

28.11.2022

To,  
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 April- 2022 to Sept. -2022.

**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- Ramanujanj, Chhattisgarh state, PIN- 497224 for the period from April- 2022 to September -2022. The lease details is as below: -

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

We are also sending you the soft copy of the report to your good on E mail – moef.ddn@gmail.com for your ready reference. 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

E-Mail – chauhan.vijaykumar@adityabirla.com

Encl:-

1. Half yearly status of compliance of Environment condition as annexure-I.
2. Environment Status Report from April- 2022 to Sept. -2022, enclosed as annexure-II.
3. Renewal copy of Consent to Operate from CECB enclosed as annexure -III.
4. Production report from April- 2022 to Sept. -2022 enclosed as annexure-IV.
5. Status report of mined out, reclaimed and afforested land as annexure-V.
6. Actual expenditure incurred in protection of environment from April- 2022 to Sept. -2022 as annexure-VI.
7. Ground Water NOC enclosed at Annexure – VII.
8. Soft copy of documents by CD.

C.C.- The Regional Officer, CECB, Ambikapur

HINDALCO INDUSTRIES LIMITED  
Samri Mines Division, Baba Chowk,  
At & Post - Kusmi, PIN : 497 224,  
Distt - Balrampur-Ramanujanjani (CG). INDIA.

REGISTERED OFFICE  
Ahura Centre, 1st Floor, B-Wing  
Mahakali Caves Road, Andheri (East),  
Mumbai 400 093. INDIA.

Website : www.hindalco.com  
E-mail : hindalco@adityabirla.com,  
corporate Identity No. L27020MH1958PLC011238

# **EC COMPLIANCE REPORT (April 2022 to September 2022)**

of

## **Kudag Bauxite Mine (Mine Lease Area of 377.116 Ha) Capacity -0.6 LTPA**

*Located at*

**Village - Kudag, Bata, Rajendrapur,  
Tehsil - Kusmi, District - Balrampur-Ramanujganj,  
State - Chhattisgarh**

**M/s. Hindalco Industries Limited  
(Samri Mines Division)  
Balrampur-Ramanujganj District (C.G.)**

26.11.2022

**Status of Compliance from April 2022 to September 2022 of Environmental Condition laid down by MOEF**

**Kudag Bauxite Mine**

The status of compliance of the conditions with reference to environment clearance letter no. J-11015/354/2007 – IA.(IIM) dated 27.07.2007 of Ministry of Environment & Forest, New Delhi, for Kudag Bauxite Mine is as under:-

**COMPLIANCE STATUS**

S.N.	Conditions	Action
<b>A.</b>	<b>Specific Conditions</b>	
i.	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority.	The Wild life Management plan has been approved by competent Authority. <b>(Annexure –A)</b>
ii.	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.	Noted.
iii.	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.	The Conservation plan for schedule I fauna have been prepared. The authenticated list of flora and fauna for core and buffer zone is enclosed for perusal please. <b>(Annexure –B).</b>
iv.	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.	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.
v.	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.	Top soil generated during mining operation is being concurrently spread on backfilled area to restore its original forms immediately. However, if required it will be stacked properly with proper slope



S.N.	Conditions	Action
		and adequate safeguards.
vi.	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.	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. Photo attached as <b>Annexure-C.</b>
vii.	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.	Old inactive OB dump has been stabilized by vegetation. 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.  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. Photographs attached as <b>Annexure - D.</b>
viii.	The project proponent shall ensure that no natural water course shall be obstructed due to mining operation.	We undertake that no natural water course is obstructed during mining operation.
ix.	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.	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.



S.N.	Conditions	Action
x.	<p>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.</p>	<p>April to Sept 2022 total 2.024 ha have been afforested and cumulative 58.293 Ha. have been afforested till date. The plantation in reclaimed area has been carried out as per plan. The density is being maintained about 2500 plant per hectare with the species like Amla, Kashia Samia, mango, babul, pears &amp; guava etc. Moreover, Ragi (Maduwa) agriculture farming has been done on over reclaimed area. Social forestry is also being encouraged among the local villagers. Apart from that local food grain Ragi (Maduwa) &amp; Tau has been planted over the reclaimed area. Year wise plantation is enclosed as <b>Annexure-E</b>.</p>
xi.	<p>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.</p>	<p>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. Photograph of recharge well and other rainwater harvesting structure/Pond is enclosed as <b>Annexure -F</b>.</p>
xii.	<p>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.</p>	<p>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.</p>
xiii.	<p>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.</p>	<p>The depth of our mining operation varies from 15-20mts. 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 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. Regular monitoring of ground water</p>

S.N.	Conditions	Action
		<p>quality is being carried out. The analysis reports are being submitted to Regional Office, CECB, Ambikapur and Raipur. Regular monitoring of ground water level is being carried out and is found below level of mining operation. The ground water Quality report is attached in <b>Annexure -II</b> (along with Environment Report).</p>
xiv.	<p>Rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, CGWB.</p>	<p>Rain water harvesting ponds has been made at lease hold area.</p>
xv.	<p>Prior permission from the competent authority shall be obtained for drawl of ground water, if any.</p>	<p>Ground water NOC has been obtained from the competent authority for domestic/drinking purpose.</p>
xvi.	<p>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.</p>	<p>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.</p> <p>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.</p> <p>b) Veterinary camp is being conducted for immunization of cattle with the help of block veterinary staff.</p> <p>c) Awareness programme related to wildlife conservation is being conducted.</p> <p>d) Eco-development activities like poultry, piggery, bee keeping etc. are being organized.</p> <p>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.</p> <p>f) Plantation is regular activity.</p>

S.N.	Conditions	Action
xvii.	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.	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.
xviii.	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.	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 <b>Annexure G.</b>
xix.	The company shall implement occupational health and safety measures for the workers and engage a qualified doctor who is trained in occupational health surveillance.	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.
xx.	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.	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



S.N.	Conditions	Action
		competent authority.
<b>B.</b>	<b>General Conditions</b>	
i.	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment & Forests.	Noted.
ii.	No change in the calendar plan including excavation, quantum of mineral bauxite ore shall be made.	Calendar plan (IBM Approved Mining Plan/scheme) prepared for the mine is being followed.
iii.	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.	<p>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.</p> <p>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.</p> <p>b) Veterinary camp is being conducted for immunization of cattle with the help of block veterinary staff.</p> <p>c) Awareness programme related to wildlife conservation is being conducted.</p> <p>d) Eco-development activities like poultry, piggery, bee keeping etc. are being organized.</p> <p>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.</p> <p>f) Plantation is regular activity.</p>
iv.	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	<p>Ambient Air quality monitoring is being carried out as per guideline and is being followed.</p> <p>For this, We have already appointed Anacon Laboratories Pvt. Ltd. NABL accredited by MoEF/NABET for conducting regular environmental</p>

S.N.	Conditions	Action
	Board.	monitoring. Analysis Report (from April to Sept 2022) is enclosed as <b>Annexure-II.</b>
v.	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.	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. Data of ambient air quality (RPM, SPM, SO <sub>2</sub> and NO <sub>x</sub> ) from April to Sept 2022) is enclosed as <b>Annexure-II.</b>
vi.	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.	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 problem. Photo attached as <b>Annexure- H.</b>
vii.	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.	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.
viii.	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.	For the waste water generated from workshop, oil and grease separation pits are provided further no waste water is generated from our mining operation,.
ix.	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.	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

S.N.	Conditions	Action
		any contractions due to exposure to dust and other occupational hazards.
x.	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.	Periodical and Initial medical examination of all workers are being carried out as per provision of Mines Act.
xi.	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.	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 <b>Annexure-I</b> .
xii.	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.	Financial closure plan not applicable as it is an operational mines.
xiii.	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.	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
xiv.	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.	Our Lease is valid upto 2046 and Financial closure plan will be submitted within stipulated time.
xv.	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.	All cooperation is being extended to regulatory authorities.
xvi.	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.	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.
xvii.	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.	The copy has been displayed by CECB in Surguja Collectorate.



S.N.	Conditions	Action
xviii.	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 <a href="http://envfor.nic">http://envfor.nic</a> and a copy of the same shall be forwarded to the Regional Office of this Ministry located Bhopal.	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 <b>Annexure I.</b>
5.	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.	Noted.
6.	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.	Noted.

Hope the above compliance will be found in order.

**Yours truly,**

(For Hindalco Industries Limited)



**(Vijay Chauhan)**

**Agent of Mines**

Encl.: As above

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

ईमेल - pccfwl@nsu.com

IP: 0771-2552228, Fax: 0771-2552227

क्रमांक/व.प्र./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 खनन 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 10 LPTA से बढ़ाकर 50 LPTA किया जाना, कुदाग के लिए 0 LPTA से बढ़ाकर 100 LPTA किया जाना एवं तटीयक्षेत्रों 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, वर्ष 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 सभी कार्य प्रस्तावित अनुदानित की गयी है। जिसका क्रियान्वयन वन विभाग के द्वारा किया जायेगा। प्रस्तावित परामर्शित कार्य 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 आयेंगी 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) 07/10/13

प्रधान मुख्य वन संरक्षक (वन्यप्राणी)  
छत्तीसगढ़, रायपुर

रायपुर दिनांक 07/10/2013

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।

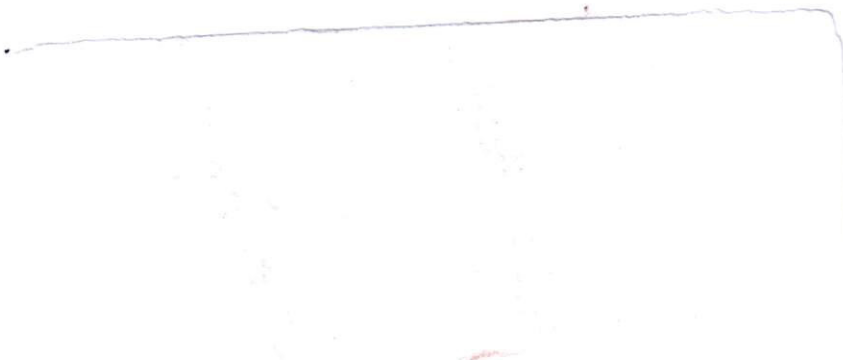
*Aprakash*  
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छत्तीसगढ़, रायपुर

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KUDAG BAUXITE MINE LEASE AREA

  
Agent of Mines  
Sahni Mines Division  
Hindalco Industries Ltd

Annexure-6  
Details of Flora and Fauna





**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>	Sabul	Mimosaceae
<i>Mangifera indica</i>	Aam	Anacardiaceae
<i>Citrus lemon</i>	Nimbu	Rutaceae
<i>Emblica officinalis</i>	Amla	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>Inpura cylindrica</i>	Grass	Poaceae
<i>Themeda quadrivalvis</i>	Grass	Poaceae
<i>Arctida ardescensiosis</i>	Grass	Poaceae
<i>Eragrostis biheria</i>	Grass	Poaceae
<i>Eragrostis tenella</i>	Grass	Poaceae
<i>Setaria glauca</i>	Grass	Cyperaceae
<i>Thyambokena maxima</i>	Grass	Graminae
<i>Parthenium hysterophorus</i>	Congress grass	Compositae
<i>Cassia tora</i>	-	Caesalpinaceae
<i>Delonix regia</i>	Kachnar	Caesalpinaceae
<i>Dalbergia Sisoo</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>Horidium 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 typhocideum</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 hypogea</i>	Fabaceae	Geophyte
12	<i>Catharanthes pusillus</i>	Compositae	Therophyte
13	<i>Cicer arietinum</i>	Fabaceae	Hemicryptophyte
14	<i>Citrus lemon</i>	Rutaceae	Therophyte
15	<i>Colocasia 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 lebbbeck</i>	Mimosaceae	Phanerophyte
28	<i>Albizia odoratissima</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 arundinaceae</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>	Euphorbiaceae	Therophyte
48	<i>Acanthospermum hispidum</i>	Compositae	Therophyte
49	<i>Achyranthes aspera</i>	Amaranthaceae	Therophyte
50	<i>Adathoda vasica</i>	Acanthaceae	Therophyte
51	<i>Adina cordifolia</i>	Rubiaceae	Phanerophyte
52	<i>Aegle marmelos</i>	Rutaceae	Phanerophyte
53	<i>Aerva lanata</i>	Compositae	Phanerophyte
54	<i>Aceratum conyzoides</i>	Compositae	Phanerophyte
55	<i>Ailanthus excelsa</i>	Simaroubaceae	Therophyte
56	<i>Alangium salivus</i>	Alangiaceae	Phanerophyte
57	<i>Albizia odoratissima</i>	Caesalpinaceae	Phanerophyte
58	<i>Albizia procera</i>	Caesalpinaceae	Phanerophyte
59	<i>Alstonia scholaris</i>	Apocyanaceae	Phanerophyte
60	<i>Altermenthera sessilis</i>	Amaranthaceae	Phanerophyte
61	<i>Alysicarpus hamosus</i>	Fabaceae	Therophyte
62	<i>Anogeissus latifolia</i>	Combretaceae	Phanerophyte
63	<i>Anogeissus serica</i>	Combretaceae	Phanerophyte
64	<i>Argemone mexicana</i>	Papaveraceae	Phanerophyte
65	<i>Azadirachta indica</i>	Meliaceae	Phanerophyte
66	<i>Barleria prionites</i>	Acanthaceae	Phanerophyte
67	<i>Bidens biternata</i>	Compositae	Therophyte
68	<i>Blepharis asperima</i>	Acanthaceae	Therophyte
69	<i>Blepharis madaraspotens</i>	Acanthaceae	Phanerophyte
70	<i>Blumea lacera</i>	Compositae	Therophyte
71	<i>Boerheavia chinensis</i>	Nyctaginaceae	Therophyte
72	<i>Boerheavia diffusa</i>	Nyctaginaceae	Therophyte
73	<i>Bombax ceiba</i>	Bombacaceae	Phanerophyte
74	<i>Borreria hispida</i>	Rubiaceae	Therophyte
75	<i>Borreria stricta</i>	Rubiaceae	Therophyte
76	<i>Boswellia serrata</i>	Burseraceae	Phanerophyte
77	<i>Brassica campestris</i>	Cruciferae	Therophyte
78	<i>Bridelia retusa</i>	Euphorbiaceae	Phanerophyte
79	<i>Bridelia superba</i>	Euphorbiaceae	Phanerophyte
80	<i>Caesalpina pulcherima</i>	Caesalpinaceae	Phanerophyte
81	<i>Calotropis procera</i>	Asclpiadaceae	Phanerophyte
82	<i>Canthium diddymum</i>	Rubiaceae	Phanerophyte
83	<i>Capparis aphylla</i>	Capparidaceae	Therophyte
84	<i>Capparis deciduas</i>	Capparidaceae	Phanerophyte
85	<i>Carissa carandus</i>	Apocyanaceae	Phanerophyte
86	<i>Carissa spinarium</i>	Apocyanaceae	Phanerophyte
87	<i>Casearia graveolens</i>	Samydiaceae	Phanerophyte
88	<i>Cassia absus</i>	Caesalpinaceae	Phanerophyte
89	<i>Cassia absus</i>	Caesalpinaceae	Phanerophyte
90	<i>Cassia auriculata</i>	Caesalpinaceae	Therophyte
91	<i>Cassia occidentalis</i>	Caesalpinaceae	Therophyte
92	<i>Cassia tora</i>	Caesalpinaceae	Therophyte
93	<i>Cestrum diurnum</i>	Rubiaceae	Therophyte
94	<i>Cestrum nocturnum</i>	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 fastuosa</i>	Solanaceae	Therophyte
105	<i>Datura metel</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>Embllica 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 hypericifolia</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 bosvelia</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 abutifolia</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	Hemicryptophyte
149	<i>Hygrophylla auriculata</i>	Acanthaceae	Therophyte
150	<i>Hyptis suaveolens</i>	Labiatae	Therophyte
151	<i>Ichnocarpus frutes</i>	Poaceae	Hemicryptophyte
152	<i>Impatiens balsamania</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 coramandatica</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>Lindenbergia indica</i>	Scrophulariaceae	Therophyte
180	<i>Lindenbergia ciliate</i>	Scrophulariaceae	Therophyte
181	<i>Lophophora tridatus</i>	Scrophulariaceae	Geophyte
182	<i>Luffa acutangularia</i>	Cucurbitaceae	Therophyte
183	<i>Lycopersicon 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 emarginata</i>	Convolvulaceae	Therophyte
192	<i>Michaelia champaca</i>	Annonaceae	Phanerophyte
193	<i>Millingtonia hirtensis</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 basilicum</i>	Labiatae	Therophyte
207	<i>Ocimum canum</i>	Labiatae	Therophyte
208	<i>Ocimum sanctum</i>	Labiatae	Therophyte
209	<i>Oldenlandia umbellata</i>	Convolvulaceae	Therophyte
210	<i>Oldenlandia corymbosa</i>	Rubiaceae	Therophyte
211	<i>Ooegonia oejensis</i>	Papilionaceae	Phanerophyte
212	<i>Opuntia dilinii</i>	Opuntiaceae	Therophyte
213	<i>Opuntia elator</i>	Cacataceae	Therophyte
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 aculeata</i>	Mimosaceae	Phanerophyte
219	<i>Parthenium hysterophytus</i>	Compositae	Therophyte
220	<i>Paspalum strobilanthu</i>	Passifloraceae	Hemicryptophyte
221	<i>Passiflora foetida</i>	Passifloraceae	Phanerophyte
222	<i>Pavonia zeylanica</i>	Malvaceae	Phanerophyte
223	<i>Peltophorum ferruginum</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 trifuga</i>	Combretaceae	Phanerophyte
245	<i>Schreberia 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>	Caesalpiniaceae	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>Tiagus biflorus</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 strumarium</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>Impurta cylindrica</i>	Poaceae	Hemicryptophyte
284	<i>Saccharum spontaneum</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	Therophyte
293	<i>Digetaria bicornis</i>	Poaceae	Hemicryptophyte
294	<i>Digetaria Segetaria</i>	Poaceae	Hemicryptophyte
295	<i>Eragrostis bifera</i>	Poaceae	Therophyte
296	<i>Eragrostis tenella</i>	Poaceae	Therophyte
297	<i>Ischaemum rugosum</i>	Poaceae	Hemicryptophyte
298	<i>Setaria glauca</i>	Cyperaceae	Hemicryptophyte
299	<i>Fulaliopsis 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 coremandus</i>	Cattle egret	Sch-IV
<i>Eudynamis scolopacea</i>	Indian koel	Sch-IV
<i>Meops philippinus philippinus</i>	Bluetailed bee-eater	Sch-IV
<i>Dinopium benghalense tehmiaae</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>	Common crow	
<i>Euploea core Cramer</i>	Common crow	
<i>Neptis hylas Moore</i>	Common sailor	
<i>Eutemia hecabe Lin.</i>	Common grass yellow	
<i>Parantica aglea Stoll.</i>	Glassy tiger	
<b>Mammals</b>		
<i>Funambulus palmarum</i>	Squirrel	
<i>Sus surofa</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 coremandus</i>	Cattle egret	Sch-IV
<i>Milvus migrans govinna</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>Eudynamis scolopacea</i>	Indian koel	Sch-IV
<i>Halcyon sylvensis fuscica</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 tehiniae</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>Bufo melanostictus</i>	Toad	Sch-IV
<b>Reptiles</b>		
<i>Calotes versicolor</i>	Lizard	Sch-IV
<i>Calotes versicolor</i>	Common garden lizard	Sch-IV
<i>Chamaeleon zeylanicus</i>	Indian chamaeleon	Sch-II
<i>Lycodon spp.</i>	Wolf snake	Sch-III
<i>Boiga spp.</i>	Cat snake	Sch-III
<i>Bungarus spp.</i>	Krait	Sch-II
<i>Naja naja</i>	Indian cobra	Sch-III
<i>Vipera spp.</i>	Russel's viper	Sch-III
<i>Python 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>Eurenia hecabe Lin.</i>	Common grass yellow	-
<i>Catopsida 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 sucrota</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>Melurus 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 maximus</i>	Indian Elephnant	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



Annexure -C



View of one small old inactive OB dump stabilized by vegetation with suitable native species at Kudag Lease



Photographs of Garland Drain & Parapat Wall



Hindalco Industries Limited  
Mines Division ,Samri

ANNEXURE - E

Year wise /Lease wise Details of Afforestation

Year	Kudag Bauxite Mines		Samri Bauxite Mines		Tatijharia Bauxite Mines		Total	
	No.of Sapling	Area in hect.	No.of Sapling	Area in hect.	No.of Sapling	Area in hect.	No.of Sapling	Area in hect.
1998-2017	117570	49.980	167211	68.154	78925	32.060	363706	150.194
2017-18	2960	1.220	11681	4.970	8868	3.540	23509	9.730
2018-19	2780	1.110	19730	7.900	19967	7.990	42477	17.000
2019-20	2980	1.200	34360	31.590	32715	18.970	70055	51.760
2020-21	4865	2.405	36160	16.918	28739	12.819	69764	32.142
2021-22	3270	0.354	47307	11.465	21947	5.557	72524	17.376
2022-23 (Upto Sept.)	6020	2.024	39071	10.918	17110	5.628	62201	18.570
Total (Till Date)	140445	58.293	355520	151.915	208271	86.564	704236	296.772

  
Agent of Mines  
Samri Mines Division  
Hindalco Industries Ltd



**Annexure F**



**A View of Pond and RWHT Structure**





**A View of Ragi Cultivation**



## 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



Annexure-H



View of Black top road constructed up to pit head to reduce dust problem.



**Annexure - i**

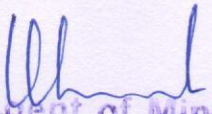
**Hindalco Industries Limited  
Mines Division, Samri**

Date - 19.04.2022

**Environment Management Cell**

An Environment Management Cell is re-constituted by the following members which is compliance of the EC conditions for the Samri, Kudag and Tatijharia Bauxite Mines.

S.No.	Name	Designation	Position
1.	Mr. Vijay Chauhan	Agent of Mines	Chairman
2.	Mr. Amit Tiwary	Manager-Mines	Secretary
3.	Mr. Praween Pradhan	Manager Geology	Member
4.	Dr. M.Kumar	Sr. Medical Officer	Member
5.	Mr. K.K.Singh	Dy. Manager	Member
6.	Mr. J.P.Thakur	Dy.Officer -Lab	Member

  
Agent of Mines  
Samri Mines Division  
(Agent of Mines) Hindalco Industries Ltd



### बड़े-छोटे जुआरी एक ही दिन पकड़े गए

हरिभूमि अर्थ (अम्बिकापुर)

सामग्रीगत आगमन को रोकने के लिए पुलिस ने 11700 रुपए एवं तामा के खते

किये (एच 57) को खपट कर पकड़े गए हैं। पुलिस को यह कार्रवाई तमि 8 बजे रात 9 बजे के बीच की है।

पुलिस ने बीबीएन सड़ियाता गते हुए चलती के न छोटे-बड़े देहू न जुआरियों को पकड़ने के लिए उजाड़ कर पकड़ने में सफल पाई है। न सुबह दोपहर के समीप ही लोग भी खेतों पकड़े जा गये के आदि कि कई परिणाम विधिओं में मेल रहे हैं। इस पकड़े अभियान आरंभों में कप्तान की हुई है।



ऐसे लोग भी खेतों है जुआ

अग्रगण्य किया है। इसके बाद पुलिस को टीम चोपखाना पर पहुंची। यहाँ पर उजा खेत में नुरा लकड़ा, रजत भरागी, रजकेश सिंह, बसोर खान, सयान-गुहा, सगोप को हिरासत में लेकर इनके कब्जे में दाय लगाने के

स्वयं कुमार नरपाण्डव, किशन दासव को रने हाथों पकड़े इनके कब्जे में लगभग 250 रुपए एवं ताता के पत्रोपकृत किए गए हैं। सभी जुआरियों पर पुलिस ने 13 जुआ एक्ट को कार्रवाई की है।

जरीन नहीं रहने के कारण आईटीआई के प्रशिक्षणार्थी वर्ग पर आईटीआई संस्था में आठ घंटे और बिना कुछ किए काम कर पर वारस चले जाते थे। इनमें प्रशिक्षणार्थी भी जानकारी नहीं दी गई। ऐसे में प्रशिक्षणार्थियों को भविष्य अंधेरे में है। छात्रों का कहना है कि 20 अगस्त से वार्षिक परीक्षा शुरू है। छात्रों की परीक्षा नहीं हुई है किन्तु किसी तरह पर कर धोरी की परीक्षा ले डलीन कर लेने बिना प्रशिक्षण का पंढा भी नान नहीं है। उन्होंने बताया कि प्रशिक्षणार्थियों के द्वारा स्वयं देर

बादशा। निरत संसाधन उपलब्ध नसको अन्धकार पर अध्ययन करमा गया है। नरिषा को न अवैध भारतीय लार पर निषा की जाती है इसलिय परीक्षा को न परिचरित करत संभव नहीं है। अन्धकार पर युव क्रोडिस के प्र शिष्यप्रसन्न अन्धकारि सुजीत सिंह आनन्द, पदम, विक्रम मिश्रा, से निकुन, रंजन मिश्रा, आशुतोष प वीरेश गुहा, जोगेश ठर, प्रदीप म पंतोष मेनी, अमकांत मिश्रा स कानो संछाना में आईटीआई प्रशिक्षणार्थी इपारित हो।

### स्वतंत्रता सेनानियों को श्रद्धांजलि देने आज जूटमें काँग्रेस

अम्बिकापुर। स्वतंत्रता संग्राम सेनानियों के स्मरण एवं श्रद्धांजलि का समारोह 5 अगस्त को सुबह 10 बजे जिला कांग्रेस कार्यालय में श्रद्धांजलि दी जा रही है। जय बजरंग गाने के बाद अन्धकार विरुद्ध अग्रणी दिशा पर युवक काँग्रेस नेता दल, महिला काँग्रेस अग्रगण्यता एवं वि काँग्रेस का राष्ट्रीय महाकाँग्रेस एवं अन्य काँग्रेस जगो से एक कार्यक्रम उपस्थित होने की अपील की है।

## आवश्यकता

हरिभूमि अम्बिकापुर जिला कार्यालय के प्रसार मार्केटिंग में कार्य करने के लिए उत्साही, योग्य तथा अनुभवी मा फ्रेण्ड युवक व युवतियों की शीघ्र आवश्यकता है

उम्मीदवारों में निम्नलिखित योग्यता होना अनिवार्य है-

- » 12 वीं या स्नातक उत्तीर्ण होना चाहिए।
- » आयु 30 वर्ष से अधिक नहीं होनी चाहिए।
- » कंपनी द्वारा संचालित इवेंट में कार्य कर सके तथा संचालित करने हेतु नगर से बाहर भी जा सकें।
- » उचित निर्णय लेने में सक्षम हो।

पैतब्रह्मण-  
राज्यतानुसार वेतन देय होगा।

कार्य का समय  
प्रातः 7 से 2 बजे तक फील्ड पर  
साय 4 से 6 बजे तक रिपोर्टिंग

निरासे का समय  
साय 5 बजे से अन्धकार तक

फायलिय प्रमूख  
**हरिभूमि**

सामग्री जिला कार्यालय केवायुपूर बड़े पापी टकी के चार  
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**हिण्डालको इण्डस्ट्रीज लिमिटेड**  
(सामग्री खान प्रभाग)  
**रूपरेखा**  
सर्वसामाजिक को मंचित किया जाता है कि वनएवं पर्यावरण मंत्रालय, नई दिल्ली से उनके पत्र क्रमांक जे.11015/353/2007-IA.II(M) दिनांक 27.07.2007 तथा जे.11015/354/2007-IA.II(M) दिनांक 27.07.2007 के तहत हिण्डालको इण्डस्ट्रीज लिमिटेड के सामग्री तथा कुदाग वांस्ताईट खादानों के क्षमता विस्तार (0.50 मिलियन टन तथा 0.06 मिलियन टन वांस्ताईट उत्पादन प्रतिवर्ष) हेतु पर्यावरणीय स्वीकृति अनुमोदित होकर प्राप्त हो चुकी है। उपरोक्त स्वीकृति पत्र की प्रतिलिपि छ.म. पर्यावरण संरक्षण मंडल कार्यालय में उपलब्ध है एवं वन एवं पर्यावरण मंत्रालय को वेबसाईट <http://envfor.nic.in> पर देखी जा सकती है।  
भवदीय  
हिण्डालको इण्डस्ट्रीज लिमिटेड  
सामग्री खान प्रभाग



या। राजन जी सिन्धीम कुहरो के मांसे चले इस आंदोलन में भाग लेने कुलपुत्र, गैरक, एनटीपीसी, एचटीपीपी, बालको, निहारिका सहित सभी क्षेत्रों के लोगों ने भाग लिया जो छोटे तक चले इस आंदोलन में अन्य सभी लोग उपस्थित थे।

प्रधानमंत्री अरुण जेटली का पुत्री किरण का विवाह 20 मई 1999 को तखतपुर धना अंतर्गत प्राय अनौरा मिश्रा के रामनाथ के पुत्र राजेश प्रसाद पाठक के पुत्र के साथ हुआ था। विवाह के एक साल बाद ही किरण को दहेज के लिए प्रताड़ित किए जाने लगा।

पटवर्गाम, छत्तीसगढ़ प्रदेश के वर्तमान सांसद एवं पूर्व मुख्यमंत्री अजीत प्रनोव जोशी के पुत्र अमित जोशी का स्थानीय युवा कार्यकर्ताओं ने जन्म दिवस मनाया। पटवर्गाम के सामुदायिक स्वस्थ केन्द्र के बार्ड में पहुंचकर युवा कार्यकर्ता कार्यकर्ताओं ने प्रोत्साहन भाविका के सौजन्य से फल, किरकूट, ब्रेड का वितरण किया तथा कार्यकर्ता

को भी वितरण किया। अनीत जोशी के जन्मदिन के अवसर पर अस्पताल परिसर में फल एवं किरकूट वितरण के साथ हर्षोदित अचवाल मनोज अम्बस्ट, रवि साधन, निशामुडीन, सुरेंद्र चेलवानी, शिव अमराल, बंजराम सिंघार, अरजोक सिंहला एवं अन्य स्थानीय कार्यकर्ता उपस्थित थे।

## गीता को कटघोरा का प्रभार

अधिकारी नियमित पंथिख को है प्रजाति मिलने वाली थी। लेकिन वे अभी स्थानांतरण के लिए पत्रवा

कलेक्टर बनार जाने के बाद से राजगांवगांव और कलेक्टर का पद विगत 2-3 माह से रिक्त था। 41 देशमुख तथा अज्ञात परिवारों के अपर संचालक के पद पर प्रयोग संचालक के पद पर प्रभावशाली विकास विभाग में प्रतिनिधित्व पर थे। इस बीच 2004-05 के 148 प्रशिक्षु आईएस अचवाल को शाहबक कलेक्टर के पद पर पदस्था किया गया है। आईएस आर तभीका को कटघोरा एवं जल कुमर को सानागढ़ अनुविभागीय अधिकारी बनाया गया है।

## मलाई निगम के आयुक्त लिए लगा रहे जोर

दबाव नहीं छल रहे हैं। प्रदेश शासन द्वारा जारी आदेश के अनुसार राष्ट्रीय 98 वीं के अधिकारी आईएस देशमुख को राजगांवगांव का अपर कलेक्टर पदस्था किया गया है। डीडी सिंह को जशपुर

## खाद नहीं मिलने को लेकर कृषकों ने निकाली रैली

पटवर्गाम क्षेत्र के किसानों को खाद नहीं मिल रहा है, जिसको लेकर कल पाटवर्गाम के किसान नेता वैद्यप्रकाश मिश्रा ने राष्ट्रीय किसानों को लेकर एक रैली निकालकर कु

खाद ही किसानों में खाद की किल्ला के लिए कार्यकर्ताओं को अधिकारियों द्वारा साठगांव तक ऊंचे टारों की दिक्की पर अतिक्रमण-आंच मूर्त उभारा देस रहे है कृषकों को लेकर एक रैली निकालकर कु

### आश्वासन मिला एक-दो दिन में होगा उपलब्ध

विस्थापित अधिकारियों की पन्ना से खाद किल्ला के संबंध में जागरूकता मंत्री व जामकर नरेशजी की रैली पन्ना ने आश्वासन दिया कि वे एक-दो दिन में खाद मल्लाखा में उपलब्ध कराई जायेगी। इन्हें आश्वासन के परचा है रैली में उपस्थित किसानों किसान खाद मिलने को रोषार हुए।

जहां पर विस्थापित अधिकारियों की पन्ना से खाद किल्ला के संबंध में जागरूकता मंत्री व जामकर नरेशजी की रैली पन्ना ने आश्वासन दिया कि वे एक-दो दिन में खाद मल्लाखा में उपलब्ध कराई जायेगी। इन्हें आश्वासन के परचा है रैली में उपस्थित किसानों किसान खाद मिलने को रोषार हुए।

## स जिला अध्यक्ष ने दौरा स्याओं की जानकारी ली

सं अपनी भावनाओं से अवगत हो ने यह भी मांग रखी कि क प्रखर श्रेणी शिक्षक एवं केन्द्रीय केन्द्रीय दिवा जगना केतनमान मिलने से प्रत्येक 00 से 2000 रुपए तक का होगा। यहगाई मर्तों की घोषणा (हो) एवम् महंगाई भत्ते के अनुसार होना चाहिए तथा कि शारी केन्द्र की घोषणा के होना चाहिए। जिस तरह से पी. अरिथो फो शिवा विभाग ने अग्रिम जायी है उसी प्रकार एम. डीक के भी अग्रिम वेतन वृद्धि मिलने

दूरे, मोरालाल ठाकुर, शिवमंगल सिंह, मुनेश्वर सिंह, शरिहरामण साहू, प्रमोदबाल साहू, भैरवराज साहू, रामलाल साहू, कुष्णा साहू, रामपति साहू, रामेन्द्र जगतार, विन्तु राम सिंह, राजकुमार पैकरा, महाल सिंह, पारसपति पैकरा, श्रीमती मनमति भगत, श्रीमती प्यारी टोयो, लखदेव सिंह, श्रीमती कर्मकल्ला जादववाल, श्रीमती सुनिता पाण्डेय, डी. एन. यादव, पी. इसलाम अंसारी, रजाम गारायण सिंह, उदयपुर लाल में सुखराम यादव, हरिरांकर गुप्ता, मोहेलाल राजबाई, फतेवहापुर सिंह, प्रमोद कुमार कश्यप, अतोवस टोयो, अमरनाथ महंत, प्रेमकुमार यादव, शंकर राम, जयकीशम, श्रीमती इमीलिया टोयो, रामलाल सिंह, प्रोडेलाल दुहे, सोमारसाय सिंह, सहाय सिंह, सम्पूर्ण राय, श्रीमती अमरकिशोरी टोयो, बनेश्वर सिंह, सुहन राम तथा अधिकारियों संख्या में हर लोक में शिवा-शिकारा उपस्थित थी। शिक्षकों के प्रस्ताव को उचित कार्यकर्ता हेतु इसमें सुझाव हेतु प्रदेश अध्यक्ष सुरेश तिमारी एवं उप-प्रान्ताध्यक्ष पी. एस. सिंह को दे दी गई है। मुख्यमंत्री छत्तीसगढ़ शासन रजाल शिक्षा मंत्री एवं आदिम जाति कल्याण मंत्री को रात्री मांगे जो की जायज माने है स्वीकृत करने हेतु अनुरोध पत्र लिखा गया है।

बंधन में मुख्य रूप से शिक्षा बपुर विम जराबैर, पी. दुहे, एस. डी. जो, सिंह, ए. के. जैन, के. बर्मा, रजना श्रीवास्तव, रजना कुपर लाल में प्रेमचन्द्र शोनी, डी. वार, से. भाता, शरितायण राम, गुणाम मोहन खान, के. एन. ठाकुर, आर. पी. सिंह, श्रीसाई लाल में दोनानाथ साहू, शत्रुघ्न प्रसाद, नारायण गुर्गा, चनरका



**हिण्डालको इण्डस्ट्रीज लिमिटेड**  
(सामरी खान प्रभाग)

### सूचना

सर्वे सघास को सुचित किया जाता है कि बन एवं पर्यावरण मंत्रालय, नई दिल्ली से उनके पत्र क्रमांक डे. 11015/354/2007-IA.1(M) दिनांक 27.07.2007 तथा डे. 11015/354/2007-IA.2(M) दिनांक 27.07.2007 के तहत हिण्डालको इण्डस्ट्रीज लिमिटेड को सामरी तथा कुदारा बाँकराई उद्योगों के क्षमता विस्तार (0.50 मिलियन टन तथा 0.08 मिलियन टन बाँकराई उद्योग प्रतिवर्ष) हेतु पर्यावरणीय स्थायित्व अनुमति लेकर प्राप्त हो चुकी है। उपरोक्त स्थायित्व पत्र की प्रतिलिपि छ.ग. पर्यावरण संरक्षण मंडल कार्यालय में उपलब्ध है एवं एवं पर्यावरण मंत्रालय की वेबसाईट <http://envfor.nic.in> पर भी देखी जा सकती है।

पबलिया  
हिण्डालको इण्डस्ट्रीज लिमिटेड  
सामरी खान प्रभाग

आभिकवाणी  
9 मार्च 2007

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



Environmental Status Report  
For  
Kudag Bauxite Mine  
at  
Post & Teh.: Samri, (Kusmi)  
Dist: Balrampur–Ramanujganj (C.G.)

**Duration: April-May-June-2022**

Name of Industry



**M/s. Hindalco Industries Limited.,**

Name of Laboratory:-



**QCI-NABET, MoEF & CC (GOI)**  
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	<p style="text-align: center;"><b>Hindalco Industries Limited Kudag Mining Environmental Status Report for April-2022 to June-2022</b></p>	<p style="text-align: center;"><b>Introduction</b></p>
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## **1.1 Introduction**

**Hindalco Industries Limited (Hindalco)** is one among the flagship companies of the Aditya Birla Group of Industries and is one of the largest corporate groups in India. This group is a leading manufacturer of Aluminum in India, having integrated facilities encompassing bauxite, mining, refining and smelting to achieve Aluminum.

Various processing units of Hindalco are strategically located in different parts of the nation to achieve optimum benefits. Over the past few decades the group has grown multifold in its production capacities, product mix and diversification in mining. The Chhattisgarh Environment Conservation Board (CECB) granted permission for establishing the Bauxite Mine to Hindalco at block Tatijharia, Kudag and Samri mines in Balrampur District of Chhattisgarh State.

HINDALCO INDUSTRIES LTD., awarded the work to M/s ANACON LABORATORIES PVT. LTD. Nagpur(ALPL) for carrying out Environmental monitoring of parameters for assessing pollution levels and preparation of monthly reports (April-May-June-2022) as per the requirement of Chhattisgarh Environment Conservation Board (CECB) and Ministry of Environment, Forest and Climate Change (MoEF&CC) for Kudag mining lease in Balrampur District, Chhattisgarh State.

## **1.2 Background Information of Kudag Mine**

Hindalco was granted Kudag Bauxite mining lease over an area of 377.116 hec. In Kudag village, Post office-Dumarkholi, Tehsil-Samri (Kusmi) of Balrampur district, Chhattisgarh on 24/12/1996 for a period of 20 years. As per the Mines and Mineral (Development and Regulation) Amendment Act, 2015, Kudag lease has been extended up to another 30 years i.e 23/12/2046. The mining operations were started on 02/07/1997. The production capacity of Kudag Bauxite Mine is 60,000 Tonne /Year.

## **1.3 Salient Features of Kudag Bauxite Mine**

The deposits occur in Kudag block, Post office Dumarkholi, Tehsil-Samri (Kusmi) of Balrampur district. This deposit has been identified as one of the resources to cater the raw material requirements of the Hindalco Alumina refinery at Renukoot, Uttar Pradesh. The salient features of the project are presented below in Table 1.

	<b>Hindalco Industries Limited Kudag</b> <b>Mining Environmental Status</b> <b>Report for April-2022 to June-2022</b>	<b>Introduction</b>
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**Table: 1**

**Salient Features of Kudag Bauxite Mines**

Sl. No.	Particulars	Details
1.	Survey of India Toposheet No.	64 M /15
2.	Latitude	23 <sup>0</sup> 26' 02"N to 23 <sup>0</sup> 29'00"N
3.	Longitude	83 <sup>0</sup> 51' 00"E to 83 <sup>0</sup> 59' 00"E
4.	Elevation	1145-m above Mean Sea Level
5.	Climatic Conditions (as per IMD, Ambikapur)	Annual maximum temperature : 30.3°C Annual minimum temperature : 17.7°C Average annual rainfall : 1401.1 mm
6.	Mining lease area	377.116 Hec.
7.	Method of mining	Open cast (Semi-Mechanized)
8.	Mode of transportation	Trucks
9.	Land use	Agricultural and Barren land
10.	Nearest Road	Samri to Kusmi (17 km)
11.	Nearest Airport	Ranchi Airport (151.09 Km)
12.	Nearest Town	Ambikapur (127 km, SW)

**14 Environmental Monitoring**

Regular monitoring of environmental parameters is of immense importance to assess the status of environment during mining operation. With the knowledge of baseline conditions, the monitoring program will serve as an indicator for any deterioration in environmental conditions due to mining operation of the project. Suitable mitigation steps will be taken in time to safeguard the environment based on monitoring reports. Monitoring is important in the control of pollution since the efficiency of control measures can only be determined by monitoring.

In order to find out the impact of mining activity on sensitive receptors, it is necessary to monitor Environmental Quality to know the level of concentrations of pollutants within and around the mining lease area. Accordingly Hindalco Industries through ALPL has been monitoring air, water and noise quality on monthly basis during these months (Table-2).



## **15 Air Environment**

### **1.5.1 Ambient Air Quality Monitoring:**

Ambient Air Quality and Fugitive emission monitored at 8 following locations with reference to Kudag mine lease area shown in (Fig.-1).

**Table 2**

**Locations of Ambient Air Quality Monitoring (AAQM) (377.116 hec.)**

<b>Sr. No.</b>	<b>Core Zone</b>	<b>Sr. No.</b>	<b>Buffer Zone</b>
1	Sairaidh Campus	5	Kutku Village
2	New Kudag/Nr.Weigh Bridge	6	Rajendrapur
3	Old Kudag/Mining Area	7	Tatijharia Village
4	SamriGopatu/Nr. Weigh Bridge	8	Virhorepat

The sampling stations are selected at the above mentioned locations, in downwind and upwind directions of the mining site. ALPL is carrying out regular monitoring for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO and Pb, Hg, As and Cr at above Ambient Air Quality Monitoring (AAQM) locations. The AAQM sampling sites are selected considering seasonal variation in wind speed and wind direction.

### **1.5.2 Sampling Duration and Frequency**

Ambient air quality monitoring was carried out for the parameters PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO and Pb, Hg, As & Cr from April-2022 to June-2022 as per CPCB norms.

Data is compared with the present revised standards mentioned in the latest Gazette Notification of the Central Pollution Control Board (CPCB) 18<sup>th</sup> November, 2009 and as per consent conditions mentioned in consent letter.



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

#### **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>), 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 fiber filter paper. The dust deposited over the filter paper is measured as PM<sub>10</sub> and the smaller particulates from PM<sub>2.5</sub> are collected into the membrane filter paper. other details are given in(**Table3**).

**Table 3**

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

<b>Parameters</b>	<b>Sampling frequency</b>
Particulate Matter (PM <sub>10</sub> )	24 hourly sample twice a week for Three months
Particulate Matter (PM <sub>2.5</sub> )	24 hourly sample twice a week for Three months
Particulate Matter 2.5	24 hourly sample twice a week for Three months
Sulphur dioxide (SO <sub>2</sub> )	24 hourly sample twice a week for Three months
Oxides of Nitrogen (NO <sub>2</sub> )	24 hourly sample twice a week for Three months
CO, Pb, Hg, As, Cr	8 hourly samples for 24 hour twice a week for three months





**Hindalco Industries Limited Samri Mining  
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April - 2022 to June - 2022**

**Details of  
Salient  
Features**

**Table 4.0**

**Measurement Techniques for various pollutants**

<b>Sr. No.</b>	<b>Parameter</b>	<b>Technique</b>	<b>Technical Protocol</b>	<b>Minimum Reportable Value(<math>\mu\text{g}/\text{m}^3</math>)</b>
1.	Particulate Matter $\text{PM}_{10}$	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part-23)	5
2.	Particulate Matter $\text{PM}_{2.5}$	Respirable Dust Sampler (Gravimetric Method)	USEPA-40 (Part-50)	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 Samri Mining  
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**1.6 Meteorology: Wind Pattern**

The data of wind pattern collected during the study period (April-May-June-2022) indicates that the wind was blowing predominately from (NW and NNW) directions, during study period.

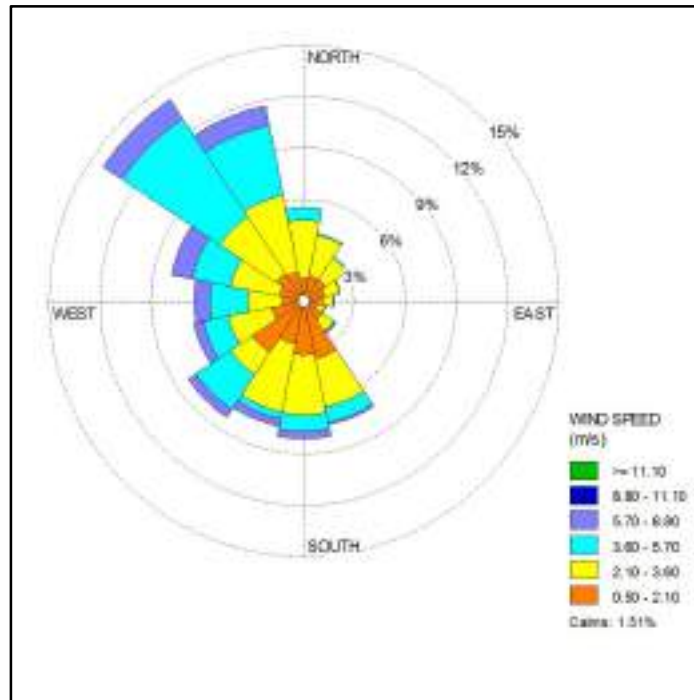
**Wind Frequency Distribution Data**

Sr. No.	Directions / Wind Classes (m/s)	0.5 - 2.1	2.1 - 3.6	3.6 - 5.7	5.7 - 8.8	8.8 - 11.1	>= 11.1	Total (%)
1	348.75 - 11.25	1.37363	3.38828	0.73260	0.00000	0.00000	0.00000	5.49451
2	11.25 - 33.75	1.55678	2.42674	0.09158	0.00000	0.00000	0.00000	4.07509
3	33.75 - 56.25	1.55678	1.51099	0.09158	0.00000	0.00000	0.00000	3.15934
4	56.25 - 78.75	1.32784	0.86996	0.04579	0.00000	0.00000	0.00000	2.24359
5	78.75 - 101.25	1.19048	0.54945	0.09158	0.00000	0.00000	0.00000	1.83150
6	101.25 - 123.75	0.86996	0.45788	0.04579	0.00000	0.00000	0.00000	1.37363
7	123.75 - 146.25	1.37363	0.77839	0.09158	0.09158	0.00000	0.00000	2.33516
8	146.25 - 168.75	3.47985	2.88462	0.91575	0.13736	0.00000	0.00000	7.41758
9	168.75 - 191.25	3.20513	3.47985	0.96154	0.45788	0.00000	0.00000	8.10440
10	191.25 - 213.75	2.60989	4.02930	0.41209	0.45788	0.00000	0.00000	7.50916
11	213.75 - 236.25	3.66300	1.55678	2.42674	0.54945	0.00000	0.00000	8.19597
12	236.25 - 258.75	1.96886	2.56410	1.51099	0.54945	0.00000	0.00000	6.59341
13	258.75 - 281.25	1.28205	2.01465	2.24359	0.91575	0.00000	0.00000	6.45604
14	281.25 - 303.75	1.51099	2.88462	2.28938	1.23626	0.00000	0.00000	7.92125
15	303.75 - 326.25	1.96886	3.98352	6.86813	1.32784	0.00000	0.00000	14.14840
16	326.25 - 348.75	1.78571	4.53297	4.16667	1.14469	0.00000	0.00000	11.63000
	<b>Sub-Total</b>	<b>30.72340</b>	<b>37.91210</b>	<b>22.98530</b>	<b>6.86813</b>	<b>0.00000</b>	<b>0.00000</b>	<b>98.48900</b>
	<b>Calms</b>							1.51099
	<b>Missing/Incomplete</b>							0.00000
	<b>Total</b>							100.00

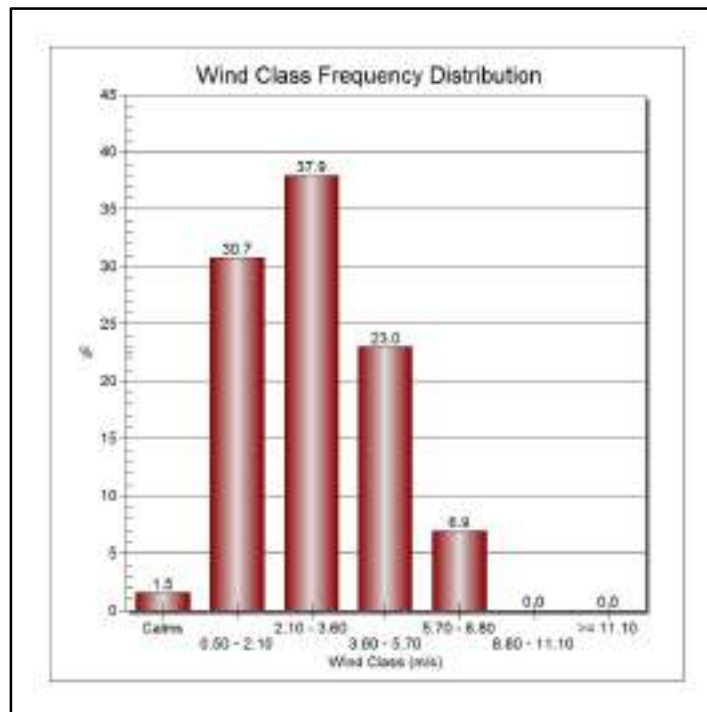
**Summary of Wind Pattern**

Season	First Pre-Dominant Wind Direction	Second Pre-Dominant Wind Direction	Calm Condition	Average Wind Speed
April-May-June-2022	NW (14.15%)	NNW (11.63%)	1.51 %	2.93 m/s





**Figure.01: Wind Rose Diagram (April-May-June-2022)**



**Figure.02: Wind Class Frequency Distribution (April-May-June-2022)**



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

### **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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**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	April-2022	59.9	26.8	10.2	18.2	0.324	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	63.1	25.0	10.2	20.6	0.231	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	51.7	18.5	7.3	16.3	0.208	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
New Kudag/Nr. Weigh Bridge	April-2022	57.2	22.2	9.8	21.0	0.304	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	63.8	22.1	10.3	19.5	0.215	0.018	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	51.1	18.5	9.4	17.3	0.201	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Old Kudag/Mining Area	April-2022	53.1	21.0	9.8	19.5	0.230	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	59.8	19.1	10.8	19.0	0.207	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	50.8	15.8	6.3	15.9	0.162	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Samri Gopatu/ Nr. Weigh Bridge	April-2022	65.7	24.1	10.0	19.1	0.301	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	67.1	25.0	10.1	20.2	0.246	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	53.9	22.5	9.9	19.2	0.212	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
<b>CPCB Standards</b>		<b>100</b> (24 hrs)	<b>60</b> (24 hrs)	<b>80</b> (24 hrs)	<b>80</b> (24 hrs)	<b>2</b> (8 hrs)	<b>1.0</b> (24 hrs)	---	<b>6.0</b> (annual)	---
<b>Minimum</b>		<b>50.8</b>	<b>15.8</b>	<b>6.3</b>	<b>15.9</b>	<b>0.162</b>	---	---	---	---
<b>Maximum</b>		<b>67.1</b>	<b>26.8</b>	<b>10.8</b>	<b>21.0</b>	<b>0.324</b>	<b>0.018</b>	---	---	---
<b>Average</b>		<b>58.1</b>	<b>21.7</b>	<b>9.5</b>	<b>18.8</b>	<b>0.237</b>	<b>0.015</b>	---	---	---
<b>98% le</b>		<b>66.8</b>	<b>26.4</b>	<b>10.7</b>	<b>20.9</b>	<b>0.320</b>	<b>0.018</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 58.1  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of PM<sub>2.5</sub> within the Core Zone of Kudag Lease is 21.7  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of SO<sub>2</sub> within the Core Zone of Kudag Lease is 9.5  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of NO<sub>2</sub> within the Core Zone of Kudag Lease is 18.8  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of CO within the Core Zone of Kudag Lease is 0.237  $\text{mg}/\text{m}^3$ .
- The Average Concentration of Pb within the Core Zone of Kudag Lease is 0.015  $\mu\text{g}/\text{m}^3$ .

**Conclusion :-**

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



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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	April-2022	60.9	20.4	9.0	18.7	0.272	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	54.8	26.7	9.2	14.4	0.209	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	49.1	16.4	6.8	16.1	0.161	BDL (DL-0.01)	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Rajendrapur	April-2022	61.3	22.5	9.2	16.2	0.300	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	53.1	23.1	8.6	15.1	0.249	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	52.9	19.5	8.3	17.6	0.185	0.013	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Tatijharia Village	April-2022	59.7	21.3	10.3	17.6	0.206	0.015	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	60.2	21.4	10.7	20.6	0.225	0.019	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	51.7	18.5	7.3	16.3	0.208	0.013	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
Virhorepat	April-2022	61.0	22.1	10.0	18.3	0.212	0.016	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	May-2022	60.9	20.6	9.5	19.7	0.205	0.017	BDL (DL-0.0005)	BDL (DL-0.1)	BDL (DL-0.03)
	June-2022	54.5	19.0	9.7	18.6	0.191	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>---</b>	<b>6.0 (annual)</b>	<b>---</b>
<b>Minimum</b>		<b>49.1</b>	<b>16.4</b>	<b>6.8</b>	<b>14.4</b>	<b>0.161</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>Maximum</b>		<b>61.3</b>	<b>26.7</b>	<b>10.7</b>	<b>20.6</b>	<b>0.300</b>	<b>0.019</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>Average</b>		<b>56.7</b>	<b>21.0</b>	<b>9.1</b>	<b>17.4</b>	<b>0.219</b>	<b>0.016</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>98% le</b>		<b>61.2</b>	<b>25.9</b>	<b>10.6</b>	<b>20.4</b>	<b>0.294</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 Buffer Zone of Kudag Lease is 56.7  $\mu\text{g}/\text{m}^3$ .
- 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 9.1  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of NO<sub>2</sub> within the Buffer Zone of Kudag Lease is 17.4  $\mu\text{g}/\text{m}^3$ .
- The Average Concentration of CO within the Buffer Zone of Kudag Lease is 0.219  $\text{mg}/\text{m}^3$ .
- The Average Concentration of Pb within the Buffer Zone of Kudag Lease is 0.016  $\mu\text{g}/\text{m}^3$ .

**Conclusion :-**

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



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### **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 April-2022 to June-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 April-2022 to June-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 50.8 µg/m<sup>3</sup> and 67.1 µg/m<sup>3</sup> respectively. The minimum and maximum concentration was recorded at Old Kudag/Mining Area and Samri Gopatu/ Nr. Weigh Bridge . The average concentration of PM<sub>10</sub> was 58.1 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 15.8 µg/m<sup>3</sup> & 26.8 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Old Kudag/Mining Area. The maximum concentration was recorded at Sairaidh Campus. The average concentration of PM<sub>2.5</sub> was 21.7 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 6.3 µg/m<sup>3</sup> and 10.8 µg/m<sup>3</sup> at respectively. The minimum & maximum concentration was recorded at Old Kudag/Mining Area. The average concentration of SO<sub>2</sub> was 9.5 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 15.9 µg/m<sup>3</sup> and 21.0 µg/m<sup>3</sup>. The minimum concentration was recorded at Old Kudag/Mining Area. The maximum concentration was also recorded at New Kudag/Nr. Weigh Bridge. The average concentration of NO<sub>2</sub> was 18.8 µg/m<sup>3</sup>.

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

The minimum and maximum for CO concentrations were recorded as 0.162 mg/m<sup>3</sup> and 0.324 mg/m<sup>3</sup>. The minimum concentration was recorded at Old Kudag/Mining Area. The maximum concentration was also recorded at Sairaidh Campus. . The average concentration of CO was 0.237 mg/m<sup>3</sup>.

**F. Lead (Pb):**

Maximum Lead detected in PM<sub>10</sub> samples was 0.018 µg/m<sup>3</sup> at New Kudag/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):**

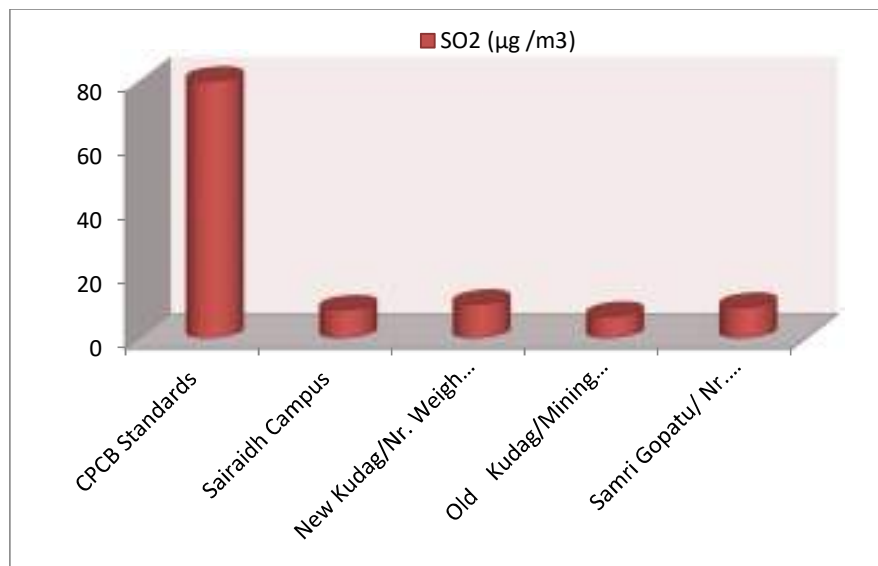
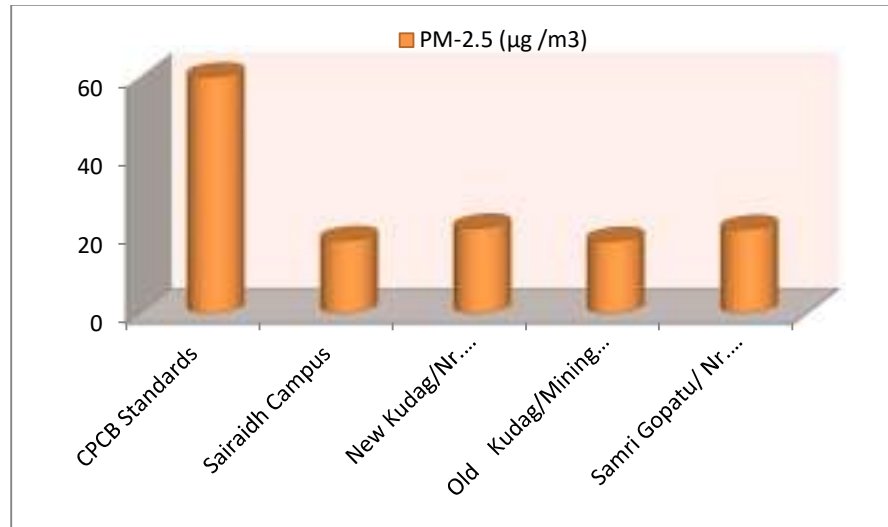
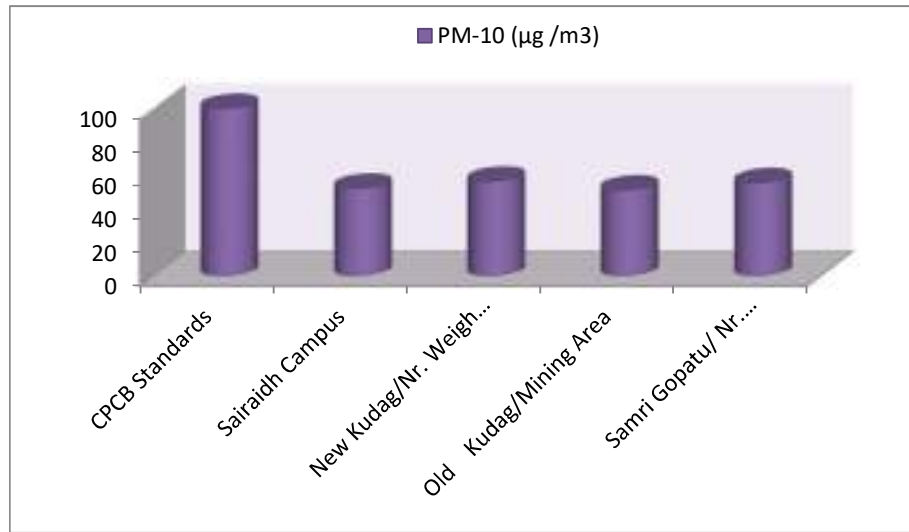
Chromium was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.





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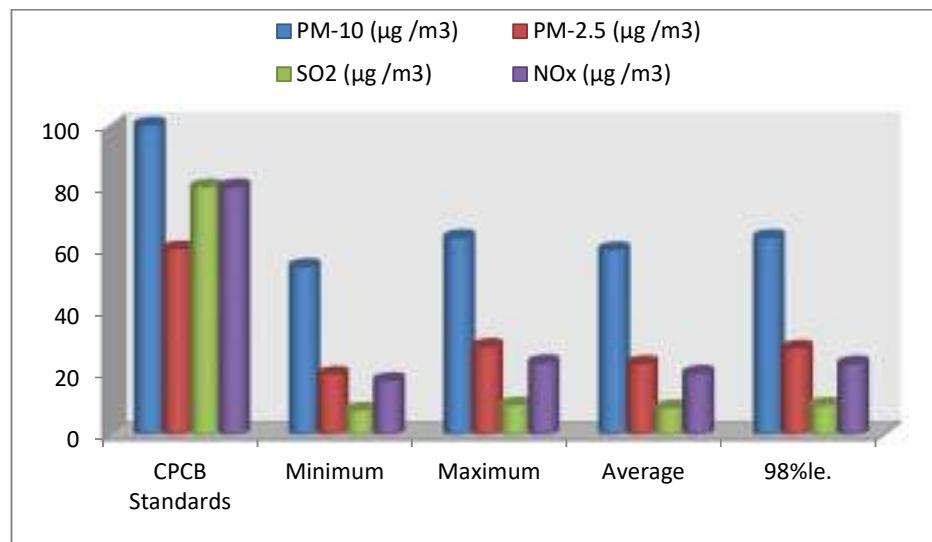
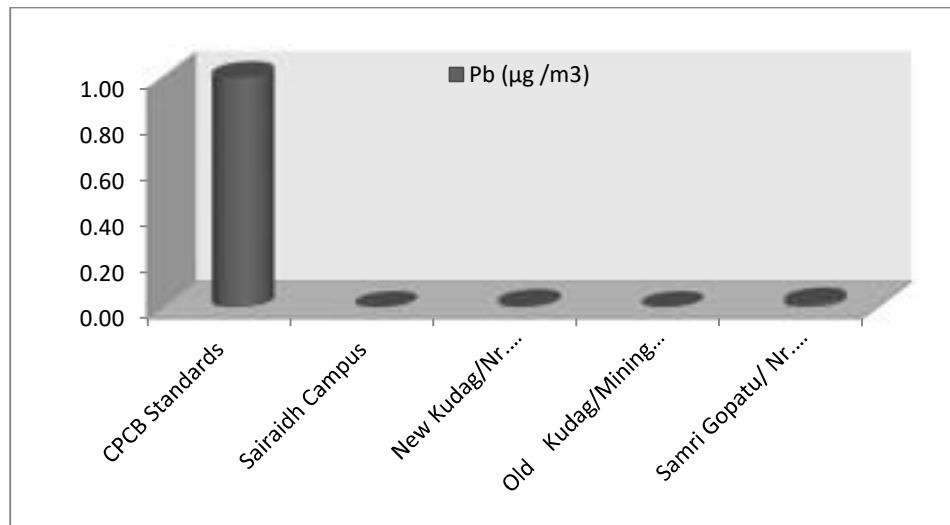
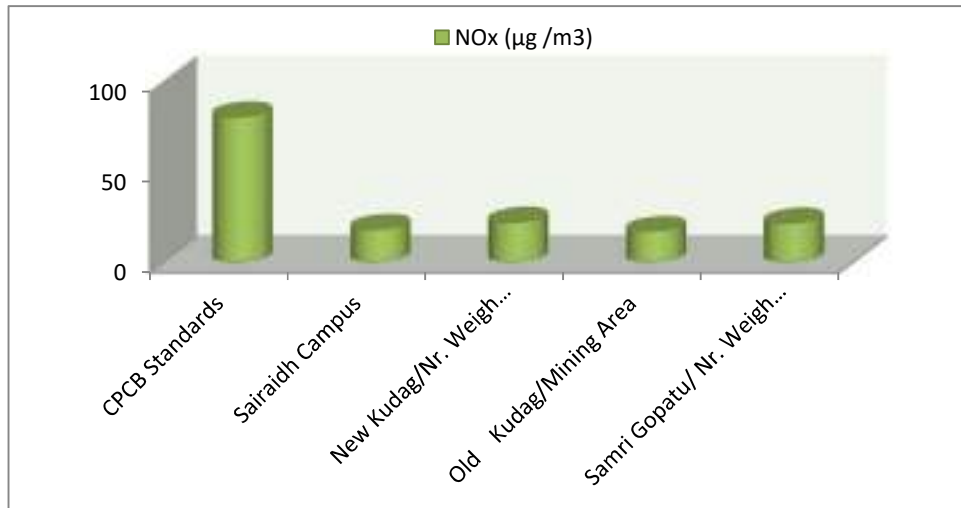
**Details of  
Salient  
Features**





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**Details of  
Salient  
Features**





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

#### **3.3 Ambient Air Quality:**

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

##### **3.3.1 Presentation of Results:**

The summary of Ambient Air Quality monitoring results from April-2022 to June-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 49.1 µg/m<sup>3</sup> and 61.3 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Kutku village. The maximum concentration was also recorded at Virhorepat. The average concentration of PM<sub>10</sub> was 56.7 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 16.4 µg/m<sup>3</sup> & 26.7 µg/m<sup>3</sup> respectively. The minimum and maximum concentration was recorded at Kutku Village. The average concentration of PM<sub>2.5</sub> was 21.0 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 6.8 µg/m<sup>3</sup> and 10.7 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Kutku village location. The maximum concentration was also recorded at Tatijharia Village. The average concentration of SO<sub>2</sub> was 9.1 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 14.4 µg/m<sup>3</sup> and 20.6 µg/m<sup>3</sup>. The minimum concentration was recorded at Kutku Village location and the maximum concentration was recorded at Tatijharia Village. The average concentration of NO<sub>2</sub> was 17.4 µg/m<sup>3</sup>.

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

The minimum and maximum for CO concentrations were recorded as 0.161 mg/m<sup>3</sup> and 0.300 mg/m<sup>3</sup>. The minimum concentration was recorded at Kutku village location and the maximum concentration was recorded at Rajendrapur. The average concentration of CO was 0.219 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 Tatijharia Village. 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.

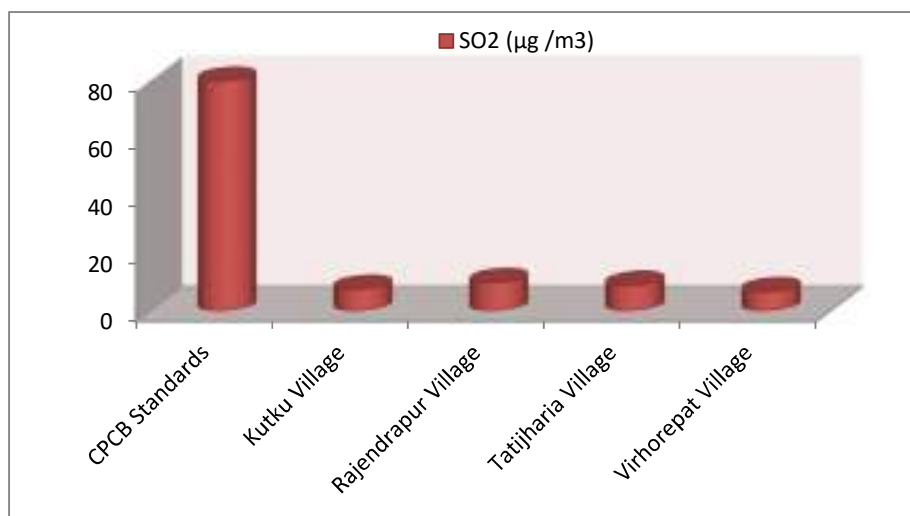
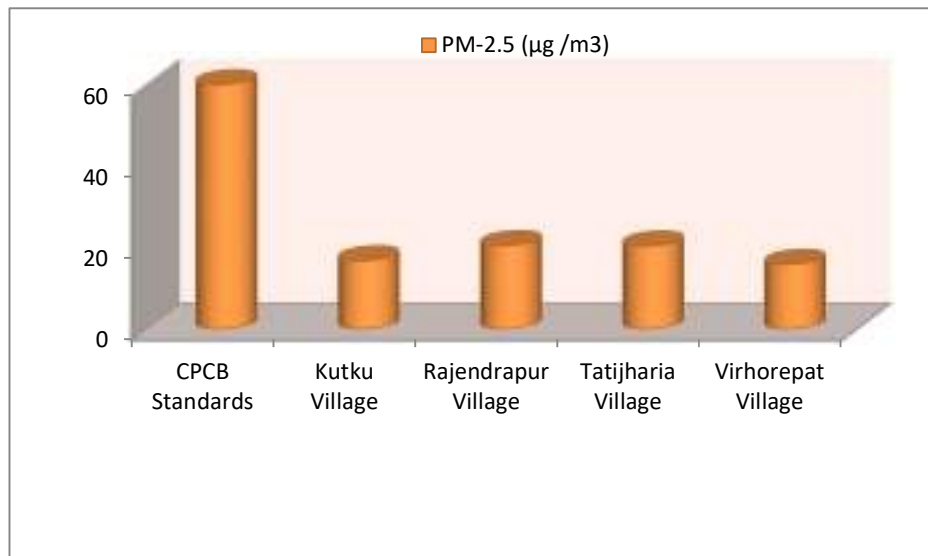
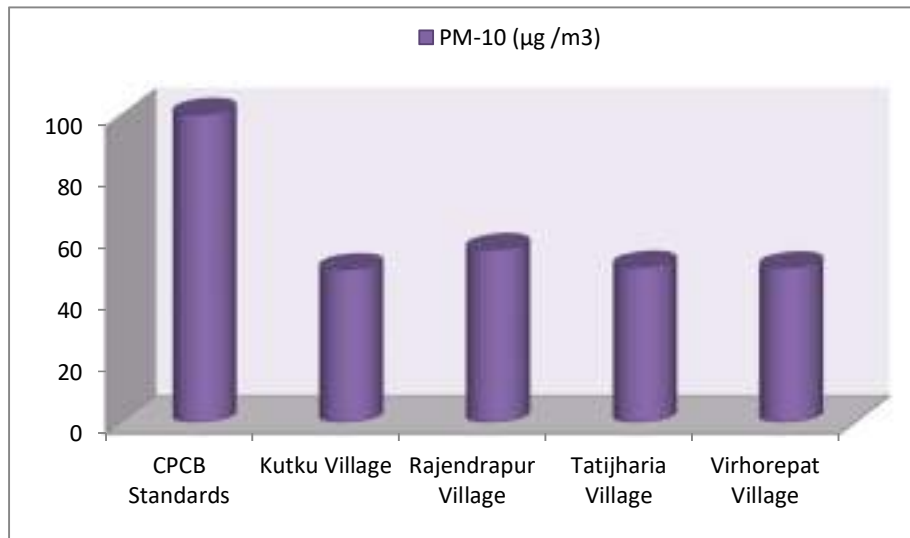
**I. Chromium (Cr):**

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



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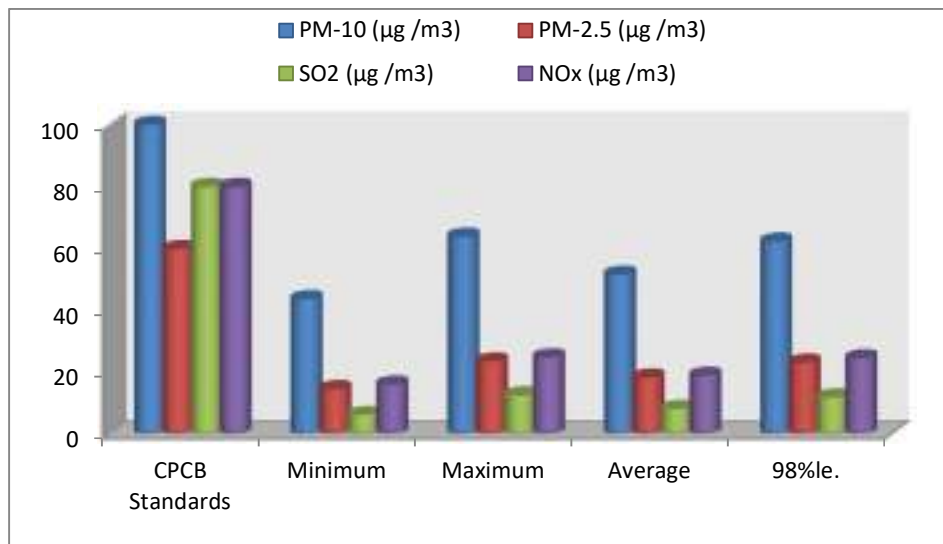
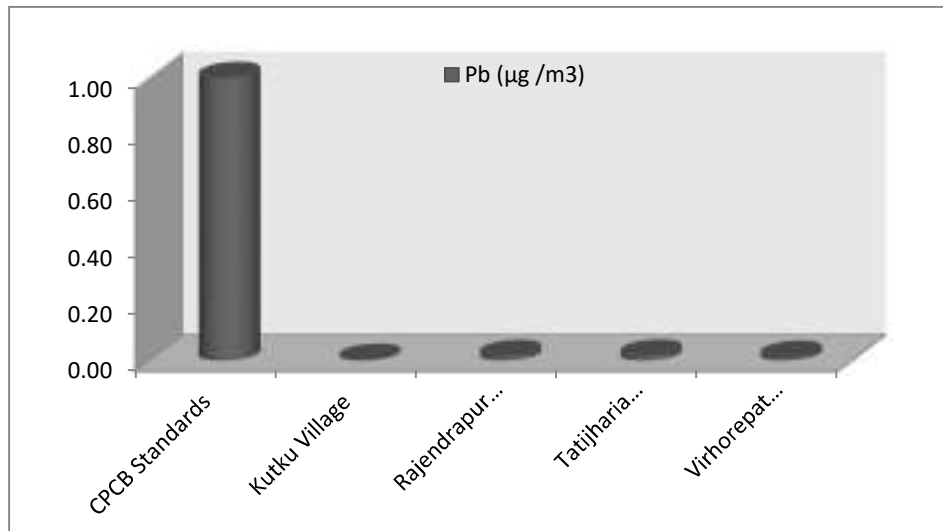
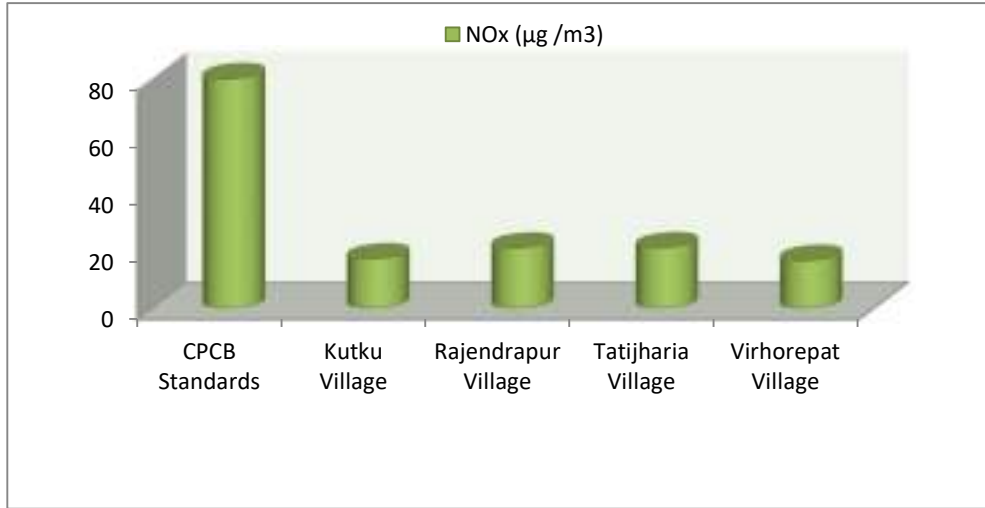
**Details of  
Salient  
Features**





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### **1.8 Noise Environment**

The Director General of Mines Safety in its circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less. There will be some noise sources in mines, which produce noise levels above 90 dB(A), however; the workers are not expected to be exposed continuously for 8 hours. In order to maintain this statutory requirement noise monitoring has been carried out in and around the mining lease area.

Work zone noise level in the mining area shall increase due to blasting excavation and transportation. The impacts due to the mining activities on the noise levels shall be negligible, if all the precautions for the elimination of the noise are taken. The mining activities will be undertaken during day time only. The day time equivalent noise levels, when all the machineries are in operation, shall be minimized as the machineries have been provided with control equipment. Noise monitoring carried out on monthly basis at mining site; Core Zone and Buffer Zone areas shown in **Fig. 3.**

#### **Identification of sampling locations**

Noise at different noise generating sources has been identified based on the activities in the village area and ambient noise due to traffic.

The noise monitoring has been conducted for determination of ambient noise levels in the mining area and villages. The noise levels at each location were recorded for 24 hours.

#### **Instrument used for monitoring**

Noise levels were measured using integrated sound level meter Model no. HTC-SL-1352. This instrument is capable of measuring the Sound Pressure Level (SPL), Leq.

#### **Method of Monitoring**

Sound Pressure Level (SPL) measurements were monitored at eight locations. The readings were taken for every hour for 24 hours. The day noise levels have been monitored during 6 am to 10 pm and night levels during 10 pm to 6 am at eight locations within 10-km radius of the study area.

Noise level monitoring was carried out continuously for 24 hours with one hour interval starting at 06.00 hrs to 06.00 hrs next day.



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Noise levels monitored during day and night at Four locations are found to be below in the Mining Area than the stipulated standard of CPCB for Industrial area as 75dB(A) and 70dB(A) for day and night respectively as given in **(Table 5)**.

**Table 5**

**Noise Emission Monitoring Report**

SR. NO.	LOCATION	Month	Noise-dB(A)	
			Day Time	Night Time
<b>Core Zone</b>				
1.	New Kudag/Nr. Weigh Bridge	April-2022	68.3	54.7
		May-2022	64.9	52.1
		June-2022	57.1	43.8
2.	Old Kudag/Mining Area	April-2022	56.2	42.9
		May-2022	56.4	41.6
		June-2022	51.9	39.1
<b>Buffer Zone</b>				
1.	Rajendrapur	April-2022	58.3	49.1
		May-2022	57.1	47.1
		June-2022	62.9	51.7
2.	Tatijharia Village	April-2022	53.9	42.1
		May-2022	51.7	41.6
		June-2022	48.3	37.6
<b>CPCB Standards</b>				
<b>Industrial Area</b>			<b>75</b>	<b>70</b>
<b>Residential area</b>			<b>55</b>	<b>45</b>

**Conclusion:** -The Noise Monitoring Results at Kudag Lease during this period **(April-May-June-2022)**, All Results are within Limit as per CPCB Standards.

**Table 6**

**HEMM Spot Noise Level Monitoring**

**Unit: dB(A) Leq**

Sl. No.	Location	April-2022		May-2022		June-2022	
		Min.	Max.	Min.	Max.	Min.	Max.
1.	Nr. Weigh Bridge	62.7	64.9	68.1	71.6	68.1	72.9
2.	Mining Area	58.3	61.7	63.9	67.2	57.6	62.8

	<p style="text-align: center;"><b>Hindalco Industries Limited Kudag Mining</b>  <b>Environmental Status</b>  <b>Report for April-2022 to June-2022</b></p>	<p style="text-align: center;"><b>Details of Salient Features</b></p>
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## 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.





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**Table 7**

**Report on Chemical Examination of Ground Water Quality  
(June-2022)**



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**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. 3		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	186
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	48.93
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	0.27
13	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.46
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) : 1983	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) : 1986	200	400	27.43
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	453
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	177.60
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) : 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	0.21
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)



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S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		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	0.5	No relaxation	BDL (DL – 0.03)
	2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',4,5,5'-pentachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',3,4,4',5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',4,4',5,5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',3,4,4',5,5'-heptachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	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	0.1	No relaxation	BDL (DL – 0.03)
	Acenaphthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Fluorene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Anthracene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Phenanthrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Fluoranthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Pyrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(a)anthracene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Chrysene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(a)pyrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(b)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(k)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Indeno(123,cd)pyrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Dibenzo(a,h)anthracene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(ghi)perylene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	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	Endosulphan					
	Alpha-Endosulphan	µg/l	ANtr/7.2/RES/01: 2018	0.4	No relaxation	BDL (DL - 0.03)
	Beta-Endosulphan					
	Endosulphan sulphate					





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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. 3		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-----



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<b>Location:</b>	<b>GW2) Kudag Village Sample Source:-Borewell Water</b>
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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. 3		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	176.28
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	17.28
9	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	43.91
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	0.18
13	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.54
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) : 1983	6.5 to 8.5	No relaxation	6.91 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) : 1986	200	400	19.46
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	427
22	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.6
23	Total hardness (as CaCO <sub>3</sub> )	mg/l	IS 3025 (Part 21) : 2009	200	600	161.27
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) : 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	0.26
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)



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				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	0.5	No relaxation	BDL (DL – 0.03)
	2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',4,5,5'-pentachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',3,4,4',5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',4,4',5,5'-hexachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	BDL (DL – 0.03)
	2,2',3,4,4',5,5'-heptachlorobiphenyl	µg/l	ANtr/7.2/RES/04: 2018	0.5	No relaxation	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	0.1	No relaxation	BDL (DL – 0.03)
	Acenaphthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Fluorene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Anthracene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Phenanthrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Fluoranthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Pyrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(a)anthracene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Chrysene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(a)pyrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(b)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(k)fluoranthene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Indeno(123,cd)pyrene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Dibenzo(a,h)anthracene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	BDL (DL – 0.03)
	Benzo(ghi)perylene	µg/l	ANtr/7.2/RES/03: 2018	0.1	No relaxation	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					





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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. 3		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  
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Report for April-2022 to June-2022**

**Details of  
Salient  
Features**

**Table 8 Report on Chemical Examination of Soil (June-2022)**

**S1) Soil:-**

**Location:- Old Kudag/Mining Area**

Page 1 of 2

S.N.	Test Parameter	Measurement Unit	Test Method	Test Results
1	Infiltration rate	mm/hr	Lab/SOP	20.24
2	Bulk density	g/cm <sup>3</sup>	Lab/SOP	1.623
3	Water holding capacity	%	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	34.21
4	Particle size distribution			
	Sand	%	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	43.58
	Silt	%	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	36.21
	Clay	%	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	20.12
5	Texture	-	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	Loam
6	pH (1:2.5 Aq. Extract) at 25 <sup>o</sup> C	-	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	7.13 at 25 <sup>o</sup> C
7	Electrical Conductivity (1:2.5 Aq. Extract)	µs/cm	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	23.6
8	Water soluble Calcium (as Ca)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	461
9	Water soluble Magnesium (as Mg)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	230
10	Water soluble Sodium (as Na)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	29.6
11	Water soluble Potassium (as K)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	217
12	Water soluble Chloride (as Cl)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	1498
13	Water soluble Sulphate (as SO <sub>4</sub> )	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	30.6
14	Exchangeable Sodium (as Na)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	29.6
15	Exchangeable Potassium (as K)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	217
16	Exchangeable Calcium (as Ca)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	461
17	Exchangeable Magnesium (as Mg)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	230
18	Sodium adsorption ratio	-	By Calculation	1.59
19	Total Organic matter	%	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	1.25
20	Total Organic Carbon	%	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	0.73
21	Available Nitrogen (as N)	Kg/hect	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	2.67
22	Available Phosphorous (as P)	Kg/hect	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	38.16
23	Available Potassium (as K)	Kg/hect	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	486.1
24	CEC	meq/100g	Method Manual, Soil testing in India	3.28



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(Department of agriculture & corporation, Govt of India)

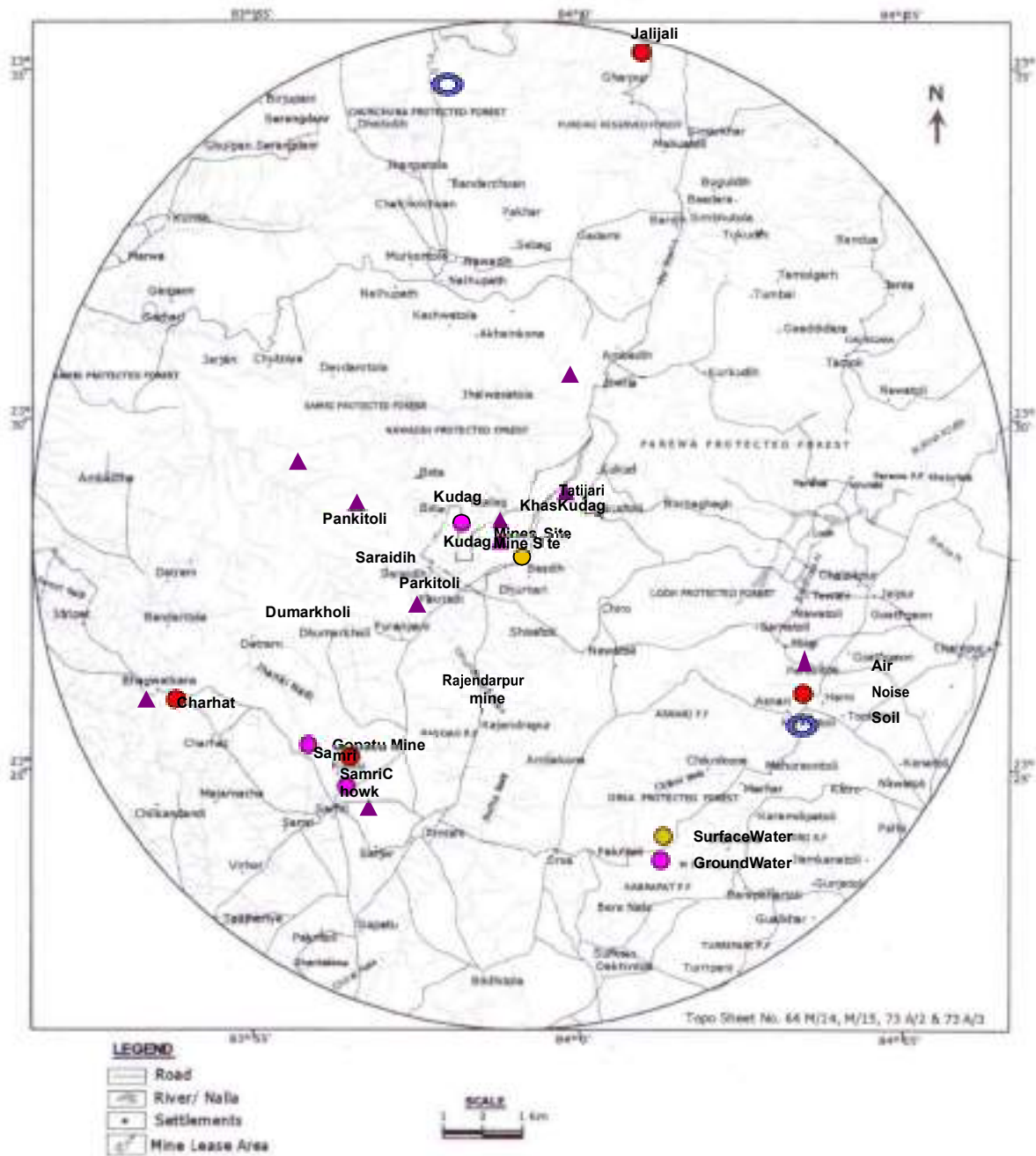
S.N.	Test Parameter	Measurement Unit	Test Method	Test Result
25	Arsenic (As)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	Absent
26	Boron (B)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	0.16
27	Cadmium (Cd)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	Absent
28	Chromium (Cr)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	Absent
29	Copper (Cu)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	4.18
30	Lead (Pb)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	Absent
31	Nickel (Ni)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	Absent
32	Cobalt (Co)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	0.13
33	Iron (Fe)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	9.42
34	Manganese (Mn)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	21.46
35	Zinc (Zn)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	0.28
36	Selenium (Se)	mg/Kg	Method Manual, Soil testing in India (Department of agriculture & corporation, Govt of India)	Absent

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**Remarks:** As requested by the client, sample was tested for above parameters only.

-----END OF REPORT-----





**Fig 5: Sampling Locations for Water**

*Agent of Mines*  
Samri Mines Division  
Hindalco Industries Ltd

Environmental Status Report  
For  
Kudag Bauxite Mine  
at  
Post & Teh.: Samri, (Kusmi)  
Dist: Balrampur–Ramanujganj (C.G.)

**Duration: July-August-September-2022**

Name of Industry



**M/s. Hindalco Industries Limited.,**

Name of Laboratory:-



**QCI-NABET, MoEF & CC (GOI)**  
**ISO 9001:2015, ISO 14001:2015, ISO 45001:2018**  
60, Bajiprabhu Nagar, Nagpur - 440 033, MS  
Lab. & Consultancy: FP-34, 35, Food Park,  
MIDC, Butibori, Nagpur – 441122  
Ph.: (0712) 2242077, 9373287475  
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website: [www.anaconlaboratories.com](http://www.anaconlaboratories.com)

	<p style="text-align: center;"><b>Hindalco Industries Limited Kudag Mining Environmental Status Report for July-2022 to September- 2022</b></p>	<p style="text-align: center;"><b>Introdu ction</b></p>
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## **1.1 Introduction**

**Hindalco Industries Limited (Hindalco)** is one among the flagship companies of the Aditya Birla Group of Industries and is one of the largest corporate groups in India. This group is a leading manufacturer of Aluminum in India, having integrated facilities encompassing bauxite, mining, refining and smelting to achieve Aluminum.

Various processing units of Hindalco are strategically located in different parts of the nation to achieve optimum benefits. Over the past few decades the group has grown multifold in its production capacities, product mix and diversification in mining. The Chhattisgarh Environment Conservation Board (CECB) granted permission for establishing the Bauxite Mine to Hindalco at block Tatijharia, Kudag and Samri mines in Balrampur District of Chhattisgarh State.

HINDALCO INDUSTRIES LTD., awarded the work to M/s ANACON LABORATORIES PVT. LTD. Nagpur(ALPL) for carrying out Environmental monitoring of parameters for assessing pollution levels and preparation of monthly reports (*July-August-September-2022*) as per the requirement of Chhattisgarh Environment Conservation Board (CECB) and Ministry of Environment, Forest and Climate Change (MoEF&CC) for Kudag mining lease in Balrampur District, Chhattisgarh State.

## **1.2 Background Information of Kudag Mine**

Hindalco was granted Kudag Bauxite mining lease over an area of 377.116 hec. In Kudag village, Post office-Dumarkholi, Tehsil-Samri (Kusmi) of Balrampur district, Chhattisgarh on 24/12/1996 for a period of 20 years. As per the Mines and Mineral (Development and Regulation) Amendment Act, 2015, Kudag lease has been extended up to another 30 years i.e 23/12/2046. The mining operations were started on 02/07/1997. The production capacity of Kudag Bauxite Mine is 60,000 Tonne /Year.

## **1.3 Salient Features of Kudag Bauxite Mine**

The deposits occur in Kudag block, Post office Dumarkholi, Tehsil-Samri (Kusmi) of Balrampur district. This deposit has been identified as one of the resources to cater the raw material requirements of the Hindalco Alumina refinery at Renukoot, Uttar Pradesh. The salient features of the project are presented below in Table 1.



**Table: 1**

**Salient Features of Kudag Bauxite Mines**

<b>S I . N o .</b>	<b>Particulars</b>	<b>Details</b>
1	Survey of India Toposheet No.	64 M /15
2	Latitude	23 <sup>0</sup> 26' 02"N to 23 <sup>0</sup> 29' 00"N
3	Longitude	83 <sup>0</sup> 51' 00"E to 83 <sup>0</sup> 59' 00"E
4	Elevation	1145-m above Mean Sea Level
5	Climatic Conditions (as per IMD, Ambikapur)	Annual maximum temperature : 30.3 <sup>0</sup> C Annual minimum temperature : 17.7 <sup>0</sup> C Average annual rainfall : 1401.1 mm
6	Mining lease area	377.116 Hec.
7	Method of mining	Open cast (Semi-Mechanized)
8	Mode of transportation	Trucks
9	Land use	Agricultural and Barren land
10	Nearest Road	Samri to Kusmi (17 km)
11	Nearest Airport	Ranchi Airport (151.09 Km)
12	Nearest Town	Ambikapur (127 km, SW)

**14 Environmental Monitoring**

Regular monitoring of environmental parameters is of immense importance to assess the status of environment during mining operation. With the knowledge of baseline conditions, the monitoring program will serve as an indicator for any deterioration in environmental

 <p>ADITYA BIRLA HINDALCO</p>	<p><b><i>Hindalco Industries Limited Kudag Mining Environmental Status Report for July-2022 to September-2022</i></b></p>	<p><b><i>Introduction</i></b></p>
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conditions due to mining operation of the project. Suitable mitigation steps will be taken in time to safeguard the environment based on monitoring reports. Monitoring is important in the control of pollution since the efficiency of control measures can only be determined by monitoring.

In order to find out the impact of mining activity on sensitive receptors, it is necessary to monitor Environmental Quality to know the level of concentrations of pollutants within and around the mining lease area. Accordingly Hindalco Industries through ALPL has been monitoring air, water and noise quality on monthly basis during these months (Table-2).



## **15 Air Environment**

### **1.5.1 Ambient Air Quality Monitoring:**

Ambient Air Quality and Fugitive emission monitored at 8 following locations with reference to Kudag mine lease area shown in (Fig.-1).

**Table 2**

**Locations of Ambient Air Quality Monitoring (AAQM) (377.116 hec.)**

<b>S</b>	<b>Core Zone</b>	<b>S</b>	<b>Buffer Zone</b>
<b>r</b>		<b>r</b>	
<b>.</b>		<b>.</b>	
<b>N</b>		<b>N</b>	
<b>o</b>		<b>o</b>	
<b>.</b>		<b>.</b>	
1	Sairaidh Campus	5	Kutku Village
2	New Kudag/Nr.Weigh Bridge	6	Rajendrapur
3	Old Kudag/Mining Area	7	Tatijharia Village
4	SamriGopatu/Nr. Weigh Bridge	8	Virhorepat

The sampling stations are selected at the above mentioned locations, in downwind and upwind directions of the mining site. ALPL is carrying out regular monitoring for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO and Pb, Hg, As and Cr at above Ambient Air Quality Monitoring (AAQM) locations. The AAQM sampling sites are selected considering seasonal variation in wind speed and wind direction.

### **1.5.2 Sampling Duration and Frequency**

Ambient air quality monitoring was carried out for the parameters PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO and Pb, Hg, As & Cr from July-2022 to September-2022 as per CPCB norms.

Data is compared with the present revised standards mentioned in the latest Gazette Notification of the Central Pollution Control Board (CPCB) 18<sup>th</sup> November, 2009 and as per consent conditions mentioned in consent letter.





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

#### **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>), 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 fiber filter paper. The dust deposited over the filter paper is measured as PM<sub>10</sub> and the smaller particulates from PM<sub>2.5</sub> are collected into the membrane filter paper. other details are given in(**Table3**).

**Table 3**

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

<b>Parameters</b>	<b>Sampling frequency</b>
Particulate Matter (PM <sub>10</sub> )	24 hourly sample twice a week for Three months
Particulate Matter (PM <sub>2.5</sub> )	24 hourly sample twice a week for Three months
Particulate Matter 2.5	24 hourly sample twice a week for Three months
Sulphur dioxide (SO <sub>2</sub> )	24 hourly sample twice a week for Three months
Oxides of Nitrogen (NO <sub>2</sub> )	24 hourly sample twice a week for Three months
CO, Pb, Hg, As, Cr	8 hourly samples for 24 hour twice a week for three months



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**Table 4.0**

**Measurement Techniques for various pollutants**

<b>Sr. No.</b>	<b>Parameter</b>	<b>Technique</b>	<b>Technical Protocol</b>	<b>Minimum Reportable Value (µg/m<sup>3</sup>)</b>
1.	Particulate Matter PM <sub>10</sub>	Respirable Dust Sampler (Gravimetric Method)	IS-5182 (Part-23)	5
2.	Particulate Matter PM <sub>2.5</sub>	Respirable Dust Sampler (Gravimetric Method)	USEPA-40 (Part-50)	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



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**1.6 Meteorology: Wind Pattern**

The data of wind pattern collected during the study period (July-Aug-Sept – 2022) indicates that the wind was blowing predominately from (E and S) directions, during study period.

**Wind Frequency Distribution Data**

Directions / Wind Classes (m/s)	0	2	3	5	8	>	T o t a l ( %)
	5	1	6	7	8	=	
	-	-	-	-	-	1	
	2	3	5	8	1	1	
	1	6	7	8	1		
	0	0	0	0	0	0	0
	0	0	0	0	0	0	0
348.75 - 11.25	2	1	0	0	0	0	4
	8	1	2	2	0	0	4
	0	7	7	2	0	0	8
	8	7	1	6	0	0	3





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		0	5	7	4	0	0	7
		0	0	0	0	0	0	0
		.	.	.	.	.	.	0
		0	0	0	0	0	0	.
	11.25 - 33.75	2	0	0	0	0	0	4
		9	9	1	6	0	0	7
		4	5	8	3	0	0	1
		3	1	1	4	0	0	0
		8	1	2	1	0	0	1
		0	0	0	0	0	0	0
		.	.	.	.	.	.	.
		0	0	0	0	0	0	0
	33.75 - 56.25	2	1	0	0	0	0	4
		0	0	5	4	0	0	0
		3	4	4	5	0	0	7
		8	1	3	2	0	0	6
		0	7	5	9	0	0	1
		0	0	0	0	0	0	0
		.	.	.	.	.	.	.
		0	0	0	0	0	0	0
	56.25 - 78.75	1	1	2	1	0	0	6
		8	2	0	1	0	0	2
		1	6	3	3	0	0	5
		1	8	8	2	0	0	0
		6	1	0	2	0	0	0
		0	0	0	0	0	0	0
		.	.	.	.	.	.	.
		0	0	0	0	0	0	0
	78.75 - 101.25	1	1	2	2	0	0	9
		8	6	8	7	6	0	7
		1	7	9	1	7	0	8
		1	5	8	7	9	0	2
		6	7	6	4	3	0	6
		0	0	0	0	0	0	0
		.	.	.	.	.	.	.
		0	0	0	0	0	0	0
	101.25 - 123.75	2	2	2	1	0	0	7
		0	1	0	6	0	0	9
		3	2	3	3	9	0	2
		8	8	8	0	0	0	5
		0	6	0	4	6	0	7
		0	0	0	0	0	0	0
		.	.	.	.	.	.	.
		0	0	0	0	0	0	0
	123.75 - 146.25	3	2	1	0	0	0	8
		2	9	8	8	0	0	9
		1	4	1	6	9	0	2
		5	3	1	0	0	0	2
		6	8	6	5	6	0	1
	146.25 -	0	0	0	0	0	0	0



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	168.75	. 0 2 7 6 2 7	. 0 4 3 4 7 8	. 0 0 8 1 5 2	. 0 0 4 5 2 9	. 0 0 0 9 0 6	. 0 0 0 0 0 0	. 0 4 6 9 2 0
	168.75 - 191.25	0 .0 2 9 4 3 8	0 .0 3 4 4 2 0	0 .0 1 6 3 0 4	0 .0 0 7 6 9 9	0 .0 0 1 3 5 9	0 .0 0 0 0 0 0	0 .0 8 9 2 2 1
	191.25 - 213.75	0 .0 3 6 6 8 5	0 .0 2 7 1 7 4	0 .0 2 2 1 9 2	0 .0 0 2 7 1 7	0 .0 0 0 0 0 0	0 .0 0 0 0 0 0	0 .0 8 8 7 6 8
	213.75 - 236.25	0 .0 3 2 1 5 6	0 .0 1 5 3 9 9	0 .0 1 9 4 7 5	0 .0 0 0 9 0 6	0 .0 0 0 0 0 0	0 .0 0 0 0 0 0	0 .0 6 7 9 3 5
	236.25 - 258.75	0 .0 2 8 9 8 6	0 .0 1 8 1 1 6	0 .0 0 2 7 1 7	0 .0 0 0 9 0 6	0 .0 0 0 0 0 0	0 .0 0 0 0 0 0	0 .0 5 0 7 2 5
	258.75 - 281.25	0 .0 1 9 0 2 2	0 .0 1 3 5 8 7	0 .0 0 0 9 0 6	0 .0 0 0 0 0 0	0 .0 0 0 0 0 0	0 .0 0 4 5 2 9	0 .0 3 8 0 4 3
	281.25 - 303.75	0 .0 0	0 .0 0	0 .0 0	0 .0 0	0 .0 0	0 .0 0	0 .0 0



**Hindalco Industries Limited Samri Mining  
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July – 2022 to September – 2022**

**Details of  
Salient  
Features**

		1	2	0	0	0	0	3
		4	1	0	0	0	0	6
		9	2	0	0	0	0	2
		4	8	0	0	0	0	3
		6	6	0	0	0	0	2
		0	0	0	0	0	0	0
		.	.	.	.	.	.	0
	303.75 -	0	0	0	0	0	0	.
	326.25	1	1	0	0	0	0	0
		3	3	5	0	0	0	3
		5	1	4	0	0	0	2
		8	3	3	0	0	0	1
		7	4	5	0	0	0	5
		0	0	0	0	0	0	6
		.	.	.	.	.	.	0
	326.25 -	0	0	0	0	0	0	.
	348.75	1	0	0	0	0	0	0
		4	3	4	2	0	0	2
		4	1	5	2	0	0	4
		9	7	2	6	0	0	4
		3	0	9	4	0	0	5
	<b>Sub- Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
		<b>. 3</b>	<b>. 3</b>	<b>. 1</b>	<b>. 0</b>	<b>. 0</b>	<b>. 0</b>	<b>. 9</b>
		<b>8</b>	<b>0</b>	<b>7</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>7</b>
		<b>3</b>	<b>1</b>	<b>7</b>	<b>5</b>	<b>0</b>	<b>4</b>	<b>3</b>
		<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>8</b>	<b>5</b>	<b>7</b>
		<b>0</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>7</b>	<b>2</b>	<b>3</b>
		<b>5</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>2</b>
	<b>Calms</b>							0
								.
								0
								2
								6
								2
								6
								8
	<b>Missing/Incomplete</b>							0
								.
								0
								0
								0
								0
	<b>Total</b>							1
								.
								0
								0
								0
								0
								0





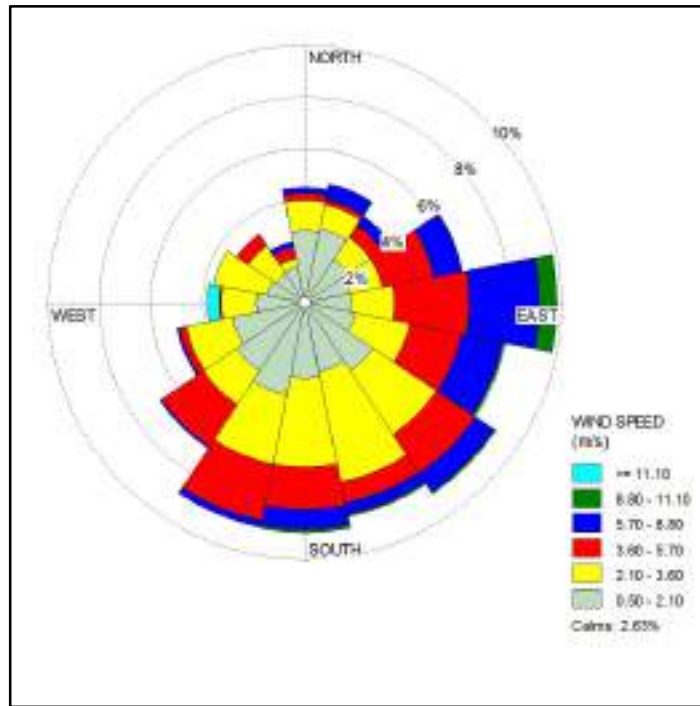
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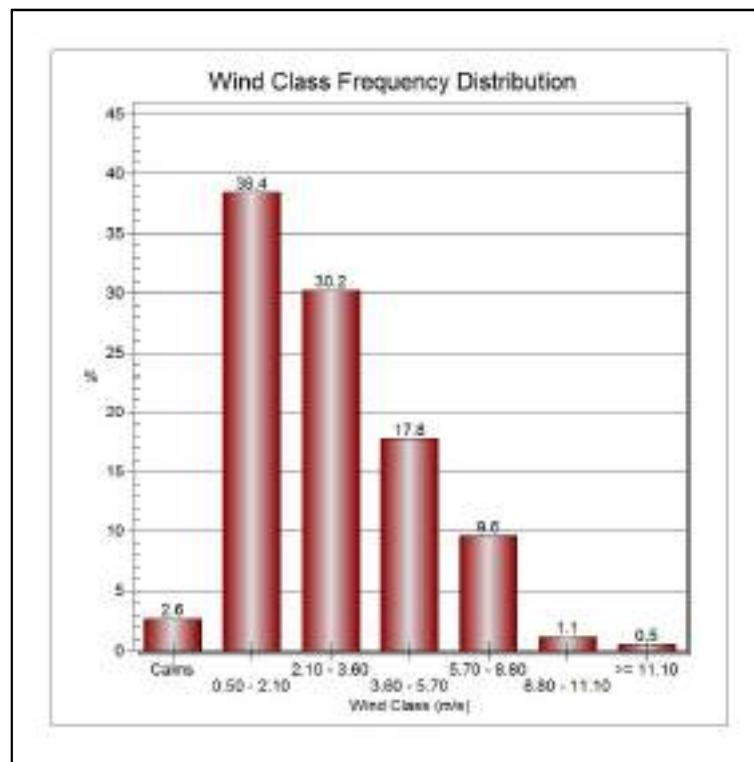
0

**Summary of Wind Pattern**

<b>Season</b>	<b>First Pre-Dominant Wind Direction</b>	<b>Second Pre-Dominant Wind Direction</b>	<b>Calm Condition</b>	<b>Average Wind Speed</b>
July-Aug-Sept-2022	E (9.78%)	S (8.92%)	2.63	3.70 m/s



**Figure.01: Wind Rose Diagram (July-August-September-2022)**



**Figure.02: Wind Class Frequency Distribution (July-August-September-2022)**



## **1.7 MONITORED PARAMETERS AND FREQUENCY OF SAMPLING 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-Gopatuduring 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>S l . N o .</b>	<b>Paramete r</b>	<b>Technique</b>	<b>Tech nica l Prot ocol</b>	<b>Minim um Repor table 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	4



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			(Part - II)	
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





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**Table 4**

**Statistical Analysis**

Location	Month & Year	PM10 ( $\mu\text{g}/\text{m}^3$ )	PM2.5 ( $\mu\text{g}/\text{m}^3$ )	SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	NO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	CO ( $\text{m}^3/\text{m}^3$ )	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	July - 2022	54.7	19.7	9.5	21.9	0.197	BDL (DL - 0.0005)	BDL (DL - 0.0005)	BDL (DL - 0.1)	BDL (DL - 0.03)
	Aug - 2022	57.7	23.3	9.1	24.3	0.198	0.019	BDL (DL - 0.0005)	BDL (DL - 0.1)	BDL (DL - 0.03)
	Sept - 20	59.8	19.1	10.8	19.0	0.207	0.017	BDL (DL - 0)	BDL (DL - 0)	BDL (DL - 0)



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	2 2							. 0 0 0 5 )	. 1 )	0 3 )
New Kudag/Nr. Weigh h Bridg e	J u l y - 2 0 2 2	5 8 . 7	2 1 . 7	1 1 . 7	1 9 . 5	0 . 1 8 5	0 . 0 1 5	B D L ( D L - 0 . 0 0 0 5 )	B D L ( D L - 0 . 0 . 1 )	B D L ( D L - 0 . 0 3 )
	A u g - 2 0 2 2	5 9 . 6	2 5 . 0	8 . 9	2 2 . 8	0 . 2 7 0	0 . 0 1 9	B D L ( D L - 0 . 0 0 0 5 )	B D L ( D L - 0 . 0 . 1 )	B D L ( D L - 0 . 0 3 )
	S e p t - 2 0 2 2	6 5 . 5	2 7 . 5	1 0 . 3	2 0 . 8	0 . 2 4 5	0 . 0 1 7	B D L ( D L - 0 . 0 0 0 5 )	B D L ( D L - 0 . 0 . 1 )	B D L ( D L - 0 . 0 3 )
Old Kudag/M ining Area	J u l y - 2 0 2 2	5 5 . 0	1 7 . 7	7 . 0	1 6 . 3	0 . 1 7 6	0 . 0 1 6	B D L ( D L - 0 . 0 . 0	B D L ( D L - 0 . 0 . 1	B D L ( D L - 0 . 0 3



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								0 0 5 )	)	)
	A u g - 2 0 2 2	6 0 · 0	2 1 · 7	1 0 · 5	2 0 · 8	0 · 2 0 6	0 · 0 1 8	B D L ( D L - 0 · 0 0 0 5 )	B D L ( D L - 0 · 1 )	B D L ( D L - 0 · 0 3 )
	S e p t - 2 0 2 2	6 2 · 1	2 5 · 1	1 1 · 0	2 1 · 0	0 · 2 3 3	0 · 0 1 6	B D L ( D L - 0 · 0 0 0 5 )	B D L ( D L - 0 · 1 )	B D L ( D L - 0 · 0 3 )
Samr i Gop atu/ Nr. Weig h Brid ge	J u l y - 2 0 2 2	5 1 · 7	1 9 · 2	8 · 2	1 7 · 4	0 · 1 7 8	0 · 0 1 5	B D L ( D L - 0 · 0 0 0 5 )	B D L ( D L - 0 · 1 )	B D L ( D L - 0 · 0 3 )
	A u g - 2 0 2 2	5 7 · 9	2 0 · 5	9 · 7	1 8 · 2	0 · 2 4 3	0 · 0 1 7	B D L ( D L - 0 · 0 0 0 )	B D L ( D L - 0 · 1 )	B D L ( D L - 0 · 0 3 )



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								5 ) B D L ( D L - 0 . 0 0 0 5 )	B D L ( D L - 0 . 0 1 )	B D L ( D L - 0 . 0 3 )
	S e p t - 2 0 2 2									
<b>CPCB Standards</b>	1 0 0 ( 2 2 4 h r s )	6 0 ( 2 4 h r s )	8 0 ( 2 4 h r s )	8 0 ( 2 4 h r s )	2 ( 8 h r s )	1 . ( 2 4 h r s )	0 0 2 1 7	- - -	6 . ( 0 a n n u a l )	- - -
<b>Minimum</b>	5 1 . 7	1 7 . 7	7 . 0	1 6 . 3	0 . 1 7 6	- - -	- - -	- - -	- - -	- - -
<b>Maximum</b>	6 5 . 5	2 7 . 5	1 1 . 7	2 4 . 3	0 . 2 7 0	- - -	- - -	- - -	- - -	- - -
<b>Average</b>	5 8 . 7	2 1 . 8	9 . 7	2 0 . 2	0 . 2 1 3	- - -	- - -	- - -	- - -	- - -
<b>98% le</b>	6 4 . 8	2 7 . 0	1 1 . 5	2 4 . 0	0 . 2 6 5	- - -	- - -	- - -	- - -	- - -

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 58.7 µg/m<sup>3</sup>.
- The Average Concentration of PM<sub>2.5</sub> within the Core Zone of Kudag Lease is 21.8 µg/m<sup>3</sup>.
- The Average Concentration of SO<sub>2</sub> within the Core Zone of Kudag Lease is 9.7 µg/m<sup>3</sup>.
- The Average Concentration of NO<sub>2</sub> within the Core Zone of Kudag Lease is 20.2 µg/m<sup>3</sup>.





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- The Average Concentration of CO within the Core Zone of Kudag Lease is 0.213mg/m<sup>3</sup>.
- The Average Concentration of Pb within the Core Zone of Kudag Lease is 0.017µg/m<sup>3</sup>.

**Conclusion :-**

The Average Concentration within the Core Zone of Kudag Lease during this period **(July-August-September-2022)**, it is within permissible limits as per CPCB Standards.



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Locati on	M o n t h & Y e a r	P M - 1 0 ( μ g / m 3 )	P M - 2 0 ( μ g / m 3 )	S O 2 ( μ g / m 3 )	N O 2 ( μ g / m 3 )	C O ( m g / m 3 )	P b ( μ g / m 3 )	H g ( μ g / m 3 )	A s ( n g / m 3 )	C r ( μ g / m 3 )
<b>Buffer Zone</b>										
Kutk u Villag e	J u l y - 2 0 2 2	5 1 · 1	1 7 · 4	7 · 4	1 6 · 5	0 · 1 5 4	B D L ( D L - 0 · 0 0 1 )	B D L ( D L - 0 · 0 0 0 5 )	B D L ( D L - 0 · 1 )	B D L ( D L - 0 · 0 3 )
	A u g - 2 0 2 2	5 7 · 4	1 8 · 8	7 · 7	1 6 · 7	0 · 1 9 8	B D L ( D L - 0 · 0 0 1 )	B D L ( D L - 0 · 0 0 0 5 )	B D L ( D L - 0 · 1 )	B D L ( D L - 0 · 0 3 )
	S e p t - 2 0 2 0	5 3 · 2	2 0 · 5	8 · 8	1 7 · 8	0 · 1 8 5	0 · 0 1 4	B D L ( D L - -	B D L ( D L - -	B D L ( D L - -



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	2 2							0 . 0 0 0 5 )	0 . 1 )	0 . 0 3 )
Rajen drapur	J u l y - 2 0 2 2	5 5 . 9	2 1 . 9	9 . 4	1 8 . 4	0 . 2 0 2	0 . 1 5	B D L  ( D L - 0 . 0 0 5 )	B D L  ( D L - 0 . 1 )	B D L  ( D L - 0 . 0 3 )
	A u g - 2 0 2 2	5 9 . 0	2 1 . 7	8 . 7	1 7 . 2	0 . 1 9 2	0 . 1 7	B D L  ( D L - 0 . 0 0 5 )	B D L  ( D L - 0 . 1 )	B D L  ( D L - 0 . 0 3 )
	S e p t - 2 0 2 2	5 8 . 4	1 9 . 3	8 . 6	1 8 . 0	0 . 1 9 6	0 . 1 4	B D L  ( D L - 0 . 0 0 5 )	B D L  ( D L - 0 . 1 )	B D L  ( D L - 0 . 0 3 )
Tatijh aria	J u l	5 0 .	1 6 .	7 . 1	1 6 .	0 . 1	0 . 0	B D L	B D L	B D L



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Village	May - 2022	5	9		5	73	14	(DL - 00005)	(DL - 01)	(DL - 003)
	August - 2022	561	207	100	183	0211	0016	B DL (DL - 00005)	B DL (DL - 01)	B DL (DL - 003)
	September - 2022	603	244	93	205	0227	0017	B DL (DL - 00005)	B DL (DL - 01)	B DL (DL - 003)
Virho repat	July - 2022	561	206	107	176	0228	0016	B DL DL - 00005	B DL (DL - 01)	B DL (DL - 003)







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	0	1		8	9	1			
					6	6			
<b>98% le</b>	6	2	1	2	0	0	-	-	-
	0	3	0	0	.	.	-	-	-
	.	.	.	.	2	0	-	-	-
	9	9	5	1	2	1			
					8	9			

**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 56.0 µg/m<sup>3</sup>.
- The Average Concentration of PM<sub>2.5</sub> within the Buffer Zone of Kudag Lease is 20.1 µg/m<sup>3</sup>.
- The Average Concentration of SO<sub>2</sub> within the Buffer Zone of KudagLease is 8.9µg/m<sup>3</sup>.
- The Average Concentration of NO<sub>2</sub> within the Buffer Zone of KudagLease is 17.8 µg/m<sup>3</sup>.
- The Average Concentration of CO within the Buffer Zone of KudagLease is 0.196 mg/m<sup>3</sup>.
- The Average Concentration of Pb within the Buffer Zone of KudagLease is 0.016 µg/m<sup>3</sup>.

**Conclusion :-**

The Average Concentration within the Buffer Zone of Kudag Lease during this period (**July-Aug-Sept-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 July-2022 to September-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 July-2022 to September-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 51.7 µg/m<sup>3</sup> and 65.5 µg/m<sup>3</sup> respectively. The minimum and maximum concentration was recorded at Samri Gopatu/ Nr. Weigh Bridge and New Kudag/Nr. Weigh Bridge . The average concentration of PM<sub>10</sub> was 58.7 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 17.7 µg/m<sup>3</sup> & 27.5 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Old Kudag/Mining Area. 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 7.0 µg/m<sup>3</sup> and 11.7 µg/m<sup>3</sup> at respectively. The minimum concentration was recorded at Old Kudag/Mining Area and The maximum concentration was recorded at New Kudag/Nr. Weigh Bridge. The average concentration of SO<sub>2</sub> was 9.7 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 16.3 µg/m<sup>3</sup> and 24.3 µg/m<sup>3</sup>. The minimum concentration was recorded at Old Kudag/Mining Area. The maximum concentration was also recorded at Sairaidh Campus. The average concentration of NO<sub>2</sub> was 20.2 µg/m<sup>3</sup>.

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

The minimum and maximum for CO concentrations were recorded as 0.176mg/m<sup>3</sup> and 0.270 mg/m<sup>3</sup>. The minimum concentration was recorded at Old Kudag/Mining Area. The maximum concentration was also recorded at New Kudag/Nr. Weigh Bridge. . The average concentration of CO was 0.213 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 Sairaidh Campus. 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):**

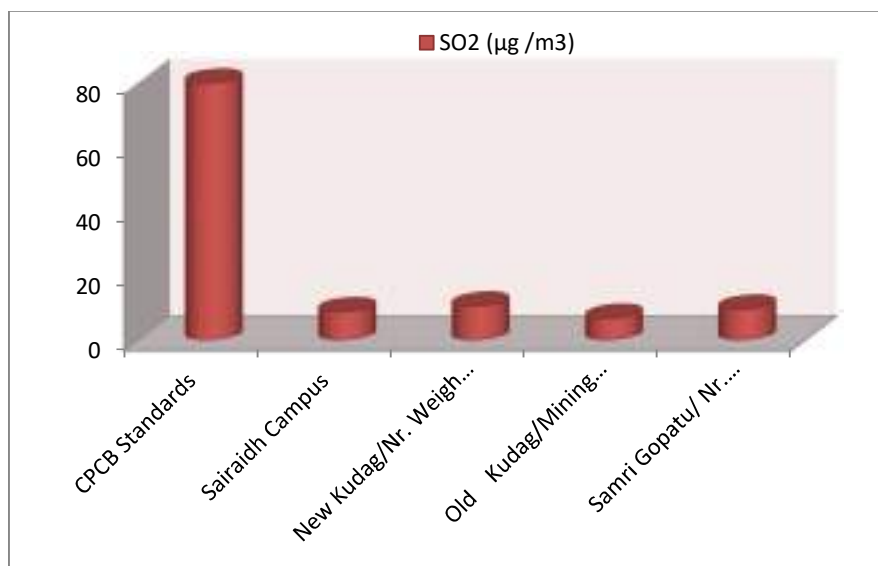
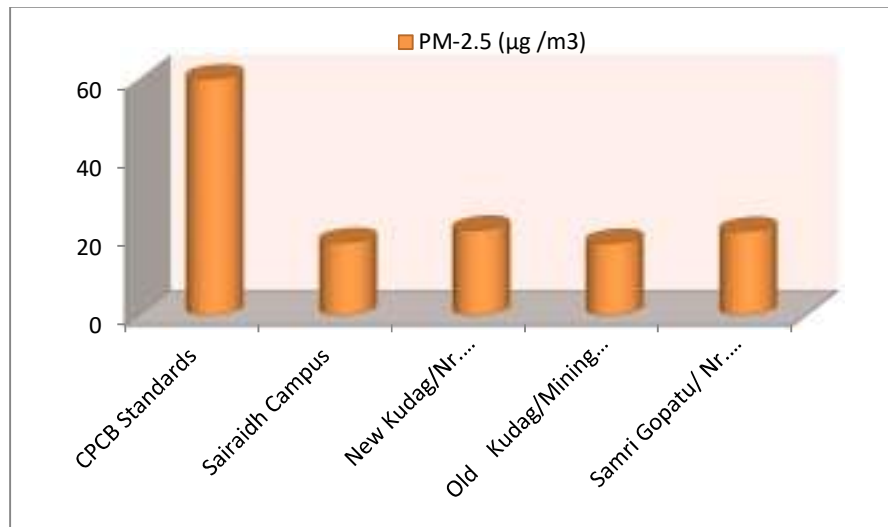
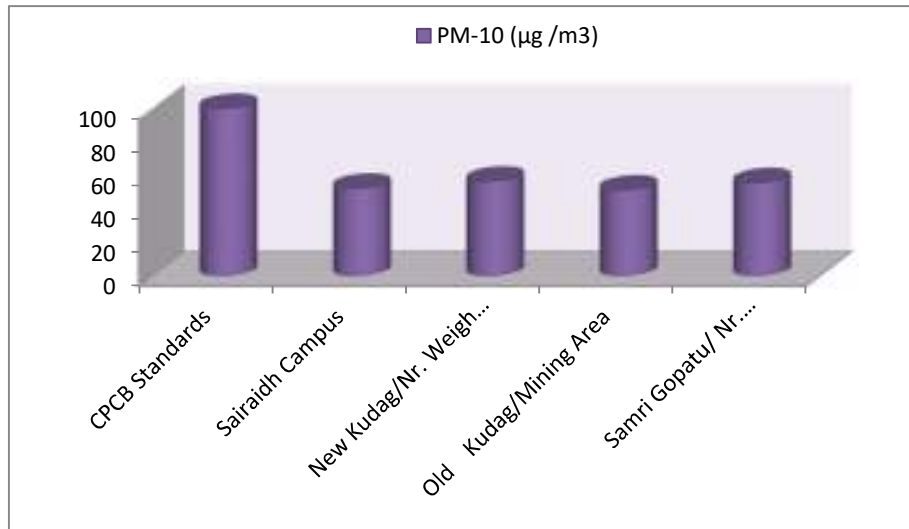
Chromium was not detected at any of the locations in PM<sub>10</sub> samples as well as PM<sub>2.5</sub> Samples.





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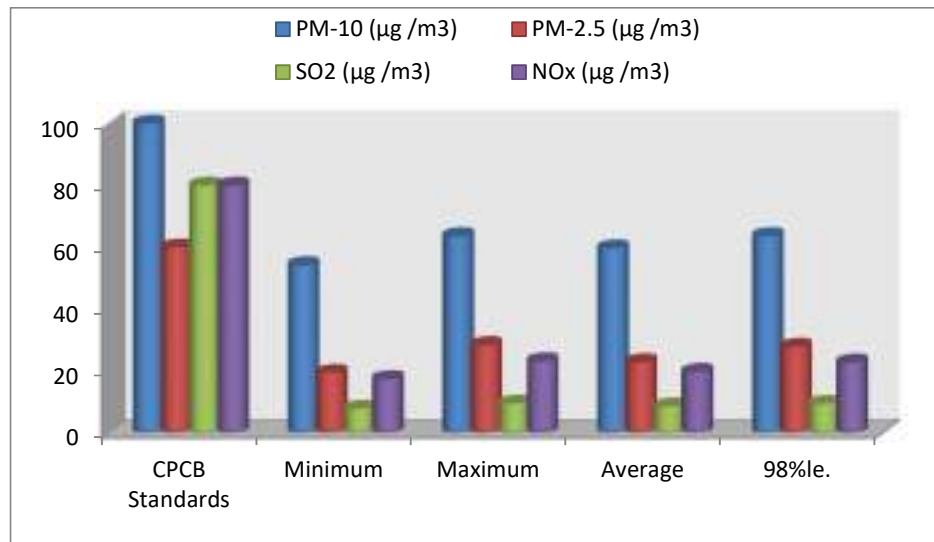
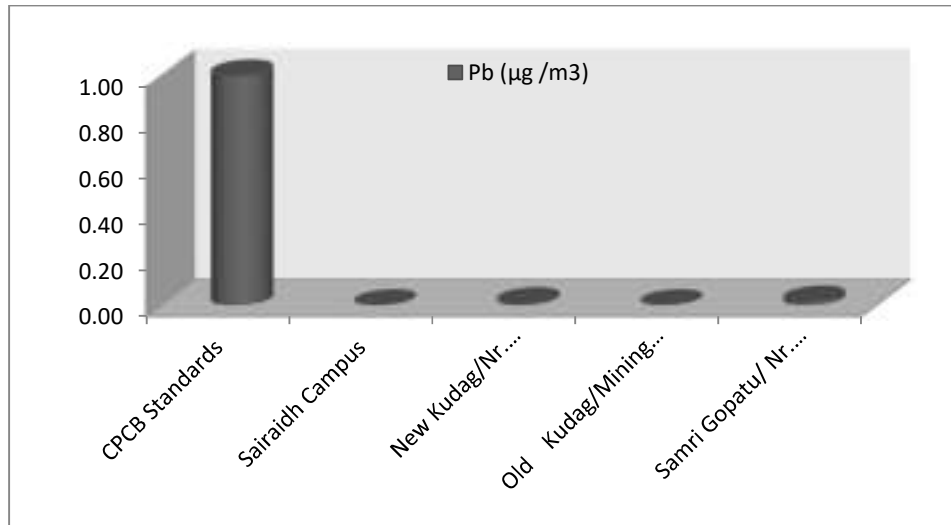
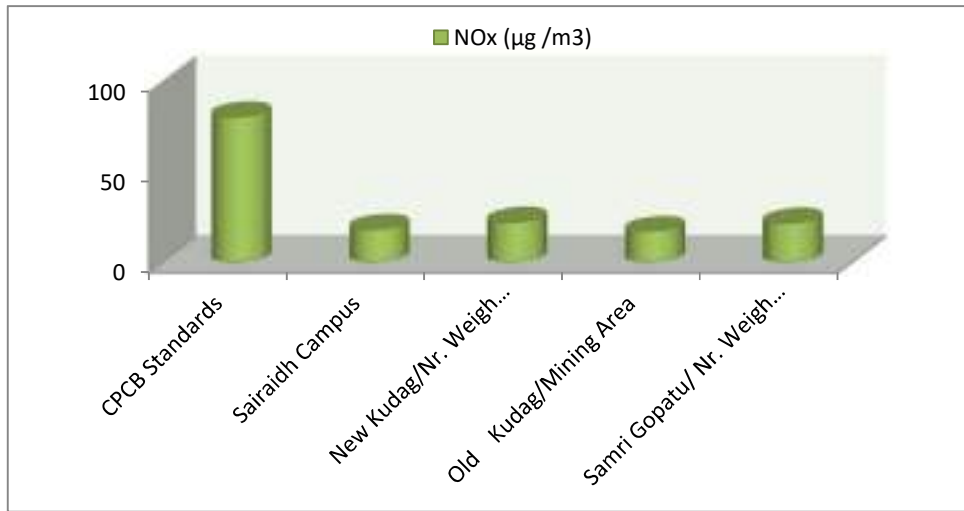
**Details of  
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### **Kudag Lease (Buffer Zone):-**

#### **3.3 Ambient Air Quality:**

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

##### **3.3.1 Presentation of Results:**

The summary of Ambient Air Quality monitoring results from July-2022 to September-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 50.5 µg/m<sup>3</sup> and 61.1 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Tatijharia Village. The maximum concentration was also recorded at Virhorepat. The average concentration of PM<sub>10</sub> was 56.0 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 16.9 µg/m<sup>3</sup> & 24.4 µg/m<sup>3</sup> respectively. The minimum and maximum concentration was recorded at Tatijharia Village. The average concentration of PM<sub>2.5</sub> was 20.1 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 7.1 µg/m<sup>3</sup> and 10.7 µg/m<sup>3</sup> respectively. The minimum concentration was recorded at Tatijharia Village location. The maximum concentration was also recorded at Virhorepat. The average concentration of SO<sub>2</sub> was 8.9 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 16.5 µg/m<sup>3</sup> and 20.5 µg/m<sup>3</sup>. The minimum concentration was recorded at Kutku Village location and the maximum concentration was recorded at Tatijharia Village. The average concentration of NO<sub>2</sub> was 17.8 µg/m<sup>3</sup>.

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

The minimum and maximum for CO concentrations were recorded as 0.154 mg/m<sup>3</sup> and 0.228 mg/m<sup>3</sup>. The minimum concentration was recorded at Kutku village location and the maximum concentration was recorded at Virhorepat. The average concentration of CO was 0.196 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 Virhorepat.

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.

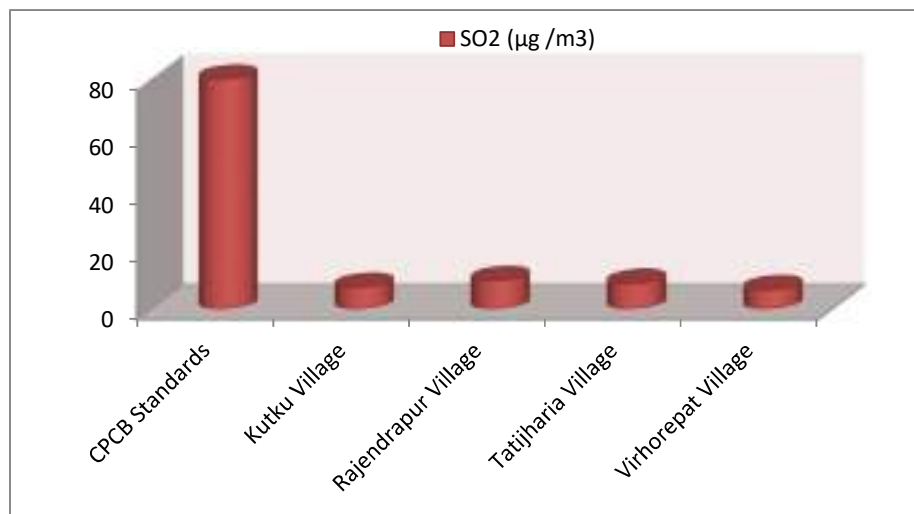
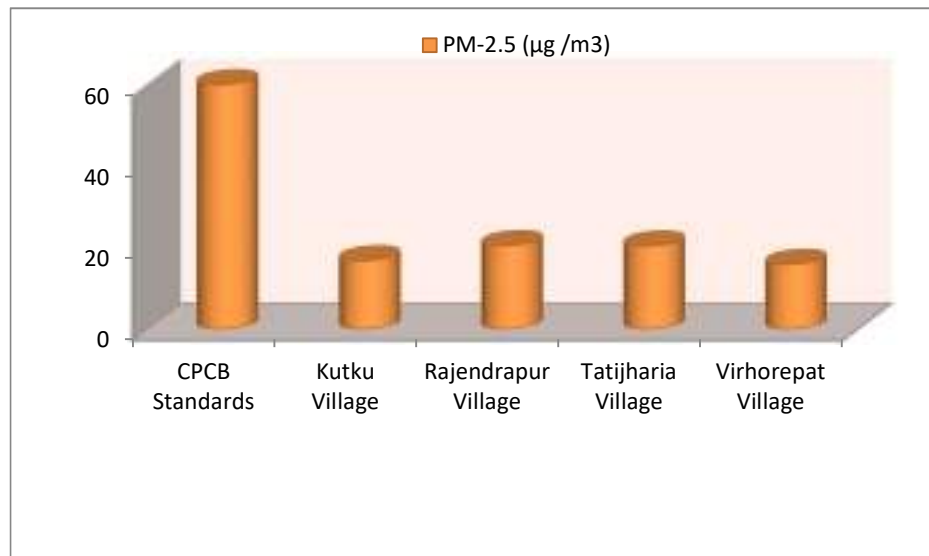
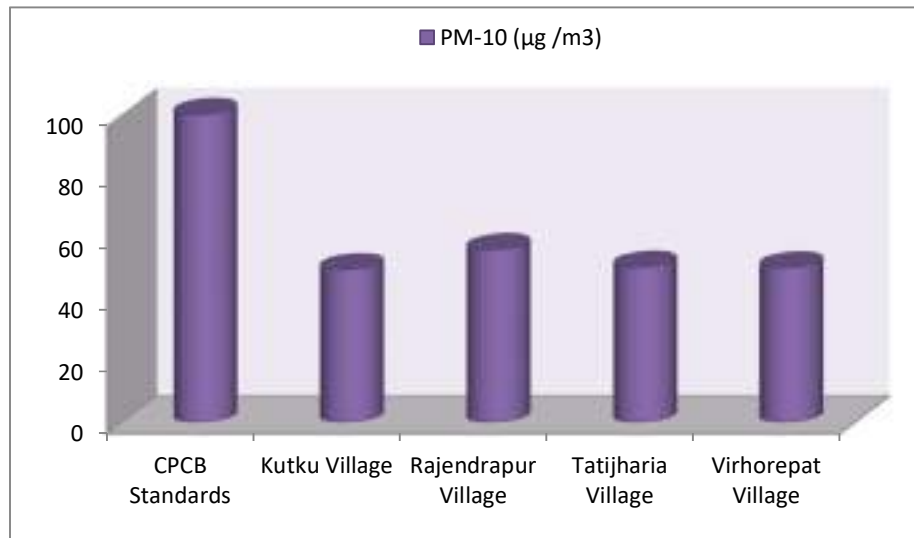
**H. Arsenic (As):**

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.

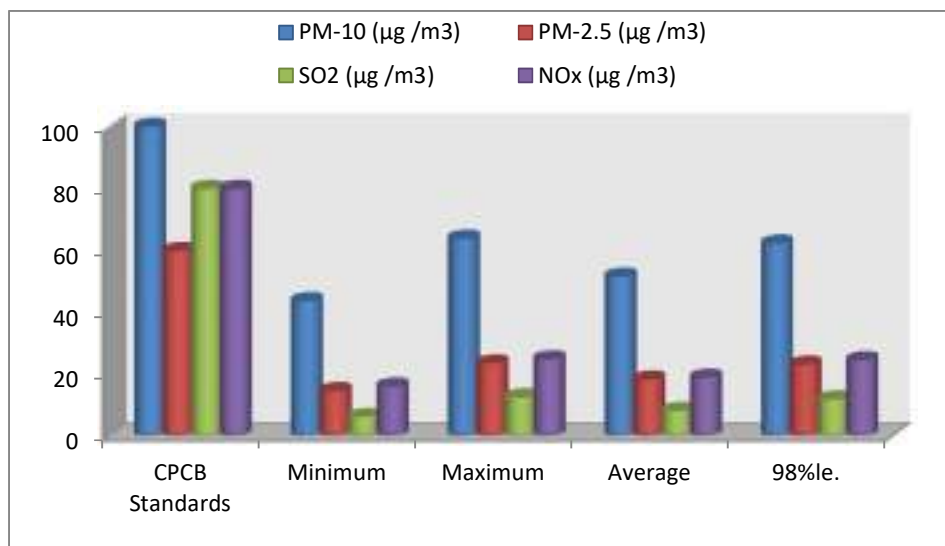
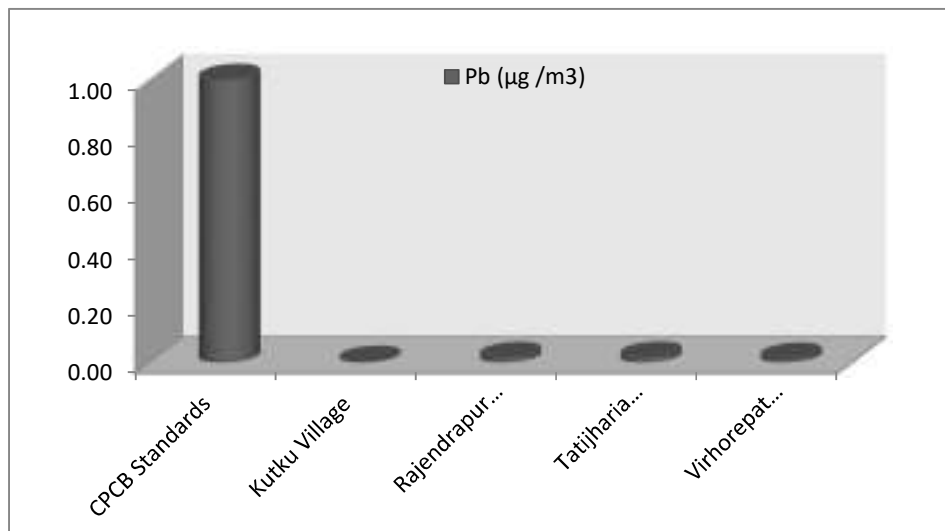
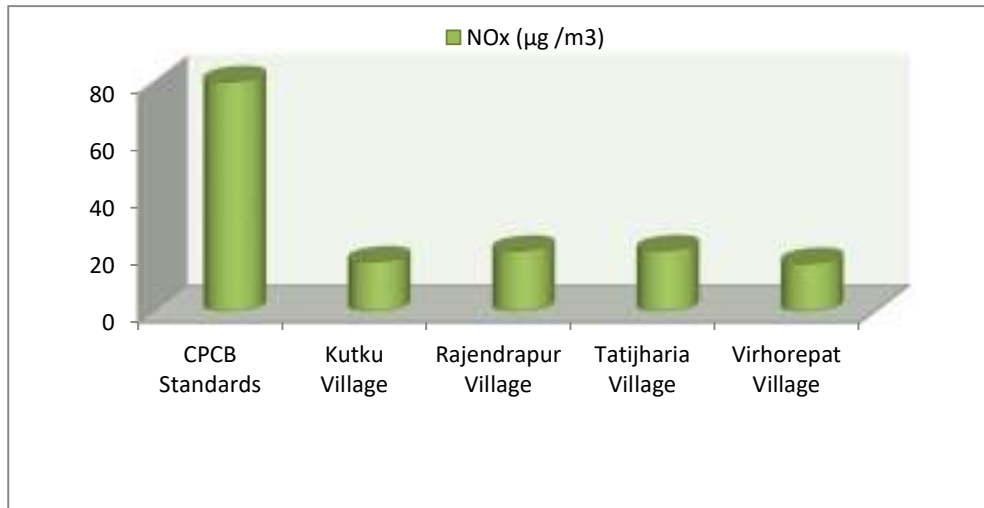






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## **1.8 Noise Environment**

The Director General of Mines Safety in its circular No. DG (Tech)/18 of 1975, has prescribed the noise level in mining occupations (TLV) for workers, in an 8 hour shift period with unprotected ear as 90 dB(A) or less. There will be some noise sources in mines, which produce noise levels above 90 dB(A), however; the workers are not expected to be exposed continuously for 8 hours. In order to maintain this statutory requirement noise monitoring has been carried out in and around the mining lease area.

Work zone noise level in the mining area shall increase due to blasting excavation and transportation. The impacts due to the mining activities on the noise levels shall be negligible, if all the precautions for the elimination of the noise are taken. The mining activities will be undertaken during day time only. The day time equivalent noise levels, when all the machineries are in operation, shall be minimized as the machineries have been provided with control equipment. Noise monitoring carried out on monthly basis at mining site; Core Zone and Buffer Zone areas shown in **Fig. 3**.

### **Identification of sampling locations**

Noise at different noise generating sources has been identified based on the activities in the village area and ambient noise due to traffic.

The noise monitoring has been conducted for determination of ambient noise levels in the mining area and villages. The noise levels at each location were recorded for 24 hours.

### **Instrument used for monitoring**

Noise levels were measured using integrated sound level meter Model no. HTC-SL- 1352. This instrument is capable of measuring the Sound Pressure Level (SPL), Leq.

### **Method of Monitoring**

Sound Pressure Level (SPL) measurements were monitored at eight locations. The readings were taken for every hour for 24 hours. The day noise levels have been monitored during 6 am to 10 pm and night levels during 10 pm to 6 am at eight locations within 10-km radius of the study area.

Noise level monitoring was carried out continuously for 24 hours with one hour interval starting at 06.00 hrs to 06.00 hrs next day.

Noise levels monitored during day and night at Four locations are found to be below in the Mining Area than the stipulated standard of CPCB for Industrial area as 75dB(A) and 70dB(A) for day and night respectively as given in **(Table 5)**.



**Table 5**  
**Noise Emission Monitoring Report**

S R · N O ·	LOCATION	Month	Noise-dB(A)	
			Day Time	Nigh t Time
<b>Core Zone</b>				
1 ·	New Kudag/Nr. Weigh Bridge	July- 2022	62.9	51.6
		August- 2022	67.2	56.1
		Septemb er-2022	61.9	54.7
2 ·	Old Kudag/Mining Area	July- 2022	54.7	43.8
		August- 2022	61.9	54.7
		Septemb er-2022	59.2	47.3
<b>Buffer Zone</b>				
1 ·	Rajendrapur	July- 2022	64.9	51.6
		August- 2022	56.7	43.9
		Septemb er-2022	61.3	48.1
2 ·	Tatijharia Village	July- 2022	51.6	39.7
		August- 2022	54.6	43.9
		Septemb er-2022	53.7	41.6
<b>CPCB Standards</b>				
<b>Industrial Area</b>			<b>75</b>	<b>70</b>
<b>Residential area</b>			<b>55</b>	<b>45</b>

**Conclusion:** -The Noise Monitoring Results at Kudag Lease during this period **(July-August-September-2022)**, All Results are within Limit as per CPCB Standards.

**Table 6**

**Monitoring**

**HEMM Spot Noise Level**





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**Unit: dB(A) Leq**

S I · N O ·	Location	July-2022		August-2022		September-2022	
		M i n ·	M a x ·	M i n ·	M a x ·	M i n ·	M a x ·
1 ·	Nr. Weigh Bridge	5	6	6	7	7	7
		7	1	8	2	2	4
		·	·	·	·	·	·
		2	9	3	8	6	1
2 ·	Mining Area	6	6	6	7	6	7
		4	8	9	4	8	2
		·	·	·	·	·	·
		1	3	1	2	3	4



## **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 for-away sources. Hence, additional care now be taken to chlorinate the tankers before leaving the supply source.



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Table 7 \_\_\_\_\_

Report on Chemical Examination of Ground Water Quality (September-2022)



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

**TEST RESULTS**

Test Parameter	M e a s u r e m e n t  U n i t	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
			A c c e p t a b l e  L i m i t	P e r m i s s i b l e L i m i t #	
<b>Biological Testing 1. Water</b>					
Total coliform	P e r  1 0 0  m l	IS 15185 : 2016	A b s e n t	A b s e n t	Abse nt
<i>Escherichia coli</i>	P e r  1 0 0  m l	IS 15185 : 2016	A b s e n t	A b s e n t	Ab sen t
<b>Chemical Testing 1. Water</b>					
Alkalinity (as CaCO <sub>3</sub> )	m g / l	IS 3025 (Part 23) : 1986	2 0 0	60 0	176
Ammonia (as N)	m g / l	IS 3025 (Part 34) : 1988	0 5	N o  r e l a x a t i o n	BDL (D L – 0.1)





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	Anionic surface active agents (as MBAS)	m g / l	IS 13428 : 2005 Annex K	0 . 2	1 . 0	BDL (D L – 0.0 1)
	Colour	H a z e n u n i t s	IS 3025 (Part 4) : 2021	5	15	1
	Cyanide (as CN)	m g / l	IS 3025 (Part 27) : 1986	0 . 0 5	N o r e l a x a t i o n	BDL (D L – 0.0 05)
	Chloride (as Cl)	m g / l	IS 3025 (Part 32) : 1988	2 5 0	10 0 0	31.68
	Calcium (as Ca)	m g / l	IS 3025 (Part 40) : 1991	7 5	20 0	51.46
	Chloramines (as Cl <sub>2</sub> )	m g / l	IS 3025 (Part 26) : 2021	4 . 0	N o r e l a x a t i o n	BDL (D L – 0.1)
	Free residual chlorine	m g / l	IS 3025 (Part 26) : 2021	M i n . 0 . 2	1	BDL (D L – 0.1)
	Fluoride (as F)	m g / l	IS 3025 (Part 60) : 2008	1 . 0	1 . 5	0.2 4
	Magnesium (as Mg)	m g / l	IS 3025 (Part 46) : 1994	3 0	10 0	12 . 58
	Nitrate (as NO <sub>3</sub> )	m g / l	APHA 23 <sup>rd</sup> Edition	4 5	N o r e l a	BD L (D L – 2)



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					x a t i o n	
	Odour	-	IS 3025 (Part 5) : 2018	A g r e e a b l e	A g r e e a b l e	Agre eab le
	pH	-	IS 3025 (Part 11) : 2022	6 . 5  8 . 5	N o  r e l a x a t i o n	7.93 at 25° C
	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	m g / l	IS 3025 (Part 43) : 1992	0 . 0 0 1	0. 0 0 2	BDL (D L – 0.0 01)
	Sulphate (as SO <sub>4</sub> )	m g / l	IS 3025 (Part 24) : 2022	2 0 0	40 0	31. 52
	Sulphide (as H <sub>2</sub> S)	m g / l	IS 3025 (Part 29) : 1986	0 . 0 5	N o  r e l a x a t i o n	BDL (D L – 0.0 3)
	Taste	-	IS 3025 (Part 8) : 1984	A g r e e a b l e	A g r e e a b l e	Agre eab le
	Total dissolved solids	m g / l	IS 3025 (Part 16) : 1984	5 0 0	20 0 0	476
	Turbidity	N T U	IS 3025 (Part 10) : 1984	1	5	0.6
	Total hardness (as CaCO <sub>3</sub> )	m g / l	IS 3025 (Part 21) : 2009	2 0 0	60 0	180.3 1
	Mineral Oil	m g / l	ANtr/7.2/ RES/06:	0 . 5	N o	BD L (D



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		1	2018		r e l a x a t i o n	L- 0.0 01)
<b>Chemical Testing 2. Residues In Water</b>						
	Arsenic (as As)	m g / l	IS 3025 (Part 37) : 1988	0 . 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 1)
	Aluminium (as Al)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 3	0 . 2	BD L (D L - 0.0 1)
	Barium (as Ba)	m g / l	IS 3025 (Part 2) : 2019	0 . 7	N o  r e l a x a t i o n	BD L (D L - 0.0 1)
	Boron (as B)	m g / l	IS 3025 (Part 2) : 2019	0 . 5	2 . 4	BD L (D L - 0.1 )
	Copper (as Cu)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 5	1 . 5	BD L (D L - 0.0 3)
	Cadmium (as Cd)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 0 3	N o  r e l a x a	BD L (D L - 0.0 01)



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					t i o n	
	Iron (as Fe)	m g / l	IS 3025 (Part 2) : 2019	1 . 0	N o  r e l a x a t i o n	0.26
	Lead (as Pb)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 01)
	Manganese (as Mn)	m g / l	IS 3025 (Part 2) : 2019	0 . 1	0 . 3	BD L (D L - 0.0 5)
	Mercury (as Hg)	m g / l	IS 3025 (Part 48) : 1994	0 . 0 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 00 5)
	Molybdenum (as Mo)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 7	N o  r e l a x a t i o n	BD L (D L - 0.0 1)
	Nickel (as Ni)	m g / l	IS 3025 (Part 2) : 2019	0 . 0	N o	BD L (D





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		1		2	r e l a x a t i o n	L - 0.0 1)
	Selenium (as Se)	m g / l	IS 3025 (Part 56) : 2003	0 . 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 01)
	Silver (as Ag)	m g / l	IS 13428 : 2005	0 . 1	N o  r e l a x a t i o n	BD L (D L - 0.0 01)
	Total Chromium (as Cr)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 5	N o  r e l a x a t i o n	BD L (D L - 0.0 3)
	Zinc (as Zn)	m g / l	IS 3025 (Part 2) : 2019	5	1 5	BD L (D L - 0.1 )



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**TEST RESULTS**

S · N ·	Test Paramete r	Meas urem ent Unit	Test Meth od	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		T e s t  R e s u l t s
				Ac ce pt ab le Li mi t	Pe r m issi ble Li mi t #	
I I	<b>Chemical Testing 2. Residues In Water</b>					
4 1	<b>Polychlorinated biphenyls</b>					
	2,2',5-trichlorobiphenyl	µg/l	ANtr/7 .2/RES /04: 2018	0.5	No rela xati on	B D L  ( D L - 0 · 0 3 )
	2,4,4'-trichlorobiphenyl	µg/l	ANtr/7 .2/RES /04: 2018			B D L  ( D L - 0 · 0 3 )
2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7 .2/RES /04: 2018	B D L  ( D L - 0			



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					0 3 )
	2,2',4,5,5'- pentachloro biphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
	2,2',3,4,4',5' - hexachlorob iphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
	2,2',4,4',5,5' - hexachlorob iphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
	2,2',3,4,4',5, 5'- heptachloro biphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
<b>4 2</b>	<b>Polynuclear aromatic hydrocarbons</b>				
	Naphthalene	µg/l	ANtr/7 .2/RES /03: 2018	0.1	No rela xati on  B D L  ( D L



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					— 0 · 0 3 )
Acenaphthyl ene	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L — 0 · 0 3 )
Acenaphthe ne	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L — 0 · 0 3 )
Fluorene	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L — 0 · 0 3 )
Anthracene	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L — 0 · 0 3 )
Phenanthren e	µg/l	ANtr/7 .2/RES /03: 2018			B D L  (



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					D L - 0 . 0 3 )
Fluoranthene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Pyrene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Benzo(a)anthracene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Chrysene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Benzo(a)pyrene	µg/l	ANtr/7 .2/RES /03:			B D L





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		2018			( D L - 0 . 0 3 )
Benzo(b)flu oranthene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Benzo(k)flu oranthene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Indeno(123, cd)pyrene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Dibenzo(a,h) anthracene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Benzo(ghi)p	µg/l	ANtr/7			B



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	ethylene		.2/RES /03: 2018			D L  ( D L - 0 . 0 3 )
4 3	<b>Trihalomethanes</b>					
i	Bromoform	mg/ l	ANtr/7.2 /RES/05: 2018	0. 1	No rel axa tio n	B D L  ( D L - 0 . 0 5 )
i i	Dibromochloromethane	mg/ l		0. 1	No rel axa tio n	B D L  ( D L - 0 . 0 5 )
i i i	Bromodichloromethane	mg/ l		0. 06	No rel axa tio n	B D L  ( D L - 0 . 0 5 )
i v	Chloroform	mg/ l		0. 2	No rel axa tio n	B D L  ( D L -



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						0 . 0 5 )
4 4	<b>Pesticide Residues Organochlorine</b>					
i	Alpha-HCH	µg/l	ANtr/7.2 /RES/01: 2018	0.01	No rel axa tio n	B D L  ( D L - 0 . 0 1 )
i i	Beta HCH	µg/l	ANtr/7.2 /RES/01: 2018	0.04	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
i i i	Gamma - HCH (Lindane)	µg/l	ANtr/7.2 /RES/01: 2018	2	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
i v	Delta-HCH	µg/l	ANtr/7.2 /RES/01: 2018	0.04	No rel axa tio n	B D L  ( D L - 0 . 0 )



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						3 )
v	Alachlor	µg/l	ANtr/7.2 /RES/01: 2018	20	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
v i i	Aldrin	µg/l	ANtr/7.2 /RES/01: 2018	0. 03	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
v i i	Dieldrin	µg/l	ANtr/7.2 /RES/01: 2018	0. 03	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
v i i i	Butachlor	µg/l	ANtr/7.2 /RES/01: 2018	12 5	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
i x	p,p'-DDE	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa	B D L



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					tion	( D L - 0 . 0 3 )
x	o,p'-DDE	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )
x i	p,p'-DDD	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )
x i i	o,p'-DDD	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )
x i i i	o,p'- DDT	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )





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						- 0 . 0 3 )
x i v	p,p'- DDT	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
x v	Endosulph an					
	Alpha- Endosulph an					B D L
	Beta- Endosulph an					( D L
	Endosulph an sulphate	µg/l	ANtr/7. 2/RES/ 01: 2018	0. 4	No rel axa tio n	- 0 . 0 3 )

**TEST RESULTS**

Test Parameter	M e a s u r e m e n t  U n i t	Test Meth od	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Res ult
			A c c e p t a b l e	Pe r m i s s i b l e L i m i t #	



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				<b>L i m i t</b>		
<b>Pesticide Residues Organophosphorus</b>						
	2,4-Dichlorophenoxyacetic acid	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	30	N o r e l a x a t i o n	BDL (DL - 0.03)
	Monocrotophos	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	1	N o r e l a x a t i o n	BDL (DL - 0.03)
	Atrazine	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	2	N o r e l a x a t i o n	BDL (DL - 0.03)
	Parathion methyl	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	03	N o r e l a x a t i o n	BDL (DL - 0.03)
	Paraoxon methyl	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	-	-	BDL (DL - 0.03)
	Isoproturon	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	9	N o r e l a x a t i o n	BDL (DL - 0.03)
	Malathion	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	190	N o r e l a x a t i o n	BDL (DL - 0.03)
	Malaoxon	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	-	-	BDL (DL - 0.03)
	Ethion	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	3	N o r e l a x a t i o n	BDL (DL - 0.03)
	Chlorpyrifos	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	30	N o r e l a x	BDL (DL - 0.03)



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					ati on	)
	Phorate	μ g / l	ANtr/7 .2/RES /02 : 2018	2	N o rel ax ati on	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-----



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**Details of  
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<b>Location:</b>	<b>GW2) Kudag Village Sample Source:-Borewell Water</b>
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**TEST RESULTS**

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>Biological Testing 1. Water</b>					
Total coliform	Per 100 ml	IS 15185 : 2016	Ab s e n t	Ab s e n t	Abse nt
<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Ab s e n t	Ab s e n t	Ab s e n t
<b>Chemical Testing 1. Water</b>					
Alkalinity (as CaCO <sub>3</sub> )	m g / l	IS 3025 (Part 23) : 1986	2 0 0	60 0	187.9 6
Ammonia (as N)	m g / l	IS 3025 (Part 34) : 1988	0 . 5	N o  r e l a x a t i	BDL (D L – 0.1)



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

					o n	
	Anionic surface active agents (as MBAS)	m g / l	IS 13428 : 2005 Annex K	0 . 2	1. 0	BDL (D L – 0.0 1)
	Colour	H a z e n  u n i t s	IS 3025 (Part 4) : 2021	5	15	1
	Cyanide (as CN)	m g / l	IS 3025 (Part 27) : 1986	0 . 5	N o  r e l a x a t i o n	BDL (D L – 0.0 05)
	Chloride (as Cl)	m g / l	IS 3025 (Part 32) :1988	2 5 0	10 0 0	26.58
	Calcium (as Ca)	m g / l	IS 3025 (Part 40) : 1991	7 5	20 0	47.82
	Chloramines (as Cl <sub>2</sub> )	m g / l	IS 3025 (Part 26) : 2021	4 . 0	N o  r e l a x a t i o n	BDL (D L – 0.1)
	Free residual chlorine	m g / l	IS 3025 (Part 26) : 2021	M i n . 0 . 2	1	BDL (D L – 0.1)
	Fluoride (as F)	m g / l	IS 3025 (Part 60) : 2008	1 . 0	1. 5	0.2 1
	Magnesium (as Mg)	m g / l	IS 3025 (Part 46) : 1994	3 0	10 0	13. 59
	Nitrate (as NO <sub>3</sub> )	m g / l	APHA 23 <sup>rd</sup> Edition	4 5	N o  r e	BD L (D L – 2)





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

					l a x a t i o n	
Odour	-	IS 3025 (Part 5) : 2018	A g r e e a b l e	A g r e e a b l e	Agre cab le	
pH	-	IS 3025 (Part 11) : 2022	6 . 5  t o 8 . 5	N o  r e l a x a t i o n	6.87 at 25° C	
Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	m g / l	IS 3025 (Part 43) : 1992	0 . 0 0 1	0. 0 0 2	BDL (D L – 0.0 01)	
Sulphate (as SO <sub>4</sub> )	m g / l	IS 3025 (Part 24) : 2022	2 0 0	40 0	23. 97	
Sulphide (as H <sub>2</sub> S)	m g / l	IS 3025 (Part 29) : 1986	0 . 0 5	N o  r e l a x a t i o n	BDL (D L – 0.0 3)	
Taste	-	IS 3025 (Part 8) : 1984	A g r e e a b l e	A g r e e a b l e	Agre cab le	
Total dissolved solids	m g / l	IS 3025 (Part 16) : 1984	5 0 0	20 0 0	461	
Turbidity	N T U	IS 3025 (Part 10) : 1984	1	5	0.7	
Total hardness (as CaCO <sub>3</sub> )	m g / l	IS 3025 (Part 21) : 2009	2 0 0	60 0	175.3 6	



**Hindalco Industries Limited Kudag Mining  
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Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

	Mineral Oil	m g / l	ANtr/7.2/ RES/06: 2018	0 . 5	N o  r e l a x a t i o n	BD L (D L - 0.0 01)
<b>Chemical Testing 2. Residues In Water</b>						
	Arsenic (as As)	m g / l	IS 3025 (Part 37) : 1988	0 . 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 1)
	Aluminium (as Al)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 3	0 . 2	BD L (D L - 0.0 1)
	Barium (as Ba)	m g / l	IS 3025 (Part 2) : 2019	0 . 7	N o  r e l a x a t i o n	BD L (D L - 0.0 1)
	Boron (as B)	m g / l	IS 3025 (Part 2) : 2019	0 . 5	2 . 4	BD L (D L - 0.1 )
	Copper (as Cu)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 5	1 . 5	BD L (D L - 0.0 3)
	Cadmium (as Cd)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 0 3	N o  r e l	BD L (D L - 0.0 01)



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

					a x a t i o n	
	Iron (as Fe)	m g / l	IS 3025 (Part 2) : 2019	1 . 0	N o  r e l a x a t i o n	0.24
	Lead (as Pb)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 01)
	Manganese (as Mn)	m g / l	IS 3025 (Part 2) : 2019	0 . 1	0 . 3	BD L (D L - 0.0 5)
	Mercury (as Hg)	m g / l	IS 3025 (Part 48) : 1994	0 . 0 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 00 5)
	Molybdenum (as Mo)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 7	N o  r e l a x a t i o n	BD L (D L - 0.0 1)



**Hindalco Industries Limited Kudag Mining  
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**Details of  
Salient  
Features**

	Nickel (as Ni)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 2	N o  r e l a x a t i o n	BD L (D L - 0.0 1)
	Selenium (as Se)	m g / l	IS 3025 (Part 56) : 2003	0 . 0 1	N o  r e l a x a t i o n	BD L (D L - 0.0 01)
	Silver (as Ag)	m g / l	IS 13428 : 2005	0 . 1	N o  r e l a x a t i o n	BD L (D L - 0.0 01)
	Total Chromium (as Cr)	m g / l	IS 3025 (Part 2) : 2019	0 . 0 5	N o  r e l a x a t i o n	BD L (D L - 0.0 3)
	Zinc (as Zn)	m g / l	IS 3025 (Part 2) : 2019	5	1 5	BD L (D L - 0.1 )



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

**TEST RESULTS**

S · N ·	Test Paramete r	Meas urem ent Unit	Test Meth od	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		T e s t  R e s u l t s
				Ac ce pt ab le Li mi t	Pe r m issi ble Li mi t #	
I I	<b>Chemical Testing 2. Residues In Water</b>					
4 1	<b>Polychlorinated biphenyls</b>					
	2,2',5-trichlorobiphenyl	µg/l	ANtr/7 .2/RES /04: 2018	0.5	No rela xati on	B D L  ( D L - 0 · 0 3 )
	2,4,4'-trichlorobiphenyl	µg/l	ANtr/7 .2/RES /04: 2018			B D L  ( D L - 0 · 0 3 )
2,2',5,5'-tetrachlorobiphenyl	µg/l	ANtr/7 .2/RES /04: 2018	B D L  ( D L - 0			





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

					0 3 )
	2,2',4,5,5'- pentachloro biphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
	2,2',3,4,4',5' - hexachlorob iphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
	2,2',4,4',5,5' - hexachlorob iphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
	2,2',3,4,4',5, 5'- heptachloro biphenyl	µg/l	ANtr/7 .2/RES /04: 2018		B D L  ( D L  -  0 .0 3 )
4 2	<b>Polynuclear aromatic hydrocarbons</b>				
	Naphthalene	µg/l	ANtr/7 .2/RES /03: 2018	0.1	No rela xati on  B D L  ( D L



**Hindalco Industries Limited Kudag Mining  
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Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

					– 0 . 0 3 )
Acenaphthyl ene	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L – 0 . 0 3 )
Acenaphthe ne	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L – 0 . 0 3 )
Fluorene	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L – 0 . 0 3 )
Anthracene	µg/l	ANtr/7 .2/RES /03: 2018			B D L  ( D L – 0 . 0 3 )
Phenanthren e	µg/l	ANtr/7 .2/RES /03: 2018			B D L  (



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

					D L - 0 .0 3 )
Fluoranthene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 .0 3 )
Pyrene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 .0 3 )
Benzo(a)anthracene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 .0 3 )
Chrysene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 .0 3 )
Benzo(a)pyrene	µg/l	ANtr/7 .2/RES /03:			B D L



**Hindalco Industries Limited Kudag Mining  
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**Details of  
Salient  
Features**

		2018			( D L - 0 . 0 3 )
Benzo(b)flu oranthene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Benzo(k)flu oranthene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Indeno(123, cd)pyrene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Dibenzo(a,h) anthracene	µg/l	ANtr/7 .2/RES /03: 2018			B D L ( D L - 0 . 0 3 )
Benzo(ghi)p	µg/l	ANtr/7			B



**Hindalco Industries Limited Kudag Mining  
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**Details of  
Salient  
Features**

	ethylene		.2/RES /03: 2018			D L  ( D L - 0 . 0 3 )
4 3	<b>Trihalomethanes</b>					
i	Bromoform	mg/ l	ANtr/7.2 /RES/05: 2018	0. 1	No rel axa tio n	B D L  ( D L - 0 . 0 5 )
i i	Dibromochloromethane	mg/ l		0. 1	No rel axa tio n	B D L  ( D L - 0 . 0 5 )
i i i	Bromodichloromethane	mg/ l		0. 06	No rel axa tio n	B D L  ( D L - 0 . 0 5 )
i v	Chloroform	mg/ l		0. 2	No rel axa tio n	B D L  ( D L -





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

						0 . 0 5 )
4 4	<b>Pesticide Residues Organochlorine</b>					
i	Alpha-HCH	µg/l	ANtr/7.2 /RES/01: 2018	0.01	No rel axa tio n	B D L  ( D L - 0 . 0 1 )
i i	Beta HCH	µg/l	ANtr/7.2 /RES/01: 2018	0.04	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
i i i	Gamma - HCH (Lindane)	µg/l	ANtr/7.2 /RES/01: 2018	2	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
i v	Delta-HCH	µg/l	ANtr/7.2 /RES/01: 2018	0.04	No rel axa tio n	B D L  ( D L - 0 . 0 )



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

						3 )
v	Alachlor	µg/l	ANtr/7.2 /RES/01: 2018	20	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
v i i	Aldrin	µg/l	ANtr/7.2 /RES/01: 2018	0. 03	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
v i i	Dieldrin	µg/l	ANtr/7.2 /RES/01: 2018	0. 03	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
v i i i	Butachlor	µg/l	ANtr/7.2 /RES/01: 2018	12 5	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
i x	p,p'-DDE	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa	B D L



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

					tion	( D L - 0 . 0 3 )
x	o,p'-DDE	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )
x i	p,p'-DDD	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )
x i i	o,p'-DDD	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )
x i i i	o,p'- DDT	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L ( D L - 0 . 0 3 )



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

						- 0 . 0 3 )
x i v	p,p'- DDT	µg/l	ANtr/7.2 /RES/01: 2018	1	No rel axa tio n	B D L  ( D L - 0 . 0 3 )
x v	Endosulph an					
	Alpha- Endosulph an					B D L
	Beta- Endosulph an					( D L - 0 . 0 3 )
	Endosulph an sulphate	µg/l	ANtr/7. 2/RES/ 01: 2018	0. 4	No rel axa tio n	- 0 . 0 3 )

**TEST RESULTS**

Test Parameter	M e a s u r e m e n t  U n i t	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 4		Test Result
			A c c e p t a b l e	P e r m i s s i b l e L i m i t #	



**Hindalco Industries Limited Kudag Mining  
Environmental Status  
Report for July-2022 to September-2022**

**Details of  
Salient  
Features**

				<b>L i m i t</b>		
<b>Pesticide Residues Organophosphorus</b>						
2,4-Dichlorophenoxyacetic acid	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	30	No relaxation	BDL (DL - 0.03)	
Monocrotophos	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	1	No relaxation	BDL (DL - 0.03)	
Atrazine	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	2	No relaxation	BDL (DL - 0.03)	
Parathion methyl	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	03	No relaxation	BDL (DL - 0.03)	
Paraoxon methyl	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	-	-	BDL (DL - 0.03)	
Isoproturon	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	9	No relaxation	BDL (DL - 0.03)	
Malathion	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	190	No relaxation	BDL (DL - 0.03)	
Malaoxon	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	-	-	BDL (DL - 0.03)	
Ethion	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	3	No relaxation	BDL (DL - 0.03)	
Chlorpyrifos	$\mu$ g / l	ANtr/7.2/RES /02 : 2018	30	No relaxation	BDL (DL - 0.03)	





**Hindalco Industries Limited Kudag Mining  
Environmental Status  
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**Details of  
Salient  
Features**

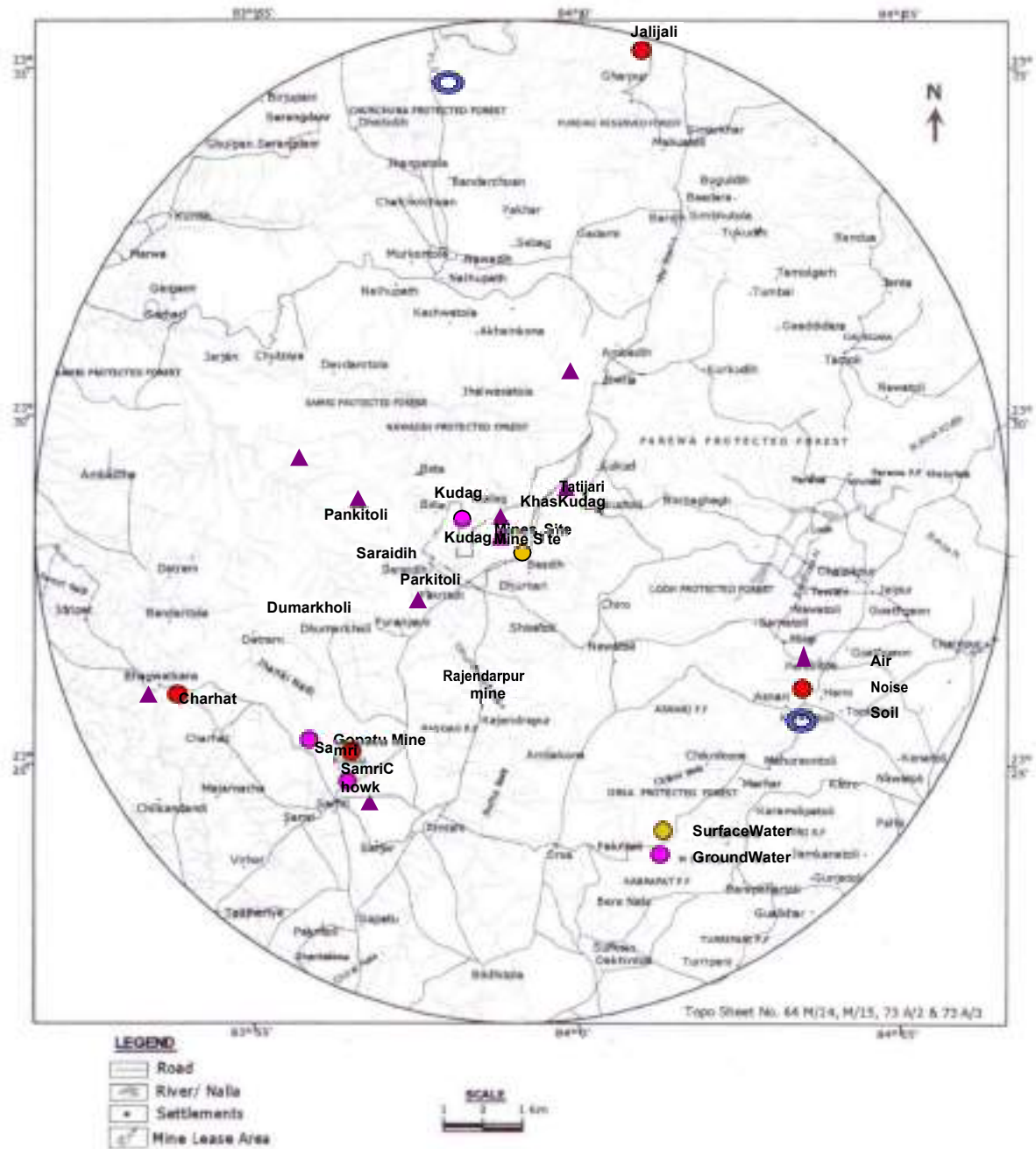
					ati on	)
	Phorate	μ g / l	ANtr/7 .2/RES /02 : 2018	2	N o rel ax ati on	BDL (DL - 0.03 )
	Phorate-sulfone					
	Phorate-sulfoxide					

**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-----

Kudag  
Kudag  
Kudag MineSite  
Saraidih campus Mine Site  
Sapatitoli  
Dumarkholi  
Parkitoli  
Dumarkholi  
Charhat  
Charhat  
Samri  
Samri  
Rajendarpur  
Rajendarpur  
Mine



**Fig 5: Sampling Locations for Water**

*Agent of Mines*  
Samri Mines Division  
Hindalco Industries Ltd

Apur/Air/R/Aug 2017/1125/05/8/2017



ANNEXURE - III

REGIONAL OFFICE

CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

Bank Colony, Behind B.T.I., Nawapara, Ambikapur (C.G.) Fax/Phone 07774-231936

No. 834/RO/TS/CECB/2017  
To,

Ambikapur, Dt. 05/8/2017

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 21 of the Air (Prevention & Control of Pollution) Act, 1981.

Ref. : Your online application no. 486480 dated 21/07/2017 and subsequent correspondence ending dated 04/08/2017.

With reference to your above, application consent and license are hereby renewed for a period of Five years i.e. from 01/12/2017 to 30/11/2022 with the terms and conditions incorporated in the consent issued by Board Office letter No. 6884/TS/CECB/2007, Raipur, dated 24/12/2007, subsequent renewal of consent issued by Board and additional condition mentioned below:-

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

**Additional Conditions:**

1. 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.
2. 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.
3. Industry shall ensure safe and scientific arrangement for disposal of all solid wastes. Excavated area shall be reclaimed scientifically.
4. All internal roads shall be made pucca & shall be maintained properly. Dust, muck & sludge generated due to transportation on the road shall be cleaned and disposed off properly. Industry shall maintain good house keeping within mine lease area. Industry shall ensure the transportation of ore in duly covered vehicles.
5. Industry shall use fly ash based products in their construction/ repairing activities.
6. Wide green belt of broad leaf local species shall be developed all along the mine lease area. As far as possible maximum area of open spaces shall be utilized for plantation purposes.
7. 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.
8. 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

Hindalco Industries Ltd.  
Samri Mines Division  
Distt. Balrampur (C.G.)

Date 7/8/17 (123)

Received by (Signature)

Agent of Mines  
Samri Mines Division  
Hindalco Industries Ltd



Apur/water/R/Aug 2017/1125/05/8/2017



## REGIONAL OFFICE

### CHHATTISGARH ENVIRONMENT CONSERVATION BOARD

Bank Colony, Behind B.T.I., Nawapara, Ambikapur (C.G.) Fax/Phone 07774-231936

No. 833/RO/TS/CECB/2017

Ambikapur, Dt. 05/8/2017

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. 486480 dated 21/07/2017 and subsequent correspondence ending dated 04/08/2017.

With reference to your above, application consent and license are hereby renewed for a period of Five years i.e. from **01/12/2017 to 30/11/2022** with the terms and conditions incorporated in the consent issued by Board Office letter No. 6880/TS/CECB/2007, Raipur, dated 24/12/2007, subsequent renewal of consent issued by Board and additional condition mentioned below:-

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

#### Additional Conditions:

1. 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.
2. Industry shall ensure safe and scientific arrangement for disposal of all solid wastes. Excavated area shall be reclaimed scientifically.
3. All internal roads shall be made pucca & shall be maintained properly. Dust, muck & sludge generated due to transportation on the road shall be cleaned and disposed off properly. Industry shall maintain good house keeping within mine lease area. Industry shall ensure the transportation of ore in duly covered vehicles.
4. Industry shall use fly ash based products in their construction/ repairing activities.
5. Industry shall submit monitoring report of effluent regularly.
6. Wide green belt of broad leaf local species shall be developed all along the mine lease area. As far as possible maximum area of open spaces shall be utilized for plantation purposes.
7. Provision of water harvesting system should be provided in the industry premises.
8. 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.
9. 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

Hindalco Industries Ltd.  
Samri Mines Division  
Distt. Balrampur (C.G.)

Date 7/8/17 (122)

Received by

Agent of Mines  
Samri Mines Division  
Hindalco Industries Ltd



Hindalco Industries Limited

Mines Division Samri

Annexure – IV & V

Lease Wise production 2022-23 (April'22 – Sept.'22)

Lease	Production (MT)	Mined out Area (Ha.)	Reclaimed Area (Ha.)
Samri	2,05,550	6.083	1.208
Tatijharia	2,03,500	7.027	2.438
Kudag	22,000	1.256	0.101
<b>Total</b>	<b>4,31,050</b>	<b>14.366</b>	<b>3.747</b>

Lease Wise Afforestation 2022-23 (April'22 – Sept.'22)

Lease	No. of Saplings planted	Afforested Area (Ha.)
Samri	39,071	10.918
Tatijharia	17,110	5.628
Kudag	6,020	2.024
<b>Total</b>	<b>62,201</b>	<b>18.57</b>

  
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## Annexure-VI

### Actual Expenditure incurred in Environment Management Plan: -

Total cost incurred for protection of environment in Samri, Tatijharia & Kudag Bauxite mine of Hindalco Industries Ltd. of Chhattisgarh state during the first half period of F.Y. 2022-23 (April 2022 to Sept. 2022).

S.No.	Environmental Protection measure	Actual Cost (Lac) FY. - 2022-23 (April'22 to Sept.'22)
1	Environment Monitoring	3.00
2	Green Belt	3.26
3	Occupational Health Monitoring	4.50
4	Reclamation/ Rehabilitation on mined out area (Samri – 1.208 Ha., Tatijharia – 2.438 Ha., Kudag – 0.101 Ha.) – Total – 3.747 Ha.	11.24
	<b>Total</b>	<b>22.00</b>

- Environment monitoring jobs has been out sourced to Annacon Lab, recognized by MoEF (GOI) & NABL etc.
- 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 Lac per ha

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

(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 Ltd Samri Mine Division Baba Chpwk At Post Kusmi, Distt Balrampur,, 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/1/2021/6171                      | 3. Category:    | Safe       |
| 2. Application No.:                    | 21-4/1433/CT/MIN/2018                             | (GWRE 2017)     |            |
| 4. Project Status:                     | Existing With Additional Ground Water Requirement | 5. NOC Type:    | Renewal    |
| 6. Valid from:                         | 29/04/2021  | 7. Valid up to: | 28/04/2023 |
| 8. 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						

9. Details of ground water abstraction /Dewatering structures

Abstraction Structure*	Total Existing No.:3						Total Proposed No.:1					
	DW	DCB	BW	TW	MP	MPu	DW	DCB	BW	TW	MP	MPu
	1	0	0	2	0	0	0	0	1	0	0	0

\*DW- Dug Well; DCB-Dug-cum-Bore Well; BW-Bore Well; TW-Tube Well; MP-Mine Pit;MPu-Mine Pumps

10. Ground Water Abstraction/Restoration Charges paid (Rs.): 527.00

(Compliance Conditions given overleaf)

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18/11, जामनगर हाउस, मानसिंह रोड, नई दिल्ली - 110011 / 18/11, Jamanagar House, Mansingh Road, New Delhi-110011  
Phone: (011) 23383561 Fax: 23382051, 23386743  
Website: cgwa-noc.gov.in

पानी बचाये - जीवन बचाये  
SAVE WATER - SAVE LIFE

Agent of Mines  
Samri Mines Division  
Hindalco Industries Ltd.



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/dischage 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 firms 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 rebats 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 CPCE 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/industry 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.)

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