

**ADITYA BIRLA**



**HINDALCO**

To,

30-05-2023

**The Addl. Principal Chief Conservator of Forest (Central),  
Ministry of Env., Forest and Climate Change,  
Regional Office (WCZ)  
Ground Floor, East Wing, New Secretariat Building,  
Civil Line, Nagpur-440001 (MS)**

**Sub: - Status of compliance of EC condition (Half yearly status of compliance report) in respect of Kudag Bauxite Mine (Lease area- 377.116 Ha.) of M/s Hindalco Industries Limited of Chhattisgarh state for the period from October-2022 to March-2023.**

*Ref No: - Environment Clearance Letter No-J-11015/354/2007-IA. II (M) dated July 27, 2007*

**Dear Sir,**

We do herewith submit half yearly status of EC compliance report in respect of Kudag Bauxite Mine, Lease area – 377.116 Ha, of M/s Hindalco Industries Limited P.O- Kusmi, Dist.- Balrampur- Ramanujganj, Chhattisgarh state, PIN-497224 for the period from October-2022 to March-2023. The lease details is as below: -

<b>Lease area</b>	<b>Production Capacity</b>	<b>Lease Period</b>
377.116 Ha.	60000 Tonnes	24.12.1996 to 23.12.2046 (50 years)

We trust that the measures taken towards environment safeguard comply with the stipulated environmental conditions. We assure that we comply all the conditions laid down in the consent letter and also abide to follow all the Rules and Regulations.

Thanking you,

Yours's faithfully

For, Hindalco Industries Limited

(Vijay Chauhan)

Agent of Mines

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**Agent of Mines**  
**Samri Mines Division**  
**Hindalco Industries Ltd**

**HINDALCO INDUSTRIES LIMITED**  
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Corporate Identity No. - L27020MH1958PLC011238

**Name of the Project** : **Kudag Bauxite Mines (377.116Ha. Capacity-0.6LTPA), M/s Hindalco Industries Ltd**

**Environment Clearance No & date** : **J-11015/354/2007 – IA.(IIM) dated 27.07.2007**

**Period of compliance Report** : **1st October 2022 to 31st March 2023**

#### **A. Specific Conditions**

**Condition-1:** Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority.

**Reply to Condition 1:** The Wildlife Management plan has been prepared and approved by competent Authority vide letter no. 12/13/2967, dated 07.10.2013. The copy attached as *Annexure –A*.

**Condition-2:** Environmental clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ petition (Civil) No. 460 of 2004 as may be applicable to this project.

**Reply to Condition 2:** Noted.

**Condition-3:** Conservation plan for schedule I fauna (if found in the study area) shall be prepared in consultation with Wildlife Department. The company shall provide authenticated list of flora & fauna separately for core and buffer zone indicating schedule of species.

**Reply to Condition 3:** The Conservation plan for schedule I fauna have been prepared and approved by competent authority & submitted to ministry. The detail list of flora & fauna along with the approved conservation plan is attached as (*Annexure –B*).

**Condition-4:** The mining operations shall be restricted to above ground water table and it shall not intersect ground water table. Prior approval of the Ministry and CGWA should be obtained for mining if any below water table.

**Reply to Condition 4:** The mining operation is restricted to well above ground water table. As per our current mining operation, ultimate depth of working is about 15 meters below. Piezometer has been installed at strategic location in the lease area to monitor the Ground water level, the average depth of which is 30-35m. The ground water table is below the depth of our mining operation Hence there is no intersection of groundwater level during course of mining operation. We undertake that no mining operation is being and will be carried out below the water table.

**Condition-5:** Top soil, if any shall be stacked properly with proper slope with adequate safeguards and shall not be used reclamation and rehabilitation of mined out area.

**Reply to Condition 5:** Top soil generated during mining operation is being concurrently spread over backfilled area to restore its original forms immediately. However, if required it will be stacked properly with proper slope and adequate safeguards.



Top Soil Spreading for Backfilling

**Condition-6:** Over burden shall be stacked at earmarked dump site (s) only and shall not be kept active for long period. The maximum height of the dump shall not exceed 30m, each stage shall preferably be of 10m and over all slope of the dump shall not exceed 28°. The mine pit area shall be reclaimed by back filling the OB in a phased manner. The OB dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests on six monthly basis.

**Reply to Condition 6:** As such there is no any active OB dump at present. As per approved Mining Plan, OB generated during mine operation is being utilized for concurrently back filling of the mined out area for reclamation purpose. Small old inactive OB dump has been stabilized by vegetation with suitable native species to prevent erosion and surface run off.



Old Inactive Dump Plantation

**Condition-7:** Garland drains shall be constructed to arrest silt and sediment flows from soil and mineral dump. The water so collected shall be utilized for watering the mine area, roads, greens belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Garland drain (size, gradient and length) shall be constructed for both mine pit and for waste dump and sump capacity shall 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 shall also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garlands drains and desilted at regular intervals.

**Reply to Condition 7:** Garland drain is provided to arrest silt and sediments flows from above mentioned OB dump. At present there is no any active OB dump. Entire waste generated during mining operation is being simultaneously backfilled in the mined out pit. Old inactive OB dump has been stabilized by vegetation. Garland drains & Parapet wall of appropriate size, gradient and length have been made around the active mining pits coupled with arrester to arrest silt from run-off and drains are being maintained. The drains are regularly desilted before the monsoon. The Water so collected is being used for green belt development and in sprinkling of the Haul Road. Sump of adequate capacity is also developed.



**Condition-8:** The project proponent shall ensure that no natural water course shall be obstructed due to mining operation.

**Reply to Condition 8:** There is no natural water course inside the lease area. However, we undertake that we will not obstruct any natural water course due to mining operation.

**Condition-9:** Blasting operations shall be carried out only during the day time. Controlled blasting shall be practiced. The drills should be operated with drill extractors. The mitigative measures for control of ground vibrations and arrest fly rocks shall be implemented.

**Reply to Condition 9:** Controlled blasting is being practiced in the mine only in day time. Wet drilling Machines are being used during drilling operations. Nonel & effective blast design are used to control blast vibration and fly rocks.



**Condition-10:** Plantation shall be raised in an area of 44.69 ha including green belt of adequate width by planting native species around the ML area, roads; OB dump sites etc. in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha. Selection of plant species shall be as per CPCB guidelines. Herbs and shrubs shall also form a part of afforestation programme besides tree plantation.

**Reply to Condition 10:** We have already achieved the target area asked for plantation. However, we are continuing the plantation to restore the biodiversity. In the FY 2022-23 total 5020 nos. of saplings have been planted over an area of 1.519 ha and in total till now about 57.788 ha area has been afforested with approx. 139445 nos. of saplings.

The density is being maintained about 2500 plant per hectare with the species like Amla, Kashia Samia, mango, babul, pears & guava etc. Moreover, Ragi (Maduwa) agriculture farming has been done on over about 0.44 ha. of reclaimed area. Social forestry is also being encouraged among the local villagers. Apart from that local food grain Ragi (Maduwa) & Tau has been planted over the reclaimed area of 1.000 ha. Year wise plantation is enclosed as *Annexure-C*.



**Condition-11:** The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.

**Reply to Condition 11:** The ground water table does not intersect our mining operation because of shallow depth of mining. Piezometer has been installed at strategic location in our lease area for monitoring the ground water level, the average depth of which is 30-35m. However, Rain water harvesting structure (Ponds and Wells) has been constructed as conservation measures in mined out area for the conservation/augmentation of ground water resources.



RWH Pond & Well Structure

**Condition-12:** Regular water sprinkling shall be carried in critical areas prone to air pollution and having high levels of SPM and RSPM such as haul road, loading, unloading and transfer points and other vulnerable areas. It should be ensured that the ambient air quality parameters conform to the norms prescribed by the CPCB in this regard.

**Reply to Condition 12:** Regular water spraying with 12 KL portable water tanker in the mine lease hold area is being carried out regularly to control air pollution. The ambient air quality is within the stipulated norms.



**Condition-13:** Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year-pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board.

**Reply to Condition 13:** Ground water quality monitoring is being carried out regularly on quarterly basis. The analysis reports are being submitted to CECB, Raipur. Regular monitoring of ground water level is being carried out by piezometer installed at strategic location-in the lease area and is found below the level of mining operation. The ground water Quality report and the GW level data is attached in *Annexure - D*.

**Condition-14:** Rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, CGWB.

**Reply to Condition 14:** Rain water harvesting ponds has been made at lease hold area.

**Condition-15:** Prior permission from the competent authority shall be obtained for drawl of ground water, if any.

**Reply to Condition 15:** Ground water NOC has been obtained from CGWA vide letter no. CGWA/NOC/MIN/REN/2/2023/7570, dated 03-04-2023 valid up to 28-04-2025 for domestic/drinking purpose. The approval copy attached as *Annexure-E*.

**Condition-16:** Existing ecological status of the project area shall be conserved and protected. The project proponent should take all possible precautionary measures during mining operation for conservation and protection of endangered fauna.

**Reply to Condition 16:** All efforts are being taken to conserve and protect existing ecological status of the project area. Important measures we are taking for conservation of flora and fauna are as follows.

- a) Company have been provided solar LED torch and florescent jacket to Staff of forest department, Ambikapur for patrolling and monitoring the movement of wildlife, encroachment, cutting, poaching, fire etc.
- b) Veterinary camp is being conducted for immunization of cattle with the help of block veterinary staff.
- c) Awareness programme related to wildlife conservation is being conducted.
- d) Eco-development activities like poultry, piggery, bee keeping etc. are being organized.
- e) Controlled blasting is being carried out so as reduce vibration and noise. Such operation is being carried out in day time only and its use is minimized.
- f) Plantation is regular activity.

**Condition-17:** 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 vehicles shall be covered with a tarpaulin and shall not be overloaded.

**Reply to Condition 17:** Regular and periodic maintenance of HEMM is being carried out for control of vehicular emission in mines area. The bauxite ore are transported in trucks with tarpaulin cover upto EUP/Railway siding. Vehicle used for transportation are having valid permit. No overloading of ores for transportation is allowed to prevent spillage of material.

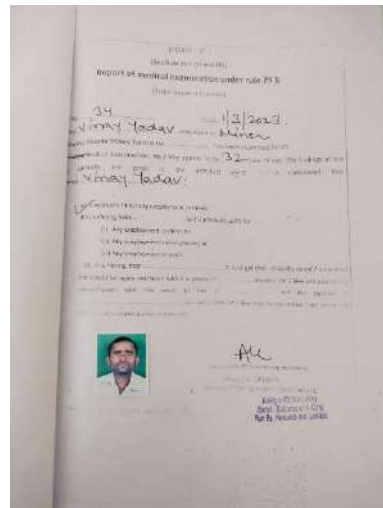


**Condition-18:** A comprehensive report on the details of land oustees, their socio-economic profile and action plan for their rehabilitation including formation of self-help groups who can facilitate promotion of economic opportunity for local indigenous people shall be submitted for record.

**Reply to Condition 18:** A copy of report has been submitted to ministry. As a part of CSR activities, company has formed SHG group to facilitate promotion of economic opportunity to local indigenous people. As of date we have 12 No. of SHGs with 120 beneficiaries who are directly engaged in Income generation activities. Detailed latest CSR report is enclosed as **Annexure F**.

**Condition-19:** The company shall implement occupational health and safety measures for the workers and engage a qualified doctor who is trained in occupational health surveillance.

**Reply to Condition 19:** Company has provided to all workers with personal protective equipment and training are also being imparted to them for safety & health in our Group vocational training center. One doctor having MBBS qualification has been appointed for facilitation of OHS. All employees working in the mine have been under gone through medical test as per Mines ACT-1952.



Safety Talk before execution of the Job & PME Copy

**Condition-20:** 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.

**Reply to Condition 20:** We accept the condition. A progressive mine closure plan approved by IBM is in place. IBM is competent authority to approve the final mine closure plan. Based on the present resource estimate, and peak rated production capacity, the tentative balance life of mine is around 27 years. However, after completion of further detailed exploration programme and geological investigation, the balance life of mine is subject to change with respect to EC Capacity and cut –off grade of mineral at that particular time. Final mine closure mine plan along with details



of corpus fund will be submitted within prescribed timelines in accordance with law to competent authority.

**B. General Conditions**

**Condition-1:** No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment & Forests.

**Reply to Condition 1:** Noted.

**Condition-2:** No change in the calendar plan including excavation, quantum of mineral bauxite ore shall be made.

**Reply to Condition 2:** Calendar plan (IBM Approved Mining Plan/scheme) prepared for the mine is being followed.

**Condition-3:** Conservation measures for protection of flora and fauna in the core and buffer zone shall be drawn up in consultation with the local forest and wildlife department.

**Reply to Condition 3:** The suggestions of local forest department are being implemented for conservation of flora and fauna in and around lease hold area. Important measure being implemented for conservation of flora and fauna are as follows.

- a) Company have been provided solar LED torch and florescent Jackets to Staff of forest department, Ambikapur for patrolling and monitoring the movement of wildlife ,encroachment, cutting ,poaching ,fire etc.
- b) Veterinary camp is being conducted for immunization of cattle with the help of block veterinary staff.
- c) Awareness programme related to wildlife conservation is being conducted.
- d) Eco-development activities like poultry, piggery, bee keeping etc. are being organized.
- e) Controlled blasting is being carried out so as reduce vibration and noise. Such operation is being carried out in day time only and its use is minimized.
- f) Plantation is regular activity.

**Condition-4:** Four ambient air quality-monitoring stations shall be established in the core zone as well as in the buffer zone for RPM, SPM, SO<sub>2</sub>, 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.

**Reply to Condition 4:** Ambient Air quality monitoring is being carried out as per the guideline and is being followed. For this purpose, we have already appointed a NABL accredited laboratory M/s. Anacon Laboratories Pvt. Ltd. for conducting regular environmental monitoring. Analysis Report (from October -22 to March -23) is enclosed as **Annexure-G**.

**Condition-5:** Data on ambient air quality (RPM, SPM, SO<sub>2</sub>, NO<sub>x</sub>) 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.

**Reply to Condition 5:** Data of ambient air quality (RPM, SPM, SO<sub>2</sub>, and NO<sub>x</sub>) are being submitted to CECB and are being submitted to other regulatory authorities as per guidelines. Ambient air quality report for the month October -22 to March -23 is enclosed as **Annexure-G**.

**Condition-6:** Fugitive dust emission from all the sources shall be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points shall be provided and properly maintained.

**Reply to Condition 6:** Fugitive dust emission from generating sources is being controlled. The dust extractor, wet drilling, regular water spraying with 12 KL portable water tanker in the mine lease hold area is being carried out regularly. Rainwater collected into the mine pit is being utilized for dust suppression purpose. Black top road has been constructed up to pit head to reduce dust emission.



Black top access road to the mines

**Condition-7:** Measures shall be taken for control of noise levels below 85dBA in the work environment. Workers engaged in operations of HEMM, etc. shall be provided with ear plugs / muffs.

**Reply to Condition 7:** The noise level in working area is being maintained below the prescribed limit. As protective measures, Workers engaged in operations of HEMM, etc. is being provided with ear plugs / muffs. The proper maintenance of HEMM is being carried out to control noise emission.

#### **HEMM Spot Noise Level (dB(A) Leq) Monitoring**

<b>Sl. No.</b>	<b>Location</b>	<b>January-2023</b>		<b>February-2023</b>		<b>March-2023</b>	
		<b>Min.</b>	<b>Max.</b>	<b>Min.</b>	<b>Max.</b>	<b>Min.</b>	<b>Max.</b>
<b>1.</b>	Nr. Weigh Bridge	68.3	72.9	71.6	73.1	73.9	74.8
<b>2.</b>	Mining Area	62.7	64.8	68.3	72.9	62.7	68.3

**Condition-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 19<sup>th</sup> May, 1993 and 31<sup>st</sup> December, 1993 or as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluents.

**Reply to Condition 8:** There is no waste water generated from the mining operation. So, there is no liquid discharge from mine. A minimal quantity of waste water generated from workshop during vehicle maintenance, for which oil and grease separation pits are provided for the treatment. The treated water is being used for dust suppression in haul road.

**Condition-9:** Personal working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects.

**Reply to Condition 9:** Company has provided adequate personal protective equipment to all workers and it is also ensured that they use the same. Regular awareness, training are also being imparted to them for safety & health in our Group vocational training center- Samri. All employees undergo Lung Function Tests during the Periodical Medical Examination. Periodical Medical Examination of employees and contractor workers are organized regularly to observe any contractions due to exposure to dust and other occupational hazards.

**Condition-10:** Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.

**Reply to Condition 10:** Periodical and Initial medical examination of all workers are being carried out as per provision of Mines Act.

**Condition-11:** A separate environmental management cell with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.

**Reply to Condition 11:** Environment cell is already in place at Samri Mines Division headed by Head (Mines) and comprises of suitable qualified persons. Constitution of Environment Management cell is enclosed in *Annexure-H*.

**Condition-12:** The project authorities shall inform to the Regional Office located at Bhopal regarding of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

**Reply to Condition 12:** Since this is an operational mine, the Financial closure plan not applicable now. When applicable we will strictly follow the condition.

**Condition-13** The funds earmarked for environmental protection measures shall be kept in separate account and should not be diverted for other purpose. Year wise expenditure shall be reported to the Ministry and its Regional Office located at Bhopal.

**Reply to Condition 13:** Adequate fund provision is already earmarked for environmental protection measures and will not be diverted to other purpose. The year wise expenditure is being submitted to concern authorities as per guidelines. The copy of the detail Expenditure is attached as *Annexure-J*.

**Condition-14:** The project authorities shall inform to the Regional Office located at Bhopal regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development.

**Reply to Condition 14:** Financial closure plan not applicable as it is an operational mines.

**Condition-15:** The Regional Office of this Ministry located at Bhopal shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/information/ monitoring reports.

**Reply to Condition 15:** All cooperation is being extended to regulatory authorities.

**Condition-16:** A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.

**Reply to Condition 16:** We have forwarded the copy of clearance letter to Panchayat in our area. The copy of same has been already submitted to your good office.

**Condition-17:** State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/Tehsildar's office for 30 days.

**Reply to Condition 17:** The copy has been displayed by CECB in Surguja Collectorate.

**Condition-18:** 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 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> and a copy of the same shall be forwarded to the Regional Office of this Ministry located Bhopal.

**Reply to Condition 18:** The information regarding environment clearance has been published in two local new papers Hari Bhumi & Ambika Vani. The copy of same has been already submitted to your good office. Copy of News paper clip is enclosed in *Annexure I*.

**Condition-19:** The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.



**Reply to Condition 19:** Noted.

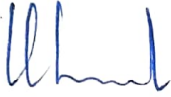
**Condition-20:** Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

**Reply to Condition 20:** Noted.

Hope the above compliance will be found in order.

Yours truly,

(For Hindalco Industries Limited)



**(Vijay Chauhan)**

**Agent of Mines**

**Agent of Mines**  
**Mines Division**  
**Hindalco Industries Ltd**

Encl.: As above

कार्यालय वन्य प्राणी संरक्षण (वन्यप्राणी प्रबंधन एवं जीव विविधता  
संरक्षण सह मुख्य वन्यप्राणी अभिरक्षक), छत्तीसगढ़  
अरण्य भवन, मेडिकल कॉलेज रोड, रायपुर

ईमेल - pccfwl@nsrf.com

IPN 0771-2552228, Fax (0771-2552227)

क्रमांक/व.प्रा./प्रबंध- 12/13/2767

रायपुर दिनांक 07/10/2013

प्रति,

संचालक,  
इन्वायरनमेंट क्लीयरेंस सेल  
भारत सरकार, वन एवं पर्यावरण मंत्रालय,  
पर्यावरण भवन, सी.जी.ओ. कॉम्प्लेक्स,  
लोधी रोड, नई दिल्ली-111003

विषय :- छत्तीसगढ़ के बलरामपुर जिले (तत्कालीन सरगुजा जिला) में स्थित सामरी बॉक्साइट  
माईन्स, कुदाग बॉक्साइट माईन्स एवं टाटीझरिया बॉक्साइट माईन्स की क्षमता बढ़ाये हेतु  
इन्वायरनमेंट क्लीयरेंस।

- संदर्भ:-
1. पर्यावरण व वन मंत्रालय, भारत सरकार का पत्र क्रमांक J-11015/353/2007-IA.II(M) दिनांक 27 जुलाई 2007.
  2. पर्यावरण व वन मंत्रालय, भारत सरकार का पत्र क्रमांक J-11015/337/2007-IA.II(M) दिनांक 27 जुलाई 2007.
  3. पर्यावरण व वन मंत्रालय, भारत सरकार का पत्र क्रमांक J-11015/337/2007-IA.II(M) दिनांक 9 अगस्त 2007.

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कृपया आपके उपरोक्त संदर्भित पत्रों का अवलोकन करने का कष्ट करें। जिसके द्वारा बलरामपुर जिले  
(पुराने सरगुजा जिले) के सामरी बॉक्साइट खुली खदान (1 LTPA) की क्षमता बढ़ाकर (SLTPA) करने, कुदाग बॉक्साइट  
खदान (0.4 LTPA) की क्षमता बढ़ाकर (0.6 LTPA) करने तथा टाटीझरिया बॉक्साइट खदान (0.5 TPA) की क्षमता बढ़ाकर  
(4 TPA) करने के परियोजना प्रस्ताव के संबंध में वन्य प्राणी (संरक्षण) अधिनियम, 1972 के तहत अनुसूची-1 के वन्यप्राणियों  
हेतु "वन्य प्राणी संरक्षण व प्रबंधन योजना" तैयार की जाकर इस कार्यालय की सहमति दिये जाने का लेख किया है।

1. विषयांकित परियोजना हेतु खदान के लीज के अनुबंध दिसंबर 1996 एवं जून 1998 में हस्ताक्षरित  
हुये थे। सामरी क्षेत्र में भारत सरकार पर्यावरण व वन मंत्रालय के आदेश क्रमांक J-11015/353/2007-  
IA.II/M दिनांक 27 जुलाई, 2007 द्वारा 2146.746 हे. में, कुदाग क्षेत्र में भारत सरकार पर्यावरण व वन  
मंत्रालय आदेश क्रमांक J-11015/354/2007-IA.II/M दिनांक 27 जुलाई 2007 द्वारा 377.116 हे. में, तथा  
टाटीझरिया में भारत सरकार पर्यावरण व वन मंत्रालय के आदेश क्रमांक J-11015/337/2007-IA.II/M  
दिनांक 9 अगस्त 2007 द्वारा 1218.762 हे. में बॉक्साइट खदान की स्वीकृति प्राप्त कर संस्था द्वारा खनन  
का कार्य किया जा रहा है।



2. वर्तमान प्रस्ताव में उपरोक्त क्षेत्रों में वन्य प्राणी संरक्षण के लिए 1.0 LPTA से बढ़ाकर 5.0 LPTA किया जाना, कुदांग के लिए 0.1 LPTA से बढ़ाकर 0.5 LPTA किया जाना एवं तटीय क्षेत्रों के लिए 50,000 TPA से बढ़ाकर 4,00,000 TPA किया जाना प्रस्तावित है। भारत सरकार पर्यावरण व वन मंत्रालय के द्वारा उपरोक्त क्षेत्रों में वन्य प्राणी संरक्षण की स्वीकृति क्रमशः आदेश क्रमांक J-11015/353/2007-IA.II/M दिनांक 27 जुलाई 2007, J-11015/354/2007-IA.II/M दिनांक 27 जुलाई 2007 एवं J-11015/337/2007-IA.II/M दिनांक 9 अगस्त 2007 द्वारा कुछ शर्तों के साथ दी गई है, जिसमें एक महत्वपूर्ण शर्त यह भी उल्लेखित है कि संबंधित क्षेत्र में वन्य प्राणी (संरक्षण) अधिनियम के शेड्यूल 1 के पाये जाने वाले वन्य प्राणियों के संरक्षण हेतु प्रबंध योजना तैयार की जाकर राज्य के मुख्य वन्य जीव अभिरक्षक के अभिमत सहित प्रस्तुत किया जाये। जिसके पालन में संस्था द्वारा एक वन्य प्राणी संरक्षण योजना तैयार की गयी है।
3. खनन क्षमता बढ़ाने से संबंधित प्रस्तावित तीनों ही परियोजनाओं के एक दूसरे से 4 कि.मी. की परिधि में स्थित होने एवं सभी के बफर क्षेत्र ओवरलैपिंग होने के कारण सभी के लिये संयुक्त रूप से वन्य प्राणी संरक्षण व प्रबंधन योजना तैयार की जाकर महाप्रबंधक, (खादान), हिन्डालको इन्डस्ट्रीज के पत्र क्रमांक HIL/SAM/300/2013 दिनांक 2.03.2013 द्वारा प्रस्तुत किया गया है जिसका समग्र रूप से परीक्षण किया गया। प्रस्तावित परियोजनाओं के कोर क्षेत्र से 10 कि.मी. की परिधि में आने वाले ओवरलैपिंग बफर क्षेत्र में वन्य प्राणियों एवं उपलब्ध वनस्पतियों का सर्वे किया जाकर पाये गये स्पेसिज को परियोजना प्रस्ताव में अनेक्स-4 के में उल्लेखित किया गया है।
4. उल्लेखित सूची में वन्य प्राणी (संरक्षण) अधिनियम के शेड्यूल 1 के वन्य प्राणी नहीं पाये गये हैं। परंतु इस कार्यालय द्वारा वन संरक्षक (वन्य प्राणी), सरगुजा से विगत दस वर्षों में वन्य प्राणियों द्वारा की गई क्षति की जानकारी चाही गयी। वन संरक्षक ने अपने पत्र क्रमांक 749 दिनांक 24.05.2012 से यह जानकारी उपलब्ध कराया है कि उक्त क्षेत्र में हाथियों का वर्ष 2005 में दो बार, वर्ष 2006 में आठ बार, 2007 में एक बार, 2008 में दो बार, 2009 में सात बार आना जाना हुआ है। इसी प्रकार भालुओं के द्वारा वर्ष 2007-08 में आठ, वर्ष 2008-09 में पाँच, वर्ष 2009-10 में छः एवं 2010-11 में 4 जनहानि व जनघायल के प्रकरण तथा वर्ष 2007-08 तथा 2008-09 में तेंदुआ द्वारा पशु हानि के दो प्रकरण तथा लकड़बग्घे के कारण एक प्रकरण दर्ज किये गये हैं। इस प्रकार वन्य प्राणी (संरक्षण) अधिनियम के शेड्यूल 1 के उपरोक्त उल्लेखित वन्य प्राणियों के परियोजना क्षेत्र में आने जाने के प्रमाण पाये गये हैं। प्रस्तावित क्षेत्र से 6 से 7 कि.मी.की दूरी पर झारखंड राज्य में भेंड़िया अभ्यारण्य भी स्थापित है। अतः संस्था द्वारा दस वर्षों के लिये वन्य प्राणी संरक्षण व प्रबंध योजना श्री पी. के. सेन पूर्व वन्य प्राणी अभिरक्षक, झारखंड से तैयार कराया जाकर प्रस्तुत किया गया है। जिसका समग्र व विस्तृत अध्ययन किया गया। प्रबंधन योजना में प्रस्तावित प्रबंधन संबंधित मुख्य गतिविधियों का विवरण निम्नानुसार है।
5. योजना में वन्य प्राणियों के लिये जलग्रहण क्षेत्र विकास, रहवास-विकास, पेयजल व्यवस्था, विभाग के क्षेत्रीय अमले के सहयोग से क्षेत्र में पेट्रोलिंग व मॉनिटरिंग, अग्नि सुरक्षा, ईको विकास की गतिविधियों, स्थानीय ग्रामीणों के लिये आजीविका सृजन, टीकाकरण, जनजागृति कार्यक्रम जैसी गतिविधियों का



समावेश करते हुये 04 वर्षों के लिए प्रथम वर्ष का कार्य प्रारंभिक वर्षावधिनिर्धारित की गयी है। जिसका क्रियान्वयन वन विभाग के द्वारा किया जायेगा। प्रस्तावित पाठ्यक्रम का विवरण निम्नांकित है -

Sr. No.	Works to be done	Cost for Four years (Rs. in lakhs)					Remarks
		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	Total	
1	Plantation including soil and moisture Conservation works as per norms of forest department surrounding the lease hold	5.00	5.00	5.00	5.00	20.00	
2	Silvicultural Operation on degraded forest Land and cut back in rooted waste	2.00	2.00	2.00	2.00	8.00	
3	Habitat Management Eradication of unwanted species in buffer Zone area, Fire Protection work including wages for fire watchman, Creation of Fire line etc. surrounding lease hold and in buffer area.	2.50	2.50	2.50	2.50	10.00	
4	Monitoring - One Staff of forest department to monitor movement of wild life, encroachment, illicit cutting, poaching, fire etc. including Salary of 1 staff	3.00	3.00	3.00	3.00	12.00	
5	Construction of water holes, their maintenance and patrolling (One per Annum)	10.00	10.00	10.00	10.00	40.00	
6	Eco-development activities like poultry, piggery, bee keeping etc.	5.00	5.00	5.00	5.00	20.00	
7	Vocational Training to weaker section, females, old persons and minors of the surrounding villages in three centre in the buffer Zone of the mining lease @ 50000/- per centre.	3.00	3.00	3.00	3.00	12.00	
8	Veterinary camp for immunization of Cattle with the help of block veterinary staff.	2.00	2.00	2.00	2.00	8.00	
9	Awareness Programme including Signages, distribution of Pamphlets related to wild life conservation etc.	2.50	2.50	2.50	2.50	10.00	
10	Provision for conservation of Biodiversity among flora and fauna of the area & Preparation of Biodiversity register	20.00	0.00	0.00	0.00	20.00	The amount is to be deposited in the account of Biodiversity Board as this work is to be done by Biodiversity management committees (BMC's)
<b>Total</b>		<b>55.00</b>	<b>35.00</b>	<b>35.00</b>	<b>35.00</b>	<b>160.00</b>	



परियोजना की लागत रु. 160.00 लाख अनुमानित है। परियोजना के क्रियान्वयन के समय जो भी लागत आयगी वह विभाग के अडेक्स के हिसाब से वृद्धि होगी। परियोजना के क्रियान्वयन के समय जो भी लागत आयगी वह परियोजना प्रस्तावकों को वन विभाग में एकमुश्त जमा करानी होगी। जिससे मूल्य वृद्धि के प्रभाव को समाप्त किया जा सके। वन विभाग एकमुश्त जमा की गई राशि से वन्यप्राणी संरक्षण योजना क्रियान्वित करेगा।

7. अनुमोदित वन्यप्राणी संरक्षण योजना की एक प्रति संलग्न प्रेषित है। कृपया वन्यप्राणी संरक्षण योजना में प्रावधानित राशि रु. 160.00 लाख एकमुश्त जमा कराने हेतु परियोजना प्रस्तावकों को आदेशित करने का कष्ट करें।

संलग्न:-उपरोक्तानुसार।

*Aprakash*  
(रामप्रकाश) 01/11/13

प्रधान मुख्य वन संरक्षक (वन्यप्राणी)  
छत्तीसगढ़, रायपुर

रायपुर दिनांक 01/10/2013

पृष्ठा क्रमांक/व.प्रा./प्रबंध-12/13/2968.

प्रतिलिपि :-

1. प्रमुख सचिव, छत्तीसगढ़ शासन, वन विभाग, महानदी मंत्रालय भवन, नया रायपुर की ओर मय योजना की प्रति सहित सूचनार्थ प्रेषित।
2. श्री एम. के. नार्यंक, जी. एम. माइन्स हिन्डालको इन्डस्ट्रीज लिमिटेड, सामरी बॉक्साईट माइन्स, पोस्ट-कुसमी, जिला-सरगुजा, छत्तीसगढ़ की ओर मय योजना की प्रति सहित सूचनार्थ प्रेषित।

*Aprakash*  
प्रधान मुख्य वन संरक्षक (वन्यप्राणी) 01/11/13  
छत्तीसगढ़, रायपुर

KUDAG BAUXITE MINE LEASE AREA

  
Agent of Mines  
Sahni Mines Division  
Hindalco Industries Ltd.

Annexure-6

Details of Flora and Fauna



समावेश करते हुये 04 वर्षों के लिए प्रस्तावित कार्य प्रस्तावित व्यय अनुमानित की गयी है। जिसका क्रियान्वयन वन विभाग के द्वारा किया जायेगा। प्रस्तावित व्यय अनुमान का विवरण निम्नांकित है -

Sr. No.	Works to be done	Cost for Four years (Rs. in lakhs)					Remarks
		1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	Total	
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9	Awareness Programme including Signages, distribution of Pamphlets related to wild life conservation etc.	2.50	2.50	2.50	2.50	10.00	
10	Provision for conservation of Biodiversity among flora and fauna of the area & Preparation of Biodiversity register	20.00	0.00	0.00	0.00	20.00	The amount is to be deposited in the account of Biodiversity Board as this work is to be done by Biodiversity management committees (BMC's)
<b>Total</b>		<b>55.00</b>	<b>35.00</b>	<b>35.00</b>	<b>35.00</b>	<b>160.00</b>	



**ANNEXURE-6**  
**DETAILS OF FLORA & FAUNA**

**TABLE-1**  
**DETAILS OF DOMINANT PLANT SPECIES IN MINE LEASE AREA (CORE ZONE)**

Name of the plant Species	Local Name	Family
<i>Butea monosperma</i>	Palas	Fabaceae
<i>Acacia Arabica</i>	Babul	Mimosaceae
<i>Leucena leucophloe</i>	Sabulal	Mimosaceae
<i>Mangifera indica</i>	Aam	Anacardiaceae
<i>Citrus lemon</i>	Nimbu	Rutaceae
<i>Emblica officinalis</i>	Amia	Euphorbiaceae
<i>Ficus hispida</i>	Jungli anjir	Moraceae
<i>Spondias cythera</i>	Kathjamun	Myrtaceae
<i>Terminalia catapa</i>	Badam	Combretaceae
<i>Apluda mutica</i>	Grass	Poaceae
<i>Chloris dolichosta</i>	Grass	Poaceae
<i>Dichanthium annulatum</i>	Grass	Poaceae
<i>Inpurta cylendrica</i>	Grass	Poaceae
<i>Themeda quadrivalvis</i>	Grass	Poaceae
<i>Aristida adscensionsis</i>	Grass	Poaceae
<i>Eragrostis bifera</i>	Grass	Poaceae
<i>Eragrostis tenella</i>	Grass	Poaceae
<i>Setaria glauca</i>	Grass	Cyperaceae
<i>Hyssanolaena maxima</i>	Grass	Graminae
<i>Parthenium hysterophorus</i>	Congress grass	Compositae
<i>Cassia tora</i>	-	Caesalpinaceae
<i>Delonix regia</i>	Kachnar	Caesalpinaceae
<i>Dalbergia Sissoo</i>	Sisoo	Caesalpinaceae

**TABLE-2**  
**FLORA/VEGETATION IN STUDY AREA (BUFFER ZONE)**

Sr. No.	Technical Name	Family	Life Form
<b>I. Agricultural Crops</b>			
1	<i>Hordium vulgare</i>	Poaceae	Hemicryptophyte
2	<i>Sorghum vulgare</i>	Poaceae	Hemicryptophyte
3	<i>Triticum vulgare</i>	Poaceae	Hemicryptophyte
4	<i>Zea mays</i>	Poaceae	Hemicryptophyte
5	<i>Oryza sativa</i>	Poaceae	Hemicryptophyte
6	<i>Pennisetum typhoideum</i>	Poaceae	Hemicryptophyte
<b>II. Commercial Crops (including Vegetables)</b>			
7	<i>Abelmoschus indicus</i>	Malvaceae	Therophyte
8	<i>Allium cepa</i>	Liliaceae	Geophyte
9	<i>Allium sativum</i>	Liliaceae	Geophyte
10	<i>Annona squamosa</i>	Annonaceae	Phanerophyte
11	<i>Arachis hypogia</i>	Fabaceae	Geophyte
12	<i>Citharanthes pusillus</i>	Compositae	Therophyte
13	<i>Cicer arietinum</i>	Fabaceae	Hemicryptophyte
14	<i>Citrus lemon</i>	Ruataceae	Therophyte
15	<i>Colacasia esculenta</i>	Areaceae	Geophyte
16	<i>Coreandrum sativum</i>	Umbelliferae	Hemicryptophyte
17	<i>Daucus carota</i>	Umbelliferae	Geophyte
18	<i>Lycopersicum esculentus</i>	Solanaceae	Therophyte
19	<i>Mangifera indica</i>	Anacardiaceae	Phanerophyte
20	<i>Momordia charantia</i>	Cucurbitaceae	Therophyte
21	<i>Pisum sativum</i>	Fabaceae	Therophyte
22	<i>Psidium guava</i>	Myrtaceae	Phanerophyte
23	<i>Solanum tuberosum</i>	Solanaceae	Geophyte
24	<i>Litchi chinensis</i>	Sapindaceae	Phanerophyte
<b>III. Plantations</b>			
25	<i>Bauhinia cormbosa</i>	Caesalpinaceae	Phanerophyte
26	<i>Acacia nilotica</i>	Mimosaceae	Phanerophyte
27	<i>Albizia lebbeck</i>	Mimosaceae	Phanerophyte
28	<i>Albizia odorattissima</i>	Mimosaceae	Phanerophyte
29	<i>Albizia procera</i>	Mimosaceae	Phanerophyte



Sr. No.	Technical Name	Family	Life Form
30	<i>Azadirachta indica</i>	Meliaceae	Phanerophyte
31	<i>Bauhinia variegata</i>	Caesalpinaceae	Phanerophyte
32	<i>Bauhinia purpuria</i>	Caesalpinaceae	Phanerophyte
33	<i>Bambusa arundanaceae</i>	Poaceae	Phanerophyte
34	<i>Butea monosperma</i>	Caesalpinaceae	Phanerophyte
35	<i>Butea frondosa</i>	Caesalpinaceae	Phanerophyte
36	<i>Eucalyptus sp</i>	Myrtaceae	Phanerophyte
37	<i>Delonix regia</i>	Caesalpinaceae	Phanerophyte
38	<i>Leucena leucophloe</i>	Caesalpinaceae	Phanerophyte
<b>IV. Natural Vegetation/Forest Type</b>			
39	<i>Abrus precatorius</i>	Fabaceae	Therophyte
40	<i>Abutilon indicum</i>	Malvaceae	Phanerophyte
41	<i>Acacia Arabica</i>	Mimosaceae	Phanerophyte
42	<i>Acacia auriculiformis</i>	Mimosaceae	Phanerophyte
43	<i>Acacia catechu</i>	Mimosaceae	Phanerophyte
44	<i>Acacia intinsia</i>	Mimosaceae	Phanerophyte
45	<i>Acacia fernacea</i>	Mimosaceae	Phanerophyte
46	<i>Acacia leucophloe</i>	Mimosaceae	Phanerophyte
47	<i>Acalypha lanceolata</i>	Mimosaceae	Phanerophyte
48	<i>Acanthospermum hispidum</i>	Euphorbiaceae	Therophyte
49	<i>Achyranthes aspera</i>	Compositae	Therophyte
50	<i>Adathoda vasica</i>	Amaranthaceae	Therophyte
51	<i>Adina cordifolia</i>	Acanthaceae	Therophyte
52	<i>Aegle marmelos</i>	Rubiaceae	Phanerophyte
53	<i>Aerva lanata</i>	Rutaceae	Phanerophyte
54	<i>Ageratum conyzoides</i>	Compositae	Phanerophyte
55	<i>Ailanthus excelsa</i>	Compositae	Therophyte
56	<i>Alangium salivus</i>	Simaroubaceae	Phanerophyte
57	<i>Albizia odoratissima</i>	Alangiceae	Phanerophyte
58	<i>Albizia procera</i>	Caesalpinaceae	Phanerophyte
59	<i>Alstonia scholaris</i>	Caesalpinaceae	Phanerophyte
60	<i>Alternanthera sessilis</i>	Apocyanaceae	Phanerophyte
61	<i>Alysicarpus hamosus</i>	Amaranthaceae	Therophyte
62	<i>Anogeissus latifolia</i>	Fabaceae	Therophyte
63	<i>Anogeissus serica</i>	Combretaceae	Phanerophyte
64	<i>Argemone mexicana</i>	Combretaceae	Phanerophyte
65	<i>Azadirachta indica</i>	Papevaraceae	Phanerophyte
66	<i>Barleria prionites</i>	Meliaceae	Phanerophyte
67	<i>Bidens biternata</i>	Acanthaceae	Therophyte
68	<i>Blepharis asperima</i>	Compositae	Therophyte
69	<i>Blepharis madaraspatens</i>	Acanthaceae	Phanerophyte
70	<i>Blumea lacera</i>	Acanthaceae	Therophyte
71	<i>Boerheavia chinensis</i>	Compositae	Therophyte
72	<i>Boerheavia diffusa</i>	Nycataginaceae	Therophyte
73	<i>Bombax ceiba</i>	Nyctaginaceae	Therophyte
74	<i>Borreria hispida</i>	Bombacaceae	Phanerophyte
75	<i>Borreria stricta</i>	Rubiaceae	Therophyte
76	<i>Boswellia serrata</i>	Rubiaceae	Therophyte
77	<i>Brassica campestris</i>	Burseraceae	Phanerophyte
78	<i>Bridelia retusa</i>	Cruciferae	Therophyte
79	<i>Bridelia superba</i>	Euphorbiaceae	Phanerophyte
80	<i>Caesalpina pulcherima</i>	Euphorbiaceae	Phanerophyte
81	<i>Calotropis procera</i>	Caesalpinaceae	Phanerophyte
82	<i>Canthium diddynam</i>	Asclpiadaceae	Phanerophyte
83	<i>Capparis aphylla</i>	Rubiaceae	Phanerophyte
84	<i>Capparis deciduas</i>	Capparidaceae	Phanerophyte
85	<i>Carissa carandus</i>	Capparidaceae	Therophyte
86	<i>Carissa spinarium</i>	Apocyanaceae	Phanerophyte
87	<i>Casuarina graveolens</i>	Apocyanaceae	Phanerophyte
88	<i>Cassia absus</i>	Samydiaceae	Phanerophyte
89	<i>Cassia absus</i>	Caesalpinaceae	Phanerophyte
90	<i>Cassia auriculata</i>	Caesalpinaceae	Phanerophyte
91	<i>Cassia occidentalis</i>	Caesalpinaceae	Therophyte
92	<i>Cassia tora</i>	Caesalpinaceae	Therophyte
93	<i>Cestrum diurnum</i>	Caesalpinaceae	Therophyte
94	<i>Cestrum noctrunum</i>	Rubiaceae	Phanerophyte
		Rubiaceae	Therophyte



Sr. No.	Technical Name	Family	Life Form
95	<i>Chloris variegata</i>	Poaceae	Therophyte
96	<i>Cissus quadrangularis</i>	Vitaceae	Therophyte
97	<i>Citrus limon</i>	Rutaceae	Phanerophyte
98	<i>Cleome gynandra</i>	Capparidaceae	Therophyte
99	<i>Combretum ovalifolium</i>	Rubiaceae	Phanerophyte
100	<i>Cordia myxa</i>	Rubiaceae	Phanerophyte
101	<i>Crotalaria medicagenia</i>	Fabaceae	Therophyte
102	<i>Croton bonplandinum</i>	Amaryllidaceae	Therophyte
103	<i>Cuscuta reflexa</i>	Cuscutaceae	Epiphyte
104	<i>Datura fastulosa</i>	Solanaceae	Therophyte
105	<i>Datura metal</i>	Solanaceae	Therophyte
106	<i>Desmodium triflorum</i>	Asclepiadaceae	Therophyte
107	<i>Diospyros melanoxylon</i>	Lythraceae	Phanerophyte
108	<i>Diospyros Montana</i>	Lythraceae	Phanerophyte
109	<i>Echinops echinatus</i>	Compositae	Therophyte
110	<i>Eclipta prostrate</i>	Compositae	Hemicryptophyte
111	<i>Emblica officinale</i>	Euphorbiaceae	Phanerophyte
112	<i>Emilia lajerium</i>	Compositae	Hemicryptophyte
113	<i>Erythrina indica</i>	Papilionaceae	Phanerophyte
114	<i>Euphorbia geniculata</i>	Euphorbiaceae	Therophyte
115	<i>Euphorbia hirta</i>	Euphorbiaceae	Therophyte
116	<i>Euphorbia hyperocifolia</i>	Euphorbiaceae	Therophyte
117	<i>Euphorbia neruri</i>	Euphorbiaceae	Therophyte
118	<i>Euphorbia nivula</i>	Euphorbiaceae	Therophyte
119	<i>Euphorbia piluliflora</i>	Euphorbiaceae	Hemicryptophyte
120	<i>Euphorbia tricauli</i>	Euphorbiaceae	Hemicryptophyte
121	<i>Evolvulus alsinoides</i>	Convolvulaceae	Therophyte
122	<i>Evolvulus numularis</i>	Convolvulaceae	Therophyte
123	<i>Feronia elephantum</i>	Rutaceae	Phanerophyte
124	<i>Ficus benghalensis</i>	Moraceae	Phanerophyte
125	<i>Ficus carica</i>	Moraceae	Phanerophyte
126	<i>Ficus glomerata</i>	Moraceae	Phanerophyte
127	<i>Ficus hispida</i>	Moraceae	Phanerophyte
128	<i>Ficus racemosus</i>	Moraceae	Phanerophyte
129	<i>Ficus religiosa</i>	Moraceae	Phanerophyte
130	<i>Ficus gibbosa</i>	Moraceae	Phanerophyte
131	<i>Gardenia latifolia</i>	Rubiaceae	Phanerophyte
132	<i>Gardenia lucida</i>	Rubiaceae	Phanerophyte
133	<i>Garuga pinnata</i>	Burseraceae	Phanerophyte
134	<i>Glossocardia bosvellia</i>	Compositae	Hemicryptophyte
135	<i>Gmelina arborea</i>	Rubiaceae	Phanerophyte
136	<i>Gomphrena globosa</i>	Amaranthaceae	Therophyte
137	<i>Gossypium herbaceum</i>	Malvaceae	Therophyte
138	<i>Grewia abutilifolia</i>	Tiliaceae	Phanerophyte
139	<i>Grewia salivifolia</i>	Tiliaceae	Phanerophyte
140	<i>Grewia subinaqualis</i>	Tiliaceae	Phanerophyte
141	<i>Gynandropis gynandra</i>	Capparidaceae	Hemicryptophyte
142	<i>Helictis isora</i>	Rubiaceae	Phanerophyte
143	<i>Heliotropium indicum</i>	Rubiaceae	Hemicryptophyte
144	<i>Heliotropium ovalifolium</i>	Rubiaceae	Hemicryptophyte
145	<i>Hemidesmus indicus</i>	Asclepiadaceae	Phanerophyte
146	<i>Hibiscus caesus</i>	Malvaceae	Hemicryptophyte
147	<i>Holarrhena antidycenterica</i>	Asclepiadaceae	Phanerophyte
148	<i>Holostemma annularia</i>	Asclepiadaceae	Phanerophyte
149	<i>Hygrophylla auriculata</i>	Acanthaceae	Hemicryptophyte
150	<i>Hyptis suavealens</i>	Labiatae	Therophyte
151	<i>Ichnocarpus frutens</i>	Poaceae	Hemicryptophyte
152	<i>Impatiens balasamania</i>	Balsaminaceae	Therophyte
153	<i>Indigofera hirsute</i>	Caesalpinaceae	Therophyte
154	<i>Indigofera limnacea</i>	Caesalpinaceae	Therophyte
155	<i>Indigofera tinctoria</i>	Caesalpinaceae	Therophyte
156	<i>Ipomea aquatica</i>	Convolvulaceae	Hydrophyte
157	<i>Ipomea coccinea</i>	Convolvulaceae	Therophyte
158	<i>Ipomea tuba</i>	Convolvulaceae	Hemicryptophyte
159	<i>Ixora arborea</i>	Rubiaceae	Phanerophyte
160	<i>Ixora parviflora</i>	Rubiaceae	Phanerophyte



Sr. No.	Technical Name	Family	Life Form
161	<i>Ixora singapuriensis</i>	Rubiaceae	Phanerophyte
162	<i>Jasminum arborens</i>	Oleaceae	Phanerophyte
163	<i>Jatropha gossypifolia</i>	Euphorbiaceae	Therophyte
164	<i>Jussiaea suffruticosa</i>	Onagraceae	Hydrophyte
165	<i>Justia diffusa</i>	Acanthaceae	Therophyte
166	<i>Justicia diffusa</i>	Acanthaceae	Therophyte
167	<i>Lactuca punctata</i>	Compositae	Therophyte
168	<i>Lannea coramandalica</i>	Anacardiaceae	Phanerophyte
169	<i>Lannea grandis</i>	Anacardiaceae	Phanerophyte
170	<i>Lannea procumbens</i>	Anacardiaceae	Therophyte
171	<i>Lantana camara</i>	Verbinaceae	Phanerophyte
172	<i>Lawsonia inermis</i>	Lythraceae	Phanerophyte
173	<i>Lepidogathis cristata</i>	Acanthaceae	Therophyte
174	<i>Leptodenia reticulata</i>	Asclepiadaceae	Phanerophyte
175	<i>Leucas aspera</i>	Labiatae	Therophyte
176	<i>Leucas longifolia</i>	Labiatae	Therophyte
177	<i>Leucas longifolia</i>	Labiatae	Therophyte
178	<i>Leucena leucophloe</i>	Caesalpinaceae	Phanerophyte
179	<i>Linderbergia indica</i>	Scrophulariaceae	Therophyte
180	<i>Lindernbergia ciliate</i>	Scrophulariaceae	Therophyte
181	<i>Lophophora tridinatus</i>	Scrophulariaceae	Geophyte
182	<i>Luffa acutangularia</i>	Cucurbitaceae	Therophyte
183	<i>Lycopersicum esculentus</i>	Solanaceae	Therophyte
184	<i>Madhuca latifolia</i>	Sapotaceae	Phanerophyte
185	<i>Mallotus philippinus</i>	Euphorbiaceae	Phanerophyte
186	<i>Malvastrum coramandalicum</i>	Malvaceae	Therophyte
187	<i>Mangifera indica</i>	Anacardiaceae	Phanerophyte
188	<i>Marselia quadrifolia</i>	Marseliaceae	Phanerophyte
189	<i>Melia azadirachta</i>	Meliaceae	Phanerophyte
190	<i>Memordica diocea</i>	Cucurbitaceae	Therophyte
191	<i>Merremia emerginata</i>	Convolvulaceae	Therophyte
192	<i>Michaelia champaca</i>	Annonaceae	Phanerophyte
193	<i>Millingtonia hartenii</i>	Bignoniaceae	Phanerophyte
194	<i>Mimosa hamata</i>	Mimosaceae	Therophyte
195	<i>Mitragyna parviflora</i>	Rubiaceae	Phanerophyte
196	<i>Mollugo cerviana</i>	Aizoaceae	Therophyte
197	<i>Mollugo hirta</i>	Aizoaceae	Therophyte
198	<i>Moringa oleifera</i>	Moringaceae	Phanerophyte
199	<i>Morus alba</i>	Moraceae	Phanerophyte
200	<i>Mucuna prurita</i>	Papilionaceae	Hemicryptophyte
201	<i>Murraya exotica</i>	Rutaceae	Phanerophyte
202	<i>Murraya koenigii</i>	Rutaceae	Phanerophyte
203	<i>Musa paradisiaca</i>	Musaceae	Therophyte
204	<i>Nymphia sp</i>	Magnoliaceae	Hydrophyte
205	<i>Ocimum americanum</i>	Labiatae	Therophyte
206	<i>Ocimum basilium</i>	Labiatae	Therophyte
207	<i>Ocimum canum</i>	Labiatae	Therophyte
208	<i>Ocimum sanctum</i>	Labiatae	Therophyte
209	<i>Oldenlandia umbellate</i>	Convolvulaceae	Therophyte
210	<i>Oldenlandia corymbosa</i>	Rubiaceae	Therophyte
211	<i>Ooqenia oojensis</i>	Papilionaceae	Phanerophyte
212	<i>Opuntia dillinii</i>	Opuntiaceae	Therophyte
213	<i>Opuntia elator</i>	Cacataceae	Therophyteq
214	<i>Oxalis corniculata</i>	Oxalidaceae	Therophyte
215	<i>Panicum milliria</i>	Poaceae	Hemicryptophyte
216	<i>Panicum notatum</i>	Poaceae	Hemicryptophyte
217	<i>Papaver somniferum</i>	Papaveraceae	Hemicryptophyte
218	<i>Parkinsonia aculata</i>	Mimosaceae	Phanerophyte
219	<i>Parthenium hysterophorus</i>	Compositae	Therophyte
220	<i>Paspalum strobilanthus</i>	Passifloraceae	Hemicryptophyte
221	<i>Passiflora foetida</i>	Passifloraceae	Phanerophyte
222	<i>Pavonia zeylanica</i>	Malvaceae	Phanerophyte
223	<i>Peltophorum ferrusinum</i>	Caesalpinaceae	Phanerophyte
224	<i>Phoenix aculis</i>	Palmae	Phanerophyte
225	<i>Phyllanthus asperulatus</i>	Euphorbiaceae	Phanerophyte
226	<i>Phyllanthus emblica</i>	Euphorbiaceae	Phanerophyte



Sr. No.	Technical Name	Family	Life Form
227	<i>Phyllanthus niruri</i>	Euphorbiaceae	Therophyte
228	<i>Phyllanthus reticulatus</i>	Euphorbiaceae	Therophyte
229	<i>Physalis minima</i>	Solanaceae	Therophyte
230	<i>Pithecolobium dulce</i>	Mimosaceae	Phanerophyte
231	<i>Polyalthia longifolia</i>	Annonaceae	Phanerophyte
232	<i>Polygala ererptera</i>	Polygalaceae	Therophyte
233	<i>Pongamia pinnata</i>	Fabaceae	Phanerophyte
234	<i>Portulaca oleracea</i>	Portulacaceae	Therophyte
235	<i>Psidium guava</i>	Myrtaceae	Phanerophyte
236	<i>Punica granatum</i>	Puniaceae	Therophyte
237	<i>Randia dumetorum</i>	Rubiaceae	Phanerophyte
238	<i>Rosa indica</i>	Rosaceae	Therophyte
239	<i>Rosa machata</i>	Rosaceae	Therophyte
240	<i>Saccharum munja</i>	Poaceae	Hemicryptophyte
241	<i>Saccharum officinarum</i>	Poaceae	Therophyte
242	<i>Salmalia malabarica</i>	Salmaliaceae	Phanerophyte
243	<i>Sapindus emarginatus</i>	Sapindaceae	Phanerophyte
244	<i>Schleichera trijuga</i>	Combretaceae	Phanerophyte
245	<i>Schrebera swietenoides</i>	Sapindaceae	Phanerophyte
246	<i>Schleichera oleosa</i>	Sapindaceae	Phanerophyte
247	<i>Sesamum indicum</i>	Pedaliaceae	Hemicryptophyte
248	<i>Shorea robusta</i>	Dipterocarpaceae	Phanerophyte
249	<i>Sida orientalis</i>	Malvaceae	Phanerophyte
250	<i>Sida ornatifolia</i>	Malvaceae	Hemicryptophyte
251	<i>Solanum nigrum</i>	Solanaceae	Therophyte
252	<i>Solanum xanthocarpum</i>	Solanaceae	Therophyte
253	<i>Sterculia villosa</i>	Tiliaceae	Therophyte
254	<i>Stereospermum chelinoides</i>	Bignoniaceae	Phanerophyte
255	<i>Syzygium cumini</i>	Myrtaceae	Phanerophyte
256	<i>Tamarindus indica</i>	Caesalpinaceae	Phanerophyte
257	<i>Tecomella undulate</i>	Bignoniaceae	Therophyte
258	<i>Tectona grandis</i>	Verbinaceae	Phanerophyte
259	<i>Tephrosia purpuria</i>	Fabaceae	Therophyte
260	<i>Terminalia bellarica</i>	Combretaceae	Phanerophyte
261	<i>Terminalia chebula</i>	Combretaceae	Phanerophyte
262	<i>Terminalia tomentosa</i>	Combretaceae	Phanerophyte
263	<i>Tinospora cordifolia</i>	Rhamnaceae	Therophyte
264	<i>Traqum biflorum</i>	Poaceae	Hemicryptophyte
265	<i>Tribulus terrestris</i>	Zygophyllaceae	Therophyte
266	<i>Tridax procumbens</i>	Compositae	Therophyte
267	<i>Triumferta pilosa</i>	Tiliaceae	
268	<i>Vernonia cinera</i>	Compositae	Therophyte
269	<i>Vicoa indica</i>	Compositae	Phanerophyte
270	<i>Vitex Negundo</i>	Verbinaceae	Phanerophyte
271	<i>Vitex negundo</i>	Verbinaceae	Therophyte
272	<i>Vitis vermicifera</i>	Vitaceae	Therophyte
273	<i>Vivevera zizanoides</i>	Poaceae	Therophyte
274	<i>Wrightia tomentosa</i>	Apocyanaceae	Phanerophyte
275	<i>Xanthium strumariumk</i>	Compositae	Therophyte
276	<i>Yucca gloriosa</i>	Agavaceae	Therophyte
277	<i>Zizyphus jujube</i>	Rhamnaceae	Phanerophyte
278	<i>Zizyphus mauritiana</i>	Rhamanaceae	Phanerophyte
<b>V. Grasslands</b>			
279	<i>Apluda mutica</i>	Poaceae	Hemicryptophyte
280	<i>Chloris dolichosta</i>	Poaceae	Hemicryptophyte
281	<i>Cyanodactylon sp</i>	Poaceae	Geophyte
282	<i>Dichanthium annulatum</i>	Poaceae	Hemicryptophyte
283	<i>Inpurta cylendrica</i>	Poaceae	Hemicryptophyte
284	<i>Sachharum spontanseum</i>	Poaceae	Hemicryptophyte
285	<i>Themeda quadrivalvis</i>	Poaceae	Hemicryptophyte
286	<i>Aristida adscensionis</i>	Poaceae	Hemicryptophyte
287	<i>Cenchrus ciliaris</i>	Poaceae	Therophyte
288	<i>Cenchrus setifera</i>	Poaceae	Therophyte
289	<i>Cymbopogon jwarancusa</i>	Cyperaceae	Hemicryptophyte
290	<i>Cyperus aristatus</i>	Cyperaceae	Therophyte
291	<i>Cyperus triceps</i>	Cyperaceae	Therophyte



Sr. No.	Technical Name	Family	Life Form
292	<i>Dactylectinium annualatum</i>	Poaceae	
293	<i>Digetaria bicornis</i>	Poaceae	Therophyte
294	<i>Digetaria Segetaria</i>	Poaceae	Hemicryptophyte
295	<i>Eragrostis biferia</i>	Poaceae	Hemicryptophyte
296	<i>Eragrostis tenella</i>	Poaceae	Therophyte
297	<i>Ischaemum rugosum</i>	Poaceae	Therophyte
298	<i>Setaria glauca</i>	Cyperaceae	Hemicryptophyte
299	<i>Eulaliopsis binata</i>	Graminae	Hemicryptophyte
300	<i>Thysanolaena maxima</i>	Graminae	Hemicryptophyte
	<b>Endangered plants</b>	No endangered plant species observed during study period and also from records of Botanical Survey of India (Red data of Books of Indian Plants)	

**TABLE-3**  
**FAUNA AND THEIR CONSERVATION STATUS FROM MINE LEASE AREA (CORE ZONE)**

Technical Name	English Name/ Local Name	Wild Life Protection Act (1972) Status
<b>Aves</b>		
<i>Phalacrocorax niger</i>	Little cormorant	
<i>Nycticorax nycticorax</i>	Night heron	Sch-IV
<i>Ardeola grayii grayii</i>	Paddy bird	Sch-IV
<i>Bubulcus ibis coromandus</i>	Cattle egret	Sch-IV
<i>Eudynamys scolopacea</i>	Indian koel	Sch-IV
<i>Meops philippinus philippinus</i>	Bluetailed bee-eater	Sch-IV
<i>Dinopium benghalense tehminae</i>	Malabar golden backed Woodpecker	Sch-IV
<i>Acridotheres tristis tristis</i>	Common myna	Sch-IV
<i>Nectarinia minima</i>	Small sunbird	Sch-IV
<i>Passer domesticus indicus</i>	Indian house sparrow	Sch-IV
<b>Butterflies</b>		
<i>Hypolimnas bolina Lin.</i>	Great orange fly	
<i>Euploea core Cramer</i>	Common crow	-
<i>Neptis hylas Moore</i>	Common sailor	-
<i>Eurema hecabe Lin.</i>	Common grass yellow	-
<i>Parantica aglea Stoll.</i>	Glassy tiger	-
<b>Mammals</b>		
<i>Funambulus palmarum</i>	Squirrel	
<i>Sus sucrofa</i>	Wild pig	Sch-IV
<i>Herpestes edwardii</i>	Common mongoose	Sch-III
<i>Vulpus benghalensis</i>	Wild fox	Sch-IV
<i>Hystrix indica</i>	Porcupine	Sch-II

**TABLE-4**  
**FAUNA AND THEIR CONSERVATION STATUS IN STUDY AREA (BUFFER ZONE)**

Technical Name	English Name/Local Name	Wild Life Protection Act (1972)
<b>Aves</b>		
<i>Phalacrocorax niger</i>	Little cormorant	
<i>Ardea purpurea manilensis</i>	Eastern purple heron	Sch-IV
<i>Nycticorax nycticorax</i>	Night heron	Sch-IV
<i>Ardeola grayii grayii</i>	Paddy bird	Sch-IV
<i>Dupetor flavicollis</i>	Black bittern	Sch-IV
<i>Ardea alba modesta</i>	Large egret	Sch-IV
<i>Bubulcus ibis coromandus</i>	Cattle egret	Sch-IV
<i>Milvus migrans govinda</i>	Common pariah kite	Sch-IV
<i>Haliastur indus indus</i>	Brahminy kite	Sch-IV
<i>Vanellus indicus indicus</i>	Redwattled lapwing	Sch-IV
<i>Tringa hypoleucos</i>	Common sandpiper	Sch-IV
<i>Gelochelidon nilotica nilotica</i>	Gullbilled tern	Sch-IV
<i>Eudynamys scolopacea</i>	Indian koel	Sch-IV
<i>Halcyon smyrnensis fusca</i>	Indian white breasted Kingfisher	Sch-IV
<i>Meops philippinus philippinus</i>	Bluetailed bee-eater	Sch-IV



Technical Name	English Name/Local Name	Wild Life Protection Act (1972)
<i>Coracias benghalensis indica</i>	Southern Indian Roller	Sch-IV
<i>Dinopium benghalense tehminae</i>	Malabar golden backed Woodpecker	Sch-IV
<i>Acridotheres tristis tristis</i>	Common myna	Sch-IV
<i>Corvus splendens protegatus</i>	Ceylon house crow	Sch-IV
<i>Nectarinia minima</i>	Small sunbird	Sch-IV
<i>Nectarinia zeylonica sola</i>	Indian purple rumped sunbird	Sch-IV
<i>Arachnothera longirostris longirostris</i>	Little spinder hunter	Sch-IV
<i>Passer domesticus indicus</i>	Indian house sparrow	Sch-IV
<i>Copsychus saularis ceylonensis</i>	Southern magpie-robin	Sch-IV
<i>Orthotomus sutorius</i>	Tailor bird guzurata	Sch-IV
<i>Pavocristatus</i>	Peacock	Part-III of Sch-I
<b>Amphibians</b>		
<i>Rana tigrana</i>	Common frog	Sch-IV
<i>Buto melanosticus</i>	Toad	Sch-IV
<b>Reptiles</b>		
<i>Calotes versicolor</i>	Lizard	Sch-IV
<i>Calotes versicolor</i>	Common garden lizard	Sch-IV
<i>Chamaleon zeylanicus</i>	Indian chamaeleon	Sch-II
<i>Lycodon spp.</i>	Wolf snake	Sch-III
<i>Boiga spp.</i>	Cat snake	Sch-III
<i>Bangarus spp.</i>	Krait	Sch-II
<i>Naja naja</i>	Indian cobra	Sch-III
<i>Vipera spp.</i>	Russels viper	Sch-III
<i>Phyton sp</i>	Python sp	Sch-I
<b>Butterflies</b>		
<i>Pachliopta hector Lin.</i>	Crimson rose	-
<i>Papilio demoleus Lin.</i>	Lime butterfly	-
<i>Graphium agamemnon Lin.</i>	Tailed jay	-
<i>Junonia almana Lin.</i>	Peacock pansy	-
<i>Hypolimnas bolina Lin.</i>	Great egg fly	-
<i>Euploea core Cramer</i>	Common crow	-
<i>Neptis hylas Moore</i>	Common sailor	-
<i>Eurema hecabe Lin.</i>	Common grass yellow	-
<i>Catopsilia sp.</i>	Emigrant	-
<b>Mammals</b>		
<i>Rattus sp.</i>	Rat	Sch-IV
<i>Lepus nigricollis</i>	Hare	Sch-IV
<i>Canis auries</i>	Jackal	Sch-III
<i>Presbytis entellus</i>	Langur	Sch-II
<i>Presbytis phayrei</i>	Monkey	Sch-I
<i>Funambulus spp.</i>	Squirrel	Sch-IV
<i>Funambulus palmarum</i>	Squirrel	Sch-IV
<i>Sus sucrofa</i>	Wild pig	Sch-III
<i>Rattus norvegicus</i>	Field mouse	Sch-V
<i>Rattus rattus</i>	House rat	Sch-V
<i>Rhinolopus spp.</i>	Bat	Sch-V
<i>Hipposiderus spp.</i>	Bat	Sch-V
<i>Herpestes edwardii</i>	Common mongoose	Sch-IV
<i>Bandicota indica</i>	Bandicoot	Sch-V
<i>Bandicota bengalensis</i>	Bandicoot	Sch-V
<i>Vulpus benghalensis</i>	Wild fox	Sch-III
<i>Melsurus ursinus</i>	Bear	Sch-III
<i>Hystrix indica</i>	Porcupine	Sch-IV
<i>Axis axis</i>	Spotted deer	Sch-III
<i>Canis lupaspallipes</i>	Indian wolf	Part-I of Sch-I
<i>Mellivora capensis</i>	Indian Ratel	Part-I of Sch-I
<i>Elephas maximas</i>	Indian Elephant	Part-I of Sch-I
<i>Felis chaus</i>	Jungle cat	Part-II of sch-II
<i>Paradoxurus hermophroiditus</i>	Indian Small civet	Part-I of sch-I
<i>Muntiacus muntiacus</i>	Barking deer	Sch-III
<i>Macaca mulata</i>	Monkey	Part-I of Sch-I

**HINDALCO INDUSTRIES LIMITED**  
**SAMRI MINES DIVISION**

Year wise /lease wise Afforestation details

Year	Samri lease		Kudag lease		Tatijharia		Total	
	No. of Saplings	Area in Ha.	No. of Saplings	Area in Ha.	No. of Saplings	Area in Ha.	No. of Saplings	Area in Ha.
1998-2017	167211	68.154	117570	49.98	78925	32.06	363706	150.194
2017-18	11681	4.97	2960	1.22	8868	3.54	23509	9.73
2018-19	19730	7.9	2780	1.11	19967	7.99	42477	17
2019-20	34360	31.59	2980	1.2	32715	18.97	70055	51.76
2020-21	36160	16.918	4865	2.405	28739	12.819	69764	32.142
2021-22	47307	11.465	3270	0.354	21947	5.557	72524	17.376
2022-23	36511	9.898	5020	1.519	17110	5.628	58641	17.045
<b>Total</b>	<b>352960</b>	<b>150.895</b>	<b>139445</b>	<b>57.788</b>	<b>208271</b>	<b>86.564</b>	<b>700676</b>	<b>295.247</b>

  
**Agent of Mines**  
Samri Mines Division  
Hindalco Industries Ltd

**Hindalco Industrial Limited**

**Samri Mines Division**

**Ground Water Level Data FY 2022-23**

<b>Kudag Mine Lease Piezometer Reading</b>	
<b>Date</b>	<b>Height(m)</b>
April-22	29.80
May-22	30.72
June-22	30.45
July-22	27.97
August-22	29.48
September-22	30.75
October-22	31.23
November-22	31.73
December-22	31.09
January-2023	31.01
February-2023	33.00
March-2023	33.74
Yearly Average	30.91





## **2.0 Water Quality Monitoring**

The existing status of water quality for ground water was assessed by collecting the water samples from underground wells from the mining area/old kudag.

The purpose of the study is to assess the water quality characteristics for critical parameters, evaluate the impacts on agricultural productivity, habitat conditions, recreational resources and aesthetics in the vicinity and identification of impact on water quality by this project and related activities.

The physico-chemical analysis of water samples collected during the study period is given in **(Table-7 and Fig.5)**. The overall water quality found to be below the stipulated standards of IS 10500-2012 for ground water & found to be fit for drinking purpose for tested parameters. Thus the impacts due to mining activities have been found to be insignificant.

The drinking water is supplied by the tankers from far-away sources. Hence, additional care now be taken to chlorinate the tankers before leaving the supply source.



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for October-2022 to December-2022**

**Details of  
Salient  
Features**

<b>Location:</b>	<b>GW1 Saraidih (Hindalco Campus)</b>
	<b>Sample Source:-Borewell Water</b>

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>I</b>	<b>Biological Testing 1. Water</b>					
1	Total coliform	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
2	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
<b>II</b>	<b>Chemical Testing 1. Water</b>					
3	Alkalinity (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 23) : 1986	200	600	181
4	Ammonia (as N)	mg/l	IS 3025 (Part 34) : 1988	0.5	No relaxation	BDL (DL – 0.1)
5	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL – 0.01)
6	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
7	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
8	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	26.57
9	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	52.84
10	Chloramines (as Cl <sub>2</sub> )	mg/l	IS 3025 (Part 26) : 2021	4.0	No relaxation	BDL (DL – 0.1)
11	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
12	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.21
13	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	11.94
14	Nitrate (as NO <sub>3</sub> )	mg/l	APHA 23 <sup>rd</sup> Edition	45	No relaxation	BDL (DL – 2)
15	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
16	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	7.91 at 25°C
17	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL – 0.001)
18	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 2022	200	400	17.32
19	Sulphide (as H <sub>2</sub> S)	mg/l	IS 3025 (Part 29) : 1986	0.05	No relaxation	BDL (DL – 0.03)
20	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
21	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	461
22	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
23	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	181.13
24	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	0.5	No relaxation	BDL (DL – 0.001)
<b>II</b>	<b>Chemical Testing 2. Residues In Water</b>					
25	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
26	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
27	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
28	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
29	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
30	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
31	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.17
32	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
33	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL – 0.05)
34	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
35	Molybdenum (as Mo)	mg/l	IS 3025 (Part 2) : 2019	0.07	No relaxation	BDL (DL - 0.01)
36	Nickel (as Ni)	mg/l	IS 3025 (Part 2) : 2019	0.02	No relaxation	BDL (DL - 0.01)
37	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
38	Silver (as Ag)	mg/l	IS 13428 : 2005	0.1	No relaxation	BDL (DL - 0.001)
39	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
40	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for October-2022 to December-2022**

**Details of  
Salient  
Features**

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Results
				Acceptable Limit	Permissible Limit #	
<b>II</b>	<b>Chemical Testing</b>					
	<b>2. Residues In Water</b>					
<b>41</b>	<b>Polychlorinated biphenyls</b>					
	2,2',5-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL - 0.03)
	2,4,4'-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,5,5'-pentachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,4',5,5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5,5'-heptachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
<b>42</b>	<b>Polynuclear aromatic hydrocarbons</b>					
	Naphthalene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL - 0.03)
	Acenaphthylene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Acenaphthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluorene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Phenanthrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Chrysene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(b)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(k)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Indeno(123,cd)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Dibenzo(a,h)anthracene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
	Benzo(ghi)perylene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
<b>43</b>	<b>Trihalomethanes</b>					
i	Bromoform	mg/l	ANtr/7.2/RES/05: 2018	0.1	No relaxation	BDL (DL -0.05)
ii	Dibromochloromethane	mg/l		0.1	No relaxation	BDL (DL -0.05)
iii	Bromodichloromethane	mg/l		0.06	No relaxation	BDL (DL -0.05)
iv	Chloroform	mg/l		0.2	No relaxation	BDL (DL -0.05)
<b>44</b>	<b>Pesticide Residues Organochlorine</b>					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	<b>Endosulphan</b>					
	Alpha-Endosulphan	µg/l	ANtr/7.2/RES/01: 2018	0.4	No relaxation	BDL (DL - 0.03)
	Beta-Endosulphan					
	Endosulphan sulphate					





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for October-2022 to December-2022**

**Details of  
Salient  
Features**

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>44</b>	<b>Pesticide Residues Organophosphorus</b>					
xvi	2,4-Dichlorophenoxyacetic acid	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xvii	Monocrotophos	µg/l	ANtr/7.2/RES/02 : 2018	1	No relaxation	BDL (DL - 0.03)
xviii	Atrazine	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
xix	Parathion methyl	µg/l	ANtr/7.2/RES/02 : 2018	0.3	No relaxation	BDL (DL - 0.03)
xx	Paraoxon methyl	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxi	Isoproturon	µg/l	ANtr/7.2/RES/02 : 2018	9	No relaxation	BDL (DL - 0.03)
xxii	Malathion	µg/l	ANtr/7.2/RES/02 : 2018	190	No relaxation	BDL (DL - 0.03)
xxiii	Malaoxon	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxiv	Ethion	µg/l	ANtr/7.2/RES/02 : 2018	3	No relaxation	BDL (DL - 0.03)
xxv	Chlorpyrifos	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xxvi	Phorate	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
	Phorate-sulfone					
	Phorate-sulfoxide					

**NOTES:** ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● 'mg/l' is equivalent to 'ppm'. ● 'µg/l' is equivalent to 'ppb'. ● **BDL**- Below detection limit. ● **DL**- DL Indicates detection limit of instrument /method and shall be considered as 'absent'. ● Result for test no. 11 is not relevant. ● **ANqr RES**:- Inhouse validated method.

**REMARKS:** As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

-----End of Report-----



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for October-2022 to December-2022**

**Details of  
Salient  
Features**

<b>Location:</b>	<b>GW2) Kudag Village</b>
	<b>Sample Source:-Borewell Water</b>

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>I Biological Testing 1. Water</b>						
1	Total coliform	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
2	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
<b>II Chemical Testing 1. Water</b>						
3	Alkalinity (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 23) : 1986	200	600	176.39
4	Ammonia (as N)	mg/l	IS 3025 (Part 34) : 1988	0.5	No relaxation	BDL (DL - 0.1)
5	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL - 0.01)
6	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
7	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
8	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	21.47
9	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	48.61
10	Chloramines (as Cl <sub>2</sub> )	mg/l	IS 3025 (Part 26) : 2021	4.0	No relaxation	BDL (DL - 0.1)
11	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
12	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.16
13	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.58
14	Nitrate (as NO <sub>3</sub> )	mg/l	APHA 23 <sup>rd</sup> Edition	45	No relaxation	BDL (DL - 2)
15	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
16	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	6.82 at 25°C
17	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
18	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 2022	200	400	21.47
19	Sulphide (as H <sub>2</sub> S)	mg/l	IS 3025 (Part 29) : 1986	0.05	No relaxation	BDL (DL - 0.03)
20	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
21	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	472
22	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
23	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	173.19
24	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	0.5	No relaxation	BDL (DL - 0.001)
<b>II Chemical Testing 2. Residues In Water</b>						
25	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
26	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
27	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
28	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
29	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
30	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
31	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.09
32	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
33	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
34	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
35	Molybdenum (as Mo)	mg/l	IS 3025 (Part 2) : 2019	0.07	No relaxation	BDL (DL - 0.01)
36	Nickel (as Ni)	mg/l	IS 3025 (Part 2) : 2019	0.02	No relaxation	BDL (DL - 0.01)
37	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
38	Silver (as Ag)	mg/l	IS 13428 : 2005	0.1	No relaxation	BDL (DL - 0.001)
39	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
40	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for October-2022 to December-2022**

**Details of  
Salient  
Features**

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Results
				Acceptable Limit	Permissible Limit #	
<b>II</b>	<b>Chemical Testing</b>					
	<b>2. Residues In Water</b>					
<b>41</b>	<b>Polychlorinated biphenyls</b>					
	2,2',5-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL - 0.03)
	2,4,4'-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,5,5'-pentachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,4',5,5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5,5'-heptachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
<b>42</b>	<b>Polynuclear aromatic hydrocarbons</b>					
	Naphthalene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL - 0.03)
	Acenaphthylene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Acenaphthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluorene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Phenanthrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Chrysene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(b)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(k)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Indeno(123,cd)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Dibenzo(a,h)anthracene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
	Benzo(ghi)perylene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
<b>43</b>	<b>Trihalomethanes</b>					
i	Bromoform	mg/l	ANtr/7.2/RES/05: 2018	0.1	No relaxation	BDL (DL -0.05)
ii	Dibromochloromethane	mg/l		0.1	No relaxation	BDL (DL -0.05)
iii	Bromodichloromethane	mg/l		0.06	No relaxation	BDL (DL -0.05)
iv	Chloroform	mg/l		0.2	No relaxation	BDL (DL -0.05)
<b>44</b>	<b>Pesticide Residues Organochlorine</b>					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	<b>Endosulphan</b>					
	Alpha-Endosulphan	µg/l	ANtr/7.2/RES/01: 2018	0.4	No relaxation	BDL (DL - 0.03)
	Beta-Endosulphan					
	Endosulphan sulphate					





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for October-2022 to December-2022**

**Details of  
Salient  
Features**

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>44</b>	<b>Pesticide Residues Organophosphorus</b>					
xvi	2,4-Dichlorophenoxyacetic acid	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xvii	Monocrotophos	µg/l	ANtr/7.2/RES/02 : 2018	1	No relaxation	BDL (DL - 0.03)
xviii	Atrazine	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
xix	Parathion methyl	µg/l	ANtr/7.2/RES/02 : 2018	0.3	No relaxation	BDL (DL - 0.03)
xx	Paraoxon methyl	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxi	Isoproturon	µg/l	ANtr/7.2/RES/02 : 2018	9	No relaxation	BDL (DL - 0.03)
xxii	Malathion	µg/l	ANtr/7.2/RES/02 : 2018	190	No relaxation	BDL (DL - 0.03)
xxiii	Malaoxon	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxiv	Ethion	µg/l	ANtr/7.2/RES/02 : 2018	3	No relaxation	BDL (DL - 0.03)
xxv	Chlorpyrifos	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xxvi	Phorate	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
	Phorate-sulfone					
	Phorate-sulfoxide					

**NOTES:** ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● 'mg/l' is equivalent to 'ppm'. ● 'µg/l' is equivalent to 'ppb'. ● BDL- Below detection limit. ● DL- DL Indicates detection limit of instrument /method and shall be considered as 'absent'. ● Result for test no. 11 is not relevant. ● ANqr RES:- Inhouse validated method.

**REMARKS:** As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

-----End of Report-----



## **2.0 Water Quality Monitoring**

The existing status of water quality for ground water was assessed by collecting the water samples from underground wells from the mining area/old kudag.

The purpose of the study is to assess the water quality characteristics for critical parameters, evaluate the impacts on agricultural productivity, habitat conditions, recreational resources and aesthetics in the vicinity and identification of impact on water quality by this project and related activities.

The physico-chemical analysis of water samples collected during the study period is given in **(Table-7 and Fig.5)**. The overall water quality found to be below the stipulated standards of IS 10500-2012 for ground water & found to be fit for drinking purpose for tested parameters. Thus the impacts due to mining activities have been found to be insignificant.

The drinking water is supplied by the tankers from far-away sources. Hence, additional care now be taken to chlorinate the tankers before leaving the supply source.



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for January-2023 to March-2023**

**Details of  
Salient  
Features**

**Location:**

GW1 Saraidih (Hindalco Campus)

Sample Source:-Borewell Water

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>I</b>	<b>Biological Testing 1. Water</b>					
1	Total coliform	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
2	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
<b>II</b>	<b>Chemical Testing 1. Water</b>					
3	Alkalinity (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 23) : 1986	200	600	176
4	Ammonia (as N)	mg/l	IS 3025 (Part 34) : 1988	0.5	No relaxation	BDL (DL – 0.1)
5	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL – 0.01)
6	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
7	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
8	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	32.63
9	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	51.94
10	Chloramines (as Cl <sub>2</sub> )	mg/l	IS 3025 (Part 26) : 2021	4.0	No relaxation	BDL (DL – 0.1)
11	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
12	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.28
13	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.64
14	Nitrate (as NO <sub>3</sub> )	mg/l	APHA 23 <sup>rd</sup> Edition	45	No relaxation	BDL (DL – 2)
15	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
16	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	8.14 at 25°C
17	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL – 0.001)
18	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 2022	200	400	16.24
19	Sulphide (as H <sub>2</sub> S)	mg/l	IS 3025 (Part 29) : 1986	0.05	No relaxation	BDL (DL – 0.03)
20	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
21	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	457
22	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
23	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	181.74
24	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	0.5	No relaxation	BDL (DL – 0.001)
<b>II</b>	<b>Chemical Testing 2. Residues In Water</b>					
25	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 2022	0.01	No relaxation	BDL (DL - 0.01)
26	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
27	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
28	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
29	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
30	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
31	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.26
32	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
33	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL – 0.05)
34	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
35	Molybdenum (as Mo)	mg/l	IS 3025 (Part 2) : 2019	0.07	No relaxation	BDL (DL - 0.01)
36	Nickel (as Ni)	mg/l	IS 3025 (Part 2) : 2019	0.02	No relaxation	BDL (DL - 0.01)
37	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
38	Silver (as Ag)	mg/l	IS 13428 : 2005	0.1	No relaxation	BDL (DL - 0.001)
39	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
40	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for January-2023 to March-2023**

**Details of  
Salient  
Features**

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Results
				Acceptable Limit	Permissible Limit #	
<b>II</b>	<b>Chemical Testing</b>					
	<b>2. Residues In Water</b>					
<b>41</b>	<b>Polychlorinated biphenyls</b>					
	2,2',5-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL - 0.03)
	2,4,4'-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,5,5'-pentachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,4',5,5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5,5'-heptachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
<b>42</b>	<b>Polynuclear aromatic hydrocarbons</b>					
	Naphthalene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL - 0.03)
	Acenaphthylene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Acenaphthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluorene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Phenanthrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Chrysene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(b)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(k)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Indeno(123,cd)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Dibenzo(a,h)anthracene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
	Benzo(ghi)perylene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
<b>43</b>	<b>Trihalomethanes</b>					
i	Bromoform	mg/l	ANtr/7.2/RES/05: 2018	0.1	No relaxation	BDL (DL -0.05)
ii	Dibromochloromethane	mg/l		0.1	No relaxation	BDL (DL -0.05)
iii	Bromodichloromethane	mg/l		0.06	No relaxation	BDL (DL -0.05)
iv	Chloroform	mg/l		0.2	No relaxation	BDL (DL -0.05)
<b>44</b>	<b>Pesticide Residues Organochlorine</b>					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	<b>Endosulphan</b>					
	Alpha-Endosulphan	µg/l	ANtr/7.2/RES/01: 2018	0.4	No relaxation	BDL (DL - 0.03)
	Beta-Endosulphan					
	Endosulphan sulphate					



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for January-2023 to March-2023**

**Details of  
Salient  
Features**

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>44</b>	<b>Pesticide Residues Organophosphorus</b>					
xvi	2,4-Dichlorophenoxyacetic acid	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xvii	Monocrotophos	µg/l	ANtr/7.2/RES/02 : 2018	1	No relaxation	BDL (DL - 0.03)
xviii	Atrazine	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
xix	Parathion methyl	µg/l	ANtr/7.2/RES/02 : 2018	0.3	No relaxation	BDL (DL - 0.03)
xx	Paraoxon methyl	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxi	Isoproturon	µg/l	ANtr/7.2/RES/02 : 2018	9	No relaxation	BDL (DL - 0.03)
xxii	Malathion	µg/l	ANtr/7.2/RES/02 : 2018	190	No relaxation	BDL (DL - 0.03)
xxiii	Malaoxon	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxiv	Ethion	µg/l	ANtr/7.2/RES/02 : 2018	3	No relaxation	BDL (DL - 0.03)
xxv	Chlorpyrifos	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xxvi	Phorate	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
	Phorate-sulfone					
	Phorate-sulfoxide					

**NOTES:** ● Please see watermark “Original Test Report” to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● ‘mg/l’ is equivalent to ‘ppm’. ● ‘µg/l’ is equivalent to ‘ppb’. ● **BDL**- Below detection limit. ● **DL**- DL Indicates detection limit of instrument /method and shall be considered as ‘absent’. ● Result for test no. 11 is not relevant. ● **ANqr RES**:- Inhouse validated method.

**REMARKS:** As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

-----End of Report-----



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for January-2023 to March-2023**

**Details of  
Salient  
Features**

<b>Location:</b>	<b>GW2) Kudag Village</b>
	<b>Sample Source:-Borewell Water</b>

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>I Biological Testing 1. Water</b>						
1	Total coliform	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
2	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
<b>II Chemical Testing 1. Water</b>						
3	Alkalinity (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 23) : 1986	200	600	183.63
4	Ammonia (as N)	mg/l	IS 3025 (Part 34) : 1988	0.5	No relaxation	BDL (DL – 0.1)
5	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL (DL – 0.01)
6	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
7	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL – 0.005)
8	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	27.18
9	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	51.64
10	Chloramines (as Cl <sub>2</sub> )	mg/l	IS 3025 (Part 26) : 2021	4.0	No relaxation	BDL (DL – 0.1)
11	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL – 0.1)
12	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.21
13	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.54
14	Nitrate (as NO <sub>3</sub> )	mg/l	APHA 23 <sup>rd</sup> Edition	45	No relaxation	BDL (DL – 2)
15	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
16	pH	-	IS 3025 (Part 11) : 2022	6.5 to 8.5	No relaxation	6.92 at 25°C
17	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL – 0.001)
18	Sulphate (as SO <sub>4</sub> )	mg/l	IS 3025 (Part 24) : 2022	200	400	23.56
19	Sulphide (as H <sub>2</sub> S)	mg/l	IS 3025 (Part 29) : 1986	0.05	No relaxation	BDL (DL – 0.03)
20	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
21	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	438
22	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
23	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	184.68
24	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	0.5	No relaxation	BDL (DL – 0.001)
<b>II Chemical Testing 2. Residues In Water</b>						
25	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
26	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019	0.03	0.2	BDL (DL - 0.01)
27	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
28	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
29	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
30	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
31	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.17
32	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
33	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL – 0.05)
34	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
35	Molybdenum (as Mo)	mg/l	IS 3025 (Part 2) : 2019	0.07	No relaxation	BDL (DL - 0.01)
36	Nickel (as Ni)	mg/l	IS 3025 (Part 2) : 2019	0.02	No relaxation	BDL (DL - 0.01)
37	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL- 0.001)
38	Silver (as Ag)	mg/l	IS 13428 : 2005	0.1	No relaxation	BDL (DL - 0.001)
39	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
40	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for January-2023 to March-2023**

**Details of  
Salient  
Features**

**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Results
				Acceptable Limit	Permissible Limit #	
<b>II</b>	<b>Chemical Testing</b>					
	<b>2. Residues In Water</b>					
<b>41</b>	<b>Polychlorinated biphenyls</b>					
	2,2',5-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL - 0.03)
	2,4,4'-trichlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,5,5'-pentachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',4,4',5,5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
	2,2',3,4,4',5,5'-heptachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018			BDL (DL - 0.03)
<b>42</b>	<b>Polynuclear aromatic hydrocarbons</b>					
	Naphthalene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL - 0.03)
	Acenaphthylene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Acenaphthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluorene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Phenanthrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)anthracene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Chrysene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(a)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(b)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Benzo(k)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Indeno(123,cd)pyrene	µg/l	ANtr/7.2/RES/03: 2018			BDL (DL - 0.03)
	Dibenzo(a,h)anthracene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
	Benzo(ghi)perylene	µg/l	ANtr/7.2/RES/03: 2018	BDL (DL - 0.03)		
<b>43</b>	<b>Trihalomethanes</b>					
i	Bromoform	mg/l	ANtr/7.2/RES/05: 2018	0.1	No relaxation	BDL (DL -0.05)
ii	Dibromochloromethane	mg/l		0.1	No relaxation	BDL (DL -0.05)
iii	Bromodichloromethane	mg/l		0.06	No relaxation	BDL (DL -0.05)
iv	Chloroform	mg/l		0.2	No relaxation	BDL (DL -0.05)
<b>44</b>	<b>Pesticide Residues Organochlorine</b>					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	<b>Endosulphan</b>					
	Alpha-Endosulphan	µg/l	ANtr/7.2/RES/01: 2018	0.4	No relaxation	BDL (DL - 0.03)
	Beta-Endosulphan					
	Endosulphan sulphate					



**Hindalco Industries Limited Kudag Mining  
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**TEST RESULTS**

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
				Acceptable Limit	Permissible Limit #	
<b>44</b>	<b>Pesticide Residues Organophosphorus</b>					
xvi	2,4-Dichlorophenoxyacetic acid	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xvii	Monocrotophos	µg/l	ANtr/7.2/RES/02 : 2018	1	No relaxation	BDL (DL - 0.03)
xviii	Atrazine	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
xix	Parathion methyl	µg/l	ANtr/7.2/RES/02 : 2018	0.3	No relaxation	BDL (DL - 0.03)
xx	Paraoxon methyl	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxi	Isoproturon	µg/l	ANtr/7.2/RES/02 : 2018	9	No relaxation	BDL (DL - 0.03)
xxii	Malathion	µg/l	ANtr/7.2/RES/02 : 2018	190	No relaxation	BDL (DL - 0.03)
xxiii	Malaoxon	µg/l	ANtr/7.2/RES/02 : 2018	-	-	BDL (DL - 0.03)
xxiv	Ethion	µg/l	ANtr/7.2/RES/02 : 2018	3	No relaxation	BDL (DL - 0.03)
xxv	Chlorpyrifos	µg/l	ANtr/7.2/RES/02 : 2018	30	No relaxation	BDL (DL - 0.03)
xxvi	Phorate	µg/l	ANtr/7.2/RES/02 : 2018	2	No relaxation	BDL (DL - 0.03)
	Phorate-sulfone					
	Phorate-sulfoxide					

**NOTES:** ● Please see watermark “Original Test Report” to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only.  
● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● #Permissible limit in absence of an alternate source for drinking water. ● ‘mg/l’ is equivalent to ‘ppm’. ● ‘µg/l’ is equivalent to ‘ppb’. ● **BDL-** Below detection limit. ● **DL-** DL Indicates detection limit of instrument /method and shall be considered as ‘absent’. ● Result for test no. 11 is not relevant. ● **ANqr RES-** Inhouse validated method.

**REMARKS:** As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

-----End of Report-----



भारत सरकार  
जल शक्ति मंत्रालय  
जल संसाधन, नदी विकास  
और गंगा संरक्षण विभाग  
केन्द्रीय भूमि जल प्राधिकरण  
Government of India  
Ministry of Jal Shakti  
Department of Water Resources,  
River Development & Ganga Rejuvenation  
Central Ground Water Authority

Annexure-E

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)

**NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION**

Project Name:	Kudag Bauxite Mines Of M/s Hindalco Industries Limited		
Project Address:	Village Kudag Block Kusmi		
Village:	Kudag	Block:	Kusmi
District:	Balrampur	State:	Chhattisgarh
Pin Code:			
Communication Address:	Hindalco Industries Limited, Samri Mines Division, Baba Chowk, At And Po-Kusmi, , Balrampur, Chhattisgarh - 497224		
Address of CGWB Regional Office :	Central Ground Water Board North Central Chhattisgarh, 2nd Floor, Lk Corporate And Logistic Park, Dhamtari Road, Nh-30, Dumartarai, Raipur, Chhattisgarh - 492015		

1. NOC No.:	CGWA/NOC/MIN/REN/2/2023/7570	2. Date of Issuance	03/04/2023										
3. Application No.:	21-4/1433/CT/MIN/2018	4. Category: (GWRE 2020)	Safe										
5. Project Status:	Existing Ground Water	6. NOC Type:	Renewal										
7. Valid from:	29/04/2023	8. Valid up to:	28/04/2025										
9. Ground Water Abstraction Permitted:													
Fresh Water		Saline Water		Dewatering		Total							
m <sup>3</sup> /day	m <sup>3</sup> /year	m <sup>3</sup> /day	m <sup>3</sup> /year	m <sup>3</sup> /day	m <sup>3</sup> /year	m <sup>3</sup> /day	m <sup>3</sup> /year						
2.00	620.00												
10. Details of ground water abstraction /Dewatering structures													
Total Existing No.:3							Total Proposed No.:0						
	DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu	
Abstraction Structure*	0	0	1	2	0	0	0	0	0	0	0	0	
*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps													
11. Ground Water Abstraction/Restoration Charges paid (Rs.):							620.00						

**(Compliance Conditions given overleaf)**

This is an auto generated document & need not to be signed.

18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamnagar House, Mansingh Road, New Delhi-110011

Phone: (011) 23383561 Fax: 23382051, 23386743

Website: cgwa-noc.gov.in

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**Validity of this NOC shall be subject to compliance of the following conditions:**

**Mandatory conditions:**

- 1) Installation of tamper proof digital water flow meter with telemetry on all the abstraction structure(s) shall be mandatory for all users seeking No Objection Certificate and intimation regarding their installation shall be communicated to the CGWA within 30 days of grant of No Objection Certificate.
- 2) Proponents shall mandatorily get water flow meter calibrated from an authorized agency once in a year.
- 3) Construction of purpose-built observation wells (piezometers) for ground water level monitoring shall be mandatory as per Section 14 of Guidelines. Water level data shall be made available to CGWA through web portal. Detailed guidelines for construction of piezometers are given in Annexure-II of the guidelines.
- 4) Proponents shall monitor quality of ground water from the abstraction structure(s) once in a year. Water samples from bore wells/ tube wells / dug wells shall be collected during April/May every year and analysed in NABL accredited laboratories for basic parameters (cations and anions), heavy metals, pesticides/ organic compounds etc. Water quality data shall be made available to CGWA through the web portal.
- 5) In case of mining projects, additional key wells shall be established in consultation with the Regional Director, CGWB for ground water level monitoring four (4) times a year (January, May, August and November) in core as well as buffer zones of the mine.
- 6) In case of mining project the firm shall submit water quality report of mine discharge/ seepage from Govt. approved/ NABL accredited lab.
- 7) The firm shall report compliance of the NOC conditions online in the website ([www.cgwa-noc.gov.in](http://www.cgwa-noc.gov.in)) within one year from the date of issue of this NOC.
- 8) Industries abstracting ground water in excess of 100 m<sup>3</sup>/d shall undertake annual water audit through certified auditors and submit audit reports within three months of completion of the same to CGWA. All such industries shall be required to reduce their ground water use by at least 20% over the next three years through appropriate means.
- 9) Application for renewal can be submitted online from 90 days before the expiry of NOC. Ground water withdrawal, if any, after expiry of NOC shall be illegal & liable for legal action as per provisions of Environment (Protection) Act, 1986.
- 10) This NOC is subject to prevailing Central/State Government rules/laws/norms or Court orders related to construction of tube well/ground water abstraction structure / recharge or conservation structure/discharge of effluents or any such matter as applicable.

**General conditions:**

- 11) No additional ground water abstraction and/or de-watering structures shall be constructed for this purpose without prior approval of the Central Ground Water Authority (CGWA).
- 12) The proponent shall seek prior permission from CGWA for any increase in quantum of groundwater abstraction (more than that permitted in NOC for specific period).
- 13) Proponents shall install roof top rain water harvesting in the premise as per the existing building bye laws in the premise.
- 14) The project proponent shall take all necessary measures to prevent contamination of ground water in the premises failing which the firm shall be responsible for any consequences arising thereupon.
- 15) In case of industries that are likely to contaminate the ground water, no recharge measures shall be taken up by the firm inside the plant premises. The runoff generated from the rooftop shall be stored and put to beneficial use by the firm.
- 16) Wherever feasible, requirement of water for greenbelt (horticulture) shall be met from recycled / treated waste water.
- 17) Wherever the NOC is for abstraction of saline water and the existing wells (s) is /are yielding fresh water, the same shall be sealed and new tubewell(s) tapping saline water zone shall be constructed within 3 months of the issuance of NOC. The firm shall also ensure safe disposal of saline residue, if any.
- 18) Unexpected variations in inflow of ground water into the mine pit, if any, shall be reported to the concerned Regional Director, Central Ground Water Board.
- 19) In case of violation of any NOC conditions, the applicant shall be liable to pay the penalties as per Section 16 of Guidelines.
- 20) This NOC does not absolve the proponents of their obligation / requirement to obtain other statutory and administrative clearances from appropriate authorities.
- 21) The issue of this NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and take decisions independently of the NOC.
- 22) In case of change of ownership, new owner of the industry will have to apply for incorporation of necessary changes in the No Objection Certificate with documentary proof within 60 days of taking over possession of the premises.
- 23) This NOC is being issued without any prejudice to the directions of the Hon'ble NGT/court orders in cases related to ground water or any other related matters.
- 24) Proponents, who have installed/constructed artificial recharge structures in compliance of the NOC granted to them previously and have availed rebate of upto 50% (fifty percent) in the ground water abstraction charges/ground water restoration charges, shall continue to regularly maintain artificial recharge structures.
- 25) Industries which are likely to cause ground water pollution e.g. Tanning, Slaughter Houses, Dye, Chemical/ Petrochemical, Coal washeries, pharmaceutical, other hazardous units etc. (as per CPCPE list) need to undertake necessary well head protection measures to ensure prevention of ground water pollution as per Annexure III of the guidelines.
- 26) In case of new infrastructure projects having ground water abstraction of more than 20 m<sup>3</sup>/day, the firm/entity shall ensure implementation of dual water supply system in the projects.
- 27) In case of infrastructure projects, paved/parking area must be covered with interlocking/perforated tiles or other suitable measures to ensure groundwater infiltration/harvesting.
- 28) In case of coal and other base metal mining projects, the project proponent shall use the advance dewatering technology (by construction of series of dewatering abstraction structures) to avoid contamination of surface water.
- 29) The NOC issued is conditional subject to the conditions mentioned in the Public notice dated 27.01.2021 failing which penalty/EC/cancellation of NOC shall be imposed as the case may be.
- 30) This NOC is issued subject to the clearance of Expert Appraisal Committee (EAC) (if applicable).

**(Non-compliance of the conditions mentioned above is likely to result in the cancellation of NOC and legal action against the proponent.)**

**18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamnagar House, Mansingh Road, New Delhi-110011**

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## Self Help Group (SHGs) , Kudag

No. of SHGs	12
No of Beneficiaries	120
No of group linked with bank	12
Average Saving / Group – Rs. 10,000 -	Rs. 10,000/-

Facility provided to groups

Register, Passbook, Dari, Sewing Machine, Income Generation training and other exposure programme like linkages with bank and training with NRLM

Groups engaged in income generation activities

12

Unit: Hindalco Industries Limited, Samri Mines Division

SHGs Details  
(Kudag)

Sl.No	SHG Name	Village Name	District Name	No Of Members	A/C Details		Economic Activity Name	Year of formation
					Members Savings in Bank A/C	Bank Loan Received		
1	Nuri Self Help Group	Saraidih	Balrampur	10	12000.00	-	Agriculture	10/10/2006
2	Shabnam Self Help Group	Saraidih	Balrampur	10	14000.00	-	Agriculture	09/05/2005
3	Suhana Self Help Group	Saraidih	Balrampur	10	8000.00	-		06/10/2016
4	Rupa Self Self Help Group	Saraidih	Balrampur	10	14500.00	-	Agriculture	9/5/2011
5	Sushila Self Help Group	Banjutoli	Balrampur	10	12500.00	-	Agriculture	18/02/2014
6	Chameli Self Help Group	Bata	Balrampur	10	25000.00	-	Agriculture	15/11/2017
7	Chameli Self Help Group	Bata (Banjutoli)	Balrampur	10	22000.00	-	Agriculture	14/10/2016
8	Punam Self Help Group	Balapani	Balrampur	10	19500.00	-	Agriculture	26/09/2017
9	Gulab Self Help Group	Kudag	Balrampur	10	14500.00	-	Agriculture	06/10/2014
10	Shubham Self Help Group	Balapani	Balrampur	10	7500.00	-	Agriculture	23/06/2017
11	Chameli Self Help Group	Kudag	Balrampur	10	14000.00	-	Agriculture	9/3/2017
12	Resham Self Help Group	Kudag	Balrampur	10	8500.00	-	Agriculture	9/3/2017

Details of SHGs Group



## **1.7 MONITORED PARAMETERS AND FREQUENCY OF SAMPLING**

Annexure-G

### **Methods and Instruments used for Sampling**

The air samples were analyzed as per methods specified by Central Pollution Control Board (CPCB). The levels of Particulate Matter (PM<sub>10</sub>), Sulphur Dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>2</sub>), Carbon Monoxide (CO), Pb, Hg, As and Cr were monitored for establishing the baseline status. PM<sub>10</sub> was collected with the help of Respirable Particulate Sampler operating 24 hours by drawing air which passes through the cyclone at the rate of 1.0 -1.3 m<sup>3</sup>/min which collects the particles less than 10 µm diameter over glass fibre filter paper. The dust deposited over the filter paper is measured as PM<sub>10</sub> and the smaller particulates from 2.5 µm are collected into the Membrane Filter Paper. The dust fall rate was measured using dust fall jar. The jar was exposed for one month in the mining area and Samri-Gopatu during pre and post monsoon period. The jar was filled with 2 lit of distilled water. The water in the jar is mixed with copper sulphate solution (0.02 N solutions) to prevent any growth of algae. The water level in the jar is constantly maintained in such a way that 2 lit of water is always retained. The measurement techniques used for various pollutants and other details are given in **(Table 3)**.

Earmarked samples were collected for Particulate Matter-PM<sub>10</sub>, Particulate Matter- PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> for 24 hourly and CO 8 hourly. Collected samples were sent to Laboratories for analysis.

**Table 3.0**  
**Measurement Techniques for various pollutants**

<b>Sl. No.</b>	<b>Parameter</b>	<b>Technique</b>	<b>Technical Protocol</b>	<b>Minimum Reportable Value (µg/m<sup>3</sup>)</b>
1.	Respirable Particulate Matter	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part-23)	5
2.	Particulate Matter 2.5	Respirable Dust Sampler (Gravimetric Method)	Gravimetric Method	5
3.	Sulphur Dioxide	Modified West and Gaeke	IS-5182 (Part – II)	4
4.	Oxide of Nitrogen	Jacob & Hochheiser Method	IS-5182 (Part – VI)	4
5.	Carbon Monoxide	NDIR Spectroscopy	IS-5182 (Part – X)	2
6.	Pb, As, Hg, Cr	Acid Digestion Method	EPA Method	0.1





**Hindalco Industries Limited Kudag Mining  
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Report for October-2022 to December-2022**

**Details of  
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**Table 4**

**Statistical Analysis**

Location	Month & Year	PM-10 ( $\mu\text{g}/\text{m}^3$ )	PM-2.5 ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	CO ( $\text{mg}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Hg ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	Cr ( $\mu\text{g}/\text{m}^3$ )
<b>Core Zone</b>										
Sairaidh Campus	Oct-2022	59.8	21.6	10.1	20.4	0.184	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	51.3	17.3	7.5	16.6	0.172	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	50.9	16.7	7.3	16.8	0.166	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
New Kudag/Nr. Weigh Bridge	Oct-2022	60.0	20.3	9.4	17.2	0.217	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	60.5	21.5	10.3	19.1	0.196	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	63.7	25.8	14.2	19.2	0.200	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Old Kudag/Mining Area	Oct-2022	54.6	20.8	9.7	19.3	0.196	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	57.5	21.3	12.4	20.1	0.185	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	55.7	22.9	9.7	16.9	0.171	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Samri Gopatu/ Nr. Weigh Bridge	Oct-2022	61.9	25.2	11.6	23.5	0.288	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	58.9	23.9	13.7	26.1	0.279	0.019	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	57.1	23.9	14.3	23.4	0.220	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
<b>CPCB Standards</b>		<b>100 (24 hrs)</b>	<b>60 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>2 (8 hrs)</b>	<b>1.0 (24 hrs)</b>	<b>---</b>	<b>6.0 (annual)</b>	<b>---</b>
<b>Minimum</b>		50.9	16.7	7.3	16.6	0.166	---	---	---	---
<b>Maximum</b>		63.7	25.8	14.3	26.1	0.288	0.019	---	---	---
<b>Average</b>		57.7	21.8	10.9	19.9	0.206	0.016	---	---	---
<b>98% le</b>		63.3	25.7	14.3	25.5	0.286	0.019	---	---	---

NOTES: ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

- The Average Concentration of PM<sub>10</sub> within the Core Zone of Kudag Lease is 57.7  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of PM<sub>2.5</sub> within the Core Zone of Kudag Lease is 21.8  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of SO<sub>2</sub> within the Core Zone of Kudag Lease is 10.9  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of NO<sub>2</sub> within the Core Zone of Kudag Lease is 19.9  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of CO within the Core Zone of Kudag Lease is 0.206  $\text{mg}/\text{m}^3$ .
- The Average Concentration of Pb within the Core Zone of Kudag Lease is 0.016  $\mu\text{g}/\text{m}^3$ .

**Conclusion :-**

The Average Concentration within the Core Zone of Kudag Lease during this period (October-November-December-2022), it is within permissible limits as per CPCB Standards.



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for October-2022 to December-2022**

**Details of  
Salient  
Features**

Location	Month & Year	PM-10 ( $\mu\text{g}/\text{m}^3$ )	PM-2.5 ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	CO ( $\text{mg}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Hg ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	Cr ( $\mu\text{g}/\text{m}^3$ )
<b>Buffer Zone</b>										
Kutku Village	Oct-2022	53.4	18.7	8.0	17.3	0.247	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	49.5	17.8	7.3	16.2	0.185	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	50.8	16.6	8.4	15.3	0.185	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Rajendrapur	Oct-2022	60.2	20.5	10.6	20.9	0.265	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	61.9	25.3	15.4	23.4	0.237	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	59.9	25.0	16.2	22.8	0.209	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Tatijharia Village	Oct-2022	58.0	22.8	13.3	23.2	0.180	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	61.6	20.6	9.8	20.0	0.207	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	61.4	21.2	10.6	18.3	0.203	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Virhorepat	Oct-2022	54.2	20.8	10.3	19.3	0.166	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Nov-2022	63.0	22.1	10.7	20.3	0.226	0.019	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Dec-2022	60.0	21.1	10.9	19.0	0.214	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
<b>CPCB Standards</b>		<b>100 (24 hrs)</b>	<b>60 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>2 (8 hrs)</b>	<b>1.0 (24 hrs)</b>	---	<b>6.0 (annual)</b>	---
<b>Minimum</b>		<b>49.5</b>	<b>16.6</b>	<b>7.3</b>	<b>15.3</b>	<b>0.166</b>	---	---	---	---
<b>Maximum</b>		<b>63</b>	<b>25.3</b>	<b>16.2</b>	<b>23.4</b>	<b>0.265</b>	<b>0.019</b>	---	---	---
<b>Average</b>		<b>57.8</b>	<b>21.0</b>	<b>11.0</b>	<b>19.7</b>	<b>0.210</b>	<b>0.017</b>	---	---	---
<b>98% le</b>		<b>62.8</b>	<b>25.2</b>	<b>16.0</b>	<b>23.4</b>	<b>0.261</b>	<b>0.019</b>	---	---	---

**NOTES:** ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

- The Average Concentration of PM<sub>10</sub> within the Buffer Zone of Kudag Lease is 57.8 $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of PM<sub>2.5</sub> within the Buffer Zone of Kudag Lease is 21.0  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of SO<sub>2</sub> within the Buffer Zone of Kudag Lease is 11.0 $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of NO<sub>2</sub> within the Buffer Zone of Kudag Lease is 19.7  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of CO within the Buffer Zone of Kudag Lease is 0.210  $\text{mg}/\text{m}^3$ .
- The Average Concentration of Pb within the Buffer Zone of Kudag Lease is 0.017  $\mu\text{g}/\text{m}^3$ .

### Conclusion :-

The Average Concentration within the Buffer Zone of Kudag Lease during this period (October-November-December-2022). It is within permissible limits as per CPCB Standards.



### **Month-wise Summary of Statistical Analysis**

#### **Kudag Lease (Core Zone):-**

##### **3.1 Ambient Air Quality:**

Ambient air quality has been generated as per NAAQS 2009 for the month of October-2022 to December-2022. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub> and CO the values obtained were then compared vis-a-vis the standards prescribed by CPCB for Industrial/ Rural/ Residential uses.

##### **3.2 Presentation of Results:**

The summary of Ambient Air Quality monitoring results from October-2022 to December-2022 are presented in detail in Table 4.0. 98<sup>th</sup> percentile; maximum and minimum values etc. have been computed from the collected raw data for all the AAQ monitoring station. The data has been compared with the standards prescribed by Central Pollution Control Board (CPCB)/NAAQS for residential and rural zone.

##### **A. Particulate Matter-PM<sub>10</sub>:**

The minimum and maximum concentrations for Particulate Matter-PM<sub>10</sub> were recorded as 50.9 µg/m<sup>3</sup> and 63.7 µg/m<sup>3</sup> respectively. The minimum and maximum concentration was recorded at Sairaidh Campus and New Kudag/Nr. Weigh Bridge . The average concentration of PM<sub>10</sub> was 57.7 µg/m<sup>3</sup>.

##### **B. Particulate Matter-PM<sub>2.5</sub>:**

The minimum and maximum concentrations for Particulate Matter-PM<sub>2.5</sub> were recorded as 16.7 µg/m<sup>3</sup> & 25.8 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Sairaidh Campus. The maximum concentration was recorded at New Kudag/Nr. Weigh Bridge. The average concentration of PM<sub>2.5</sub> was 21.8 µg/m<sup>3</sup>.

##### **C. Sulphur Dioxide (SO<sub>2</sub>):**

The minimum and maximum for SO<sub>2</sub> concentrations were recorded as 7.3 µg/m<sup>3</sup> and 14.3 µg/m<sup>3</sup> at respectively. The minimum concentration was recorded at Sairaidh Campus and The maximum concentration was recorded at Samri Gopatu/Nr. Weigh Bridge. The average concentration of SO<sub>2</sub> was 10.9 µg/m<sup>3</sup>.





**D. Nitrogen Dioxide (NO<sub>2</sub>):**

The minimum and maximum for NO<sub>2</sub> concentrations were recorded as 16.6 µg/m<sup>3</sup> and 26.1 µg/m<sup>3</sup>. The minimum concentration was recorded at Sairaidh Campus and The maximum concentration was recorded at Samri Gopatu/Nr.Weigh Bridge. The average concentration of NO<sub>2</sub> was 19.9 µg/m<sup>3</sup>.

**E. Carbon Monoxide (CO):**

The minimum and maximum for CO concentrations were recorded as 0.166mg/m<sup>3</sup> and 0.288 mg/m<sup>3</sup>. The minimum concentration was recorded at Sairaidh Campus and The maximum concentration was recorded at Samri Gopatu/Nr.Weigh Bridge. The average concentration of CO was 0.206 mg/m<sup>3</sup>.

**F. Lead (Pb):**

Maximum Lead detected in PM<sub>10</sub> samples was 0.019 µg/m<sup>3</sup> at Samri Gopatu/Nr.Weigh Bridge. No lead could be detected in PM<sub>2.5</sub> samples at any of the Ambient Air samples at any of the locations.

**G. Mercury (Hg):**

Mercury was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.

**H. Arsenic (As):**

Arsenic was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.

**I. Chromium(Cr):**

Chromium was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.



### **1.7 Methods and Instruments used for Sampling**

The air samples were analyzed as per methods specified by Central Pollution Control Board (CPCB). The levels of Particulate Matter (PM<sub>10</sub>), Sulphur Dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>2</sub>), Carbon Monoxide (CO), Pb, Hg, As and Cr were monitored for establishing the baseline status. PM<sub>10</sub> was collected with the help of Respirable Particulate Sampler operating 24 hours by drawing air which passes through the cyclone at the rate of 1.0 -1.3 m<sup>3</sup>/min which collects the particles less than 10 µm diameter over glass fibre filter paper. The dust deposited over the filter paper is measured as PM<sub>10</sub> and the smaller particulates from 2.5 µm are collected into the Membrane Filter Paper. The dust fall rate was measured using dust fall jar. The jar was exposed for one month in the mining area and Samri-Gopatu during pre and post monsoon period. The jar was filled with 2 lit of distilled water. The water in the jar is mixed with copper sulphate solution (0.02 N solutions) to prevent any growth of algae. The water level in the jar is constantly maintained in such a way that 2 lit of water is always retained. The measurement techniques used for various pollutants and other details are given in **(Table 3)**.

Earmarked samples were collected for Particulate Matter-PM<sub>10</sub>, Particulate Matter- PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> for 24 hourly and CO 8 hourly. Collected samples were sent to Laboratories for analysis.

**Table 3.0**  
**Measurement Techniques for various pollutants**

<b>Sl. No.</b>	<b>Parameter</b>	<b>Technique</b>	<b>Technical Protocol</b>	<b>Minimum Reportable Value (µg/m<sup>3</sup>)</b>
1.	Respirable Particulate Matter	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part-23)	5
2.	Particulate Matter 2.5	Respirable Dust Sampler (Gravimetric Method)	Gravimetric Method	5
3.	Sulphur Dioxide	Modified West and Gaeke	IS-5182 (Part – II)	4
4.	Oxide of Nitrogen	Jacob & Hochheiser Method	IS-5182 (Part – VI)	4
5.	Carbon Monoxide	NDIR Spectroscopy	IS-5182 (Part – X)	2
6.	Pb, As, Hg, Cr	Acid Digestion Method	EPA Method	0.1



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for January-2023 to March-2023**

**Details of  
Salient  
Features**

**Table 4**

**Statistical Analysis**

Location	Month & Year	PM-10 ( $\mu\text{g}/\text{m}^3$ )	PM-2.5 ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	CO ( $\text{mg}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Hg ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	Cr ( $\mu\text{g}/\text{m}^3$ )
<b>Core Zone</b>										
Sairaidh Campus	Jan-2023	61.5	21.1	10.0	20.0	BDL (DL-0.5)	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	56.2	19.6	9.2	19.6	BDL (DL-0.5)	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	60.0	21.1	10.0	19.1	BDL (DL-0.5)	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
New Kudag/Nr. Weigh Bridge	Jan-2023	52.3	21.5	9.9	19.6	BDL (DL-0.5)	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	55.2	19.2	8.4	17.4	BDL (DL-0.5)	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	58.0	20.9	8.6	19.8	BDL (DL-0.5)	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Old Kudag/Mining Area	Jan-2023	61.6	21.3	10.5	20.4	BDL (DL-0.5)	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	50.5	17.8	9.0	17.9	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	53.2	19.7	9.7	20.7	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Samri Gopatu/ Nr. Weigh Bridge	Jan-2023	59.5	21.9	10.6	18.3	BDL (DL-0.5)	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	59.2	21.0	10.4	19.8	BDL (DL-0.5)	0.018	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	61.2	23.8	11.5	23.0	BDL (DL-0.5)	0.019	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
<b>CPCB Standards</b>		<b>100 (24 hrs)</b>	<b>60 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>2 (8 hrs)</b>	<b>1.0 (24 hrs)</b>	<b>---</b>	<b>6.0 (annual)</b>	<b>---</b>
<b>Minimum</b>		<b>50.5</b>	<b>17.8</b>	<b>8.4</b>	<b>17.4</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>Maximum</b>		<b>61.6</b>	<b>23.8</b>	<b>11.5</b>	<b>23.0</b>	<b>---</b>	<b>0.019</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>Average</b>		<b>57.4</b>	<b>20.7</b>	<b>9.8</b>	<b>19.6</b>	<b>---</b>	<b>0.017</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>98% le</b>		<b>61.6</b>	<b>23.4</b>	<b>11.3</b>	<b>22.5</b>	<b>---</b>	<b>0.019</b>	<b>---</b>	<b>---</b>	<b>---</b>

NOTES: ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

- The Average Concentration of PM<sub>10</sub> within the Core Zone of Kudag Lease is 57.4  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of PM<sub>2.5</sub> within the Core Zone of Kudag Lease is 20.7  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of SO<sub>2</sub> within the Core Zone of Kudag Lease is 9.8  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of NO<sub>2</sub> within the Core Zone of Kudag Lease is 19.6  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of Pb within the Core Zone of Kudag Lease is 0.017  $\mu\text{g}/\text{m}^3$ .

**Conclusion :-**

The Average Concentration within the Core Zone of Kudag Lease during this period (January-February-March-2023), it is within permissible limits as per CPCB Standards.





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for January-2023 to March-2023**

**Details of  
Salient  
Features**

Location	Month & Year	PM-10 ( $\mu\text{g}/\text{m}^3$ )	PM-2.5 ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	CO ( $\text{mg}/\text{m}^3$ )	Pb ( $\mu\text{g}/\text{m}^3$ )	Hg ( $\mu\text{g}/\text{m}^3$ )	As ( $\text{ng}/\text{m}^3$ )	Cr ( $\mu\text{g}/\text{m}^3$ )
<b>Buffer Zone</b>										
Kutku Village	Jan-2023	57.4	22.2	9.4	20.0	BDL (DL-0.5)	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	59.6	21.4	10.0	19.9	BDL (DL-0.5)	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	59.3	19.7	9.6	18.3	BDL (DL-0.5)	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Rajendrapur	Jan-2023	51.4	19.1	7.9	16.8	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	53.2	17.8	7.8	16.4	BDL (DL-0.5)	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	53.2	17.8	8.1	17.0	BDL (DL-0.5)	0.018	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Tatijharia Village	Jan-2023	59.0	21.2	9.5	20.8	BDL (DL-0.5)	0.018	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	61.0	22.8	10.7	20.2	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	59.1	22.1	9.5	20.0	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Virhorepat	Jan-2023	55.7	20.3	10.6	20.2	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	Feb-2023	54.6	20.0	9.3	18.8	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	March-2023	60.5	22.2	10.8	21.2	BDL (DL-0.5)	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
<b>CPCB Standards</b>		<b>100 (24 hrs)</b>	<b>60 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>80 (24 hrs)</b>	<b>2 (8 hrs)</b>	<b>1.0 (24 hrs)</b>	<b>---</b>	<b>6.0 (annual)</b>	<b>---</b>
<b>Minimum</b>		<b>51.4</b>	<b>17.8</b>	<b>7.8</b>	<b>16.4</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>Maximum</b>		<b>61.0</b>	<b>22.8</b>	<b>10.8</b>	<b>21.2</b>	<b>---</b>	<b>0.018</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>Average</b>		<b>57.0</b>	<b>20.6</b>	<b>9.4</b>	<b>19.1</b>	<b>---</b>	<b>0.017</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>98% le</b>		<b>60.9</b>	<b>22.7</b>	<b>10.8</b>	<b>21.1</b>	<b>---</b>	<b>0.018</b>	<b>---</b>	<b>---</b>	<b>---</b>

**NOTES:** ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

- The Average Concentration of PM<sub>10</sub> within the Buffer Zone of Kudag Lease is 57.0  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of PM<sub>2.5</sub> within the Buffer Zone of Kudag Lease is 20.6  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of SO<sub>2</sub> within the Buffer Zone of Kudag Lease is 9.4  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of NO<sub>2</sub> within the Buffer Zone of Kudag Lease is 19.1  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of Pb within the Buffer Zone of Kudag Lease is 0.017  $\mu\text{g}/\text{m}^3$ .

### Conclusion :-

The Average Concentration within the Buffer Zone of Kudag Lease during this period (January-February-March-2023). It is within permissible limits as per CPCB Standards.



### **Month-wise Summary of Statistical Analysis**

#### **Kudag Lease (Core Zone):-**

##### **3.1 Ambient Air Quality:**

Ambient air quality has been generated as per NAAQS 2009 for the month of January-2023 to March-2023. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub> and CO the values obtained were then compared vis-a-vis the standards prescribed by CPCB for Industrial/ Rural/ Residential uses.

##### **3.2 Presentation of Results:**

The summary of Ambient Air Quality monitoring results from January-2023 to March-2023 are presented in detail in Table 4.0. 98<sup>th</sup> percentile; maximum and minimum values etc. have been computed from the collected raw data for all the AAQ monitoring station. The data has been compared with the standards prescribed by Central Pollution Control Board (CPCB)/NAAQS for residential and rural zone.

##### **A. Particulate Matter-PM<sub>10</sub>:**

The minimum and maximum concentrations for Particulate Matter-PM<sub>10</sub> were recorded as 50.5 µg/m<sup>3</sup> and 61.6 µg/m<sup>3</sup> respectively. The minimum and maximum concentration was recorded at Old Kudag/Mining Area. The average concentration of PM<sub>10</sub> was 57.4 µg/m<sup>3</sup>.

##### **B. Particulate Matter-PM<sub>2.5</sub>:**

The minimum and maximum concentrations for Particulate Matter-PM<sub>2.5</sub> were recorded as 17.8 µg/m<sup>3</sup> & 23.8 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Old Kudag/Mining Area. The maximum concentration was recorded at Samri Gopatu/Nr.Weigh Bridge. The average concentration of PM<sub>2.5</sub> was 20.7 µg/m<sup>3</sup>.

##### **C. Sulphur Dioxide (SO<sub>2</sub>):**

The minimum and maximum for SO<sub>2</sub> concentrations were recorded as 8.4 µg/m<sup>3</sup> and 11.5 µg/m<sup>3</sup> at respectively. The minimum concentration was recorded at New Kudag/Nr. Weigh Bridge and The maximum concentration was recorded at Samri Gopatu/Nr.Weigh Bridge. The average concentration of SO<sub>2</sub> was 9.8 µg/m<sup>3</sup>.



**D. Nitrogen Dioxide (NO<sub>2</sub>):**

The minimum and maximum for NO<sub>2</sub> concentrations were recorded as 17.4 µg/m<sup>3</sup> and 23.0 µg/m<sup>3</sup>. The minimum concentration was recorded at New Kudag/Nr. Weigh Bridge and The maximum concentration was recorded at Samri Gopatu/Nr.Weigh Bridge. The average concentration of NO<sub>2</sub> was 19.6 µg/m<sup>3</sup>.

**E. Carbon Monoxide (CO):**

No CO could be detected in the Ambient Air samples at any of the locations.

**F. Lead (Pb):**

Maximum Lead detected in PM<sub>10</sub> samples was 0.017 µg/m<sup>3</sup> at Old Kudag/Mining Area. No lead could be detected in PM<sub>2.5</sub> samples at any of the Ambient Air samples at any of the locations.

**G. Mercury (Hg):**

Mercury was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.

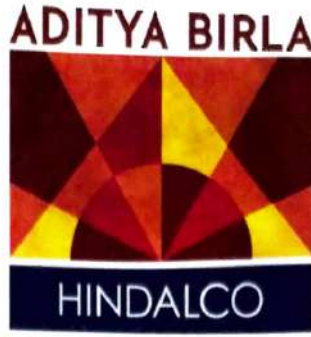
**H. Arsenic (As):**

Arsenic was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.

**I. Chromium(Cr):**

Chromium was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.





Annexure-H

**Hindalco Industries Limited**  
**Mines Division, Samri**

Date: 04.01.2023

**Environment Management Cell**

An Environment Management Cell is reconstituted by the following members which is compliance of the EC Conditions for the Samri, Tatijharia and Kudag Bauxite Mines.

Sl. No.	Name	Designation	Position
01	Mr. Vijay Chauhan	Agent of Mines	Chairman
02	Mr. Amit Tiwari	Manager-Mines	Secretary
03	Mr. Praween Pradhan	Manager-Geology	Member
04	Mrs. Madhusmita Parida	Asst. Manager-Env	Member
05	Mr. Ashutosh Saha	Asst. Manager-Sustainability	Member
06	Dr. Ajay Kumar	Medical Officer	Member
07	Mr. K K Singh	Dy. Manager	Member

For Hindalco Industries Ltd.

  
Vijay Singh Chauhan  
Agent of Mines  
Head Mines

# 56 दजन जुआरया स 17 हजार बरामद

## बड़े-छोटे जुआरी एक ही दिन पकड़े गए

हरिभूमि न्यून (अभिकल्प)।

समगोपण अवकाल को टोकरा घर एकेला। इन जुआ फंड को पुलिस ने 11700 रुपए पर तोड़ा के चले

लिए सवे 52 को रूपए स जात के बते चल किए गए हैं। पुलिस को यह भारीबाई तबि 9 घण्टे एव 9 बजे के बीच की है।



परेल खान भी खेलेते हैं जुआ

तो हुए वाली के न-पार-बरे उड़ न जुआरियों को डककर लानाए जुआर रूपए मद करी से लवा पाई है। इ सुकर बोझा तब के समाय। घेसे लोग भी न खेलेते पकड़े गो गरी के अदी ही नई बरिध विधियों में मन् रहे हैं। इन को एक एकद अभियान जुआरियों में कपन भरो हुई है। पुलिस अधीक्षक हेमकला राठी निदेश में संकुली जेजा इत सा नेटान में बोले एत कार डककर गहर सिरोकी, विरोध तब के प्रभरी जनेजात, सिह, हु एका के नेतक में निक्के इन बल ने मयते पदते रिप बोध समीप दुका खेले रहे संवेत खाल, मनीष अद्यवत, सिह खाल, अरोक अणपाल,

परेल खान भी खेलेते हैं जुआ बरामद किया है। इसके बाद पुलिस को टीम सीपडाकार पहुंची। यहाँ पर जुआ खेल रहे सुरेश जगड़ा, रजनी मधुवी, रमेश सिंह, पशोत खान, अणत गुला, संतोष की बिद्याता में खेला इनके कब्जे से 17 हजार के

स गत पुलिस का यह अभियान अरुण सुबरा भी जारी रहा। यहाँ के खरीपारत मोहरी में सिध बोधा जालक के पीछे में वैकण हार होत का दामि लगा रहे संकप प्रसाद, गन्, समीह, सन्, गडक, अणत कुमार लखाण्य, निखत खाल को भी इनके एकदक इनके कब्जे से लगभग 250 रुपए एक हाका के घुसे जल किए गए हैं। सभी जुआरियों पर पुलिस ने 13 जुआ एक को भारियान को है।

चिहने एवं शुक्र किया गया है। इनमें खरीके को सिधान के लिए संसाधन हो इगतक्य नहीं है। संसाधन की मरतम नहीं रहने के कारण अर्द्धोजाई के प्रतिक्षणको बने पूरे अर्द्धोजाई संकथ में आते थे खीर बिना शुक्र किए पतु कर पर साता बते जाते थे। इनके संकटकल की भी जानकारी नहीं थी गई। घेसे में प्रारिखणारियों को शक्ति अर्भर में है। छात्रों को कहना है कि 20 अरुण से खरिफा परीक्षा शुरू है। छात्रों को पढ़ाई नहीं हुई है किन्तु किसी तरह पर कर छात्रों की परीक्षा को जतायो कर लेगे किन्तु प्रोक्टरकन का बोझा भी दान नहीं है। उन्होंने बताया कि प्रारिखणारियों के द्वारा एकदक टेल

जायेगी परीक्षा के किसी प्रकार परीक्षा होवे को प्रारिखणारियों को सहायुक्त दुबक सिधान में सादर। जितने संसाधन संकथक वकली अणत पर संधरकन करमा पाये है। परीक्षा को है अखिल भारतीय स्तर पर निधा की जाती है इहालिप परीक्षा की प्रारिखण करमा संभव नहीं है। अणत पर पुन खंडित के प्र रिपयसत अणत। सुधीर सिह अर्द्धोजाई परिक्रम मिक, स निंदक, किन सिधा, अणतख प वीलय गुण, अमिह रीप, अणत खेलेप सानी, रमेशरिप मिश्र स हाको संख्या में अणतख अरिखणारियों इरिखिता थे।

स्वतंत्रता सेनानियों को श्रद्धांजलि देने आज जुटेगे कार्यकर्ता

### आवश्यकता

हरिभूमि अभिकल्प मिला कार्यलय के प्लार मार्केटिंग में कार्य करने के लिए उम्मीदवादी, योग्य तथा अनुभवी या प्लार भुक्त य सुपरियों की सीप अवस्थाकरा है

उम्मीदवादी में निम्नलिखित क्षमता होना आवश्यक है-

- 12 वीं या उच्चतर उत्तीर्ण होना चाहिए।
- आयु 30 वर्ष से अधिक नहीं होनी चाहिए।
- कंपनी द्वारा संगठित इन्ट में कार्य कर लगे तथा संगठित करने हेतु नगर से बाहर भी जा सकें।
- उचित विनिर्ण होमे में समाप्त हो।

**वेतनमान-**  
योग्यतानुसार पैसा देव होगा।

**कार्य का समय**  
प्रातः 9 से 2 बजे तक सोबर वर्क सार्क 4 से 6 बजे तक रिपोर्टिंग

**मिलन का समय**  
सार्क 5 घण्टे से 6 घण्टे तक

**कार्यालय प्रमुख**  
**हरिभूमि**

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### हिण्डालको इण्डस्ट्रीज लिमिटेड

(सामरी खान प्रभाग)

**रूपरे**

सर्वसाधारण को सूचित किया जाता है कि सन एवं प्रबांवरण मंत्रालय, नई दिल्ली से उनके पत्र क्रमांक ज.11015/353/2007-IA.II(M) दिनांक 27.07.2007 तथा ज.11015/354/2007-IA.II(M) दिनांक 27.07.2007 के तहत हिण्डालको इण्डस्ट्रीज लिमिटेड के सामरी तथा कुदाग बाक्सराईट खादरों के क्षमता विलान (0.50 मिलियन टन तथा 0.06 मिलियन टन बाक्सराईट उत्पादन प्रतिवर्ष) हेतु पर्यावरणय स्वोक्ति अनुमतिदित होकर प्राप्त हो चुकी है। उपरोक्त स्वोक्ति पत्र की प्रतिलिपि उ.ग. पर्यावरण संरक्षण मंडल कार्यालय में उपलब्ध है एवं सन एवं पर्यावरण मंत्रालय को वेबसाईट <http://envfor.nic.in> पर देखी जा सकती है।

भवदीय  
हिण्डालको इण्डस्ट्रीज लिमिटेड  
सामरी खान प्रभाग



बया। शासन ने रिगड़िम कुहरा को मजबूत करने का आदेश देना शुरू किया। नैराश, एनटीपीसी, एचटीपीपी, बालको, निद्राशिका सहित सभी क्षेत्रों के लोगों ने भाग लिया जो मंटे तक चले हुए आंदोलन में अन्य सभी लोग उपस्थित थे।

शुद्धीकरण का विचार 20 मई 1997 को तत्कालीन मान्य अंतरिम प्रान्त अन्वेषण निगम के अध्यक्ष राजेंद्रप्रसाद पाठक के पुत्र के पास हुआ था। निगम के एक साल बाद ही निगम को दहेला के लिए प्रकटित किए जाने लगे।

पश्चिम/ उत्तरीसंग्रह प्रदेश के कर्माग सहित एवं पूर्व मुख्यामी अजीत प्रमोद जोशी के सुपुत्र अमित जोशी का स्थानीय युवा कार्यकर्ताओं ने जन्म दिवस मनाया। पश्चिम/ उत्तरीसंग्रह प्रदेश के सामुदायिक स्वास्थ्य केन्द्र के चर्च में पहुंचकर खुदा काँचें की कार्यकर्ताओं ने प्रीतपाल मार्टिया के शीर्षक से कल, विस्तृत, वेब को टिटरण किया तथा काँचें की

कल का जन्म दिवस मनाया। अजीत जोशी के जन्मदिन के उपलक्ष्य पर अखिल भारतीय किसानों के संघ के अध्यक्ष विवेक मिश्र के द्वारा हरमोहन अचवाल, मनोज अग्रवाल, रवि सादव, निशागुप्ती, सुदीप शेरवानी, शिव अचवाल, प्रदीपान सिंघान, अशोक रोहिला एवं अन्य सामाजिक कार्यकर्ता उपस्थित थे।

# गीता को कटघोरा का प्रभार

हा. अधिकारी नीरिन चंडिच को है पदोन्नति मिलने वाली थी। लेकिन है। वे अभी स्थानांतरण के लिए चढ़ा

कलेक्टर बनाए जाने के बाद से राजनाथराय अन्वेषण निगम का पद विगत 2-3 माह से रिक्त था। श्री राजेंद्र प्रसाद अचवाल परियोजना के अन्वेषण निगम के पद पर प्राथमिक परीक्षा के पद पर प्रत्याक्ष प्रतियोगिता विभाग ने प्रतियोगिता का बो। इस बीच 2004 बीच के एक प्रिन्सिपल अफसरों को राजनाथराय अचवाल के पद पर पदस्था किया गया है। आईएसएस अन्वेषण निगम को कटघोरा एवं पश्चिम कुहरा को सारांगड अन्वेषण निगम अधिकारी बनाया गया है।

## मलाई निगम के आयुक्त जए लगा रहे जोर

के दबाव नहीं कर रहे हैं। प्रदेश शासन द्वारा जारी आदेश के अनुसार राष्ट्रीय 198 बंध के अधिकारी आईईसी रोशनाथ को राजनाथराय का अन्वेषण निगम पर पदस्था किया गया है। डीडी सिंह को जरापुर

# खाद नहीं मिलने को लेकर कृषकों ने निकाली रैली

पश्चिम/ क्षेत्र के किसानों को खाद नहीं मिल रहा है, जिसको लेकर कल पश्चिम/ उत्तरीसंग्रह प्रदेश के किसानों ने आशवासन मिश्र ने प्राथमिक किसानों को लेकर एक रैली निकालकर का किया। विचार अधिकारी श्री पन्ना से खाद किल्ला के सफाई में जालकारी मांगी व अन्वेषण निगम/ उत्तरीसंग्रह प्रदेश के आशवासन मिश्र कि वे एक-दो दिन में खाद पश्चिम/ उत्तरीसंग्रह प्रदेश के किसानों को उपलब्ध कराई जायेगी। इस आशवासन के परभाव से रैली में उपस्थित सैकड़ों किसानों को खाद मिलने की संभावना

खाद ही किसानों ने खाद की किल्ला के लिए व्यापारियों से अधिकारियों द्वारा सारांगड तक छोड़े जाने की बिली पर अधिकारी अधिक मुद्दे समरा देख रहे है। रैली में अन्वेषण निगम/ उत्तरीसंग्रह प्रदेश के आशवासन मिश्र कि वे एक-दो दिन में खाद पश्चिम/ उत्तरीसंग्रह प्रदेश के किसानों को उपलब्ध कराई जायेगी। इस आशवासन के परभाव से रैली में उपस्थित सैकड़ों किसानों को खाद मिलने की संभावना

# स जिला अध्यक्ष ने दौरा स्याओं की जानकारी ली

से अपनी भावनाओं से अवगत को ने पद को मजबूत करके कि, कल क्षेत्री किल्ला एवं केन्द्रीय योजनाएं दिया जाना। योजनाएं मिलने से प्रत्येक 10 से 2000 रुपए तक का होगा। महंगाई जल की घोषणा (हो)। शीतल महंगाई बढ़ते के अनुसार क्षेत्रों को घोषणा के होना चाहिए। किस तरह से पी, परिवारों को निराश विभाग में अग्रिम जाती है उसी प्रकार हम, श्रील गी की अग्रिम वेतन सुविधा मिलनी

दूरे, भोपाला लखन, शिवगंज सिंह, मुन्नेशन सिंह, हरिनाथराय साहू, प्रमोदपाल साहू, प्रेमनाथ साहू, रामलाल साहू, कृष्ण साहू, रामपाल साहू, राजेंद्र पाण्डेय, पिलू राम सिंह, राजकुमार पन्ना, बल्लभ सिंह, पारसपति पन्ना, श्रीमती मानमति अन्वेषण, श्रीमती प्यारी टोम्पो, संदेश सिंह, श्रीमती कल्पना जायसवाल, श्रीमती सुमिता पाण्डेय, श्रीमती. यादव मो. इमलाम अंसारी, श्याम नाथराय सिंह, उदयपुर लाल में सुखराम यादव, हरिश्चंद्र गुप्ता, मोहम्मद राजाबाद, कलेक्टर सिंह, प्रमोद कुमार कश्यप, अलोडित टोम्पो, अमरनाथ महंत, प्रमोद कुमार यादव, शंकर राम, अरुंधतीराम, श्रीमती इन्दिरा टोम्पो, रामलाल सिंह, छोटोपाल दूरे, सोमनाथ सिंह, सहाय सिंह, रामपाल, श्रीमती अन्वेषण निगम/ उत्तरीसंग्रह प्रदेश के आशवासन मिश्र कि वे एक-दो दिन में खाद पश्चिम/ उत्तरीसंग्रह प्रदेश के किसानों को उपलब्ध कराई जायेगी। इस आशवासन के परभाव से रैली में उपस्थित सैकड़ों किसानों को खाद मिलने की संभावना

पंजाब में मुख्य रूप से विशाखपुर में अन्वेषण निगम/ उत्तरीसंग्रह प्रदेश के आशवासन मिश्र कि वे एक-दो दिन में खाद पश्चिम/ उत्तरीसंग्रह प्रदेश के किसानों को उपलब्ध कराई जायेगी। इस आशवासन के परभाव से रैली में उपस्थित सैकड़ों किसानों को खाद मिलने की संभावना



**हिण्डालको इण्डरट्रीज लिमिटेड**  
(सामग्री खान प्रभाग)

**सूचना**

सर्व सामग्री को सूचित किया जाता है कि प्रान्त एवं पर्यावरण विभाग, नई दिल्ली से उनके पत्र क्रमांक नं- 11015/353/2007-IA II(M) दिनांक 27.07.2007 तथा नं- 11015/354/2007-IA II(M) दिनांक 27.07.2007 के तहत हिण्डालको इण्डरट्रीज लिमिटेड के सामग्री तथा कुदाग बाक्सिंग्ट खदानों के क्षमता विलोप (0.00 मिलियन टन तथा 0.05 मिलियन टन बाक्सिंग्ट खदान प्रतियोग) हेतु पर्यावरणीय स्वीकृति अनुमति प्राप्त हो चुकी है। पर्यावरण स्वीकृति पत्र को प्रतिलिपि उरो, पर्यावरण संरक्षण मंडल कार्यालय में उपलब्ध है एवं वन एवं पर्यावरण मंत्रालय की वेबसाइट <http://envfor.nic.in> पर भी देखी जा सकती है।

अन्वेषण निगम/ उत्तरीसंग्रह प्रदेश के आशवासन मिश्र कि वे एक-दो दिन में खाद पश्चिम/ उत्तरीसंग्रह प्रदेश के किसानों को उपलब्ध कराई जायेगी। इस आशवासन के परभाव से रैली में उपस्थित सैकड़ों किसानों को खाद मिलने की संभावना

आम्बिकावानी  
3 अगस्त 2007

**Hindalco Industries Limited**  
**Samri Mines Division**

Annexure-J

**Actual Expenditure incurred in Environment Management Plan**

Total cost incurred for protection of Environment in Samri, Tatijharia & Kudag Bauxite mine of Hindalco Industries Limited of Chhattishgarh State during the FY 2022-23 (April-2022 to March-2023).

Sl. No.	Environment Protection Measure	Actual Cost (Lakh) FY 2022-23
01	Environment Monitoring	6.00
02	Greenbelt development	9.00
03	Reclamation/ rehabilitation of mined out area (Samri-9.187Ha., Kudag-1.9Ha., Tatijharia-3.397Ha.) Total- <b>14.484 Ha.</b>	43.452
<b>Total</b>		<b>58.452</b>

- ❖ Environment Monitoring Job has been out sourced to Anacon Laboratory, recognized by MoEF & NABL.
- ❖ One centralized nursery has been established at Samri mines for Samri, Tatijharia & Kudag lease.
- ❖ Reclamation of mined out land has been out sourced along with production. Average cost of reclamation considered @ 3.00 lakh per ha.

  
**Agent of Mines**  
Samri Mines Division  
Hindalco Industries Ltd



Annexure-K

**Hindalco Industries Limited**  
**Samri Mines Division**

**Lease wise production data FY 2022-2023**

<b>Lease Name</b>	<b>Production (MT)</b>	<b>Mined out Area, ha.</b>	<b>Reclaimed area Ha.</b>
<b>Samri</b>	450950	14.853	9.187
<b>Kudag</b>	43800	2.544	1.900
<b>Tatijharia</b>	390300	14.318	3.397
<b>Total</b>	<b>885050</b>	<b>31.715</b>	<b>14.484</b>



**Agent of Mines**  
Samri Mines Division  
Hindalco Industries Ltd



Annexure-L

**REGIONAL OFFICE**  
**CHHATTISGARH ENVIRONMENT CONSERVATION BOARD**

Kanya Parisar Road, Near Govt. Aayurvedic Hospital, Namnakala Gangapur, Ambikapur (C.G.)  
e-mail:-rocecbamk@gmail.com

No. 1572 /RO/TS/CECB/ 2022

Ambikapur, Dated : 29/11/2022

To,

**M/s Hindalco Industries Limited,**  
**(Kudag Bauxite Mine)**  
**Village- Kudag, Tehsil - Samri,**  
**District - Balrampur-Ramanujanj (C.G.)**

Subject : Renewal of consent of the board under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974.

Ref. : Your online application no. 10478339 dated 27/07/2022 and subsequent correspondence ending dated 25/11/2022.

With reference to your above application, consents under section 25 of the Water (Prevention and Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention and Control of Pollution) Act, 1981 are hereby renewed for period of Five years i.e. from **01/12/2022 to 30/11/2027**, subject to the fulfillment of the terms and conditions incorporated in the water consent letter no. 6880/TS/CECB/2007 Raipur, dated: 24/12/2007 and air consent letter no. 6884/TS /CECB/2007 Raipur, dated: 24/12/2007 Raipur and subsequent renewal(s)/amendment(s) issued by the Board and additional conditions mentioned below.

This renewal of consent is valid for product & production capacity of: -

NAME	PRODUCTION CAPACITY
Mining of Bauxite Ore	0.6 Lakhs T./Annum (Zero Point Six Lakhs Tonnes Per Annum)

**Additional Conditions**

**A. Water (Prevention and Control of Pollution) Act, 1974**

1. This renewal of consent is being issued under the "Scheme of Auto-Renewal of Consent" of the Board issued vide office order no. 5938 dated 29/01/2018 as per self certificate submitted by authorized signatory **Shri Vijay Kumar Singh Chauhan, General Manager of M/s Hindalco Industries Limited (Kudag Bauxite Mine), Village-Kudag, Teh.-Samri, Distt.-Balrampur-Ramanujanj (C.G.)**.
2. Chhattisgarh Environment Conservation Board reserves the rights to revoke the Consent at any time for any violation/non-compliance.
3. In case, if the capital investment is increased by such amount that the total investment exceeds the range for which renewal fees has been paid, the industry shall have to pay the difference amount of renewal fees for the corresponding block years.
4. In case, the prescribed fee payable is amended in future, the industry shall be liable to pay the difference amount for corresponding block years.
5. Industry shall operate and maintain the effluent treatment system effectively and regularly. Industry shall ensure treated effluent quality within the standards prescribed by Board published in Gazette Notification dated 25.03.1988. Treated effluent shall be used for dust suppression, domestic use, irrigation, other useful purposes etc. Industry shall not discharge any treated/untreated effluent into the river or any other surface water bodies. No effluent shall be discharged outside of the mine premises in any circumstances; hence zero discharge condition shall be maintained all the time; failing which, this renewal of consent may be cancelled.
6. Industry shall ensure safe and scientific arrangement for disposal of all solid wastes. Excavated area shall be reclaimed scientifically.

Cont...../2

7. All internal roads shall be maintained properly. Industry shall maintain good house keeping within mine lease area. Industry shall ensure the transportation of ore in duly covered vehicles.
8. Industry shall use fly ash brick, fly ash blocks or fly ash based products in their construction/repairing activities.
9. Industry shall submit monitoring report of effluent regularly.
10. Wide green belt of broad leaf local species shall be developed along the mine lease area. As far as possible maximum area of open spaces shall be utilized for plantation purposes.
11. Provision of water harvesting system should be provided in the industry premises.
12. Industry shall submit Environment statement to the Board as per provision of Environmental (Protection) Amendment Rule, 1993 for the previous year ending 31<sup>st</sup> March on or before 30<sup>th</sup> September every year.
13. Chhattisgarh Environment Conservation Board reserves the rights to revoke the Consent at any time for any violation/non-compliance.

### **B. Air (Prevention and Control of Pollution) Act, 1981**

1. This renewal of consent is being issued under the "Scheme of Auto-Renewal of Consent" of the Board issued vide office order no. 5938 dated 29/01/2018 as per self certificate submitted by authorized signatory **Shri Vijay Kumar Singh Chauhan, General Manager of M/s Hindalco Industries Limited (Kudag Bauxite Mine), Village- Kudag, Teh.- Samri, Distt.- Balrampur-Ramanujanj (C.G.)**.
2. Chhattisgarh Environment Conservation Board reserves the rights to revoke the Consent at any time for any violation/non-compliance.
3. In case, if the capital investment is increased by such amount that the total investment exceeds the range for which renewal fees has been paid, the industry shall have to pay the difference amount of renewal fees for the corresponding block years.
4. In case, the prescribed fee payable is amended in future, the industry shall be liable to pay the difference amount for corresponding block years.
5. The Industry shall operate & maintain the air pollution control system effectively & regularly. Effective steps shall be taken to control fugitive dust emission. Fixed type automatic water sprinkling system shall be installed at haul roads/other roads, ore stock yard etc. Dust suppression system (water sprinkling arrangement) shall be made more effective to ensure ambient air quality within prescribed limit in and around the mine area all the time.
6. Regular monitoring for the measurement of air pollutants level in ambient shall be carried out. Industry shall submit air quality monitoring reports to the Board regularly.
7. Industry shall ensure safe and scientific arrangement for disposal of all solid wastes. Excavated area shall be reclaimed scientifically.
8. All internal roads shall be maintained properly. Industry shall maintain good house keeping within mine lease area. Industry shall ensure the transportation of ore in duly covered vehicles.
9. Industry shall use fly ash brick, fly ash blocks or fly ash based products in their construction/repairing activities.
10. Wide green belt of broad leaf local species shall be developed along the mine lease area. As far as possible maximum area of open spaces shall be utilized for plantation purposes.
11. Industry shall submit Environment statement to the Board as per provision of Environmental (Protection) Amendment Rule, 1993 for the previous year ending 31<sup>st</sup> March on or before 30<sup>th</sup> September every year.
12. Chhattisgarh Environment Conservation Board reserves the rights to revoke the Consent at any time for any violation/non-compliance.

Please acknowledge the receipt of this letter.

For and on behalf of  
**CHHATTISGARH ENVIRONMENT CONSERVATION BOARD**

**Regional Officer**  
Chhattisgarh Environment Conservation Board,  
Ambikapur