Sampling Date Sample Received Date Type of Sample	: ELES/RNC/2024/SW/1326 : 09.03.2024 : 12.03.2024 : Surface Water		
Address	: Lohardaga, Jharkhand-835302	Source of Sample Location of Sample	: Up Stream : Dhardhari Nadi, Kujam-II Bauxite Mine (157.38ha)		
Mines Status	: Operational	Sampling Procedure Sample Collected By	: ELES/DOC/SMPL/01 : ELES Pvi. Ltd.		
Period of Analysis	: 12.03.2024 to 29.03.2024	Sample Condition	: Sealed & Preserved		

Discipline : Chemic	cal	Group	: Water	Tolerance Limits
Parameter	Unit	Test Protocol	Result	as per 1S 2296-1992 Class C (Inland Surface Water)
pH (at 24.9 °C)	+1	#\$ 3025 (Part 11): 2022	6,83	6.5-8.5
Colour	Hazen	IS 3025 (Pan -4): 2021	7.0	300
Ódour	+0	1S 3025 (Part-5) : 2018	Unobjectionable	
Taste		APHA 23rd Ed.2017, 2160 C	N/A	-
Tarbidity	mg/L	IS 3025 (Part-10):1984;RA2017	4,57	
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part 16):1984; RA2017	307	1500
Total Alkalinity (as CaCO ₂)	mg/L	IS 3025 (Part-23):1986; RA2019	98.5	
Total Hardness (as CaCO ₅)	mg/L	IS 3025 (Part-21): 2009; RA2019	125	**
Sulphate (as SO ₄)	mg/L	IS 3025 (Part 24): 1986; RA2019	22.5	400
Nitrate (as NO ₃)	mg/L	APHA 23rd Ed.2017, 4500 NOs-B	2.35	50
Chloride (as C1)	mg/L	IS 3025 (Part-32) :1988; RA2019	50.4	600
Fluoride (as F)	mg/L	IS 3025 (Part-60) :2008; RA2019	0.192	1.5
Cyanide (us CN)	mg/L	APHA 23 rd Ed.2017, 4500 CN-E	BDL (DL: 0.012)	0.05
Phenols Compounds (as C ₀ H ₂ OH)	mg/L	IS 3025 (Part-43); 1992;RA2019	BDL (DL: 0,001)	0.005



Test Report No.	: ELES/RNC/2024/1540	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline: Chem	ical	Group: Wate	er	Tolerance Limits as per IS 2296-1992 Class C (Inland Surface Water	
Parameter	Unit	Test Protocol	Result		
Calcium (as Ca)	mg/L	IS 3025 (Part-40): 1991;RA2019	33.3		
Free Residual Chlorine (RFC)	mg/L	IS 3025 (Part-26) ;2021	BDL (DL: 0.1)	-	
Anionie Surfactants (as MBAS)	mg/L	APHA 24th Ed.2023, 5540-C	BDL (DL: 0.025)	1.0	
Discipline: Chemic	cal	Group: Residu	es in Water		
Aluminium (as Al)	mg/L	IS 3025 (Part-55) ;2003; RA2019	BDL (DL: 0.02)	D)	
Arsenic (as As)	mg/L	IS 3025 (Part-37); 2022	BDL (DL: 0.005)	0.2	
Boron (as B)	mg/L	IS 3025 (Part-57) ;2021	BDL (DL: 0.2)	-	
Cadmium (as Cd)	mg/L	APHA23 rd Ed.2017; 3111B	BDL (DL: 0.003)	10.0	
Total Chromium (as Cr)	mg/L	APHA 23rd Ed,2017; 3111B	BDL (DL: 0.03)	1	
Copper (as Cu)	mg/L	APHA 23 rd Ed.2017; 3111B	BDL (DL: 0.03)	1.5	
Iron (as Fe)	mg/L	APHA 23rd Ed.2017; 3111B	0.346	50	
Lead (as Pb)	mg/L	APHA 23 th Ed.2017, 3111 B	BDL (DL: 0.01)	0.1	
Manganese (as Mn)	mg/L	APHA 23 rd Ed.2017; 3111 B	BDL (DL: 0.05)	*	
Mercury (as Hg)	mg/L	IS 3025 (Part-48) :1994; RA2019	BDL (DL: 0.001)		
Selenium (as Se)	mg/L	IS 3025 (Part-56) :2003; RA2019	BDL. (DL: 0.01)	0.05	
Zinc (as Zn)	mg/L	APHA 23 rd Ed.2017, 3111 B	BDL (DL: 0.1)	15	
Polynuclear Aromatic Hydrocarbons (PAH)	µg/L	ELES/GC/SOP/04	BDL (DL: 0.05)	-	

Remarks: L. pH & RFC done at Lab.





Test Report No.	: ELES/RNC/2024/1540	Report Release Date	: 10.04.2024	
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Parameter	Unit	Test Protocol	Result	as per IS 2296-1992 Class C (Inland Surface Water)
Pesticides				
Alachlor	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Atrazine	μg/L	ELES/GC/SOP/01	BDL (DL; 0.5)	-
Butachlor	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	**
Chlorpyriphos	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Ethion	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Malathion	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Methyl parathion	μg/L	ELES/GC/SOP/01	BDL (DL: 0.1)	-
Monocrotophos	μg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	
Phorate	µg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	141
Phorate Sulphone	pg/L	ELES/GC/SOP/01	BDL (DL: 0.5)	-
Dieldrin	µg/L	ELES/GC/SOP/02	BDL (DL: 0.01)	4
Alpha HCH	µg/L	ELES/GC/SOP/02	BDL (DL: 0.006)	-4.
Beta HCH	μg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	1.4
Delta HCH	μg/L	ELES/GC/SOP/02	BDL (DL: 0.02)	7991
Gamma HCH (Lindane)	μg/L	ELES/GC/SOP/02	BDL (DL: 0,02)	-
Endosulfan (alpha, beta and sulphate)	μg/L	ELES/GC/SOP/02	BDL (DL: 0.05)	-
DDT(o,p and p,p-isomers of DDT,DDEand DDD)	µg/L	ELES/GC/SOP/02	BDL (DL: 0.05)	+





Test Report No.	: ELES/RNC/2024/1540	Report Release Date	: 10.04.2024	
Work Order No.	: 13612310218	Work Order Date	: 21.04.2023	

Discipline : Bi	iological	Group : Wa	Tolerance Limits		
Parameter	Unit	Test Protocol	Result	as per 1S 2296-1992 Class C (Inland Surface Water	
Total Coliform	CFU/100 mL	1S 15185: 2016, RA2021	3.81×10 ³	5000	
Escherichia Coli	CFU/100 mL	IS 15185: 2016; RA2021	1.54×10 ²	-	

Reviewed by:

****End of Report****

Authorised Signatory:

(Saswata Burman Roy, Dy. Quality Manager)

Sharkhand & Sangar Colony West Colony

(Bapan Das, Dy. Technical Manager)



Annexure 3

Date - 01.05.2024

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. Mr. Amit Pradhan (Geologist)
- 3. 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, Mined Out, Back Filled and Over Burden removal from October'23 to March'24								
S No	Name of the Mines	Mining lease area (ha)	Production Capacity (MT)*	Lease Period*	Production (MT)	Mined out area (ha)	Back filled area (ha)	Over burden (Cu.M)	
1	Bagru Bauxite Mine	75.41	85000	22.01.1974 to 31.03.2030	NIL	NIL	NIL	NIL	
2	Bhusar Bauxite Mine	65.31	280000	11.07.1981 to 31.03.2030	102292	0.68	0.32	68480.59	
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	42069	0.8	0.00	39067.98	
4	Pakhar (8.09) Bauxite Mine	8.09	80000	16.05.1973 to 31.03.2030	NIL	NIL	NIL	NIL	
5	Pakhar (35.12) Bauxite Mine	35.12	200000	17.04.1975 to 31.03.2030	NIL	NIL	NIL	NIL	
6	Pakhar (115.13) Bauxite Mine	115.13	300000	19.07.1996 to 31.03.2030	130749.2	2.06	0.56	534025.4	
7	Sherangdag-A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	11950	0.81	0.76	55693.68	
8	Serangdag-B Bauxite Mine	77.89	100000	04.10.1978 to 31.03.2030	36230	2.81	1.65	116122.92	
9	Jalim & Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	16450	0.07	0.06	17533.27	
10	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	145680	5.91	3.23	201022.508	
11	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	5480	0.46	2.91	72661.44	
12	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	66000	2.79	9.53	61380.23	
13	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	48600	1.85	1.15	131087.65	

	Minerals & Minerals Limited							
14	Pakhar (109.507) Bauxite Mine	109.507	280000	26.07.2008 to 25.07.2058	142288	1.01	1.12	213450.18
15	Pakhar (15.58) Bauxite Mine	15.58	60000	28.04.1965 to 31.03.2030	NIL	NIL	NIL	NIL
16	Bimarla Bauxite Mine	134.526	300000	18.07.2009 to 17.07.2059	67450	3.41	3.29	101973.71
17	Amtipani Chirodih Bauxite Mines	130.01	450000	11.01.2017 to 10.01.2067	123330	8.583	5.67	208720.97

^{*}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 Bagru (75.41 ha), Hisri New (14.55 ha), Bhusar (65.31 ha), Pakhar (115.13 ha), Pakhar (109.507 ha), Pakhar (15.58 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), Sherangdag (155.81 ha), Serangdag (77.89 ha), Jalim & Sanai (12.14 ha), Bimarla Bauxite Mines (134.526 ha), Gurdari (584.19 ha), Amtipani (190.95 ha), Kujam I (80.87 ha) Kujam II (157.38 ha), and Amtipani Chirodih (130.01 ha) Bauxite Mines.

S No	Description	Budget (in Rupees) FY 2023-24	Actual (in Rupees) FY 2023-24 (From Oct'23 to Mar'24)
1	Pollution Control & Environment monitoring	1,57,41,102.00	73,14,906.01
2	Reclamation/ Back filing & Rehabilitation**	1,36,62,095.00	6,53,29,973.21
3	Green belt, Plantation & Water sprinkling arrangement	67,45,898.00	32,08,288.90
4	Rural Development	6,19,33,534.00	2,08,14,673.36

^{**}Part of OB removed cost.

Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)