ADITYA BIRLA
HINDALCO

Ref No: HIL/LHD/JP (M)/MoEF/097 Date: 23.05.2017

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 Bauxite Mining (115.13 Ha) project of M/s Hindalco Industries Limited located in Dist- Lohardaga, Jharkhand for the period Oct'16 to March'17.**

Ref: **Environmental Clearance letter no J-11015/406/2007 -IA II (M) dated 27th Nov 2012**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Pakhar** Bauxite Mining (115.13 Ha) project of M/s Hindalco located in Lohardaga, Jharkhand for the period **Oct'16 to March'17.**

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED

(Bijesh Kumar Jha)
Agent of Mines

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi
RO, JSPCB, Ranchi
CPCB, Zonal Office, Kolkata
<mef@ori.nic.in>, <mef@nic.in>, <mef.or@nic.in>, mef.or@nic.in

Hindalco Industries Limited
Mines Division, Court Road, Lohardaga 835302, Jharkhand, India
T: +91 6526 224112/224015/223113 | E: hindalco@adityabirla.com | W: www.hindalco.com
Registered Office: Century Bhavan, 3rd Floor, Dr. Annie Besant Road, Worli, Mumbai 400 030, India | T: +91 22 6662 6666
Corporate ID No.: L27020MH1958PLC011238

Compliance of conditions laid down in Environmental Clearance
PAKHAR BAUXITE MINES
Period: Period: Oct'16-March'17
Area (115.13 Ha)
MoEF Environment Clearance ref: No. J-11015/406/2007-IA.II (M) dated 27th Nov, 2012

Sl No	Specific Conditions	Compliance Status
(i)	The project proponent shall obtain Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.	Consent to operate is in place and conditions are being complied. The Consent operate is valid upto 30 June 2020.
(ii)	All the conditions stipulated by the Jharkhand State Pollution Control Board in their NOC shall be effectively implemented.	Implementations of the stipulated condition are fulfilled.
(iii)	Corporate Environment Policy and hierarchical system for ensuring adherence to the policy and compliance with environmental regulation in accordance with the office memorandum dated 26.4.2011 issued by MoEF should be put in place.	Corporate Environment Policy and hierarchical system is in place.
(iv)	The Company shall submit within 3 month their policy towards Corporate Environment Responsibility which should inter-alia address (i) Standard operating process/procedure to bring Into focus any infringements/ deviation/ violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance EC conditions and (iii) System of reporting of non compliance/violation environmental norms to the Board of Directors of the Company and/or stakeholders or shareholders.	Following policies towards corporate Environment responsibility have been submitted at MoEF, Delhi on due date: (i) Standard operating process/procedure to bring into focus any infringements/ deviation/ violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance EC conditions and (iii) System of reporting of non compliance/violation
(v)	The environmental clearance is subject to approval of the State Land use Department, Government of Jharkhand for diversion of	Mining Lease is granted by the State Govt. after due consideration and Cabinet

	agricultural land for nonagricultural use.	approval on recommendation of District Collector who is the competent authority to give permission for using the agricultural land for non-agricultural purpose.
(vi)	The critical habitat in the area including dens of python, fox and bear should be protected by adopting appropriate wildlife conservation measures.	Appropriate wildlife conservation measures are being taken to protect critical habitat in the area. The measures includes:- 1. Permanent pillars are established within the mine lease area at 7.5m from the forest boundary. 2. Maintenance of the forest road 3. Ensured necessary air and noise pollution control measures. 4. Daily water sprinkling is being carried out on the forest road 5. Transportation is done only in day time.
(vii)	The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	Shallow depth mining is being done in the Pakhar Bauxite Mines & the ground water table is much below the working depth. Hence, ground water will not be intersected due to mining activities.
(viii)	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. Adequate measures shall be taken for conservation and protection of the 1st and 2nd order streams, if any emanating or passing through the mine lease during the course of mining operation.	It is being ensured .No natural water course is obstructed due to mining activities.
(ix)	The top soil shall temporarily be stored at	Sequential backfilling and

	earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	reclamation of the mined out area are being implemented during mining operation. Top soil which is temporarily stored separately spread over the back filled area in the process of reclamation. (data of back filling is enclosed Annexure-4). This will be done progressively with the progress of mining activity.
(x)	The over burden (OB) generated during the mining operation shall be temporarily stacked at earmarked dump site(s) only for the purpose of backfilling. Backfilling shall commence from the third year onwards and thereafter the waste generated shall be concurrently backfilled in the mined out area. There shall be no external OB dump. An area of 16.39ha of the worked out pit shall be backfilled and reclaimed by plantation during the plan period. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office, Bhubneshwar on six monthly basis.	The over burden (OB) generated during the mining operation temporarily stacked at earmarked dump site(s) only for the purpose of backfilling. Backfilled area will be reclaimed by plantation. Monitoring and management of rehabilitated areas will continue until the vegetation becomes self-sustaining. Compliance status is being submitted to the Ministry of Environment & Forests regularly on six monthly basis.
(xi)	Catch drains and siltation ponds of appropriate size shall be constructed for the working pit, temporary soil, OB and mineral dumps to arrest flow of silt and sediment directly into the agricultural fields, the Chaupat Nadi, the Kisko Nadi, the Shankh Nadi, Kisko Nallah, the Narachiya Nal lah 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 the monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and temporary over burden dumps to prevent run off of water and flow of sediments directly	No run-off is generated from mining activities. However to collect & manage rain water during monsoon, part of mined out area is used as settling tank for the runoff. Rain water stored is being used for watering the mine area, roads, green belt development and sprinkling as necessary. Catch drains, Garland drains, settling tanks and check dams of appropriate size have been constructed both around the mine pit and temporary over burden dumps to prevent run off of water

	into the agricultural fields, the Chaupat Nadi, the Kisko Nadi, the Shankh Nadi, Kisko Nallah, the Narachiya Nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	and flow of sediments directly into the agricultural field and rivers.
(xii)	Dimension of the retaining wall at the toe of the temporary OB dumps and the OB benches within the mine to check run-off and siltation should be based on the rain fall data.	The dimensions of the retaining wall of OB dumps are based on the average rainfall.
(xiii)	The void left unfilled in an area of 4.5ha shall be converted into water body. The higher benches of excavated void/mining pit shall be terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.	Will be implemented at the end of conceptual mining period. Around 4000 nos of saplings have been planted during 2016-17 within this mine.
(xiv)	Plantation shall be raised in an area of 24.09ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around reclaimed area, mine benches, around water body, along the roads etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 1500 plants per hectare. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	It is already in practice. Phase wise plantation of native species in consultation with forest department is being carried out within the safety zone and mined out/reclaimed pits. Around 4000 nos of saplings have been planted during 2016-17 within this mine.
(xv)	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 crushing and screening plant, loading and unloading point and transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient	Mobile 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. AAQ parameters are monitored from time to time.

	Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	
(xvi)	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.	A suitable scheme for ground water augmentation is under preparation. Rain water is being harvested in mined out pit.
(xvii)	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 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 Bhubneswar, 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.	It is being done. Report enclosed.
(xviii)	Appropriate mitigative measures should be taken to prevent pollution of the Chaupat Nadi, the Kisko Nadi and the Shankh Nadi in consultation with the State Pollution Control Board.	Being complied, There is no discharge of mine water into any drainage network. Monitoring is being done.
(xix)	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of ground water, required for the project.	As per the terms and conditions in Mining lease deed, we have the liberty to use water. water cess is being paid regularly to Jharkhand State Pollution Control Board, Ranchi. However we are not using ground water for mining purpose.

(xx)	The project proponent shall practice suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rainwater harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the Ministry of Environment and Forests and its Regional Office, Bhubneswar.	Rain water is being harvested in mined out pit.
(xxi)	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. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	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. Bauxite are transported through tarpaulin cover trucks.
(xxii)	Drills shall either be operated with the dust extractors or equipped with water injection system.	Wet drilling is done in the drill holes intermittently for dust suppression by pumping water.
(xiii)	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting at Mines is done at fixed blasting period i.e. 12.00 Noon to 1.00 PM on working days. Mobile mining activities are not being practiced during blasting. All the precautionary and mitigative measures to control ground vibration and to arrest fly rocks are being implemented.
(xxiv)	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.	Water sprinkling is being carried out regularly at loading, unloading and mineral handling areas as well as at all the transfer points by water sprinkler/ mobile water tanker.
(xxv)	Sewage treatment plant shall be installed for	There is no discharge of effluent

	the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	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.
(xxvi)	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.
(xxvii)	It shall be ensured that the fluoride level in the drinking water to be used by the workers in the project as well as to be provided to the public, if any, should meet the prescribed norms in this regard.	There is no issue found in respect of fluoride in and around the mines. Water monitoring report is annexed as annexure-1 with this report.
(xxviii)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely python, leaf monkey (Presbyits phayrei) etc. spotted in the study area. The critical habitats in the area including dens of python, fox and bear should be protected by adopting appropriate wildlife conservation measures and the conservation plan prepared specific to this project in consultation with the State Forest and Wildlife Department should effectively address the same. All the safeguard measures brought out in the Wildlife Conservation Plan prepared specific to this project site shall be effectively implemented in consultation with the State Forest and Wildlife Department A copy of approved wildlife conservation plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months.	All precautionary measures during mining operation for conservation and protection of endangered fauna are being taken care in consultation with forest Dept. viz. 1. Permanent pillars are established within the mine lease area at 7.5m from the forest boundary. 2. Maintenance of the forest road 3. Ensured necessary air and noise pollution control measures. 4. Daily water sprinkling is being carried out on the forest road 5. Transportation is being done only in day time.

(xxix)	Provision shall he made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile sTp, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Since the project is in operation. Necessary infrastructure and facilities are already in place.
(xxx)	The critical parameters such as RSPM (Particulate matter with size less than 10 micron 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. J-20012/1/2005-IA.II(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.	Complied Monitoring Reports is enclosed as Annexure-1. Presently, there is no discharge of water from the mines.
(xxxi)	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Progressive Mine Closure Plan has been duly approved by Indian Bureau of Mine. FMCP related provision will be compiled as per statue.

Sl No	General Conditions	Compliance Status
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Being adhered to.
(ii)	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 2016-17 as Annexure-4.
(iii)	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 10micron i.e., P1410) 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 State Pollution Control Board.	Complied
(iv)	Data on ambient air quality RSPM(Particulate matter with size less than 10micron i.e., PM10) and N0x) 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.	Complied,
(v)	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Mobile water 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 arrest fugitive dust emission.
(vi)	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Noise monitoring is being done regularly at various locations of the work zone area Workers engaged in operation of HEMMs, etc have been provided with PPEs,ear plug and ear muffs.

(vii)	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 31st 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. It is being ensured to make it operational and effective as and when required.
(viii)	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 VT centre and also through various other training programmes conducted by the State Government, recognized agencies, etc
(ix)	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.
(x)	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 Bhubaneswar.	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.
(xi)	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	The provision related to financial closure is not applicable as this is an operating mine.

	authorities and the date of start of land development work	
(xii)	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.
(xiii)	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 Bhubneswar, 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, Bhubneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	Being complied
(xiv)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ 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.	Duly submitted.
(xv)	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.
(xvi)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution	Duly submitted.

	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, Bhubneswar by e-mail.	
(xvii)	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at littp://envfonnic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Complied in due time.

Annexure - I

Eco Ventures Pvt. Ltd.

Regd. Office: 2/37, Sarvapriya Vihar, Near IIT Gate, New Delhi-110016
Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Porthugese Church, Near Dindayal Upadhyay Garden, Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.
E: ecoventures.mumbai@gmail.com /ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

PAKHAR PLATEAU- ENVIRONMENTAL MONITORING REPORT

JANUARY TO MARCH 2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
At Booty, Near PHED Colony, Behind Pump House, PO – RMCC, District – Ranchi 834009,
Mobile No: +91 9431.102.102 / +91 9955.358.262,
E-mail:mahabalranchi@gmail.com

CONTENT

Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
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E-mail:mahabalranchi@gmail.com

Report no: MEEPL/APRIL0140/2016-17 **Date:** 20th April, 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: 26.03.2017

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/m³	**100**	**63.5**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**39.5**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**32.5**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**41.2**
05.	Ammonia (NH_3)	µg/m³	**400**	**12.1**
06.	Ozone (O_3)	µg/m³	**180**	**17.2**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.60**
08.	Lead (Pb)	µg/m³	**1.0**	**0.05**
09.	Nickel (Ni)	ng/m³	**20**	**8.9**
10.	Arsenic (As)	ng/m³	**06**	**2.95**
11.	Benzene (C_6H_6)	µg/m³	**05**	**2.18**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.45**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
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Mobile No: +91 9431.102.102 / +91 9955.358.262,
E-mail:mahabalranchi@gmail.com

Report no: MEEPL/APRIL0141/2016-17 **Date:** 20th April, 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: 26.03.2017

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/m³	**100**	**66.4**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**35.1**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**9.8**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**19.2**
05.	Ammonia (NH_3)	µg/m³	**400**	**12.9**
06.	Ozone (O_3)	µg/m³	**180**	**14.3**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.50**
08.	Lead (Pb)	µg/m³	**1.0**	**0.03**
09.	Nickel (Ni)	ng/m³	**20**	**3.9**
10.	Arsenic (As)	ng/m³	**06**	**2.4**
11.	Benzene (C_6H_6)	µg/m³	**05**	**2.10**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.52**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
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E-mail:mahabalranchi@gmail.com

Report no: MEEPL/APRIL0142/2016-17 **Date:** 20th April, 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: 26.03.2017

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Office				
Sl. No.	**PARAMETERS**	**UNIT**	**Standard Limit**	**Concentration**
01.	Particulate Matter (size less than 10 µm) PM_{10}	µg/m³	**100**	**60.4**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**29.9**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**10.1**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**18.5**
05.	Ammonia (NH_3)	µg/m³	**400**	**17.2**
06.	Ozone (O_3)	µg/m³	**180**	**14.6**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.4**
08.	Lead (Pb)	µg/m³	**1.0**	**0.02**
09.	Nickel (Ni)	ng/m³	**20**	**3.8**
10.	Arsenic (As)	ng/m³	**06**	**2.5**
11.	Benzene (C_6H_6)	µg/m³	**05**	**2.1**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.34**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
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E-mail:mahabalranchi@gmail.com

Report no: MEEPL/APRIL0143/2016-17 **Date:** 20th April, 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 Quarry 109.507 ha. (Near Shed)
Sample collected on: 26.03.2017

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/m³	100	64.1
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	60	31.7
03.	Sulphur Dioxide (SO_2)	µg/m³	80	9.4
04.	Nitrogen Dioxide (NO_2)	µg/m³	80	18.6
05.	Ammonia (NH_3)	µg/m³	400	12.5
06.	Ozone (O_3)	µg/m³	180	15.5
07.	Carbon Monoxide (CO)	mg/m³	02	0.49
08.	Lead (Pb)	µg/m³	1.0	0.03
09.	Nickel (Ni)	ng/m³	20	3.8
10.	Arsenic (As)	ng/m³	06	2.3
11.	Benzene (C_6H_6)	µg/m³	05	2.10
12.	Benzo (a) Pyrene	µg/m³	01	0.42

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Report no: MEEPL/APRIL0144/2016-17 **Date:** 20th April, 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 Quarry 109.507 ha. (Yatri Shed)
Sample collected on: 27.03.2017

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/m³	**100**	**43.5**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**27.8**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**9.9**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**20.1**
05.	Ammonia (NH_3)	µg/m³	**400**	**12.7**
06.	Ozone (O_3)	µg/m³	**180**	**16.1**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.49**
08.	Lead (Pb)	µg/m³	**1.0**	**0.03**
09.	Nickel (Ni)	ng/m³	**20**	**3.8**
10.	Arsenic (As)	ng/m³	**06**	**2.3**
11.	Benzene (C_6H_6)	µg/m³	**05**	**3.1**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.52**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

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Mahabal Enviro Engineers Pvt. Ltd.

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Report no: MEEPL/APRIL0145/2016-17 **Date:** 20th April, 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: 27.03.2017

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/m³	**100**	**64.5**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**37.4**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**9.9**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**19.5**
05.	Ammonia (NH_3)	µg/m³	**400**	**11.2**
06.	Ozone (O_3)	µg/m³	**180**	**15.8**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.52**
08.	Lead (Pb)	µg/m³	**1.0**	**0.03**
09.	Nickel (Ni)	ng/m³	**20**	**3.6**
10.	Arsenic (As)	ng/m³	**06**	**2.7**
11.	Benzene (C_6H_6)	µg/m³	**05**	**2.13**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.50**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Report no: MEEPL/APRIL0146/2016-17 **Date:** 20th April, 2017

Sample described by customer: Measurement of Noise

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: Measurement of Noise
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: 27.03.2017

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Near Office	dB (A) L_{eq}	75	**55.1**	70	**49.9**	**27.03.2017**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Report no: MEEPL/APRIL0147/2016-17 **Date:** 20th April, 2017

Sample described by customer: **Measurement of Noise**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **27.03.2017**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (115.13 ha.)	dB (A) L_{eq}	75	**59.5**	70	**49.2**	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

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Report no: MEEPL/APRIL0148/2016-17 **Date:** 20th April, 2017

Sample described by customer: **Measurement of Noise**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **2703.2017**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. Loading Area)	dB (A) L_{eq}	75	**60.3**	70	**38.6**	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

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Report no: MEEPL/APRIL0149/2016-17 **Date:** 20th April, 2017

Sample described by customer: **Measurement of Noise**

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: Measurement of Noise
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **27.03.2017**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. of Yatri Shed)	dB (A) L_{eq}	75	**57.9**	70	**44.6**	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

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Report no: MEEPL/APRIL0150/2016-17 **Date:** 20th April, 2017

Sample described by customer: **Measurement of Noise**

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **27.03.2017**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Quary (Near Shed)	dB (A) L_{eq}	75	**52.9**	70	**47.1**	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: MEEPL/APRIL0151/2016-17	**Date:** 20th April, 2017
Sample described by customer: **Measurement of Spot Noise**	
Client Name: Hindalco Industries Limited Client Address: Lohardaga Postal Code: 835203 State: Jharkhand Country: India Sample Description: **Measurement of Spot Noise** Sampling Method: Instrumental, using Sound level Metter Data Collection Date: **27.03.2017**	

Location/Identification	Unit	Limit (day)	Result	Dates
Near Poklen at Pakhar Mines (115.13 ha.)	dB (A) L_{eq}	75	**61.9**	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

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Report no: MEEPL/APRIL0152/2016-17 **Date:** 20th April, 2017

Sample described by customer: **Measurement of Spot Noise**

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Spot Noise**
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **27.03.2017**

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines (109.507 ha. of Minerals & Minerals) Loading point near Dumper	dB (A) L_{eq}	75	**67.3**	27.03.2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

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Report no: MEEPL/APRIL0153/2016-17 **Date:** 20th April, 2017

Sample described by customer : DRINKING WATER-POTABILITY

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: DRINKING WATER-POTABILITY
Marks on Sample: Location: Near Canteen
Quantity: 5 L X 2 No. PVC Can
Sample collected on:27.03.2017

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22nd 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	0.20	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.1	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	1 max	APHA 22nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	83	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-CIG, 4-69
9	Dichioramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO3)	mg/l	61	200 max	APHA 22nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinirty Total (as CaCO3)	mg/l	67	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	8.1	250 max	APHA 22nd Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO4)	mg/l	3.9	200 max	APHA 22nd Ed. 2012, 4500-so4-e, 4-190

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Continuation Sheet
MEEPL/APRIL0153/2016-17

Report no: MEEPL/APRIL0153/2016-17 **Date:** 20th April, 2017

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO3)	mg/l	1.01	45 max	APHA 22nd Ed. 2012, 4500-NO3-E, 4-125
15	Fluoride (as F)	mg/l	0.26	1 max	APHA 22nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.02	0.5 max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	20.4	75 max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	2.7	30 max	APHA 22nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22nd Ed. 2012, 4500-NH3-F, 4-115
20	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.10	5 max	APHA 22nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	0.006	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.008	0.02 max	APHA 22nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-S2-C 4-175 & F 4-178

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Continuation Sheet
MEEPL/JAN0153/2016-17

Report no: MEEPL/APRIL0153/2016-17 **Date:** 20th April, 2017

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α –HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β–HCH	µg/L	N.D	0.04	US EPA 508-1995
12	Б- HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Conclusion : The Physical & Chemical Analysis report indicates that the water is not contaminated and potable.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Eco Ventures Pvt. Ltd.
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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

OCTOBER TO DECEMBER 2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0167/2016-17 **Date:** 30th January , 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: 29.12.2016

LOCATION / IDENTIFICATION: Pakhar Plateau-Near Office

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM_{10}	µg/m³	100	65.2
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	60	32.2
03.	Sulphur Dioxide (SO_2)	µg/m³	80	26.2
04.	Nitrogen Dioxide (NO_2)	µg/m³	80	38.5
05.	Ammonia (NH_3)	µg/m³	400	18.9
06.	Ozone (O_3)	µg/m³	180	19.5
07.	Carbon Monoxide (CO)	mg/m³	02	0.43
08.	Lead (Pb)	µg/m³	1.0	0.03
09.	Nickel (Ni)	ng/m³	20	5.3
10.	Arsenic (As)	ng/m³	06	2.72
11.	Benzene (C_6H_6)	µg/m³	05	2.1
12.	Benzo (a) Pyrene	µg/m³	01	0.34

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng. Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
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Report no: : MEEPL/ JAN0168/2016-17 **Date:** 30th January , 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: 29.12.2016

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/m³	**100**	**61.2**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**45.2**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**20.1**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**31.2**
05.	Ammonia (NH_3)	µg/m³	**400**	**12.5**
06.	Ozone (O_3)	µg/m³	**180**	**14.5**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.52**
08.	Lead (Pb)	µg/m³	**1.0**	**0.03**
09.	Nickel (Ni)	ng/m³	**20**	**6.3**
10.	Arsenic (As)	ng/m³	**06**	**2.71**
11.	Benzene (C_6H_6)	µg/m³	**05**	**2.10**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.52**

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0169/2016-17 **Date:** 30th January , 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 Quarry 109.507 ha. (Near Shed)
Sample collected on: 29.12.2016

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/m³	**100**	**62.2**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**33.5**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**20.4**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**41.2**
05.	Ammonia (NH_3)	µg/m³	**400**	**12.5**
06.	Ozone (O_3)	µg/m³	**180**	**18.5**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.52**
08.	Lead (Pb)	µg/m³	**1.0**	**0.04**
09.	Nickel (Ni)	ng/m³	**20**	**6.5**
10.	Arsenic (As)	ng/m³	**06**	**2.89**
11.	Benzene (C_6H_6)	µg/m³	**05**	**2.10**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.42**

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0170/2016-17 **Date:** 30th January , 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 Quarry 109.507 ha. (Yatri Shed)
Sample collected on: 29.12.2016

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/m³	**100**	**43.5**
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	**60**	**27.8**
03.	Sulphur Dioxide (SO_2)	µg/m³	**80**	**23.5**
04.	Nitrogen Dioxide (NO_2)	µg/m³	**80**	**36.8**
05.	Ammonia (NH_3)	µg/m³	**400**	**12.5**
06.	Ozone (O_3)	µg/m³	**180**	**19.5**
07.	Carbon Monoxide (CO)	mg/m³	**02**	**0.62**
08.	Lead (Pb)	µg/m³	**1.0**	**0.03**
09.	Nickel (Ni)	ng/m³	**20**	**7.3**
10.	Arsenic (As)	ng/m³	**06**	**2.89**
11.	Benzene (C_6H_6)	µg/m³	**05**	**3.3**
12.	Benzo (a) Pyrene	µg/m³	**01**	**0.52**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Report no: : MEEPL/ JAN0171/2016-17 **Date:** 30th January , 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: 29.12.2016

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/m³	100	64.5
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	60	41.5
03.	Sulphur Dioxide (SO_2)	µg/m³	80	26.8
04.	Nitrogen Dioxide (NO_2)	µg/m³	80	41.2
05.	Ammonia (NH_3)	µg/m³	400	10.2
06.	Ozone (O_3)	µg/m³	180	15.9
07.	Carbon Monoxide (CO)	mg/m³	02	0.52
08.	Lead (Pb)	µg/m³	1.0	0.04
09.	Nickel (Ni)	ng/m³	20	8.4
10.	Arsenic (As)	ng/m³	06	3.00
11.	Benzene (C_6H_6)	µg/m³	05	2.15
12.	Benzo (a) Pyrene	µg/m³	01	0.50

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0172/2016-17 **Date:** 30th January , 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: 29.12.2016

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/m³	100	63.5
02.	Particulate Matter (size less than 2.5 µm) $PM_{2.5}$	µg/m³	60	39.5
03.	Sulphur Dioxide (SO_2)	µg/m³	80	32.5
04.	Nitrogen Dioxide (NO_2)	µg/m³	80	41.2
05.	Ammonia (NH_3)	µg/m³	400	12.1
06.	Ozone (O_3)	µg/m³	180	17.2
07.	Carbon Monoxide (CO)	mg/m³	02	0.60
08.	Lead (Pb)	µg/m³	1.0	0.05
09.	Nickel (Ni)	ng/m³	20	8.9
10.	Arsenic (As)	ng/m³	06	2.95
11.	Benzene (C_6H_6)	µg/m³	05	2.18
12.	Benzo (a) Pyrene	µg/m³	01	0.45

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Environmental Monitoring Report **OCT-DEC 2016**

Report no: : MEEPL/ JAN0173/2016-17 **Date:** 30th January , 2017

Sample described by customer: Measurement of Noise

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: Measurement of Noise
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: 29.12.2016
Analyse Date: 30.12.2016

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Near Office	dB (A) L_{eq}	75	**53.5**	70	**47.8**	**29.12.2016**

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Report no: : MEEPL/ JAN0174/2016-17 **Date:** 30th January , 2017

Sample described by customer: **Measurement of Noise**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **29.12.2016**
Analyse Date: **30.12.2016**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (115.13 ha.)	dB (A) L_{eq}	75	**59.8**	70	**49.1**	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0175/2016-17 **Date:** 30th January , 2017

Sample described by customer: **Measurement of Noise**

Client Name: **Hindalco Industries Limited**
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **29.12.2016**
Analyse Date: **30.12.2016**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. Loading Area)	dB (A) L_{eq}	75	**61.8**	70	**36.2**	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Report no: : MEEPL/ JAN0176/2016-17 **Date:** 30th January , 2017

Sample described by customer: **Measurement of Noise**

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: Measurement of Noise
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **29.12.2016**
Analyse Date: **30.12.2016**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Mines (109.507 ha. of Yatri Shed)	dB (A) L_{eq}	75	**53.5**	70	**43.5**	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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SENIOR EXECUTIVE

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Report no: : MEEPL/ JAN0177/2016-17 **Date:** 30th January , 2017

Sample described by customer: **Measurement of Noise**

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Description: **Measurement of Noise**
Sampling Method: Instrumental, using Sound level Metter
Data Collection Date: **29.12.2016**
Analyse Date: **30.12.2016**

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result	Dates
Pakhar Quary (Near Shed)	dB (A) L_{eq}	75	**52.5**	70	**44.5**	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0178/2016-17	**Date:** 30th January , 2017
Sample described by customer: **Measurement of Spot Noise**	
Client Name: Hindalco Industries Limited Client Address: Lohardaga Postal Code: 835203 State: Jharkhand Country: India Sample Description: **Measurement of Spot Noise** Sampling Method: Instrumental, using Sound level Metter Data Collection Date: **29.12.2016** Analyse Date: **30.12.2016**	

Location/Identification	Unit	Limit (day)	Result	Dates
Near Poklen at Pakhar Mines (115.13 ha.)	dB (A) L_{eq}	75	**61.5**	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0179/2016-17	**Date:** 30th January , 2017
Sample described by customer: **Measurement of Spot Noise**	
Client Name: Hindalco Industries Limited Client Address: Lohardaga Postal Code: 835203 State: Jharkhand Country: India Sample Description: **Measurement of Spot Noise** Sampling Method: Instrumental, using Sound level Metter Data Collection Date: **29.12.2016** Analyse Date: **30.12.2016**	

Location/Identification	Unit	Limit (day)	Result	Dates
Pakhar Mines (109.507 ha. of Minerals & Minerals) Loading point near Dumper	dB (A) L_{eq}	75	**64.5**	29.12.2016

For Mahabal Enviro Engineers Pvt. Ltd.

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Report no: : MEEPL/ JAN0180/2016-17 **Date:** 30th January , 2017

Sample described by customer : DRINKING WATER-POTABILITY

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: DRINKING WATER-POTABILITY
Marks on Sample: Location: Near Canteen
Quantity: 5 L X 2 No. PVC Can
Sample collected on:29.12.2016

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22nd 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	0.20	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.0	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	80	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-CIG, 4-69
9	Dichioramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO3)	mg/l	65	200 max	APHA 22nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinirty Total (as CaCO3)	mg/l	70	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as Cl)	mg/l	10.5	250 max	APHA 22nd Ed. 2012, 4500-Cl-b, 4-72
13	Sulphate (as SO4)	mg/l	4.0	200 max	APHA 22nd Ed. 2012, 4500-so4-e, 4-190

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Continuation Sheet
MEEPL/JAN0180/2016-17

Report no: : MEEPL/ JAN0180/2016-17 **Date:** 30th January , 2017

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO3)	mg/l	1.05	45 max	APHA 22nd Ed. 2012, 4500-NO3-E, 4-125
15	Fluoride (as F)	mg/l	0.35	1 max	APHA 22nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.08	0.5 max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	25.6	75 max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	5.0	30 max	APHA 22nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22nd Ed. 2012, 4500-NH3-F, 4-115
20	Iron (as Fe)	mg/l	0.15	0.3 max	APHA 22nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.16	5 max	APHA 22nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	0.007	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.008	0.02 max	APHA 22nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-S2-C 4-175 & F 4-178

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Continuation Sheet
MEEPL/JAN0180/2016-17

Report no: : MEEPL/ JAN0180/2016-17 **Date:** 30th January , 2017

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α –HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β–HCH	µg/L	N.D	0.04	US EPA 508-1995
12	Б- HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
14	Alachlor	µg/L	N.D	20	US EPA 508-1995
15	Atrazine	µg/L	N.D	2	US EPA 508-1995
16	α Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
17	β Endosulfan	µg/L	N.D	0.4	US EPA 508-1995
18	Endosulfan Sulphate	µg/L	N.D	0.4	US EPA 508-1995
19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
20	Malathion	µg/L	N.D	190	US EPA 8141A-1994
21	Methoyl Parathion	µg/L	N.D	0.3	US EPA 8141A-1994
22	Monocrotophos	µg/L	N.D	1	US EPA 8141A-1994
23	Phorate	µg/L	N.D	2	US EPA 8141A-1994
24	Chlorpyrifos	µg/L	N.D	30	US EPA 8141A-1994
25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Conclusion : The Physical & Chemical Analysis report indicates that the water is not contaminated and potable.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng Pvt. Ltd. Ranchi

Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:
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Report no: : MEEPL/ JAN0181/2016-17 **Date:** 30th January , 2017

Sample described by customer : SURFACE WATER - POTABILITY

Client Name: Hindalco Industries Limited
Client Address: Lohardaga
Postal Code: 835203
State: Jharkhand
Country: India
Sample Type: SURFACE WATER
Marks on Sample: Location: 115.13 Quarry
Quantity: 5 L X 2 No. PVC Can
Sample collected on:29.12.2016

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method reference
1	Colour	Hazen	<1	5 Max	APHA 22nd 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	0.30	1 Max	APHA 22nd Ed. 2012, 2130-B, 2-13
5	pH	--	6.8	6.5-8.5	APHA 22nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22nd Ed. 2012, 4500-Cl-G, 4-69
7	Total Dissolved Solids	mg/l	124	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Monochloramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-CIG, 4-69
9	Dichioramines	mg/l	<0.05	--	APHA 22nd Ed. 2012, 4500-CIG, 4-69
10	Total hardness (as CaCO3)	mg/l	70	200 max	APHA 22nd Ed. 2012, 4500-CIG, 4-69
11	Alkalinirty Total (as CaCO3)	mg/l	82	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
12	Chloride (as CI)	mg/l	8.2	250 max	APHA 22nd Ed. 2012, 4500-CI-b, 4-72
13	Sulphate (as SO4)	mg/l	7.0	200 max	APHA 22nd Ed. 2012, 4500-so4-e, 4-190

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Continuation Sheet
MEEPL/JAN0181/2016-17

Report no: : MEEPL/ JAN0181/2016-17 **Date:** 30th January , 2017

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS10500:2012)	Method reference
14	Nitrate (as NO3)	mg/l	1.20	45 max	APHA 22nd Ed. 2012, 4500-NO3-E, 4-125
15	Fluoride (as F)	mg/l	0.3	1 max	APHA 22nd Ed. 2012, 4500-FB & D, 4-84, 4-87
16	Boron (as B)	mg/l	0.23	0.5 max	APHA 22nd Ed. 2012, 4500-BB, 4-25
17	Calcium (as Ca)	mg/l	18.9	75 max	APHA 22nd Ed. 2012, 3500-Ca-B, 3-67
18	Magnesium (as Mg)	mg/l	5.2	30 max	APHA 22nd Ed. 2012, 3500-Mg-B, 3-84
19	Ammonical Nitrogen/Total Ammonia	mg/l	<0.1	--	APHA 22nd Ed. 2012, 4500-NH3-F, 4-115
20	Iron (as Fe)	mg/l	0.10	0.3 max	APHA 22nd Ed. 2012, 3111-B, 3-18
21	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22nd Ed. 2012, 3111-B, 3-18
22	Aluminium (as Al)	mg/l	0.01	0.03 max	APHA 22nd Ed. 2012, 3500-Al-B, 3-61
23	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22nd Ed. 2012, 3111-B, 3-18
24	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
25	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22nd Ed. 2012, 3111-B, 3-18
26	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3111-B, 3-18
27	Zinc (as Zn)	mg/l	0.15	5 max	APHA 22nd Ed. 2012, 3111-B, 3-18
28	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-38
29	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22nd Ed. 2012, 3112-B, 3-23
30	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22nd Ed. 2012, 3114-B, 3-38
31	Nickel (as Ni)	mg/l	<0.008	0.02 max	APHA 22nd Ed. 2012, 3111-B, 3-18
32	Mineral Oil	mg/l	N.D	0.5 max	IS 3025 (Part 39): 1991, Reaffirmed 2003: ed. 2.1
33	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-CN.C & 4-39 & 4-44
34	Anionic detergents as MBAS	mg/l	<0.1	0.2 max	APHA 22nd ED. 2012, 5540-C.C & 5-53
35	Phenolic compounds (as C6H5OH)	mg/l	N.D	0.001 max	APHA 22nd ED. 2012, 5530-B & C 5-4753
36	Polynuclear aromatic hydrocarbons (PAH)	mg/l	N.D	0.0001 max	APHA 22nd ED. 2012, 6440, 6-93
37	Polychlorinated Biphenyls (PCBs)	mg/l	N.D	0.0005 max	USEPA Method 8082
38	Sulphide (as S)	mg/l	N.D	0.05 max	APHA 22nd ED. 2012, 4500-S2-C 4-175 & F 4-178

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Continuation Sheet
MEEPL/JAN0181/2016-17

Report no: : MEEPL/ JAN0181/2016-17 **Date:** 30th January , 2017

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
Microbiological Analysis					
1	Total Colliforms	MPN/100mL	N.D	<1.1	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-67
2	E-Coli	MPN/100mL	N.D	Absent	APHA 22nd Ed. 2012, 9221-B & C, 9-66, 9-69 and 9-76
Pesticides Residues					
3	p.p DDT	µg/L	N.D	1	US EPA 508-1995
4	o.p DDT	µg/L	N.D	1	US EPA 508-1995
5	p.p DDE	µg/L	N.D	1	US EPA 508-1995
6	o.p DDE	µg/L	N.D	1	US EPA 508-1995
7	p.p DDD	µg/L	N.D	1	US EPA 508-1995
8	o.p DDD	µg/L	N.D	1	US EPA 508-1995
9	γ-HCH (Lindance)	µg/L	<0.01	2	US EPA 508-1995
10	α –HCH	µg/L	<0.01	0.01	US EPA 508-1995
11	β–HCH	µg/L	N.D	0.04	US EPA 508-1995
12	Б- HCH	µg/L	N.D	0.04	US EPA 508-1995
13	Butachlor	µg/L	N.D	125	US EPA 508-1995
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19	Ethion	µg/L	N.D	3	US EPA 8141A-1994
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25	Aldrin	µg/L	N.D	0.03	US EPA 508-1995
26	Dieldrin	µg/L	N.D	0.03	US EPA 508-1995
Remarks: N.D- Not Detected					

Conclusion : The Physical & Chemical Analysis report indicates that the water is not contaminated and potable.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE

Mahabal Enviro Eng Pvt. Ltd. Ranchi

Annexure- 2

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

The composite cost during the year 2016-17 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 (80.97 Ha) Kujam II (157.38 Ha) and Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud, *Orsa pat(196.36 Ha)*, Bhusar (65.31 Ha)& *Bimarla Bauxite Mines (134.52 Ha)*.

Sl No	Description	Budget (in Rupees) FY 2016-17	Actual (in Rupees) FY 2016-17 (from April'16 to Sep'2016)	Actual (in Rupees) FY 2016-17 (from April'16 to March'2017)
1	Pollution Control & Environment monitoring	**1540000.00**	**574975.50**	**1674221.50**
2	Reclamation/ Back filing & Rehabilitation**	**40000000.00**	**33837173.00**	**74355537.00**
3	Green belt, Plantation & Water spraying arrangement	**2100000.00**	**2051751.00**	**6821323.50**
4	Rural Development	**20000000.00**	**10244807.32**	**21404308.19**

**Part of OB removed cost.

(B.K. Mahapatra)
Convenor (Quality & Environment)

Annexure- 3

HINDALCO INDUSTRIES LIMITED
MINES DIVISION, COURT ROAD,
PO&DIST-LOHARDAGA (JHARKHAND)

Date: 05.09.16

Office Order

Environmental Cell has been re-constituted at Pakhar Bauxite Mines (Area 115.13 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. S. P Jha- Manager (Coordinator)
2. Mr. Narayan Pramanik (Geologist)-Member
3. Mr. Ashutosh jha (Mining Engineer)-Member
4. Mr. Sunil Kumar Pandey (Fore man)-Member
5. Sanjay Singh (Foreman)-Member

(B.K. Mahapatra)
Convenor (Quality & Environment)

Annexure - 4

PRODUCTION, MINED OUT, BACKFILLED, PRODUCTION AND OVERBURDEN REMOVAL FROM APR-16 to March-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	5.87	5.10	258487.00	413395.00
Gurdari Bauxite Mines	584.19	12.94	10.63	324200.00	428811.00
Jalim & Sanai	12.14	1.04	0.45	44624.00	36500.00
Serangdag	140.06	0.00	0.00	0.00	0.00
Pakhar Buxite Mines	115.13	3.90	3.40	282190.00	370111.00
Pakhar Buxite Mines	8.09	0.00	0.00	0.00	0.00
Kujam-I	80.87	4.52	4.05	148770.00	272334.00
Kujam-II	157.38	8.30	7.85	294830.00	572328.00
Amtipani	190.95	6.61	5.91	149450.00	282375.00
Chiro-Kukud	152.57	3.09	2.03	87570.00	154928.20
Orsa Bauxite Mines	196.36	0.00	0.00	0.00	0.00
Hisri New	14.55	1.77	1.27	98608.00	90560
Bhusar	65.31	0.68	1.38	171961.00	51545.00
Bagru	75.41	0.00	0.00	0.00	0.00
Minerals & Minerals Limited					
Pakhar Buxite Mines	109.51	3.78	3.28	277220.00	414676.00
Pakhar Buxite Mines	15.58	0.00	0.00	0.00	0.00
Bimarla Bauxite Mines	134.53	5.47	2.61	112730.00	135260.64

(B.K. Mahapatra)
Convenor (Quality & Environment)

Annexure-5

Monitored water level (FY 2016-17)

Location (Mines)	Elevation (Mtr)	Well type	Monsoon (July-Sep)		Post Monsoon (November)		Winter (January)		Pre Monsoon (April-May)	
			Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML	Inside ML	Outside ML
Bagru Plateau (Hisri new, Bagru & Bhusar)	905	Open Well		21.32		22.70		27.30		29.10
	910	Open Well		24.38		24.56		26.50		27.40
	915	Open Well		29.00		28.43		29.90		31.35
	903	Open Well		22.81		33.15		35.15		35.70
	909	Open Well		20.15		28.72		30.15		30.25
	1000	Open Well		24.93		22.65		25.15		25.85
Pakhar Gr. Of Mines (115.13,109.507,15.58,8.	1083	Hand Pump	35.35		31.60		34.2		35.45	
Sherengdag Plateau (Serangdag 155.81 ha, Sherengdag 140.06 Ha, Jalim & Sanai)	1027	Open Well		25.80		28.40		30.15		31.35
	1094	Hand Pump	41.74		39.55		42.60		42.85	
	1081	Hand Pump	39.60		31.30		41.10		42.10	
	1055	Hand Pump	33.00		27.50		35.50		35.65	
	1066	Hand Pump	27.75		26.25		29.10		30.10	
Gurdari	1045	Hand Pump	29.30		27.70		29.90		30.50	
	1061	Hand Pump	28.30		24.90		25.20		25.90	
	1059	Hand Pump	38.10		36.15		35.15		36.25	
	1075	Hand Pump	27.90		26.75		28.40		29.65	
	1075	Hand Pump	28.30		29.30		30.20		30.15	
Kujam I, Kujam II & Amtipani Mines	1040	Open Well		33.90		21.85		35.15		36.65
	1041	Open Well		33.65		24.80		36.25		39.35
	1064	Hand Pump	31.50		28.60		36.10		42.00	
	1052	Hand Pump	22.35			21.05		24.60		23.50
Chiro Kukud	1148	Hand Pump	33.40		28.30		34.20		37.45	
	1151	Hand Pump	37.60		31.80		36.20		36.00	
	1084	Hand Pump	34.20		33.15		35.60		39.50	

B Mahapatra

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Convenor (Quality & Environment)