

MINERALS & MINERALS LIMITED

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

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref

Date _____

Ref No: M&M/LHD/GM (Geo)/MoEF/453

Date: 28.11.2017

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 Pakhar (109.507 ha) Bauxite Mining project of M/s Minerals & Minerals Limited located in the District of Lohardaga, Jharkhand for the period Apr'17 to Sept'17.**

Ref: **Environmental Clearance letter no J-11015/518/2008-IA II (M) dated 21st Oct 2010.**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar (109.507 ha) Bauxite Mining project of M/s Minerals & Minerals Limited**, located in Lohardaga, Jharkhand for the period **Apr'17 to Sept'17**.

Hope you will find the same in order.

Thanking You

Yours Sincerely

FOR Minerals & Minerals Limited



(Basudev Gangopadhyay)

GM(Geology)

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi

RO, JSPCB, Ranchi

CPCB, Zonal Office, Kolkata

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Compliance of conditions laid down in Environmental Clearance

PAKHAR BAUXITE MINES(109.507 Ha)

Period: Apr'17- Sept'17

J-11015/518/2008-IA II (M) Dated 21.10.2010

Sl No	Conditions	Compliance Status
	Specific Conditions	
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 has been obtained up to 31-12-20. Implementations of stipulated conditions are fulfilled.
2	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	Mining Lease is granted by the State Govt. after due consideration and cabinet approval on recommendation of DC who is the competent authority to give permission for using the agricultural land for non-agricultural purpose.
3	The mining operation shall be confined to the hill tops only and restricted to above ground water table and it should not intersect the ground water table. In case of working below ground water table, prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained, for which a detailed hydro - geological study shall be carried out.	Working zone is being restricted to above ground water table.
4	The project proponent shall ensure that no natural watercourse and/or water resources are obstructed due to any mining operations, Adequate measures shall be taken for protection of seasonal channels, if any emanating from the mine lease, during the course of mining operation.	No natural water course has been obstructed.
5	The top soil 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.	Sequential backfilling and reclamation of the mined out area are being implemented during mining operation. Topsoil is being used to reclaim and restore the backfilled area up to the extent possible. Top soil is being stored at earmarked site temporarily with the progress of mining activity.
6	The over burden (OB) generated shall be temporarily stacked in the earmarked area for a period of one year and thereafter concurrently backfilled. There shall be no external overburden dump. The backfilled area shall be progressively afforested. Monitoring and management of rehabilitated areas should continue until the	Sequential backfilling and reclamation of the mined out area are being practiced. Backfill data is enclosed. Monitoring and management of rehabilitated areas is continuing until the vegetation becomes self-sustaining through supervision.

vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six-monthly basis.

7.	The void left unfilled in an area of 0.41 ha. shall be converted into water body. The higher benches of excavated void/ mining pits shall be terraced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.	Implementation of the condition is in progress.
8.	<p>Catch drains and siltation ponds of appropriate size should be constructed around the mine working, soil and mineral dumps to prevent run off of water and flow of sediments directly into the agricultural fields, the Kisko Nadi, the Sankh Nadi, the Surang River, the Chaupat Nadi and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted, particularly after monsoon and maintained properly.</p> <p>Garland drain, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, topsoil, dumps and the mineral dumps to prevent runoff water and flow sediments directly into the agricultural fields, the Kisko Nadi, the Sankh Nadi, the Surang River, the Chaupat Nadi and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	<p>Catch drains and siltation ponds of appropriate size are being constructed around the mine working.</p> <p>The water so collected are being utilized for watering the mine area, roads, green belt development etc.</p> <p>The drains are regularly desilted, particularly after monsoon and maintained properly.</p> <p>Garland drain, settling tanks and check dams of appropriate size, gradient and length are being constructed around the mine pit as per the requirement.</p> <p>Adequate sump capacity is provided.</p>
9.	Dimension of the retaining wall at the toe of the OB benches within the mine to check run-off and siltation should be based on the rain fall data.	The dimension of the retaining wall of OB dumps are based on the average rainfall.
10.	Plantation shall be raised in an area of 6.3 ha including a 7.5 m. wide statutory barrier all around the mining lease, reclaimed and rehabilitated areas, around water body, etc. by planting the native species in consultation with the local DFO / Agriculture Department. The density of the trees should be around 2000 plants per ha., Greenbelt	Progressive plantation is being carried out in consultation with local forest department. Total 4400 saplings have been planted during this year. Green belt development programme is in progress with progress of mining activities.

shall be developed all along the mine lease area in a planned manner and shall be completed within first five years.

11	Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as around crushing and screening plant, 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.	Water towers have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to arrest excessive dust emission. AAQ parameters are being regularly monitored. Report enclosed.
12	Regular monitoring of the flow rate of the springs and perennial nullahs flowing in and around the mine lease shall be carried out and records maintained.	There is no spring within the mining lease. Monitoring of spring water of nearby area will be conducted in post monsoon.
13	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.	Implementation suitable conservation measures to augment ground water resources in the area viz Rainwater harvesting pond and No use of ground water etc are implemented.
14	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The 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 Bhubneshwar, The Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the ground water table is getting depleted, due to the mining activity, necessary corrective measures shall be carried out.	Monitoring is being carried out. Report enclosed.
15	Appropriate mitigative measures shall be taken to prevent pollution of the Kisko Nadi, the Sankh Nadi, the Surang River, the Chaupat Nadi in consultation with the State Pollution Control Board.	There is no discharge of mine water.
16.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water (from natural spring) required for the project.	Water is being drawn from water harvesting pond. No Natural spring / ground water is being used for mining purposes.

17.	Surface rain water harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board	Surface rain water harvesting measures on long term basis has been planned and being implemented with the progress of mining.
18.	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 within the mine lease up to the stock yard. The mineral transportation within the mine lease shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be over-loaded.	Regular maintenance of vehicles are undertaken to minimize vehicular emission. All the transporters have been instructed to obtain PUC for their vehicles from the competent authority and submit to the concerned officer for verification. Almost all Vehicles are having PUC and emission are under control.
19.	Blasting operation should be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	Blasting time is fixed during Lunch Time i.e. 12.00 Noon -1.00 PM. Controlled blasting method is in practice. Ground vibration study has been conducted by IIT, Kharagpur. All efforts are being taken to mitigate impact of blasting.
20.	Drills shall either be operated with dust extractors or equipped with water injection system.	Drilling is being done with water pouring in the drill holes intermittently for dust suppression.
21.	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.	We are exploring the possibilities. However, water sprinkling is being carried out regularly at loading, unloading and mineral handling areas.
22.	Sewage treatment plant should be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operations.	There is no discharge of effluent from mine, hence ETP is not required. The sewage water for working population is planned to be collected through Septic Tank/Soak Pit and treated in Sewage Treatment Plant.
23.	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.	Under process.
24.	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.	System is already in place.
25.	The land oustees and land losers/ affected people shall be compensated/ rehabilitation as per the National Policy of Resettlement and Rehabilitation	All land acquisition activities is done as per CNT Act and with permission of competent authority i.e. concerned Deputy

	of protect Affected Families (NPRR)	Commissioner (D.C.) and consent of Raiyat (Land Owner) for 20 years period and the land will be returned so acquired as per the norms set by D.C. in land purchased agreement.
26.	Door to door sample survey should be undertaken within the impact zone to assess the family based need of the tribals and it should be appropriately addressed in the CSR activities to be undertaken in the area. An action plan in this regard should be prepared and submitted.	Company's CSR team is doing regular assessment of the family based need of the tribals and it appropriately addressed.
27.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of the temporary structures to be removed after the completion of the project.	Necessary infrastructure is already in place.
28.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered flora and fauna (python etc.) found in the study area. Action plan for conservation of flora and fauna prepared shall be implemented in consultation with the State Forest and Wildlife Department. All the safeguard measures brought out in the Wildlife conservation plan prepared specific to this project site shall be effectively implemented. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. A copy of action plan shall be submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar.	Suitable precautionary measures during mining operation are being implemented for conservation and protection of endangered flora and fauna.
27.	The critical parameters such as RSPM (Particulate matter with size less than 10 μm (i.e. PM_{10}) and NO_x in the ambient air within the impact zone, peak particle velocity at 300 m. distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharge water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)] . The monitored data shall be uploaded on the website of the Company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in Public domain. The Circular no. J-20012/1/2006-IA.II(M) dated	Complied Monitoring Reports is enclosed as Annexure-1. Presently, there is no discharge of water from the mines. In case of discharge monitoring will be ensured.

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.

28. A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval. Progressive Mine Closure Plan duly approved by Indian Bureau of Mines. FMCP related provision will be compiled as per statute.

GENERAL CONDITIONS

Sl No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Being adhered to.
2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Excavation of Over Burden and Bauxite is being done as per the approved calendar plan. Details of excavation, quantum of mineral, OB, etc have been furnished for the financial year 2017-18 as Annexure.
3	At least four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 μm (i.e. PM_{10}) & NO_x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Complied. Monitoring Reports is enclosed as Annexure-1.
4	Data on ambient air quality RSPM [(Particulate matter with size less than 10 μm i.e. PM_{10}) & NO_x] should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	Complied Monitoring Reports is enclosed as Annexure-1.
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water tankers have been provided for sprinkling of water on haul roads and are generally being engaged at the places where active mining is in progress to contain fugitive dust.

6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug, muffs.	Noise monitoring is being carried out at various locations of the work zone area and a monitoring report for the period of reporting six monthly compliance is enclosed. Workers engaged in operation of HEMMs, etc have also been provided with PPEs such as ear plug and ear muffs.
7	Industrial waste water (workshops and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	There is no effluent discharge from Mine Workshop has an Oil Catchment Pit to trap oil and grease.
8	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.	Complied. Use of Personal Protective Equipment (PPE) by the individuals is being ensured. All the mine workers are being regularly and periodically sent to our own hospital for health checkup for any contraction of diseases due to exposure in dusty and noisy areas. Training on safety, health and environmental aspects of mining is being regularly imparted through V1 centre and also through various other training programmes conducted by the State Government, recognized agencies, etc.
9	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Separate Environmental Management Cell (EMC) has been constituted and is functioning effectively. Copy enclosed as Annexure-3
10	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar.	Statement of budgetary provision and actual expenses for environmental protection measure is enclosed as Annexure-2. It is once again reiterated that the funds so ear marked shall not be diverted for any other purposes other than it is committed at the beginning of the financial year.
11	The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	This as an operational mines hence this provision is not applicable.
12	The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities	Agreed.

	should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data information monitoring reports.	
13	The project proponent shall submit six monthly report on the status of the compliance of the stipulated environmental Clearance conditions including results of monitoring data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Officer, Bhubaneswar, the respective Zonal office of Central Pollution Control Board 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, Bhubneswar, the respective Zonal Office of Central Pollution Control Board and State Pollution Control Board.	Duly submitted
14	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Complied.
15	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.	Displayed.
16	The environmental statement for each financial year ending 31 st March in Form – V as is mandated to be submitted by the project proponent to the concerned Stated 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 the compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Bhubneswar by e-mail.	Submitted.

<p>17. The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days 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 Bhubneshwar.</p>	<p>Complied (Documents already submitted)</p>
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Mahabal Enviro Engineers Pvt. Ltd.
At Booty, Near PHED Colony, Behind Pump House, PO - RMCC,
District - Ranchi 834009

PAKHAR PLATEAU- ENVIRONMENTAL MONITORING REPORT

JULY TO SEPTEMBER 2017

For Mahabal Enviro Engineers Pvt. Ltd.
For Mahabal Enviro Eng. Pvt. Ltd.


Vijay Pandey
Authorised Signatory
SENIOR EXECUTIVE





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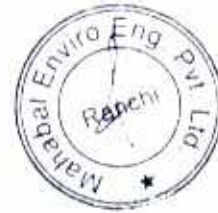
Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

CONTENT

	LOCATION
	AMBIENT AIR QUALITY
1	Pakhar Plateau- Near Weigh Bridge
2	Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4
3	Pakhar Plateau- Near Office
4	Pakhar Plateau- Pakhar Quarry (109.507 ha. Near Shed)
5	Pakhar Plateau Pakhar Mines(109.507 ha. Yatri Shed)
6	Pakhar Plateau Pakhar Loading Area (109.507 ha.)
	SURFACE WATER
1	Pakhar Plateau





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0129/2017-18	Date: 24 th October 2017
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Pakhar Plateau-Near Weigh Bridge	
Sample collected on: 18.09.2017	

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Weigh Bridge

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	63.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.4
05.	Ammonia (NH ₃)	µg/m ³	400	14.3
06.	Ozone (O ₃)	µg/m ³	180	13.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.40
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.5
10.	Arsenic (As)	ng/m ³	06	2.42
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.10
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.
For Mahabal Enviro Eng. Pvt. Ltd


Vijay Pandey
Authorised Signatory
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0130/2017-18

Date: 24th October, 2017

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4

Sample collected on: 18.09.2017

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar (115.13 ha.) Quarry No. 4

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	68.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.0
05.	Ammonia (NH ₃)	µg/m ³	400	12.6
06.	Ozone (O ₃)	µg/m ³	180	13.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.38
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.1
10.	Arsenic (As)	ng/m ³	06	2.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.47

For Mahabal Enviro Engineers Pvt. Ltd.
For Mahabal Enviro Eng. Pvt. Ltd.


Vignay Prasad
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Hindalco Industries

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0131/2017-10

Date: 24th October, 2017

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau-Near Office

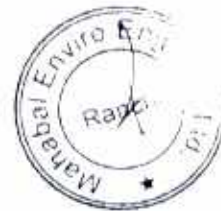
Sample collected on: 18.09.2017

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Office

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	61.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.3
05.	Ammonia (NH ₃)	µg/m ³	400	12.4
06.	Ozone (O ₃)	µg/m ³	180	13.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.40
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	3.2
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.
For Mahabal Enviro Eng. Pvt. Ltd.


Authorised Signatory
Vinay Pandey
SENIOR EXECUTIVE



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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0132/2017-18

Date: 24th October, 2017

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Remarks on Sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed)

Sample collected on: 19.09.2017

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Near Shed)

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	66.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.9
05.	Ammonia (NH ₃)	µg/m ³	400	12.7
06.	Ozone (O ₃)	µg/m ³	100	14.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.40
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.2
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.10
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.
For Mahabal Enviro Eng. Pvt. Ltd.


Vijay Pandey Authorised Signatory
SENIOR EXECUTIVE



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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0133/2017-18

Date: 24th October, 2017

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Remarks on sample: Location: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed)

Sample collected on: 19.09.2017

LOCATION / IDENTIFICATION: Pakhar Plateau- Pakhar Quarry 109.507 ha. (Yatri Shed)

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.2
05.	Ammonia (NH ₃)	µg/m ³	400	12.9
06.	Ozone (O ₃)	µg/m ³	180	14.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.37
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.0
10.	Arsenic (As)	ng/m ³	06	2.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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Vijay Kumar
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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0134/2017-18

Date: 24th October, 2017

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Pakhar Plateau- 109.507 ha. Loading Area.

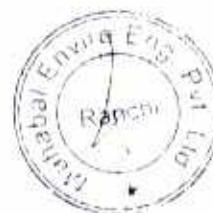
Sample collected on: 19.09.2017

LOCATION / IDENTIFICATION: Pakhar Plateau- 109.507 ha. Loading Area.

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	26.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.1
05.	Ammonia (NH ₃)	µg/m ³	400	10.6
06.	Ozone (O ₃)	µg/m ³	180	13.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.41
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	3.0
10.	Arsenic (As)	ng/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.12
12.	Benzo (a) Pyrene	µg/m ³	01	0.50

For Mahabal Enviro Engineers Pvt. Ltd.
For Mahabal Enviro Eng. Pvt. Ltd.

Vijay Pandey  Authorised Signatory
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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0135/2017-18	Date: 24 th October, 2017
Sample described by customer : SURFACE-WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: Pakhar Plateau	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 18.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (Is 10503:2012)	Method Reference
1	Colour	Hazen	<2	5 max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.31	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.5	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+ -B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	482	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	49	700 max	APHA 22 nd Ed. 2012, 4500-Cl-G, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	43	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	47	250 max	APHA 22 nd Ed. 2012, 4500-Cl-b, 4-72
11	Sulphate (as SO ₄)	mg/l	32.9	200 max	APHA 22 nd Ed. 2012, 4500-so ₄ -e, 4-190
12	Boron (as B)	mg/l	0.20	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	6.1	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84





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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Continuation Sheet
MEEPL/OCT0135/2017-18

Report no: MEEPL/OCT0135/2017-18					Date: 24 th October, 2017
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.12	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	11.3	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.08	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.03	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
24	Mercury (as Hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 4500-CN C & 4-39, 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.5	7-8	APHA 20 th ED. Method 4500-0 g

For Mahabal Enviro Engineers Pvt. Ltd.

Mahabal Enviro Eng. Pvt. Ltd.


 Vijay Pandey
 Authorised Signatory
 SENIOR EXECUTIVE



BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2016-17

The composite cost during the year 2017-18 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 (35.12Ha), Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.87 Ha) Kujam II (157.38 Ha) and 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).

SI No	Description	Budget (in Rupees) FY 2017-18	Actual (in Rupees) FY 2017-18 (from April'17 to Sep'2017)
1	Pollution Control & Environment monitoring	1316000.00	651832.00
2	Reclamation/ Back filing & Rehabilitation**	300000000.00	131262375.00
3	Green belt, Plantation & Water spraying arrangement	3400000.00	3373300.00
4	Rural Development	40000000.00	18500000.00

**Part of OB removed cost.



(Basudev Gangopadhyay)
Convenor (Quality & Environment)

MINERALS & MINERALS LIMITED

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

Tel.-06526-223163

CIN NO. U26990JH1970PLC000875

Ref :

Date :

Date: 03.04.17

Office Order

Environmental Cell has been re-constituted at Pakhar Bauxite Mines (Area 109.507 Ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

1. Mr. Jitendra Kumar -Mines Manager (Coordinator)
2. Mr. Abhay Bharti (CSR Dept)-Member
3. Mr. Ashok Sahu (Fore man)-Member
4. Mr. Rahul Sinha (Mining Mate)-Member



Basudev Gangopadhyay
Convenor (Quality & Environment)

ANNEXURE-4

PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-17 to Sep-17

NAME OF THE MINES	MINING LEASE AREA (IN HA)	MINED OUT AREA (HA)	BACK FILLED AREA (HA)	PRODUCTION (In MT)	OVERBURDEN (In Cu M)
Shrengdag Bauxite	155.81	2.57	2.00	148229.00	141538.00
Gurdari Bauxite Mines	584.19	8.10	4.70	175860.00	391707.00
Jalim & Sanai	12.14	1.25	0.50	25137.00	16365.00
Serangdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	1.52	1.89	137420.00	166565.00
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
Kujam-I	80.87	1.87	1.95	67925.00	108182.00
Kujam-II	157.38	3.32	3.70	132480.00	269516.00
Amtipani	190.95	4.70	3.17	102545.00	138980.00
Chiro-Kukud	152.57	1.73	1.28	41460.00	64089.00
Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
Hisri New	14.55	1.05	0.91	35561.00	44239.00
Bhusar	65.31	0.16	1.80	63239.00	88532.00
Bagru	75.41	0.00	0.00	0.00	0.00
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.51	1.50	1.70	136490.00	152916.00
Pakhar Buxite Mines	15.58	0.20	0.00	0.00	2716.00
Bimarla Bauxite Mines	134.52	4.71	5.86	67850.00	164820.00

(Basudev Gangopadhyay)
Convenor (Quality & Environment)