



Ref No: HIL/LHD/GM (Geo)/MoEF/490

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 Kujam-I Bauxite Mining project of M/s Hindalco Industries Limited located in Dist- Gumla, Jharkhand for the period Apr'17 to Sept'17.**

Ref: **Environmental Clearance letter no J-II015/240/2005-IA II(M) dated 14th August 2006**

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for Kujam-I (80.87 Ha) Bauxite Mining project of M/s Hindalco located in Gumla, Jharkhand for the period **Apr'17 to Sept'17.**

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES 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
KUJAM - I BAUXITE MINES (80.87 Ha)

Period: Apr'17- Sept'17

MoEF Environment Clearance letter Ref: No. J-11015/240/2005-IA.II(M) dated 14 Aug'06

Sl No	Conditions	Compliance Status
Specific Conditions		
1	All the conditions stipulated by the State Pollution Control Board in their NOC should be effectively implemented.	Implementation of the stipulated conditions are fulfilled.
2	The mining operations shall not intersect groundwater table. Prior approval of the MoEF and CGWA shall be obtained for mining below water table.	The mining operation is confined within shallow depth (20 m max) and as per the previous study conducted by Center for Ground Water Studies, Kolkata (WB) there is no chance to intersect ground water table during mining operation. Working zone will be restricted to above ground water table.
3	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.	This provision has been taken care of during land acquisition with permission of competent authority i.e. concerned Deputy Commissioner (D.C.) and consent of Raiyat (Land Owner) for 20 years period and land so acquired will be return as per the norms set by D.C. in land purchased agreement. (Documents already submitted)
4	Top soil shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	Top soil is being stacked separately for reclamation and rehabilitation of mined out areas with progress of Mining.
5	The waste generated in the initial period shall be dumped temporarily and backfilled in the mined out area. There shall be no permanent external OB dump in the project area. Concurrent backfilling should start from the fifth year onwards. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests on six monthly basis.	Concurrent backfilling is being done in the mined out pit. Afforestation is being carried out progressively over reclaimed area for rehabilitation. The details of back filling is attached here with.
6	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil and mineral dump. The water so	Adequate capacity Sump, Catch drains, siltation ponds, garland drains are being constructed in commensuration with

	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. Garland drain (size, gradient and length) shall be constructed for mine pit 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.	the progress of mining activities.
7	plantation shall be raised in an area of 43.5 ha including a green belt of adequate width by planting the native species around the ML area, roads, etc. in consultation with the local P.O./Agriculture Department. The density of the trees should be around 1500 plants per ha.	plantation is being carried out as per the stipulated condition with progress of mining. During 2017-18 around 2000 saplings has been planted.
8	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 study has been conducted by Centre for Ground Water Studies, Kolkata, combined Netarhat plateau. We are in the process of implementation of suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board. Conservation Measures to augment water viz. check dams, contour bunds, gullies in the mining lease area is so designed that all the rain water within the lease are collected in to the pit, No water allowed to flow out of the lease.
9	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 monitoring should be carried out four times in a year - pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board.	Complied, A copy for ground water level monitoring report is enclosed as annexure-5.
10	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	Water is being drawn from rain water harvesting pond located at mined out pit. Water cess is being paid on regular

		<p>basis to JSPCB.</p> <p>We are not using ground water/natural water resources for mining purpose.</p>
11	<p>The project proponent shall monitor the spring discharge on long term basis (at least one major spring) both in terms of quantity and quality of water and records maintained. Six monthly report should be submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubneshwar.</p>	<p>Surface water quality report enclosed. There is no spring within the mining lease.</p>
12	<p>Vehicular emissions should 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 vehicles should be covered with a tarpaulin and shall not be overloaded.</p>	<p>Regular maintenance of vehicles are undertaken to minimize vehicular emission. All measures are being taken to control vehicular emission. The vehicles are being covered with tarpaulin while transportation of mineral.</p>
13	<p>Drills should either be operated with dust extractors or should be equipped with water injection system</p>	<p>Wet drilling is done in the drill holes intermittently for dust suppression by pumping water.</p>
14	<p>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</p>	<p>Blasting time is fixed during Lunch Time i.e. 12.00 Noon -1.00 PM. Controlled blasting method is in practice. All efforts are being taken to mitigate impact of blasting.</p>
15	<p>Consent to operate should be obtained from SPCB prior to start of production of mine.</p>	<p>Consent to operate obtained from JSPCB prior to start of production from Mines, which is being renewed by JSPCB periodically. Consent to Operate is valid upto 31.12.2020</p>
16	<p>Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.</p>	<p>There is no effluent discharge from Mine; hence ETP has not been installed. The sewage water from domestic uses is being collected through individual septic tanks & soak pits. Sullage is collected to an integrated soak pit.</p>
17	<p>Land oustees and land loser/affected people should be compensated and rehabilitated as per the National Policy on Resettlement and Rehabilitation of project Affected Families (NPRR), 2003</p>	<p>All land acquisition activities is done as per CNT Act and with permission of competent authority i.e. concerned Deputy Commissioner (D.C.) and consent of Raiyat (Land Owner) for 20 years period. There is no displacement involved & hence R&R is not applicable.</p>

18	The inner benches of the excavated void to be converted into water reservoir shall be terraced and afforested to stabilize the slopes. Peripheral fencing shall be done along the excavated area.	Planned to implement with progress of mining.
19	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Final mine Closure Plan will be submitted at appropriate time. Presently we are having approved progressive mine Closure Plan.

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. Annexure-4.
3	Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife departments.	Suitable conservation measures implemented for protection of flora & fauna. 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 done only in day time.
4	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x 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.	Monitoring Reports is enclosed as Annexure-1.

5	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhopal and the State Pollution Control Board / Central Pollution Control Board once in six months.	Monitoring Reports is enclosed as Annexure-1.
6	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Water spraying arrangement on haul roads, loading and unloading and at transfer points is being carried out on regular basis.
7	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	PPE's provided to workers at noise prone areas
8	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 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 industrial waste water.
9	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	PPE's provided to workers at dusty areas Periodic health checks up/ occupational health checkup are in practice for the workers at Mine.
10	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) already formed with qualified personals and informed. (enclosed as annexure-3)
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.	Date of financial closure is not applicable since it is operating mine.
12	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.	Separate budget has been prepared for the purpose. Year wise expenditure is being reported to the Ministry and its Regional Office located at Ranchi. Copy enclosed as annexure-2.

13	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.	Vide Point no. 11 above.
14	The Regional Office of this Ministry located at Bhubneshwar 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.
15	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom and suggestion / representation has been received while processing the proposal.	Complied
16	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	Displayed.
17	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Complied (Documents already submitted).



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Mahabal Enviro Engineers Pvt. Ltd.

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

NETARHAT PLATEAU- ENVIRONMENTAL MONITORING REPORT

JULY TO SEPTEMBER 2017

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

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2	Gurdari Mines Weigh Bridge
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7	Amtipani Mines Near Office
8	Amtipani Mines Near Quarry
	SURFACE WATER
1	Kujam-I
2	Kujam-II
3	Gurdari Quarry
4	Amtipani Quarry



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Hindalco Industries : Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0148/2017-18	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: <i>Gurdari Mines Quarry 6B</i>	
Sample collected on: 21.09.2017	

LOCATION / IDENTIFICATION: Gurdari Mines Quarry 6B				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	61.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.7
05.	Ammonia (NH ₃)	µg/m ³	400	15.0
06.	Ozone (O ₃)	µg/m ³	180	14.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	3.0
10.	Arsenic (As)	µg/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.

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SENIOR EXECUTIVE



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Hindalco Industries : Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0149/2017-18	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: <i>Gurdari Mines - Weigh Bridge</i>	
Sample collected on: <i>21.09.2017</i>	

LOCATION / IDENTIFICATION: Gurdari Mines Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	60.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.6
05.	Ammonia (NH ₃)	µg/m ³	400	14.0
06.	Ozone (O ₃)	µg/m ³	180	15.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.43
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	3.1
10.	Arsenic (As)	µg/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries : Environmental Monitoring Report JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0150/2017-18	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: <i>Kujam II Weigh Bridge</i>	
Sample collected on: 22.09.2017	

LOCATION / IDENTIFICATION: Kujam II Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	67.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	9.2
05.	Ammonia (NH ₃)	µg/m ³	400	14.6
06.	Ozone (O ₃)	µg/m ³	180	13.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.44
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	3.2
10.	Arsenic (As)	µg/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.35

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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0151/2017-18	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: <i>Kujam II Quarry</i>	
Sample collected on: 22.09.2017	

LOCATION / IDENTIFICATION: Kujam II Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 μm) PM ₁₀	$\mu\text{g}/\text{m}^3$	100	63.1
02.	Particulate Matter (size less than 2.5 μm) PM _{2.5}	$\mu\text{g}/\text{m}^3$	60	32.5
03.	Sulphur Dioxide (SO ₂)	$\mu\text{g}/\text{m}^3$	80	4.9
04.	Nitrogen Dioxide (NO ₂)	$\mu\text{g}/\text{m}^3$	80	7.7
05.	Ammonia (NH ₃)	$\mu\text{g}/\text{m}^3$	400	15.9
06.	Ozone (O ₃)	$\mu\text{g}/\text{m}^3$	180	13.5
07.	Carbon Monoxide (CO)	mg/m^3	02	0.42
08.	Lead (Pb)	$\mu\text{g}/\text{m}^3$	1.0	0.03
09.	Nickel (Ni)	$\mu\text{g}/\text{m}^3$	20	3.1
10.	Arsenic (As)	$\mu\text{g}/\text{m}^3$	06	2.0
11.	Benzene (C ₆ H ₆)	$\mu\text{g}/\text{m}^3$	05	3.2
12.	Benzo (a) Pyrene	$\mu\text{g}/\text{m}^3$	01	0.33

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Hindalco Industries : Environmental Monitoring Report JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0152/2017-18	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: <i>Kujam I Quarry I</i>	
Sample collected on: 22.09.2017	

LOCATION / IDENTIFICATION: Kujam I Quarry I				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	68.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	37.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.5
05.	Ammonia (NH ₃)	µg/m ³	400	14.2
06.	Ozone (O ₃)	µg/m ³	180	14.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.40
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	3.0
10.	Arsenic (As)	µg/m ³	06	2.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.43

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries :

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JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0153/2017-18	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: <i>Kujam I Quarry II</i>	
Sample collected on: 22.09.2017	

LOCATION / IDENTIFICATION: Kujam I Quarry II				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	65.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	32.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.7
05.	Ammonia (NH ₃)	µg/m ³	400	14.1
06.	Ozone (O ₃)	µg/m ³	180	15.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.48
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	2.9
10.	Arsenic (As)	µg/m ³	06	2.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.43

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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Hindalco Industries:**Environmental Monitoring Report****JULY - SEPTEMBER 2017****Continuation Sheet**
MEEPL/OCT0156/2017-18

Report no: MEEPL/OCT0156/2017-18				Date: 24 th October, 2017	
Sl.No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.10	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 84, 4-87
15	Calcium (as Ca)	mg/l	11.9	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.10	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	7.3	7-8	APHA 20 th ED. Method 4500-o g

For Mahabal Enviro Engineers Pvt. Ltd.Vijay Pandey
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Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0154/2017-18	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	
Matrix on Sample: Location: <i>Amtipani Mines Near Office</i>	
Sample collected on: 22.09.2017	

LOCATION / IDENTIFICATION: Near Amtipani Mines Near Office				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	71.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	36.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	8.4
05.	Ammonia (NH ₃)	µg/m ³	400	13.6
06.	Ozone (O ₃)	µg/m ³	180	15.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.44
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	µg/m ³	20	2.1
10.	Arsenic (As)	µg/m ³	06	1.9
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.2
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.:

Vijay Pandey
SENIOR EXECUTIVE



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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0155/2017-18	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: <i>Amtipani Mines – Near Quarry</i>	
Sample collected on: 22.09.2017	

LOCATION / IDENTIFICATION: Amtipani Mines Near Quarry				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	74.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	7.3
05.	Ammonia (NH ₃)	µg/m ³	400	14.8
06.	Ozone (O ₃)	µg/m ³	180	15.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.46
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	µg/m ³	20	2.8
10.	Arsenic (As)	µg/m ³	06	1.31
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.3
12.	Benzo (a) Pyrene	µg/m ³	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

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SENIOR EXECUTIVE



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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0156/2017-18	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: Kujam - I	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 22.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	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	0.29	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	8.2	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-CI-G, 4-69
7	Total Dissolved Solids	mg/l	466	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	50	200 max	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	41	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	47	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO ₄)	mg/l	29.6	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	5.9	30 max	APHA 22 nd Ed. 2012, 4500-Mg-B, 3-84



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Hindalco Industries:

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0157/2017-18	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: Kujam - II	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 22.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	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	0.29	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	8.0	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	464	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	50	200 max	APHA 22 nd Ed. 2012, 4500-Cl-G, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	42	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	29.9	200 max	APHA 22 nd Ed. 2012, 4500-so4-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	5.9	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/OCT0157/2017-18

Report no: MEEPL/OCT0157/2017-18					Date: 24 th October, 2017
Sl. No.	Parameters	Unit	Result	Acceptable Lim ^{it} (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.11	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	13.7	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.10	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	7.3	7-8	APHA 20 th ED. Method 4500-o g.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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Hindalco Industries :

Environmental Monitoring Report

JULY - SEPTEMBER 2017

Report no: MEEPL/OCT0158/2017-18	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: Gurdari Quarry	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 21.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	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	0.30	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	8.3	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-CI-G, 4-69
7	Total Dissolved Solids	mg/l	486	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	51	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	45	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	47	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO ₄)	mg/l	30.9	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	5.9	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/OCT0158/2017-18

Sl. No.	Parameters	Unit	Result	Acceptable Limit: (IS 10500.2012)	Method Reference
14	Fluoride (as F)	mg/l	0.11	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	12.0	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.10	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-o g.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE



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Hindalco Industries:

Environmental Monitoring Report

JULY – SEPTEMBER 2017

Report no: MEEPL/OCT0159/2017-18	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: Amtipani Quarry	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 22.09.2017	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	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	--	8.3	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	491	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	52	200 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	44	250 max	APHA 22 nd Ed. 2012, 4500-Cl-b, 4-72
11	Sulphate (as SO ₄)	mg/l	30.3	200 max	APHA 22 nd Ed. 2012, 4500-SO ₄ -c, 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	5.8	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/OCT0159/2017-18

Report no: MEEPL/OCT0159/2017-18					Date: 24 th October, 2017
Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.10	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	13.5	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.10	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-o g.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



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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**	30000000.00	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)



Annexure - 3

Date: 03.04.17

Office Order

Environmental Cell has been re-constituted at Kujam I Bauxite Mines (Area 80.87 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. Shambhu Sharan Vashistha- Manager (Coordinator)
2. Mr. Ratikant Behera- Geologist (Member)
3. Mr. Bhanu Kumar- 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)