

MINERALS & MINERALS LIMITED

Regd. Office- Court Road, P.O. & Distt.-Lohardaga, Jharkhand-835302

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref. :

Date

M&M/LHD/ENV/MoEF/398

Date: 25.11.2022

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

Sub: Compliance Report of EC conditions for Bimarla (134.37 ha) Bauxite Mining project of M/s Minerals & Minerals Limited located in Gumla, Jharkhand for the period April'22 to September'22.

Ref: Environmental Clearance letter no J-11015/87/2009-IA.II (M) dated 24th Sep, 2013

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Bimarla (134.37 ha) Bauxite Mining project of M/s Minerals & Minerals Limited** located in Gumla, Jharkhand for the period April'22 to September'22.

The lease detail is as below.

Lease area (ha)	Production Capacity (MT)	Lease Period
134.37	300000	18.07.2009 to 17.07.2059

Hope you will find the same in order.

Thanking You

Yours Sincerely

FOR Minerals & Minerals 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, mccb.cpcb@nic.in, zokolkatta.cpcb@nic.in, ranchiispcb@gmail.com, roranchi47@gmail.com

Name of the Project : Bimarla Bauxite Mine (134.526 ha)
M/s Minerals & Minerals Ltd

Environment Clearance No & date : J-11015/87/2009-IA.II (M) dated 24.09.2013

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

S No	Specific Condition	Compliance
1	The project proponent shall obtain Consent to Establish and Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.	Consent to Establish and consent to operate obtained. Implementations of Stipulated conditions are being complied. The Consent to operate is valid till 30 Sep 2024.
2	Implementations of conditions laid down in the letter of the State Department of Forests vide dated 11.05.2012 with regard to permission for transportation of ore through the forest land.	Implementations of conditions as laid down in the letter are being complied with.
3	Necessary wildlife clearance as may be applicable to this project should be obtained. Measures for conservation of flora and fauna observed in the study area shall be undertaken. Wildlife Conservation Plan shall be implemented in consultation with the State Forests and Wildlife Department.	We understand Wildlife Clearance is not applicable to this project. Safeguard Measures already implemented and being implemented as suggested by forest department are as follows: <ol style="list-style-type: none">1. Minimum level of Noise during Mining.2. Permanent pillars are established within in the mine lease area at 7.5m from the forest boundary3. Daily water sprinkling on haul road.4. Transportation is carried out during daytime only.5. Maintenance of mineral transportation road is being done regularly.6. Social activities are being undertaken in nearby areas etc. However, Draft WLCP report has already been prepared by EX PCCF in consultation with state forest

		department. The final report will be submitted soon for its approval.
4	Adequate measures for control of air pollution in the area shall be taken and it shall be ensured that the pollution levels do not exceed the prescribed limits.	Measures for control of air pollution in the area are being taken. Important measures are as follows. 1. Water sprinkling on haul roads and at places of source of pollution. 2. Control blasting practice. 3. Wet drilling is in practice. Monitoring report is attached as Annexure 2 .
5	No working shall be undertaken in the forest area for which forestry clearance has not been obtained.	Lease area is devoid of any forest land.
6	Necessary prior clearance, as applicable shall be obtained from CGWA for working below groundwater table.	Mining is confined to above ground water table level only and it is not intersecting ground water table. We undertake that no mining is/was carried out below ground water table and the same status will be maintained in future also. Already obtained NOC for extraction of ground water from CGWB.
7	The Company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter-alia provide for (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.	Policies towards Corporate Environment Responsibility is in place. The latest corporate environment policy enumerating corporate responsibilities is attached as Annexure 6. Company has implemented a system in line with the above policies which addresses following points. (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company.
8	The mining operations shall be restricted to above the groundwater table and it should not intersect the groundwater table, In case of working below the	Mining is confined to above ground water table level only. Mining will not intersect the ground water table. Proper care is being taken in this regard.

	groundwater table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydrogeological study shall be carried out.	
9	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. The first order streams and the seasonal nallahs originating from the mining lease area shall be protected	No natural watercourse and/or water resource is being and will be obstructed due to any mining operations. All water bodies and sources available in mining lease area is protected.
10	The top soil, 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.	Topsoil is being stacked temporarily and separately for reclamation, if applicable and being rehabilitated of mined out areas with progress of mining.
11	Monitoring and management of rehabilitated areas should continue until vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office, Bhubaneswar on six monthly basis.	This Mine started production since 2015-16. Concurrent Backfilling has already been started in scientific manner in line with approved mining plan. The status of backfilling is attached as Annexure-4.
12	Catch drains and siltation ponds of appropriate size shall be constructed around the working pit, sub-grade dump, soil and mineral dumps to arrest flow of silt and sediment directly into the agricultural fields and the water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de silted, particularly after monsoon, and maintained properly, Garland drains settling tanks and check dams of appropriate size, gradient and length shall be constructed for both around the mine pit and sub-grade dump to prevent run off of water and flow sediments directly into the agricultural fields and the 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	<p>No run-off is generated from mining activities. However, to collect & manage rainwater during monsoon, part of mined out area is used as settling tank for the runoff. Rainwater stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary.</p> <p>Catch drains, Garland drains of appropriate size are being constructed in both around the mine pit to prevent runoff of water and flow of sediments directly into the agricultural field and water bodies, if applicable.</p> <p>Sump of adequate capacity is being provided and maintained as required.</p> <p>No active external dump exists as on date.</p>

	the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de silted at regular intervals.	
13	Dimension of the retaining wall at the toe of sub-grade dump and OB benches within the mine to check run-off and siltation should be based on the rain fall data.	There is no external OB dump as of now.
14	The plantation is proposed over an area of 24 ha with 2500 samplings per ha.	Total 2600 saplings have been planted in and around mine area from April'22 to Sept'22. Total 6.44 ha areas have been planted till date. In addition to this agricultural activity is going on in reclaimed land as per the consent from landowners. Green belt development programme is in progress with progress of mining activities.
15	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Regular water sprinkling is being carried out on haul road and critical areas. Ambient Air Quality parameters conform to the norms. Report is attached as Annexure 2 .
16	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Suitable conservation measures to augment ground water is being taken as directed in NOC granted by CGWB e.g. Constructing 01 no of water harvesting pond etc. Backfilling and drainage system in mine is maintained in such way that no mine water is discharged outside mine lease area and it is getting recharged in mined out pit only.

17	<p>Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.</p>	<p>We are not using ground water for any mining purpose. There is no chance of intersection of ground water table during mining operation at present and in future.</p> <p>Piezometer has been installed for monitoring of ground water level. Water quality and water level report are attached herewith as Annexure 1.</p>
18	<p>Monitoring of the springs shall be carried out for the quality and quantity of water regularly so as to ensure that there is no adverse impact- on the same due to the project. Records in this regards shall be maintained.</p>	<p>Spring water is being monitored. Analysis report is attached as Annexure 2.</p>
19	<p>It shall be ensured that there is no change in the hydrology of the area due to the project.</p>	<p>Noted. We are regularly monitoring the ground water level and no adverse changes is noted.</p>
20	<p>Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.</p>	<p>Suitable conservation measures to augment ground water is being taken as directed in CGWB NOC Viz. Constructing 01 no of water harvesting pond etc. This will continue with progress of mining operations.</p>
21	<p>Appropriate mitigative measures shall be taken to prevent pollution of the all the water bodies, in consultation with the State Pollution Control Board</p>	<p>We are not discharging any water outside mine lease area, all waters are collected in sump. Suitable measures such as, contour bunds are being taken to prevent water pollution. Drains are provided. All precautions are being taken to ensure that water does not flow</p>

		outside mine lease areas. There is no contamination of water due to mining activities.
22	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	Regular maintenance of vehicles are undertaken to minimize vehicular emission. Measures are being taken to control emission. The vehicles are being covered with tarpaulin while transportation of mineral.
23	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.	Blasting time is fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method is in practice. All efforts are being taken to mitigate impact of blasting.
24	Drills shall either be operated with dust extractors or equipped with water injection system.	Wet drilling is in practice.
25	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Two nos. of water tanker have been provided for sprinkling of water on haul roads and active mining areas to arrest fugitive dust. Water spraying at loading, unloading, etc is also being done regularly.
26	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	As of now there is no colony within the lease hold. Suitable measures will be taken if required in future. There is no effluent generated from this mine.
27	The project authorities should undertake sample survey to generate data on pre project community health status within a radius of 1 km from proposed mine.	As a part of Community Health status check we regularly conduct medical camp in nearby areas since inception of Mine.
28	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.	Pre-placement medical examination conducted. Periodical medical examination are being carried out in due time.
29	Provision shall be made for the housing of construction labour within	Safe drinking water and medical facilities already provided. Other

	<p>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.</p>	<p>applicable infrastructure will be constructed phase wise. Workers employed are localities only who resides in nearby areas.</p>
30	<p>The critical parameters such as RSPM (Particulate matter with size less than 10µm i.e. PM10) and NOx 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. 3-20012/1/2006- IA.11 (M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.,envfor.nic.in shall also be referred in this regard for its compliance.</p>	<p>Monitoring data is uploaded in website and displayed at mines. Report is enclosed as Annexure 2.</p>
31	<p>A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.</p>	<p>Will be complied in due time. Progressive mine closure plan approved along Scheme of Mining. FMCP for total lease area will be prepared and submitted in due time as per applicable guideline and timelines mentioned in MCDR/IBM guideline who are competent authority to approve the same. Based on the present resource estimate, and peak rated production capacity mentioned in EC, Mining operation is being carried out.</p>
S No	General Conditions	Compliance
1	<p>No change in mining technology and scope of working should be made without prior approval of the Ministry</p>	<p>Noted.</p>

	of Environment & Forests.	
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Calendar plan including excavation, quantum of mineral bauxite and waste is being done as per IBM approved mining scheme. Report is attached herewith as Annexure 4.
3	Conservation measures for protection of flora and fauna in the core and buffer zone should be drawn up in consultation with the local forest and wildlife department.	Safeguard Measures Conservation measures for protection of flora and fauna is being implemented and as follows: <ol style="list-style-type: none"> 1. Minimum level of Noise during Mining. 2. Permanent pillars are established within in the mine lease area at 7.5m from the forest boundary. 3. Daily water sprinkling on haul road. 4. Transportation is carried out during daytime only. 5. Maintenance of mineral transportation road is being done regularly. 6. Social activities is being undertaken in nearby areas etc. Draft WLCP report has already been prepared by EX PCCF in consultation with state forest department. The final report will be submitted soon for its approval.
4	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the	We have already established four ambient air quality monitoring stations in core zone as well as buffer zone. Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure 2.

	State Pollution Control Board.	
5	Data on ambient air quality [(RSPM (Particulate matter with size less than 10micron i.e., PM10) and NOx] should be regularly submitted to the Ministry including its Regional office located at: Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	Monitoring is being carried out and reported to concern authorities. Report is attached as Annexure-2 .
6	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Suitable water spraying arrangement is being done to control fugitive dust emissions from loading, unloading and transfer points as applicable.
7	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Measures are being taken for control of noise level. PPE's provided to workers.
8	Industrial waste water (workshop and waste water from the Mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31' December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There is no industrial wastewater generation from workshop within mine lease area. We are not discharging any wastewater outside mine lease area.
9	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Personal protective equipment's have been provided to workers. Safety training is being provided to persons working in mine. Occupational health surveillance program of the workers is being carried out.
10	A separate environmental management cell with suitable qualified personnel directly to the Head of the Organization.	Separate environment management cell with suitable qualified persons is already formulated as Annexure-3 .
11	The funds earmarked for environmental protection measures should be kept in separate account and should not be	The fund earmarked for environmental protection measures is being budgeted

	diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	separately. Annual expenditure is being reported to the Ministry as Annexure-5 .
12	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Date of start of land development is 21.05.2015 (Opening notice sent to concerned offices) The provision related to financial closure is not applicable as it is an operational mine. Now Regional office is at Ranchi.
13	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Agreed. Currently, the Regional Office is located at Ranchi.
14	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board	Six monthly compliance is being submitted timely to the Ministry of Environment and Forests, its Regional Office Ranchi, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board and also uploaded in Hindalco's website.
15	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Displayed.
16	The environmental statement for each financial year ending 31 March in	Is being complied.

	Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	
17	The project authorities should advertise at least in two local newspapers of the which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar	Complied. Relevant paper cutting duly submitted.



Signature

Bimarla Bauxite Mines



Water Sprinkling for dust suppression



Potato Vegetation at Mined out area

Bimarla Bauxite Mines



Gondli seeds spread at reclaimed area.



Peer Plantation

Bimarla Bauxite Mines



Reclamation process is going on over mined out area



Reclamation over mined out area

Bimarla Bauxite Mines



Rainwater Harvesting Pond

Annexure 1

Piezometer reading - Bimarla Bauxite Mines

S No	FY	Piezometer Water Level (mtr)
1	Apr-22	31.09
2	May-22	30.85
3	Jun-22	30.21
4	Jul-22	31.19
5	Aug-22	32.67
6	Sep-22	33.72



ENVIRONMENTAL LABORATORIES &

ENGINEERING SERVICES PVT. LTD.

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Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2022/0942A	Report Release Date	: 12.05.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055A
Address	: Lohardaga, Jharkhand-835203	Location	: Near Weigh Bridge Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°25'20.14"E	6	Latitude	: 23°17'6.19"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	63
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	33
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.8
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	1.06
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.022
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

Page 1 of 2

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"Save Environment, Save Future"



CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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TEST REPORT

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Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.9
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.33

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055B
Address	: Lohardaga, Jharkhand-835203	Location	: Near Quarry No 1B Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°25'12.83"E	6	Latitude	: 23°17'1.82"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	57
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	34
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.8
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.026
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.6

Page 1 of 2

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942B	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.2
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.29

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0942C	Report Release Date	: 12.05.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055C
Address	: Lohardaga, Jharkhand-835203	Location	: Nav Prathmik Vidyalaya Barang Path; Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°25'30.51"E	6	Latitude	: 23°17'20.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	53
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.2
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.9
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942C	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0942D	Report Release Date	: 12.05.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055D
Address	: Lohardaga, Jharkhand-835203	Location	: Near Mine Entry Gate; Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°25'35.93"E	6	Latitude	: 23°16'48.36"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	67
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	38
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	7.1
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	12.1
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.031
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	0.28

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942D	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	µg/m ³	ASTM D3687:2007	05(Annual)	2.8
Benzo (a) Pyrene*	ng/m ³	USEPA 8270 C to -13A	01(Annual)	0.32

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942E	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055E
Address	: Lohardaga, Jharkhand-835203	Location	: Near Korle Village
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°25'56.20"E	6	Latitude	: 23°17'30.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	55
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	32
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.3
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.018
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.2

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942E	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

Authorized Signatory

SANDIP BERA
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TEST REPORT

Test Report No. : ELES/RNC/2022/0942F	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055F
Address	: Lohardaga, Jharkhand-835203	Location	: Near Barang Village
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°25'16.51"E	6	Latitude	: 23°16'30.61"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	47
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.015
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942F	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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Page 2 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/0942G	Report Release Date	: 12.05.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055G
Address	: Lohardaga, Jharkhand-835203	Location	: Near Ghaghra Village
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 65	4	Weather Condition	: Clear
5	Longitude	: 84°24'46.53"E	6	Latitude	: 23°17'14.34"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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Test Report No. : ELES/RNC/2022/0942G	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

Authorized Signatory

****End of Report****

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942H	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Hindalco Industries Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1055H
Address	: Lohardaga, Jharkhand-835203	Location	: Near Bimarla Village
Plant Status	: Operational	Sampling Date	: 29/04/2022 to 30/04/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 27	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 65	4	Weather Condition : Clear
5	Longitude : 84°25'27.92"E	6	Latitude : 23°17'45.65"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	50
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.5
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.9
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.010
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/0942H	Report Release Date : 12.05.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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

Bimarla Bauxite Mine-Environmental Monitoring Report

May 2022



CONTENT

Minerals & Minerals : Bimarla Bauxite Mine		Environmental Monitoring Report	May2022
Bimarla Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Near Weigh Bridge		
2	Near Quarry No 1B		
3	Nav Prathmik Vidyalaya Barang Path		
4	Near Mine Entry Gate		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Korle Village		
2	Near Barang Village		
3	Near Ghaghra Village		
4	Near Bimarla Village		
AMBIENT NOISE			
WORKZONE/SPOT NOISE			
WORKSHOP EFFLUENT			
DRINKING WATER ANALYSIS			





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TEST REPORT

Test Report No.	: ELES/RNC/2022/1353A	Report Release Date	: 14.06.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361A
Address	: Lohardaga, Jharkhand-835302	Location	: Near Weigh Bridge Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'20.14"E	6	Latitude	: 23°17'6.19"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	57
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	29
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.4
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	1.03
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.013
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.7

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353A	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.6
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.24

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

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Authorized Signatory
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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2022/1353B	Report Release Date	: 14.06.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361B
Address	: Lohardaga, Jharkhand-835302	Location	: Near Quarry No 1B Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'12.83"E	6	Latitude	: 23°17'1.82"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	55
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	29
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.3
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.024
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.5

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353B	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.4
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.32

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

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353C	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361C
Address	: Lohardaga, Jharkhand-835302	Location	: Nav Prathmik Vidyalaya Barang Path; Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'30.51"E	6	Latitude	: 23°17'20.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	58
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.012
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353C	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.4
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.31

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353D	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361D
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Entry Gate; Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 27	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 70	4	Weather Condition : Clear
5	Longitude : 84°25'35.93"E	6	Latitude : 23°16'48.36"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	59
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	32
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	7.3
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.024
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	0.32

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353D	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.3
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.44

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

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1353E	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Korle Village
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 27	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 70	4	Weather Condition : Clear
5	Longitude : 84°25'56.20"E	6	Latitude : 23°17'30.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	51
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.7
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.012
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353E	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353F	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361F
Address	: Lohardaga, Jharkhand-835302	Location	: Near Barang Village
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'16.51"E	6	Latitude	: 23°16'30.61"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	42
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.6
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.5

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353F	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.25

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353G	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ghaghra Village
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°24'46.53"E	6	Latitude	: 23°17'14.34"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	51
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.7
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.009
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.4

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353G	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1353H	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1361H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Bimarla Village
Plant Status	: Operational	Sampling Date	: 20/05/2022 to 21/05/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 27	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'27.92"E	6	Latitude	: 23°17'45.65"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	48
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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Test Report No. : ELES/RNC/2022/1353H	Report Release Date : 14.06.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.7
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	<0.20

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1355S	Report Release Date : 14.06.2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Date	: 21.05.2022
Address	: Lohardaga, Jharkhand-835302	Type of Sample	: Ambient Noise
Plant Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L _{eq}	
Bimarla Bauxite Mines	dB(A)	IS 9989:1981, RA 2020	Day Time	70	75 dB(A) Day Time & 70 dB(A) Night Time
Sample ID: ELES/RNC/2022/AN/1363S			Night Time	55	

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1356R	Report Release Date	: 14.06.2022
Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sampling Date	: 21.05.2022
Address	: Lohardaga, Jharkhand-835302	Type of Sample	: Work zone Noise
Plant Status	: Operational	Sampling procedure	: ELES/DOC/SMPL/03
		Sample Drawn By	: ELES Pvt. Ltd.

Location	Unit	Test Protocol	Result		Regulatory Limit (Industrial Zone)
			Time	L _{eq}	
Bimarla Bauxite Mines	dB(A)	IS 9989:1981, RA 2020	Day Time	73	75 dB(A) Day Time
Sample ID: ELES/RNC/2022/AN/1364R					

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TEST REPORT

Test Report No. : ELES/RNC/2022/1357E	Report Release Date : 14/06/2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/EF/1365E
Address	: Lohardaga, Jharkhand-835302	Location	: Workshop Effluent – Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 21/05/2022
		Type of Sample	: Effluent Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	CPCB Regulatory Limits EPR,1986: Schedule VI (Inland Surface Water)
pH	-	APHA 23rd Edition 2017,4500-H+-B	8.0	5.5-9.0
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17):2022	62	100
Temperature	°C	IS 3025 (Part-9):1984; RA 2017	27.2	Shall not exceed 5°C above the receiving Water Temperature
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1430	--
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2006; RA 2017	38	250
Biochemical Oxygen Demand (BOD)	mg/L	IS 3025 (Part-44): 1993; RA 2019	6.6	30
Oil & Grease	mg/L	APHA 23 rd Ed.2017,5520B	1.3	10
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	16	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	2.76	3
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	2.44	--

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TEST REPORT

Test Report No. : ELES/RNC/2022/1359R	Report Release Date : 14/06/2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/DW/1367R
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water Bimarla Bauxite Mines
Plant Status	: Operational	Sampling Date	: 21/05/2022
		Type of Sample	: Drinking Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.0	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	<1.0	5
Odour	-	IS 3025 (Part-05): 1983	Agreeable	Agreeable
Taste	-	IS 3025 (Part-07): 1984	Agreeable	Agreeable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.08	1
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	0.2
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	153	500
Monochloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Dichloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	31.8	200
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	34.6	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	6.4	250



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TEST REPORT

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Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	3.3	200
Nitrate (as NO ₃)	mg/L	IS 3025 (Part-34): 1988	1.61	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.1088	1
Ammoniacal Nitrogen (as NH ₃ -N)	mg/L	APHA 23rd Edition 2017, 4500 Norg-C	<0.1	0.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05
Phenolic Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43): 1992	<0.00002	0.001
Sulphide (as S)	mg/L	IS 3025 (Part-29): 1986	<0.04	0.05
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	<0.2	0.5
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	9.5	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	2.0	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.137	1
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	0.1
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	<0.02	0.03
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.003
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.01
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.1	5

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

Website : www.elespl.co.in

CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2022/1359R	Report Release Date	: 14/06/2022
Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

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

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TEST REPORT

Test Report No. : ELES/RNC/2022/1359R	Report Release Date : 14/06/2022
Order No. : M&M/LHD/FY22-23/001	Order Date : 01/04/2022

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

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

Authorized Signatory

SANDIP BERA

SENIOR MANAGER

ELES PVT. LTD.

****End of Report****

Page 4 of 4

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

Bimarla Bauxite Mine-Environmental Monitoring Report

June 2022



CONTENT

Minerals & Minerals : Bimarla Bauxite Mine		Environmental Monitoring Report	June2022
Bimarla Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Near Weigh Bridge		
2	Near Quarry No 1B		
3	Nav Prathmik Vidyalaya Barang Path		
4	Near Mine Entry Gate		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Korle Village		
2	Near Barang Village		
3	Near Ghaghra Village		
4	Near Bimarla Village		
SPRING WATER			





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TEST REPORT

Test Report No. : ELES/RNC/2022/1626A	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797A
Address	: Lohardaga, Jharkhand-835302	Location	: Near Weigh Bridge Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION			
1	Average Temperature (°C)	: 26	2 Barometric Pressure (mmHg) : 742
3	Relative Humidity (%)	: 66	4 Weather Condition : Clear
5	Longitude	: 84°25'20.14"E	6 Latitude : 23°17'6.19"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	60
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	26
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.5
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	1.05
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.018
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.6

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626A	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	3.7
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.22

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

Authorized Signatory

****End of Report****

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626B	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797B
Address	: Lohardaga, Jharkhand-835302	Location	: Near Quarry No 1B Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'12.83"E	6	Latitude	: 23°17'1.82"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	48
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.4
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	10.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.011
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

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TEST REPORT

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Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.2
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.28

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

****End of Report****

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
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TEST REPORT

Test Report No. : ELES/RNC/2022/1626C	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797C
Address	: Lohardaga, Jharkhand-835302	Location	: Nav Prathmik Vidyalaya Barang Path; Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'30.51"E	6	Latitude	: 23°17'20.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	48
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.7
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

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Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.27

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

****End of Report****

Authorized Signatory

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Website : www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2022/1626D	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797D
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Entry Gate; Bimarla Bauxite Mine
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'35.93"E	6	Latitude	: 23°16'48.36"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	63
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	36
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	8.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.016
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	0.24

Page 1 of 2

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ENVIRONMENTAL LABORATORIES &

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626D	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.7
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.23

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626E	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Korle Village
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'56.20"E	6	Latitude	: 23°17'30.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	58
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	33
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.2
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.5
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.7

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626E	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

****End of Report****


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SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626F	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797F
Address	: Lohardaga, Jharkhand-835302	Location	: Near Barang Village
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'16.51"E	6	Latitude	: 23°16'30.61"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	50
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.010
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626F	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.3
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.21

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

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ELES PVT, LTD.

Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626G	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ghaghra Village
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°24'46.53"E	6	Latitude	: 23°17'14.34"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	38
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.0
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626G	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

****End of Report****

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1626H	Report Release Date	: 15.07.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/1797H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Bimarla Village
Plant Status	: Operational	Sampling Date	: 24/06/2022 to 25/06/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'27.92"E	6	Latitude	: 23°17'45.65"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	55
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	20
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.3
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1626H	Report Release Date : 15.07.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	ASTM D3687:2007	05(Annual)	2.3
Benzo (a) Pyrene*	ng/m^3	USEPA 8270 C to -13A	01(Annual)	0.23

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

****End of Report****


Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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TEST REPORT

Test Report No. : ELES/RNC/2022/1629G	Report Release Date : 15/07/2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/SW/1800G
Address	: Lohardaga, Jharkhand-835302	Location	: Spring Water - Bimarla Bauxite Mines
Plant Status	: Operational	Sampling Date	: 25/06/2022
		Type of Sample	: Surface Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.1	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	4	300
Odour	-	IS 3025 (Part-05): 1983	Unobjectionable	Unobjectionable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.45	--
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	--
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	901	1500
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	272	--
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	224	--
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	89.2	600
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	30.4	400
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F-D	0.1429	1.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05

Page 1 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1629G	Report Release Date	: 15/07/2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Result	As per CPCB & IS2296:1982 (Class-C)
				Tolerance Limit
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	0.207	--
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	73.2	--
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	21.7	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.462	50
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	--
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.01
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	1.5
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.1
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	0.199	15
Arsenic (as As)	mg/L	APHA 23rd Edition, 3111 B&C	<0.005	0.2
Selenium (as Se)	mg/L	APHA 23rd Edition, 3125 B	<0.01	0.05
Mercury (as Hg)	mg/L	IS 3025 (Part-48): 2000	<0.001	--
Dissolved Oxygen (DO)	mg/L	IS 3025 (Part-38) : 2014	7.7	4.0 (Minimum)

****End of Report****


Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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

Bimarla Bauxite Mine-Environmental Monitoring Report

July 2022



CONTENT

Minerals & Minerals : Bimarla Bauxite Mine		Environmental Monitoring Report	July2022
Bimarla Bauxite Mine			
AMBIENT AIR QUALITY- CORE ZONE			
1	Near Weigh Bridge		
2	Near Quarry No 1B		
3	Nav Prathmik Vidyalaya Barang Path		
4	Near Mine Entry Gate		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Korle Village		
2	Near Barang Village		
3	Near Ghaghra Village		
4	Near Bimarla Village		





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TEST REPORT

Test Report No. : ELES/RNC/2022/1775A	Report Release Date : 18.08.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203A
Address	: Lohardaga, Jharkhand-835302	Location	: Near Weigh Bridge Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 25/07/2022 to 26/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'20.14"E	6	Latitude	: 23°17'6.19"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	51
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	28
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.7
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.011
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

Page 1 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1775A	Report Release Date : 18.08.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.1
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775B	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203B
Address	: Lohardaga, Jharkhand-835302	Location	: Near Quarry No 1B Bimarla Bauxite Mine (134.526 ha)
		Sampling Date	: 25/07/2022 to 26/07/2022
Plant Status	: Operational	Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'12.83"E	6	Latitude	: 23°17'1.82"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	41
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.016
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775B	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

****End of Report****

Authorized Signatory

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

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775C	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203C
Address	: Lohardaga, Jharkhand-835302	Location	: Nav Prathmik Vidyalaya Barang Path; Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 25/07/2022 to 26/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'30.51"E	6	Latitude	: 23°17'20.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	49
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.1
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775C	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

****End of Report****

Authorized Signatory

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

Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1775D	Report Release Date : 18.08.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203D
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Entry Gate; Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 25/07/2022 to 26/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'35.93"E	6	Latitude	: 23°16'48.36"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	53
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	25
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.3
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	9.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.012
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	0.21

Page 1 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775D	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

Authorized Signatory

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775E	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Korle Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 25/07/2022 to 26/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'56.20"E	6	Latitude	: 23°17'30.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775E	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

Authorized Signatory

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

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775F	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203F
Address	: Lohardaga, Jharkhand-835302	Location	: Near Barang Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 25/07/2022 to 26/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'16.51"E	6	Latitude	: 23°16'30.61"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	47
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	5.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.2

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TEST REPORT

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Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

Authorized Signatory

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ELES Pvt. Ltd. Technical Manager

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775G	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ghaghra Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 25/07/2022 to 26/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°24'46.53"E	6	Latitude	: 23°17'14.34"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775G	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

****End of Report****

Authorized Signatory

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

Page 2 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1775H	Report Release Date	: 18.08.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/5203H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Bimarla Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 25/07/2022 to 26/07/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 26	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 70	4	Weather Condition	: Clear
5	Longitude	: 84°25'27.92"E	6	Latitude	: 23°17'45.65"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	43
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	16
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.4
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

Authorized Signatory

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

Bimarla (134.526 ha) Bauxite Mine-Environmental Monitoring Report

August 2022



CONTENT

Minerals & Minerals : Bimarla (134.526 ha) Bauxite Mine August 2022		Environmental Monitoring Report
Bimarla (134.526 ha) Bauxite Mine		
AMBIENT AIR QUALITY- CORE ZONE		
1	Near Weigh Bridge	
2	Near Quarry No 1B	
3	Nav Prathmik Vidyalaya Barang Path	
4	Near Mine Entry Gate	
AMBIENT AIR QUALITY- BUFFER ZONE		
1	Near Korle Village	
2	Near Barang Village	
3	Near Ghaghra Village	
4	Near Bimarla Village	





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TEST REPORT

Test Report No.	: ELES/RNC/2022/1887Q	Report Release Date	: 16.09.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189A
Address	: Lohardaga, Jharkhand-835302	Location	: Near Weigh Bridge Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION				
1	Average Temperature (°C)	: 25	2 Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 68	4 Weather Condition	: Clear
5	Longitude	: 84°25'20.14"E	6 Latitude	: 23°17'6.19"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.008
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1887Q	Report Release Date	: 16.09.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

Authorized Signatory

Dr. Deependra Kumar Sinha
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TEST REPORT

Test Report No. : ELES/RNC/2022/1887R	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189B
Address	: Lohardaga, Jharkhand-835302	Location	: Near Quarry No 1B Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 25	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 68	4	Weather Condition : Clear
5	Longitude : 84°25'12.83"E	6	Latitude : 23°17'1.82"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	44
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	23
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.0
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.015
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	2.3

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TEST REPORT

Test Report No. : ELES/RNC/2022/1887R	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

****End of Report****

Authorized Signatory

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TEST REPORT

Test Report No. : ELES/RNC/2022/1887S	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189C
Address	: Lohardaga, Jharkhand-835302	Location	: Nav Prathmik Vidyalaya Barang Path; Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°25'30.51"E	6	Latitude	: 23°17'20.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	38
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

****End of Report****

Authorized Signatory

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1887T	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189D
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Entry Gate; Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°25'35.93"E	6	Latitude	: 23°16'48.36"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	45
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	21
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.8
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.006
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/1887T	Report Release Date	: 16.09.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	0.24

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

Authorized Signatory

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

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Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1887U	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189E
Address	: Lohardaga, Jharkhand-835302	Location	: Near Korle Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°25'56.20"E	6	Latitude	: 23°17'30.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	43
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.9
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/1887U	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

****End of Report****

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

Page 2 of 2

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TEST REPORT

Test Report No. : ELES/RNC/2022/1887V	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189F
Address	: Lohardaga, Jharkhand-835302	Location	: Near Barang Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 25	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 68	4	Weather Condition : Clear
5	Longitude : 84°25'16.51"E	6	Latitude : 23°16'30.61"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	43
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	12
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.005
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

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Test Report No. : ELES/RNC/2022/1887V	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.6
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory
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TEST REPORT

Test Report No. : ELES/RNC/2022/1887W	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189G
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ghaghra Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 25	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 68	4	Weather Condition	: Clear
5	Longitude	: 84°24'46.53"E	6	Latitude	: 23°17'14.34"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	17
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.002
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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Test Report No. : ELES/RNC/2022/1887W	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

Authorized Signatory

Dr. Deependra Kumar Sinha
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****End of Report****

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TEST REPORT

Test Report No. : ELES/RNC/2022/1887X	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3189H
Address	: Lohardaga, Jharkhand-835302	Location	: Near Bimarla Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 29/08/2022 to 30/08/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C) : 25	2	Barometric Pressure (mmHg) : 742
3	Relative Humidity (%) : 68	4	Weather Condition : Clear
5	Longitude : 84°25'27.92"E	6	Latitude : 23°17'45.65"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	41
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	12
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	5.8
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.007
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No. : ELES/RNC/2022/1887X	Report Release Date : 16.09.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.1
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

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

****End of Report****

Page 2 of 2

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

Bimarla Bauxite Mine-Environmental Monitoring Report

September 2022



CONTENT

Minerals & Minerals : Bimarla Railway Siding		Environmental Monitoring Report	September 2022
Bimarla Railway Siding			
AMBIENT AIR QUALITY- CORE ZONE			
1	Near Weigh Bridge		
2	Near Quarry No 1B		
3	Nav Prathmik Vidyalaya Barang Path		
4	Near Mine Entry Gate		
AMBIENT AIR QUALITY- BUFFER ZONE			
1	Near Korle Village		
2	Near Barang Village		
3	Near Ghaghra Village		
4	Near Bimarla Village		
WORKSHOP EFFLUENT			
DRINKING WATER ANALYSIS			





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TEST REPORT

Test Report No.	: ELES/RNC/2022/2332	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3337
Address	: Lohardaga, Jharkhand-835302	Location	: Near Weigh Bridge Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'20.14"E	6	Latitude	: 23°17'6.19"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	43
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	19
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.1
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.009
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2332	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	2.5
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.20

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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Test Report No.	: ELES/RNC/2022/2333	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3338
Address	: Lohardaga, Jharkhand-835302	Location	: Near Quarry No 1B Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'12.83"E	6	Latitude	: 23°17'1.82"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	39
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	5.2
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.010
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2333	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Benzene*	$\mu\text{g}/\text{m}^3$	IS 5182 (Part- 11): 2004	05(Annual)	<2.0
Benzo (a) Pyrene*	ng/m^3	IS 5182 (Part- 12): 2006	01(Annual)	<0.2

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

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SANDIP BERA
SENIOR MANAGER
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TEST REPORT

Test Report No. : ELES/RNC/2022/2334	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3339
Address	: Lohardaga, Jharkhand-835302	Location	: Nav Prathmik Vidyalaya-Barang Path; Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'30.51"E	6	Latitude	: 23°17'20.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	40
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	22
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.6
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.005
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2334	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

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Authorized Signatory

SANDIP BERA
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TEST REPORT

Test Report No.	: ELES/RNC/2022/2335	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3340
Address	: Lohardaga, Jharkhand-835302	Location	: Near Mine Entry Gate; Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'35.93"E	6	Latitude	: 23°16'48.36"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	50
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	24
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	6.1
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.9
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.009
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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CIN: U74999JH2018PTC011125

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2335	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

Authorized Signatory

SANDIP BERA
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Page 2 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2336	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3341
Address	: Lohardaga, Jharkhand-835302	Location	: Near Korle Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'56.20"E	6	Latitude	: 23°17'30.46"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	18
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	7.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.005
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2336	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2337	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3342
Address	: Lohardaga, Jharkhand-835302	Location	: Near Barang Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'16.51"E	6	Latitude	: 23°16'30.61"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	40
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	8.2
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No. : ELES/RNC/2022/2337	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2338	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3343
Address	: Lohardaga, Jharkhand-835302	Location	: Near Ghaghra Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION

1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°24'46.53"E	6	Latitude	: 23°17'14.34"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	35
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	13
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.4
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.004
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2338	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

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

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

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2339	Report Release Date	: 11.11.2022
Work Order No.	: M&M/LHD/FY22-23/001	Work Order Date	: 01.04.2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/AA/3344
Address	: Lohardaga, Jharkhand-835302	Location	: Near Bimarla Village Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 15/09/2022 to 16/09/2022
		Type of Sample	: Ambient Air
		Sampling Procedure	: ELES/DOC/SMPL/02
		Sample Condition	: Sealed & Preserved

METEOROLOGICAL INFORMATION					
1	Average Temperature (°C)	: 24	2	Barometric Pressure (mmHg)	: 742
3	Relative Humidity (%)	: 66	4	Weather Condition	: Clear
5	Longitude	: 84°25'27.92"E	6	Latitude	: 23°17'45.65"N

Parameter	Unit	Test Protocol	Regulatory Limit	Result
Particulate Matter (PM10)	µg/m ³	IS 5182 (Part-23): 2006; RA2017	100 (24hrs)	37
Particulate Matter (PM2.5)	µg/m ³	IS 5182 (Part- 24): 2019	60 (24hrs)	15
Sulphur Di-Oxide (SO ₂)	µg/m ³	IS 5182 (Part-2): 2001; RA2017	80 (24hrs)	<5.0
Nitrogen Di-Oxide (NO ₂)	µg/m ³	IS 5182 (Part-6): 2001; RA2017	80 (24hrs)	6.3
Ozone (O ₃)	µg/m ³	IS 5182 (Part-9): 1974; RA2014	100 (8hrs)	<20.0
Ammonia (NH ₃)	µg/m ³	IS 5182 (Part- 25): 2018	400 (24hrs)	<10.0
Carbon Monoxide (CO)	mg/m ³	IS 5182 (Part-10): 1999; RA2019	2 (8hrs)	<1.0
Lead (Pb)	µg/m ³	IS 5182 (Part-22): 2004	1 (24hrs)	0.003
Nickel (Ni)	ng/m ³	IS 5182(Part-26):2020	20 (Annual)	<6.0
Arsenic (As)	ng/m ³	ELES/AIR/SOP/01:2021	6 (Annual)	<2.0

Page 1 of 2

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CIN: U74999JH2018PTC011125

ENVIRONMENTAL LABORATORIES &

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

ENGINEERING SERVICES PVT. LTD.

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

Phone no : 0651-2290103

Website : www.elespl.co.in

TEST REPORT

Test Report No. : ELES/RNC/2022/2339	Report Release Date : 11.11.2022
Work Order No. : M&M/LHD/FY22-23/001	Work Order Date : 01.04.2022

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

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

Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 2 of 2

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2354E	Report Release Date	: 11.11.2022
Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/EF/3358E
Address	: Lohardaga, Jharkhand-835302	Location	: Workshop Effluent – Bimarla Bauxite Mine (134.526 ha)
Plant Status	: Operational	Sampling Date	: 16/09/2022
		Type of Sample	: Effluent Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	CPCB Regulatory Limits EPR,1986: Schedule VI (Inland Surface Water)
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.6	5.5-9.0
Total Suspended Solids (TSS)	mg/L	IS 3025 (Part-17):2022	77	100
Temperature	°C	IS 3025 (Part-9):1984; RA 2017	25.7	Shall not exceed 5°C above the receiving Water Temperature
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	1508	--
Chemical Oxygen Demand (COD)	mg/L	IS 3025 (Part-58): 2006; RA 2017	49	250
Biochemical Oxygen Demand (BOD)	mg/L	IS 3025 (Part-44): 1993; RA 2019	8	30
Oil & Grease	mg/L	APHA 23 rd Ed.2017,5520B	1.8	10
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	24	--
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	2.46	3
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	2.21	--


Authorized Signatory

SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

****End of Report****

Page 1 of 1

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TEST REPORT

Test Report No.	: ELES/RNC/2022/2352A	Report Release Date	: 11.11.2022
Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

CUSTOMER DETAILS		SAMPLE DETAILS	
Customer Name	: Minerals & Minerals Limited	Sample Ref. No.	: ELES/RNC/2022/DW/3260A
Address	: Lohardaga, Jharkhand-835302	Location	: Drinking Water Bimarla Bauxite Mines(134.526ha)
Plant Status	: Operational	Sampling Date	: 16/09/2022
		Type of Sample	: Drinking Water
		Sampling Procedure	: ELES/DOC/SMPL/01
		Sample Condition	: Sealed & Preserved

Parameter	Unit	Test Protocol	Result	Regulatory Limit
				as per IS:10500:2012 Acceptable Limit
pH	-	APHA 23rd Edition 2017,4500-H+-B	7.2	6.5-8.5
Color	Hazen	IS 3025 (Part-04): 1983	<1.0	5
Odour	-	IS 3025 (Part-05): 1983	Agreeable	Agreeable
Taste	-	IS 3025 (Part-07): 1984	Agreeable	Agreeable
Turbidity	NTU	APHA 23rd Edition 2017,2130 B	0.12	1
Free Residual Chlorine	mg/L	IS 3025 (Part-26): 1986	<0.1	0.2
Total Dissolved Solids (TDS)	mg/L	IS 3025 (Part-16):1984	171	500
Monochloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Dichloramines	mg/L	APHA 23rd Edition 2017, 4500 Cl-G	<1.0	4
Total Hardness (as CaCO ₃)	mg/L	APHA 23rd Edition 2017, 2340 C	38.2	200
Total Alkalinity (as CaCO ₃)	mg/L	IS 3025 (Part-23):1986	35.2	200
Chloride (as Cl)	mg/L	IS 3025 (Part-32): 1988: RA 2014	8.4	250

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CIN: U74999JH2018PTC011125

TEST REPORT

Test Report No.	: ELES/RNC/2022/2352A	Report Release Date	: 11.11.2022
Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

Parameter	Unit	Test Protocol	Result	Regulatory Limit as per IS:10500:2012
				Acceptable Limit
Sulphate (as SO ₄)	mg/L	IS 3025 (Part-24):1986	2.34	200
Nitrate (as NO ₃)	mg/L	IS 3025 (Part-34): 1988	1.22	45
Fluoride (as F)	mg/L	APHA 23rd Edition 2017,4500-F--D	0.1211	1
Ammoniacal Nitrogen (as NH ₃ -N)	mg/L	APHA 23rd Edition 2017, 4500 Norg-C	<0.1	0.5
Cyanide (as CN)	mg/L	IS 3025 (Part-27): 1986	<0.0125	0.05
Phenolic Compounds (as C ₆ H ₅ OH)	mg/L	IS 3025 (Part-43): 1992	<0.00002	0.001
Sulphide (as S)	mg/L	IS 3025 (Part-29): 1986	<0.04	0.05
Boron (as B)	mg/L	APHA 23rd Edition, 3125 B	<0.2	0.5
Calcium (as Ca)	mg/L	APHA 23rd Edition 2017, 3500 B	10.8	75
Magnesium (as Mg)	mg/L	IS 3025 (Part-46):1994	2.7	30
Iron (as Fe)	mg/L	APHA 23rd Edition, 3111 B&C	0.188	1
Manganese (as Mn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.05	0.1
Aluminum (as Al)	mg/L	APHA 23rd Edition, 3125 B	<0.02	0.03
Cadmium (as Cd)	mg/L	APHA 23rd Edition, 3111 B&C	<0.003	0.003
Total Chromium (as Cr)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Copper (as Cu)	mg/L	APHA 23rd Edition, 3111 B&C	<0.03	0.05
Lead (as Pb)	mg/L	APHA 23rd Edition, 3111 B&C	<0.01	0.01
Zinc (as Zn)	mg/L	APHA 23rd Edition, 3111 B&C	<0.1	5

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Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

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

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TEST REPORT

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Order No.	: M&M/LHD/FY22-23/001	Order Date	: 01/04/2022

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

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

Authorized Signatory
SANDIP BERA
SENIOR MANAGER
ELES PVT. LTD.

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MINERALS & MINERALS LIMITED

Regd. Office- Court Road, P.O. & Distt.-Lohardaga, Jharkhand-835302

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref. :

Date

Annexure 3

Date – 01.09.2022

Office Order

Environmental Cell has been re-constituted at Bimarla Bauxite Mine (Area 134.526 ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Minerals & Minerals Industries Limited.

1. Mr. Jitender Kumar (Coordinator)
2. Mr. Mihir Barai - Geologist
3. Ms. Abhilasha Singh– Environment Engineer
4. Mr. Abhay Kumar – Environment Engineer

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

Basudev Gangopadhyay

AVP (Planning, Environment & Compliance)


Annexure 4

Production, Mined Out, Back Filled and Over Burden removal from April'22 to September'22								
S No	Name of the Mines	Mining lease area (ha)	Production Capacity (MT)*	Lease Period*	Production (MT)	Mined out area (ha)	Back filled area (ha)	Over burden (Cu.M)
1	Bagru bauxite Mine	75.41	85000	22.01.1974 to 31.03.2030	NIL	NIL	NIL	NIL
2	Bhusar Bauxite Mine	65.31	280000	11.07.1981 to 31.03.2030	116176	0.78	0.34	82296.15
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	63046	0.34	0.23	47769.44
4	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	53620	1.74	1.18	39931.13
5	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	147610	4.79	2.56	181309.80
6	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	96500	2.12	2.050	126569.80
7	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	114070	3.65	2.68	292766.10
8	Shrengdag A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	53600	1.2	0.9	40876.3
9	Shrengdag B Bauxite Mine	140.07	100000	04.10.1978 to 31.03.2030	45750	0.8157	0.6184	44264.72
10	Jalim & Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	25000	0.2413	0.2	8656.24
11	Orsapat Bauxite Mine	196.36	200000	17.07.1986	NIL	NIL	NIL	NIL

Annexure 4

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

*Static information about the mines included in the above table


 for
Basudev Gangopadhyay
 AVP (Planning, Environment & Compliance)

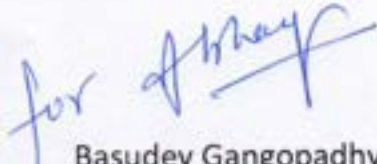
Annexure-5

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

The composite cost during the year 2022-23 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 ha), Pakhar (15.58 ha), Pakhar (109.507 ha), Pakhar (8.09 ha), Pakhar (35.12 ha), Serengdag (140.06 ha), Serengdag (155.81 ha), Jalim & Sanai (12.14 ha), Gurdari (584.19 ha), Amtipani (190.95 ha), Kujam I (80.97 ha) Kujam II (157.38 ha), Bagru (75.41 ha), Hisri New (14.55 ha), Chiro kukud (152.57 ha), Orsa pat (196.36 ha), Bhusar (65.31 ha), Bimarla Bauxite Mines (134.52 ha) and Amtipani Chirodih (130.01 ha) Bauxite Mine.

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

**Part of OB removed cost.


Basudev Gangopadhyay
AVP (Planning, Environment & Compliance)



HINDALCO MANAGEMENT FRAMEWORK
excellence by design

ENVIRONMENT POLICY

We, at Hindalco Industries Limited, operating across the process chain from mining to semi-fabricated products in non-ferrous metals, will strive to continually improve our environmental performance for sustainable operations and responsible growth globally, by integrating sound environmental systems & practices and Pollution Prevention approach.

To achieve this, we shall:

- Continue to comply with all applicable legal and other requirements on environment.
- Continually improve environmental performance by strengthening the Environmental Management System conforming to national /international standards, including setting up and reviewing targets and measuring, monitoring and reporting their progress.
- Allocate sufficient resources such as organisational structure, technology and funds for implementation of the policy and for regular monitoring of performance.
- Adopt pollution prevention approach for all our processes; enhance material efficiency and achieve high productivity.
- Conserve key resources like electricity, coal, water, oil, and raw materials, by promoting efficient technologies and manufacturing process improvements, water conservation programmes, and efficient use of raw materials.
- Adopt energy efficient and cleaner technologies based on techno-economic viability, appropriate to the region in which we operate, and in line with our growth and diversification plans.
- Promote the principles of waste prevention, reduction, reuse, recycling and recovery to minimize waste generation and strengthen the practices for management of wastes.
- Work in partnership with regulatory authorities, relevant suppliers, contractors, distributors and logistics partners and all other stakeholders, as applicable, to understand and initiate improvement actions.
- Engage with internal and external stakeholders including key business partners such as joint venture partners, licensees and outsourcing partners and wider communities, to broaden our understanding of environmental priorities and initiate actions on key environmental challenges.
- Adapt environmental performance over life cycle as an important input to the decision-making processes in the organization.
- Raise environmental awareness at all levels of our operations, through training and effective communication, participation and consultation.
- Communicate this Policy within the Organization. Develop and follow appropriate communication system to inform other stakeholders, as applicable, about our environmental commitment and performance.
- Conduct environmental, health and safety due diligence before undergoing any mergers and acquisitions.

This policy shall be made available to all employees, suppliers, customers, community and other stakeholders, as appropriate.



SATISH PAI
MANAGING DIRECTOR

Date : 30 June 2020

HINDALCO INDUSTRIES LIMITED



QUALITY, ENVIRONMENT, OCCUPATIONAL HEALTH & SAFETY POLICY

We, at "Hindalco Industries Limited" are committed to demonstrate excellence in Quality, Environment and Occupational Health & Safety for sustainable development

To achieve this, we shall:

- Ensure customer satisfaction by providing value added products and services;
- Continually establish systems, procedures and best practices with technological interventions;
- Optimize resource consumption particularly- raw materials, energy, water oil and promote pollution prevention;
- Commit to continual improvement by strengthening the Integrated Management System;
- Nurture and sustain safe and healthy work environment;
- Commit to protection of environment including prevention of pollution by reclamation and rehabilitation of mined out areas by utilization of solid waste and developing green belt in the area.
- Comply with applicable legislation in letter and spirit;
- Strengthen competence of employees and business associates through continuous training;
- Commit to the control of Quality & Environment risks through a hierarchy of control.

We shall communicate and make this policy available to all stakeholders

Lohardaga

Date: 24-03-2018


B.K.Jha

President, Jharkhand Mines

HINDALCO INDUSTRIES LIMITED
MINES DIVISION



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