

SPEED POST

Ref : HZL/Kayad/ENV/MOEF/2024-25/38

May 25, 2024

To,
The Deputy Director (S) /Scientist -C
Ministry of Environment, Forest & Climate Change,
Integrated Regional Office, A-209&218, Aranya Bhawan,
Jhalana Institutional area Jaipur-302004

Sub: Six monthly environmental compliance report from October 2023 to March 2024 .**Ref: Env clearance vide No. : J-110115/47/2012-IA.II (M) dated 5th Feb, 2018.**

Dear Sir / Madam,

Please find enclosed herewith the compliance status report of above referred Environmental Clearance granted by the Ministry of Environment, Forest and Climate Change for the period of **October 2023 to March 2024**. is for your kind perusal. Soft copy of compliance is also mailed and uploaded in the website.

Thanking you,

Yours faithfully


(Nirmalendu Kumar)
Director- SBU Kayad Mine
Dist.-Ajmer (Raj.)
SBU Director
Hindustan Zinc Ltd.
Kayad Mine-305023
Dist.-Ajmer (Raj.)

Cc to:

In -Charge (Zonal office)
Central Pollution Control Board,
Vithal Market, Paryavaran Parisar ,
E-5, Arera Colony, Bhopal, – 462 016 (MP)

Member Secretary
Rajasthan Pollution Control Board
4 Institutional Area, Jhalana Doogri
Jaipur (Raj) -302004

The Regional officer
Rajasthan Pollution Control Board Regional Office,
SPL-II , RIICO Industrial Area, Phase-V , Kishangarh,
Dist. Ajmer-305801

Hindustan Zinc Limited
Kayad Mine, Ajmer

Environment Clearance Compliance Report: -

Name of the project: Kayad Lead- Zinc Underground Mine, M/S Hindustan Zinc Limited, Village Kayad, Distt. Ajmer, Rajasthan.

Environmental Clearance letter no: J-11015/47/2012-IA.II (M) dated 5th Feb, 2018.

Period of Compliance report: October 2023 to March 2024

S.no	A. Specific Conditions	Compliance Status
1.	Environmental Clearance is Granted Subject to Under Hon'ble Supreme Court Judgment Date 02.08.2017	Noted
2.	Environmental Clearance is Granted Subject to Final Outcome of Hon'ble Supreme Court of India, Hon'ble High Court of Rajasthan and other Court of Law, if any, as May be Applicable to this project .	Noted
3.	This Environmental Clearance is subject to obtaining Requisite NBWL Clearance from the Standing Committee of National Board for Wildlife, if any, Applicable for this Mining Project	Not Applicable
4.	No Mining Activities Will be Allowed in Forest area, if any, for which the Forest Clearance is not Available.	No forest involved in mine lease area.
5.	This Project Shall obtain Consent to Operate from the State Pollution Control Board, Rajasthan and effectively implement all the Conditions Stipulated therein.	Consent to Operate was granted by Rajasthan State Pollution Control Board Vide F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563 dated 06/01/2023 and valid till 31.01.2028 Annexure -VI All the conditions are being implemented effectively.
6.	The Proponent should install online Ambient Air Quality Monitoring System and there should be system for display of digital AAQ data within 03 months at least at three locations as per wind direction. Online provisions of pH and Turbidity meters at discharge points of STP and ETP and also at water storage pond in the mining area may be made; Project Proponent should display the result digitally in front of the main Gate of the mine site.	Online Ambient Air Quality Monitoring system installed and AAQ data digital displayed outside gate. pH and Turbidity meters at discharge point of STP and at a water storage pond in mining area installed and result digitally displayed. Annexure-VIII, No ETP at Kayad Mine .
7.	The Project Proponent has to take care of gullies formed on slopes. Dump mass should be consolidated with proper filling/leveling with the help of dozer/compactors. The report on slope and stability monitoring should be	Waste generated from Mining operations is being reused for back filling. No waste is accumulated at site.

	sent to MoEF & CC and its Regional office every six-month.	
8.	The reclamation at waste dump sites shall be ecologically sustainable. Scientific reclamation has been followed. The local species may be encouraged and species are so chosen that the slope, bottom of the dumps and top of the dumps are able to sustain these species. The aspect of the dump is also a factor which regulates some climatic parameters and allows only species adapted to that micro climate. This may be recommended to be studied by hiring Expert Ecology Group.	Waste generated from Mining operations is being reused for back filling. No waste is accumulated at site.
9.	There is need for regular monitoring of invertebrates and aquatic life of water bodies including the reservoir located close to the mining lease to establish that fish and other animals including the water is not 'contaminated with heavy metal. There could be a research on "bio accumulation of heavy metals in invertebrates" to completely establish that there is no impact of mining.	Study get done from M/s NEERI Nagpur and Report submitted. Annexure -VII
10.	A specialized Institution may be hired to carry out ecological survey on the plant species to evaluate their growth in terms of stunted, deformed and seed viability. The sensitive species and indicator species to heavy metal pollution may be screened out and plantation accordingly designed. Similarly, uptake of Zinc, Cadmium and lead etc. by crops and vegetables grown in the crop lands around the mining lease may be studied. Bottom sediment analysis of ponds, wells and Rivers to ascertain the level of accumulation of heavy metal may be done.	Study get done from specialized Institution M/s National Environmental Engineering Research Institute (NEERI), Nagpur and Report submitted.
11.	The Proponent shall conduct an Occupational health study with respect to the pressure impact on ear drums as person goes underground and implement the recommendations.	Occupational health study with respect to the pressure impact on ear drums as person goes underground conducted inhouse as well as from M/s Sure Safety. Report submitted.
12.	Project Proponent shall carry out vibration studies well before approaching any such habitats or other buildings to evaluate the zone of influence and impact of blasting on the neighborhood. Within 500 meters of such sites vulnerable to blasting vibrations, avoidance of use of explosives and adoption of alternative means of mineral extraction. A provision for monitoring of each blast should be made so that the impact of blasting on nearby habitation and dwelling units could be ascertained. The covenant of lease deed under Rule 31 of MCR 1960 provides that no mining operations shall be carried out within 50 meters of public works such as public roads and	Blasting being carried out during day time only and the vibration study is being done regularly by M/s CIMFR, Dhanbad. No secondary blasting being carried out at site.

	buildings or inhabited sites except with the prior permission from the Competent Authority.	
13.	Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. The material transfer points should invariably be provided with Bag filters and or dry fogging system. Belt-conveyors should be fully covered to avoid air borne dust; Use of effective sprinkler system to suppress fugitive dust on haul roads and other transport roads shall be ensured,	Mine haul road is being wetted through water tankers fitted with sprinklers. Annexure-XI Permanent water sprinkler fitted. Belt-conveyor at CRF is fully covered to avoid air borne dust. Ensured effective sprinkling system to suppress fugitive dust on haul and transport roads.
14.	The monitoring of PM2.5 in the vehicle emission shall be conducted to improve the mine environment and report submitted to the Regional Office of the MoEFCC.	The monitoring of PM2.5 in ambient air near vehicular movement is conducted but not able to monitor PM 2.5 in vehicular emission due unavailability of technology/ instruments.
15.	The Project Proponent reported that there are seven Schedule-1 species viz. Peafowl (<i>Pavo cristatus</i>), Osprey (<i>Pandion haliaetus</i>), Tawny eagle (<i>Aquila rapax</i>), Crested honey buzzard (<i>Pernis ptilorhynchus</i>), Shikra (<i>Accipiter badius</i>), Leopard (<i>Panthera pardus</i>), Indian pangolin (<i>Manis crassicaudata</i>) in the study area. The PP shall implement the Conservation Plan and enhance the budget for implementation of Conservation Plan for Schedule I Specie and also increase the budget for plantation/green development. The Proponent shall implement the Wildlife Conservation Plan along with the funds so allocated with consultation of Chief Wild Life Warden of the State Govt. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office, Lucknow and the Chief Wild Life Warden of the State Govt.	Conservation plan has been developed for Schedule-1 namely Peafowl (<i>Pavo cristatus</i>) and has been approved by the additional Principal Chief Conservation of Forest and Chief wildlife warden Jaipur, Rajasthan and implemented the same. Action plan along with its implementation status report being submitted to RO MOEF & CC & Chief wild life warden of State Government.
16.	Proponent shall carry out monitoring of lead in the blood samples of the employees and the villagers in the areas surrounding the mine in their schedule of health check-up. The nearby water bodies shall be monitored every six months and report submitted to Regional office of the MoEFCC to ascertain impact due to lead contamination.	Lead in the blood samples of the employees carried out during their PME and villagers are monitored. Water samples analysis of nearby water bodies carried out regularly and report submitted.
17.	Implementation of Action Plan on the issues raised during the Public Hearing shall be ensured. The Project Proponent shall complete all the tasks as per the Action Plan submitted with budgetary provisions during the Public Hearing.	Being implemented
18.	Implementation of the outcome of study with regard to "optimization of blast design parameter for the safety and stability of surface structures and subsequent monitoring of vibration on the surface structures for their long term stability" which was carried out by Central Institute of Mining and Fuel Research should be ensured.	The Implementation of CIMFR study report is being ensured. <ul style="list-style-type: none"> • Regular vibration studies conducted through CIMFR • Peak Particle Velocity within ranging between 1.0 to 15.00 mm/sec

		<ul style="list-style-type: none"> • Due care is taken in blast design, explosives use, selection of detonators and delay to ensure safe vibration limit.
19.	Continuous monitoring of radioactive elements, if any, shall be undertaken till entire mine is dewatered and report has to be submitted to MoEFCC Regional Office. Periodic monitoring of any adverse impact of Radon and its daughter products on any worker should be included in the Occupational Health Monitoring Programmed.	The monitoring of radioactive element done, and report already submitted to MoEFCC Regional Office. No radioactive element trace in analysis. Periodic monitoring of any adverse impact of Radon and its daughter products on any worker included in the Occupational Health Monitoring Programmed
	B. Standard conditions	
1.	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest and Climate Change 5 years in advance of final mine closure for approval.	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted 5 years in advance.
2.	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change.	Assured to comply
3.	No change in the calendar plan including excavation, quantum of mineral and waste should be made.	Being ensured as per Mine Plan.
4.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) for the project.	Renewal application submitted for permission. Recommendation by CGWB to CGWA done. NOC approved and valid till 09/10/2024. Surface water monitoring report attached Annexure XV
5.	Mining shall be carried out as per the provisions outlined in mining plan approved by Indian Bureau of Mines (IBM) as well as by abiding to the guidelines of Directorate General Mines Safety (DGMS).	Ensuring the Mining as per the Mine Plan approved by IBM and as per the guideline of DGMS
6.	The lands which are not owned by Proponent, mining will be carried out only after obtaining the consents from all the concerned land owners as per the provisions of the Mineral Concession Rules, 1960 and MMDR Act, 1957.	Ensured to comply
7.	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use. Pattern and report submitted to Ministry of Environment, Forest and Climate Change its Regional Office.	Digital processing of the entire lease area using remote sensing technique carried out M/s J.M. Environet Pvt. Ltd. and Report submitted vide letter no HZL/Kayad/Enc/MoEF/22-23/94 dated 23 /11/2023 Annexure -XIV
8.	The critical parameters as per the Notification 2009 such as Pm, .10., PM 2.5 NOx and Sox etc. in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored	The critical parameters such as PM10, PM 2.5, NOx and Sox etc. in the ambient air are being monitored within the impact zone,

	periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. 3-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.	peak particle velocity at Kayad Village being monitored regularly. Zero discharge is being maintained. PM 10, PM 2.5, NOx monitoring data and peak particle velocity data are being uploaded on website of the company as well as display board on main gate of the company.
9.	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of Phyllo and PM2.5 such as haul road, loading and unloading point and transfer points. Fugitive dust emissions from all the sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed under National Ambient Air Quality Standards (NAAQS) or by the Central Pollution Control Board in this regard. Monitoring of Ambient Air Quality to be carried out based on the Notification 2009, as amended from time to time by the Central Pollution Control Board.	An effective safeguard measure has been taken and regular water spraying on the haul road, loading and unloading area are being carried out. Ambient Air Quality parameters maintained and monitored as per National Ambient Air Quality Standards (NAAQS) or by the Central Pollution Control Board. Monitoring data enclosed as Annexure-II
10.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations. 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 Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Regular monitoring of ground water level and quality is being carried out in and around the mine lease by establishing a network of existing wells and piezometers. No natural water course / water resources obstructed due to mining operations. The Water level and water quality Annexure -I.
11.	Regular monitoring of the flow rate of the springs and perennial allays flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed, The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table.	No springs and perennial allay flowing in and around the mine lease.
12.	Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority, Regional	Regular monitoring of water quality upstream and downstream of water bodies carried out and analysis report Enclosed Annexure-I


	Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	
13.	Transportation of the minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The project proponent shall bear the cost towards the widening and strengthening of existing public road network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.	Transportation of the lead & zinc ore is being done by road which is passing through Highways.
14.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours.	Ensured the biological clock of the villagers by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limit for day and night. Annexure-III.
15.	Main haulage road in the mine should be provided with permanent water sprinklers and other roads should be regularly wetted with water tankers fitted with sprinklers. The material transfer points should invariably be provided with Bag filters and or dry fogging system. In case of Belt-conveyors facilities the system should be fully covered to avoid air borne dust; Use of effective sprinkler system to suppress fugitive dust on haul roads and other transport roads shall be ensured.	Permanent water sprinkler at near portal haul road and roads is being wetted through water tankers fitted with sprinklers. Annex- XI Effective sprinkling system is in place to suppress fugitive dust on haul road. Belt-conveyor at CRF is fully covered to avoid air borne dust.
16.	Sufficient number of Gullies to be provided for better management of water. Regular Monitoring of pH shall be included in the monitoring plan and report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly bases.	Mine water monitored regularly, and report attached as Annexure - IV. Regular pH Monitoring Report enclosed Annexure-V.
17.	There shall be planning, developing, and implementing facility of rainwater harvesting measures on long term basis and implementation of conservation measures to augment ground water resources in the area in consultation with Central Ground Water Board.	Rainwater harvesting is being done and water recharge structure made in consultation with CGWA. Annexure- XII
18.	The Project Proponent has to take care of gullies formed on slopes. Dump mass should be consolidated with proper filling/leveling with the help of Dozer/compactors.	No dump mass, all the waste used in backfilling purpose.
19.	The reclamation at waste dump sites shall be ecologically sustainable. Scientific reclamation shall be followed. The local species may be encouraged and species are so chosen that the	No waste dumps. All the mine waste reused for backfilling in underground.

	slope, bottom of the dumps and top of the dumps are able to sustain these species. The aspect of the dump is also a factor which regulates some climatic parameters and allows only species adapted to that micro climate.	
20.	The top soil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The maximum height of the dumps shall not exceed 8m and width 20 m and overall slope of the dumps shall be maintained to 45°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface runoff. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	The top soil stored at earmark location of 9000 CuM soil in 645 Sq M and developed a beautiful garden on it. All the waste utilized in the mine void refilling. No such OB Dump. Envr
21.	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, roads, Green belt development etc. The drains shall be regularly desilted Particularly after monsoon and maintained properly. The drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of 'sediments directly into the river and other Water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt Material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.	Catch drains and siltation ponds constructed to collect and prevent run off water and flow of sediments directly into the river and other water bodies. Water so collected used for dust suppression in mine area haul roads, green belt development, recharge etc . The drain and settling pond are being regularly de-silted and maintained properly.
22.	Plantation shall be raised in a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around water body, along the roads etc. by planting the native species in consultation with the local DFO/Agriculture Department and as per CPCB Guidelines. The density of the trees should be around 2500 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	Plantation has been raised around boundary of acquired area along the road etc. and included the native species. More than 33% Greenbelt has been developed in mine area. Annexure -XIII
23.	Project Proponent shall follow the mitigation measures provided in Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining	Being ensured

	activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area", if any, applicable to the project.	
24.	The Project Proponent shall make necessary alternative arrangements, where required, in consultation with the State Government to provide alternate areas for livestock grazing, if any. In this context, Project Proponent should implement the directions of the Hon'ble Supreme Court with regard to acquiring grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded against felling and plantation of such trees should be promoted.	Ensured
25.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department, A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	A nursery has been developed within mine area for rare plant's species and other medicinal plants. Same being included in yearly plantation program to improve their existence.
26.	As per the Company Act, the CSR cost should be 2 % of average net profit of last three years. Hence CSR expenses should be as per the Company Act/Rule for the Socio Economic Development of the neighborhood Habitats which could be planned and ,executed by the Project Proponent more systematically based on the 'Need based door to door survey' by established Social Institutes/Workers. The report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly bases.	The baseline needs assessment Survey done. Annexure XVI
27.	Provision shall be made for the housing of construction labor within the site with all necessary infrastructure and facilities such as Mel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed After the completion of the project.	The facilities are provided like Canteen, Toilets, STP Annexure IX, and safe drinking water and a permanent Doctor for their health care and crèche etc.
28.	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Regular monitoring of the noise in work environment is being carried out and workers engaged in operations of HEMM are being ensured with ear muffs.
29.	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Oil and grease trap have been installed at vehicle washing area and clean water reuse for vehicle washing- Annexure-X . Mine water reused for drilling and dust suppression, CRF Plant. Zero discharge Maintained.
30.	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with	Job specific PPE are mandatory for all workers and regular training

		suppression, CRF Plant. Zero discharge Maintained.
30.	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.	Job specific PPE are mandatory for all workers and regular training being given on safety and health aspect.
31.	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A separate environmental management department is in place under control of SBU Director.
32.	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office.	The funds earmarked for environmental protection measures and kept in separate account. The expenditure from Oct 23 to March 2024 has been incurred Rs 40.71 Lacs. Annexure V(A)
33.	The project authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	No additional land is required for proposed expansion.
34.	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Central Pollution Control Board and State Pollution Control Board.	Being Complied
35.	The Regional Office of this Ministry 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.	The project will extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.
36.	A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing them proposal.	Complied
37.	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.	Complied
38.	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter Informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment, Forest and Climate Change at www.environmentclearance.nic.in and a copy of the same should be forwarded to the Regional Office.	Complied

14.	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.	Assured to comply
15.	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the Provisions of the Environment (Protection) Act, 1986.	Assured to Comply
16.	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/ High Court of Rajasthan and any other Court of Law relating to the subject matter.	Assured to Comply. Environment statement submitted to MoEF&CC dated 26/09/2023.
17.	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Assured to Comply


 (Nirmalendu Kumar)
 SBU Director
 Hindustan Zinc Ltd.
 Kayad Mine-305023
 Dist.-Ajmer (Raj.)

Mechanism for addressing Environmental Issues

HZL has a Health Safety and Environment Policy, given below, signed by its CEO and forms the guidelines for the entire organization. A well laid mechanism is implemented uniformly across all units of HZL for the implementation of the policy.

All operating units of Hindustan Zinc Limited are certified for ISO-14001 Environmental Management system (EMS). The Management Representative (MR) of the certification system is an experienced environmental officer with due authority to implement and drive a responsible EMS. The MR is duly supported by a committee constituting the operations and maintenance officers of the unit. The system has a well laid documented procedure for identification of all environmental aspects, impacts and implementation of suitable mitigation measures.

The company has three level monitoring mechanism for addressing environmental concerns starting at unit level, HZL corporate level and Vedanta group company level. Depending on the scale and nature of the issue, the concern is escalated to different level right up to the Board of the company and also the shareholders of the company in the general body meetings.

The compliances to Environment Clearance and all environmental licenses are reviewed and monitored regularly and reports are submitted to the respective regulatory authorities at every unit, by a dedicated environmental professional, who reports directly to the unit head. The compliance is periodically reviewed and audited by Corporate Environment Department, which reports to the top management of the company. A Corporate Sustainability Committee, chaired by the CEO of the company, oversees all sustainability issues including Environment, Safety and Health and also reviewing any policy matters.

Any non-compliances/show cause/notices/complaints received from regulatory authority or any stakeholder is addressed jointly by the unit and corporate environment department. Such issues are also reported and the actions taken are reviewed by the top management every month. Further, all show cause, complaint letters and notices from any stakeholder, along with the action taken report is submitted to the Board Of Directors of the company every quarterly. All major concerns are reported to the stakeholders through the annual general body meetings of the company.

HINDUSTAN ZINC

Environmental Policy

Purpose

Hindustan Zinc Limited is committed to achieving excellence in environmental management. Our goal is to minimise environmental impacts of our business across the entire lifecycle by implementing pollution-prevention and natural resource conservation actions either on site or off site.

This policy is forward looking and sets a vision for businesses across the Hindustan Zinc Limited.

Scope

This policy is applicable to all Hindustan Zinc Limited business units, including subsidiaries, joint ventures, and acquisitions, managed sites, licensees, outsourcing partners, corporate offices, and research facilities. This policy is also applicable to all Hindustan Zinc Limited employees, contractor employees, business partners, suppliers, and others with whom Hindustan Zinc does business.

In addition, this policy is applicable throughout the operational lifecycle of the projects and mines, covering stages from exploration and planning to evaluation, operation, and closure. Furthermore, it extends to activities in our upstream and downstream value chain, limited to distribution, logistics, and sale of products and services to the customer.

Objectives of the Environmental Policy

Hindustan Zinc will strive to:

- ❖ Comply with applicable national, regional, and local environmental regulations and statutory obligations. In the absence (or lack) of appropriate legislation, industry best practices and applicable international standards will be used.
- ❖ Develop, implement, and improve environmental management systems, consistent with world-class standards.
- ❖ Set targets and objectives to avoid, reduce or mitigate Environmental impacts on people and planet.
- ❖ Consistently assess our environmental risks, manage our impacts, take appropriate mitigation and adaptation measures, and communicate our environmental strategy to our stakeholders.
- ❖ Incorporate appropriate environmental criteria for all business decisions including the planning, operationalization, and closure of the projects.
- ❖ Conduct regular environmental review and due diligence of the projects (including for mergers & acquisitions) to identify, prioritize, assess, and take effective actions for mitigating the potential environmental risks.
- ❖ Drive continuous environmental performance improvement by implementing appropriate available practices and technology.
- ❖ Conserve natural resources by adopting environment-friendly and energy-efficient technologies through process improvements.
- ❖ Apply mitigation hierarchy (avoid, reduce, reuse, recycle, disposal) to environmental impacts and adopt the principles of circular economy.
- ❖ Manage impacts related to energy, carbon emissions, waste, nature, air emissions, land-use & biodiversity, and water.
- ❖ Raise awareness of internal and external stakeholders including business partners, suppliers, and other stakeholders on adoption of practices in alignment with our policies, thereby fostering a collective commitment to managing environmental impacts.
- ❖ Provide appropriate training to all employees and emphasise the importance of minimising risks to environment, while also understanding the impacts of their work activities on the environment.
- ❖ Communicate with all our stakeholders on the progress and performance of Environment management.
- ❖ Review the performance against the policy on a periodic basis to ensure management of environmental impacts as per our objectives including the sharing of good practices throughout the organization and stakeholders.

Responsibility & Review

This policy is part of the Vedanta Sustainability Framework, and each Hindustan Zinc Limited business unit shall implement this policy. Our CEO will be accountable for controlling and setting the policy, and the Executive Committee are responsible for the full implementation of the policy and associated standards. The Board ESG committee will review this policy annually and recommend appropriate revisions to the Board as may deem necessary.

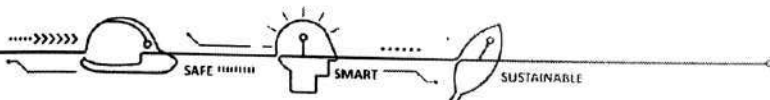
Related additional policies: Energy & Climate Change Policy, Biodiversity Policy, Water Policy, Tailing Management Policy.

Date: 1st September, 2023

Arun Misra

Arun Misra

CEO & Whole Time Director, HZL



www.hzllindia.com



HINDUSTAN ZINC

Health & Safety Policy

Purpose

Hindustan Zinc Limited is committed to achieving excellence in Health and Safety (H&S) management. Our goal is to minimise safety and health impacts of our operations by eliminating unsafe work conditions either on-site or off-site.

Scope

This policy is applicable to all Hindustan Zinc Limited business units, including subsidiaries, joint ventures, and acquisitions, managed sites, licensees, outsourcing partners, corporate offices, and research facilities. This policy is also applicable to all Hindustan Zinc Limited employees, contractor employees, business partners, suppliers, and others with whom Hindustan Zinc does business.

In addition, this policy is applicable throughout the operational lifecycle of the projects and mines, covering stages from exploration and planning to evaluation, operation, and closure. Furthermore, it extends to activities in our upstream and downstream value chain, limited to distribution, logistics, and sale of products and services to the customer.

Objectives of the Health & Safety Policy

Hindustan Zinc will strive to:

- ❖ Comply with applicable national, regional, and local H&S regulations and statutory obligations as well industry best practices. In the absence (or lack) of appropriate legislation, industry best practices and applicable international standards will be used.
- ❖ Develop, implement, and improve H&S management systems, with our commitments and values and consistent with world class standards.
- ❖ Set targets and objectives to avoid, reduce or mitigate H&S related impacts on people.
- ❖ Prevent injury and ill-health to employees and business partners by eliminating hazards and providing a safe and healthy work environment and minimizing the risks associated with occupational hazards.
- ❖ Implement regular health surveillance and risk-based exposure monitoring of employees and contractor workers.
- ❖ Incorporate appropriate H&S criteria for all business decisions including the planning, operationalization, and closure of the projects.
- ❖ Conduct regular H&S review of the projects (including for mergers & acquisitions) to identify, prioritize, assess, and take effective actions for mitigating the potential H&S risks.
- ❖ Drive continuous H&S improvement through setting and reviewing targets using appropriate best available practices and technology.
- ❖ Review performance against the policy on a periodic basis to ensure management of health & safety as per our objectives including the sharing of good practices throughout the organization and stakeholders.
- ❖ Ensure training for all employees training to emphasize the importance of maintaining a safe and healthy workplace.
- ❖ Promote a positive H&S culture through effective communication, participation and consultation with employees and business partners.
- ❖ Establish processes of consultation and ensure participation of workers, and their representatives (when applicable) in the decision-making process for H&S matters.
- ❖ Promote awareness of business partners, suppliers, and other stakeholders on the adoption of practices in alignment with our policies, thereby fostering a collective commitment to health and safety.
- ❖ Drive positive healthcare outcomes for our employees, business partners and the local community.
- ❖ Communicate to all our stakeholders on the progress and performance of H&S management.
- ❖ Provide information and education programs on high-risk diseases including HIV/ AIDS for all employees and contractor employees.
- ❖ Ensure prevalence of diseases such as HIV/AIDS in any of our workforce, do not affect employment, employee rights, development opportunities, benefits, or access to sick leaves. We also commit to elimination of stigma and discrimination associated with these diseases through non-discriminatory policies, practices and relevant awareness and outreach programs for our workforce, their families, and the community.
- ❖ **Responsibility & Review**

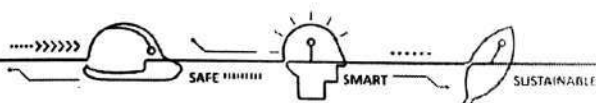
This policy is part of the Vedanta Sustainability Framework, and each Hindustan Zinc Limited business unit shall implement this policy. Our CEO will be accountable for controlling and setting the policy, and the Executive Committee are responsible for the full implementation of the policy and associated standards. The Board ESG committee will review this policy annually and recommend appropriate revisions to the Board as may deem necessary.

Date: 1st September, 2023

Arun Misra

Arun Misra

CEO & Whole Time Director, HZL



HINDUSTAN ZINC LIMITED

KAYAD MINE

PIEZOMETER WATER ANALYSIS REPORT

	P-1		P-2		P-3		P-4		P-5		P-6	
Parameters	Nov-23	Feb-24	Nov-23	Feb-24	Nov-23	Feb-24	Nov-23	Feb-24	Nov-23	Feb-24	Nov-23	Feb-24
pH	7.3	6.95	7.09	6.61	7.77	7.07	7.01	7.36	7.18	7.24	7.5	7.35
Hardness	310.68	2740.38	1126.81	2980.77	857.14	2884.62	2572.82	3653.85	3883.5	3990.38	598.04	581.63
Iron	<0.01	<0.01	<0.01	0.06	<0.01	<0.01	0.03	0.04	0.05	0.04	BDL	BDL
Chloride	154.85	2064.61	67.38	2246.11	506.94	2949.44	1751.23	3085.57	2396.42	2450.3	520.69	489.43
TDS	836	6277	2386	6926	2178	7392	5536	7741	6557	6832	1834	1689
Copper	0.01	<0.01	0.02	0.02	0.03	<0.01	0.02	<0.01	0.04	0.06	BDL	BDL
Sulphate	188	950	712	492	645	1175.71	1933	1400	1891	1704	161.4	152.6
Cadmium	<0.001	<0.001	<0.003	<0.001	<0.001	<0.001	<0.003	<0.001	<0.005	<0.001	BDL	BDL
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	BDL	BDL
Zinc	0.39	0.32	18.79	0.13	0.02	0.05	4.15	0.03	4.52	4.6	BDL	BDL
Alkalinity	181.76	492.8	99.4	596.8	190.28	385	79.52	369.6	96.56	75.84	362.6	346.5
Nickel	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	BDL	BDL
Cyanide	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	BDL	BDL
Cobalt	0	<.05	<.05	<.05	0	<.05	0.05	<.05	<.05	<.05	BDL	BDL
TSS	25	296	10	1262	10	176	20	68	17	19	13	14
Total solid	861	6573	2396	8188	2184	7568	5556	7809	6574	6851	1847	1703

All figureas are in mg/l except pH

HINDUSTAN ZINC LIMITED
KAYAD MINE
GROUND WATER ANALYSIS REPORT

Annexure I (2/3)

Parameters	Kayad Village U/S			Gagwana Village D/S			Chatri Village D/S			Lohagal Village U/S		
	Baseline	Nov-23	Feb-24	Baseline	Nov-23	Feb-24	Baseline	Nov-23	Feb-24	Baseline	Nov-23	Feb-24
pH	7	8.45	7.26	7.1	7.6	8.06	7.5	7.6	7.07	6.9	7.9	7.21
Hardness	245	54.37	326.92	306	201.94	134.62	1366	89.32	144.23	1233	118.45	238.46
Iron	0.33	<0.01	0.04	0.19	<0.01	<0.01	0.2	<0.01	0.07	0.18	<0.01	<0.01
Chloride	92	136.13	72.6	536	123.51	85.31	1842	142.86	179.24	1060	68.21	72.6
TDS	598	642	562	812	858	344	4746	876	1022	4512	320	364
Mg	-	4.72	9.35	-	16.04	1028	-	15.1	23.36	-	10.85	28.97
Copper	0.03	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sulphate	54.9	59.33	13.42	302	112	29	512.6	55	111.42	666.8	<5	33.71
Cadmium	<0.01	<0.001	<0.001	<0.01	<0.001	<0.001	<0.01	<0.001	<0.001	<0.01	<0.001	<0.001
Arsenic	<0.01	<0.001	<0.001	<0.01	<0.001	<0.001	<0.01	<0.001	<0.001	<0.01	<0.001	<0.001
Lead	0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.01
Zinc	2.76	<0.01	0.29	0.1	0.06	0.02	0.06	<0.01	2.41	0.32	<0.01	0.02
Alkalinity	272	340.8	289.52	456	177.5	154	524	369.2	231	486	99.4	123.2
TSS	-	10	27	-	12	10	7	11	24	-	<10	<10
Cobalt	BDL	<0.01	<0.05	BDL	<0.01	<0.05	BDL	<0.01	<0.05	BDL	<0.01	<0.05
Mercury	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	BDL	<0.001	<0.001	<0.001	<0.001	<0.001
Cyanide	<0.02	<0.04	<0.04	<0.02	<0.04	<0.04	BDL	<0.04	<0.04	<0.02	<0.04	<0.04
Nickel	BDL	<0.01	<0.01	BDL	<0.01	<0.01	0.02	<0.01	<0.01	BDL	<0.01	<0.01
Total solid	-	647	589	-	870	347	3260	887	1046	-	326	367

All figures are in mg/l except pH



Water level of Piezometers & open wells

Annexure I (3/3)

S.No.	Source Code	Location with land mark	Latitude	Longitude	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
	P-1	Piezometer-1, near VTC- HZL	N26°31'44.1"	E74°41'19.2"	20.1	21.4	21.9	21.5	21.2	23.1
2	P-2	Near mine dumped area, HZL fuel	N26°31'56.9"	E74°41'41.1"	18.6	18.9	19.1	18.6	18.5	19.2
3	P-3	Plantation area, nursery, near other collapsed bore well	N26°32'10.0"	E74°41'44.4"	10.1	11.2	10.9	10.5	10.3	11.1
4	P-4	New drilled bore well, near ANFO Mixing plant, HZL boundary wall	26°32'02.0"	74°41'45.2"	8.1	8.4	8.9	8.5	8.1	10.3
5	P-5	New drilled bore well, DG Set area	26°31'40.3"	74°41'29.1"	12.8	12.9	13.5	13.8	14.9	16.5
6	W-1	Man Singh Raghuvver singh Chandawal, Kayar/ Naeem Bhutta	N26°33'25.7"	E74°41'45.9"	10.11	11.2	11.6	12.1	10.5	13.2
7	W -2	Gurjar Well Near Abkar Minar and ARG opp SK associates	N26°32'48.6"	E74°42'24.8"	11.2	12.3	12.8	13.2	12.4	14.5
8	W-3	Near Talab area, land planning by propoerty dealers/ poltary farm	N26°32'08.3"	E74°42'27.7"	10.4	10.9	11.8	12.4	11.9	12.5
9	W-4	Mohan Gurjar Well Kayad	N26°31'11.7"	E74°41'02.7"	9.95	10.4	10.9	11.8	11.2	13.9
10	W-5	Near outside HZL boundary wall, near outside HZL road area	N26°31'52.7"	E74°41'36.0"	10.8	11.3	11.8	12.6	12.9	14.7
11	W-6	Near Govt. School/Mr. Sultan Master, Kamurdin Nizam ji Kayar	N26°31'38.7"	E74°41'11.3"	10.5	10.9	11.3	14.8	11.4	12.8

HINDUSTAN ZINC LIMITED

KAYAD MINE

AMBIENT AIR MONITORING

Annexure-H

Location->		Near Sub Station						Near CRF						Near ANFO					
Month-Year	Parameter	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
	Limit	500 µg/m ³	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4000 µg/m ³	500 µg/m ³	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4000 µg/m ³	500 µg/m ³	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4000 µg/m ³
Oct-23	1st Fortnight	139.20	69.36	27.01	7.03	16.68	370.00	123.23	66.10	32.55	7.05	14.92	410.00	144.74	68.66	28.82	6.94	15.75	360.00
	11nd Fortnight	141.82	79.82	31.77	6.07	14.88	320.00	161.82	73.10	29.41	6.43	14.79	330.00	130.26	66.19	26.48	6.49	15.45	350.00
Nov-23	1st Fortnight	142.74	71.37	40.50	6.64	16.19	360.00	155.82	77.47	34.81	6.78	15.92	340.00	141.21	66.17	32.55	6.51	14.94	320.00
	11nd Fortnight	144.11	75.19	34.58	6.48	16.10	360.00	125.16	68.55	35.70	6.41	16.23	410.00	130.66	72.47	40.47	6.40	15.61	330.00
Dec-23	1st Fortnight	128.59	66.10	33.23	6.31	15.01	330.00	132.52	60.59	28.02	6.42	15.41	350.00	141.33	80.94	30.47	6.54	15.19	370.00
	11nd Fortnight	139.81	72.61	30.83	6.21	16.68	340.00	116.62	62.50	27.76	6.16	16.73	350.00	127.58	59.61	26.74	6.65	17.24	360.00
Jan-24	1st Fortnight	146.46	65.33	31.87	6.51	14.55	360.00	116.62	62.50	27.76	6.16	16.73	350.00	127.58	59.61	26.74	6.65	17.24	360.00
	11nd Fortnight	159.55	81.01	29.56	6.90	14.06	360.00	150.74	75.37	31.48	6.77	14.34	380.00	137.71	73.20	30.43	6.77	15.98	350.00
Feb-24	1st Fortnight	148.48	77.45	30.89	6.44	15.84	360.00	136.25	78.29	37.43	7.32	15.62	350.00	129.28	75.23	34.75	7.06	14.27	330.00
	11nd Fortnight	148.00	67.48	34.37	6.64	15.35	340.00	127.92	63.99	33.70	6.70	16.36	360.00	148.58	73.54	31.46	6.80	15.76	380.00
Mar-24	1st Fortnight	144.82	80.63	30.08	6.78	15.52	240.00	159.54	82.75	34.54	6.81	15.15	320.00	151.69	79.64	32.46	6.69	15.70	370.00
	11nd Fortnight	136.40	77.43	31.57	7.23	15.37	280.00	145.28	73.77	32.50	6.84	14.78	370.00	147.70	74.23	31.42	6.75	14.16	360.00
		140.61	79.03	30.83	7.01	15.45	310.00	152.41	78.26	33.52	6.83	14.97	345.00	149.70	76.94	31.94	6.72	14.93	365.00
Location->		Kayar						Lohagal						Gagwana					
Month-Year	Parameter	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
	Limit	500 µg/m ³	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4000 µg/m ³	500 µg/m ³	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4000 µg/m ³	500 µg/m ³	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4000 µg/m ³
Oct-23	1st Fortnight	134.79	70.30	23.06	6.36	12.84	270.00	130.04	73.54	30.92	6.38	12.29	260.00	131.43	66.33	23.03	6.54	13.36	280.00
	11nd Fortnight	144.86	79.44	34.76	6.95	13.90	290.00	139.03	74.57	33.56	7.39	12.99	260.00	133.72	77.03	25.27	7.63	13.99	270.00
Nov-23	1st Fortnight	113.44	50.40	24.36	6.52	14.83	290.00	127.81	69.21	33.16	6.29	14.44	260.00	115.14	49.19	25.22	6.58	14.62	280.00
	11nd Fortnight	130.37	71.19	32.03	6.55	14.91	340.00	119.64	60.52	27.53	6.19	14.31	290.00	135.27	66.73	26.45	5.95	13.88	270.00
Dec-23	1st Fortnight	136.45	78.28	26.53	6.35	14.73	280.00	164.78	62.30	26.27	5.56	11.83	270.00	124.01	78.21	24.25	6.12	13.08	290.00
	11nd Fortnight	149.17	70.40	28.02	6.48	15.63	250.00	114.90	60.14	30.88	6.60	13.32	260.00	149.61	64.69	32.95	6.99	15.74	270.00
Jan-24	1st Fortnight	130.74	60.04	29.24	5.82	14.50	280.00	128.48	71.27	27.91	5.68	15.35	250.00	146.36	76.57	39.39	5.76	13.26	370.00
	11nd Fortnight	163.95	68.71	33.10	5.54	15.41	290.00	118.53	62.77	30.6	5.73	13.58	260.00	141.89	68.50	30.88	5.94	13.22	280.00
Feb-24	1st Fortnight	137.22	78.69	30.14	6.43	14.38	280.00	120.66	64.91	31.42	5.49	13.00	290.00	118.22	62.64	25.72	5.71	13.71	270.00
	11nd Fortnight	128.68	65.85	26.95	7.46	14.95	260.00	136.73	79.81	25.86	6.95	14.30	290.00	139.64	64.18	28.34	6.97	13.24	280.00
Mar-24	1st Fortnight	133.81	71.44	24.62	5.43	14.07	260.00	140.83	63.95	26.14	6.43	13.78	250.00	114.55	63.43	27.40	5.34	14.51	270.00
	11nd Fortnight	146.69	74.77	25.58	5.13	15.28	270.00	131.54	73.57	25.88	5.74	14.53	260.00	139.26	66.22	28.38	5.39	13.26	250.00

HINDUSTAN ZINC LIMITED

Annexure-III

KAYAD MINE

Noise Level Monitoring Report for Oct 2023 to March 2024

S.No	Location	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
		Day Time Industrial Limit 75dB(A)						Night Time Industrial Limit 65dB(A)					
N-1	South West Corner of Mine Boundary	62.8	60.7	57.6	61	58.7	61.8	53.5	51.6	48.5	52.4	49.2	52.7
N-2	East Side Boundary Near West Dump	65.1	60.3	58.2	57.4	61.9	63.6	56.2	51.2	50.8	49.3	52.8	54.6
N-3	North East Corner of Mine Boundary	64.1	62.7	56.4	56.6	62.8	58.4	55.7	53.6	47.7	47.5	53.9	49.4
N-4	North West Corner of Mine Boundary	62.8	61.9	63.5	60.4	61.3	66.9	53.7	52.8	56.2	49.9	52.6	57.7
N-5	West Side Towards Kayad Village	61.3	60.5	61.4	56.5	60.8	55.7	52	51.7	52.1	46.7	51.5	48.9
N-6	South East East Corner	63.9	60.4	59.5	63.4	62.8	60.3	54.8	51.4	50.6	55.4	54.7	51.5
N-7	Sub station	63	62.7	59.9	53.8	50.4	59.5	54.2	53.4	50.1	43.5	41.2	50.3
S.No	Location												
N-8	Kayad Village	52.3	53.7	51.4	51.2	52.5	52.6	42.4	43.5	42.3	41.7	41.3	43.7
N-9	Lohagal Village	52.6	50.6	50.7	51.6	50.8	50.6	43.5	40.5	40.6	41.5	41.5	40.1
N-10	Gagwana	51.3	53.1	53.1	53.7	51.6	53.5	40.2	42.6	43.9	42.8	40.5	4.0

HINDUSTAN ZINC LIMITED

Annexure IV

KAYAD MINE**MINE WATER ANALYSIS REPORT**

Parameters	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24
pH	7.07	7.28	7.38	7.15	7.22	7.12
Total Dissolved Solid	3847	3866	3818	3950	3881	3948
Total Suspended Solid	21	26	22	26	33	28
Total Solid	3868	3892	3840	3976	3914	3976
Chloride	484.53	475.03	579.54	603	627.04	459.43
Cyanide	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Hardness	970.9	932.04	951.46	876.19	803.92	876.19
Sulphate	769.5	732.5	688	811	868	857.14
Arsenic	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt	<0.05	<0.01	<0.01	<0.01	0.02	<0.01
Copper	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Iron	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	2.25	2.61	2.35	2.51	2.24	2.91
Alkalinity	43.26	52.75	65.71	51	56.84	62.62
Mg	58.98	65.27	82.57	57.86	60.2	46.29
Hg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ni	0.14	0.16	0.15	0.13	0.15	0.18



Hindustan Zinc Limited Kayad Mine

pH monitoring report Oct-23 to March 2024

Annexure-V

Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity
01/10/2023	7.6	2.3	01/11/2023	7.7	2.4	01/12/2023	8.00	2.4	01/01/2024	7.63	2.2	01/02/2024	7.2	2	01/03/2024	7.20	2.4
02/10/2023	7.6	2.3	02/11/2023	7.9	2.4	02/12/2023	7.90	2.5	02/01/2024	7.64	2.1	02/02/2024	7.3	2.3	02/03/2024	7.50	1.2
03/10/2023	7.3	2.4	03/11/2023	7.2	2.6	03/12/2023	7.70	4.1	03/01/2024	7.90	2.2	03/02/2024	7.2	3.2	03/03/2024	7.10	2.6
04/10/2023	7.9	2.4	04/11/2023	7.8	2.4	04/12/2023	7.90	2.5	04/01/2024	7.91	3.3	04/02/2024	7.5	3.2	04/03/2024	7.20	3.1
05/10/2023	7.3	2.4	05/11/2023	7.7	2	05/12/2023	7.20	2.7	05/01/2024	7.90	3.2	05/02/2024	7.3	3.2	05/03/2024	7.40	2.10
06/10/2023	7.8	2.8	06/11/2023	7.6	2.1	06/12/2023	7.80	2.9	06/01/2024	7.43	3.2	06/02/2024	7.4	2.5	06/03/2024	7.20	2.50
07/10/2023	7.3	2.5	07/11/2023	7.8	3.5	07/12/2023	7.70	2	07/01/2024	7.65	2.1	07/02/2024	7.4	2.4	07/03/2024	7.60	3.20
08/10/2023	7.0	2.1	08/11/2023	7.8	2.4	08/12/2023	7.60	3	08/01/2024	7.63	2.1	08/02/2024	7.2	2.4	08/03/2024	7.30	2.10
09/10/2023	8.0	2.5	09/11/2023	7.3	2.6	09/12/2023	7.80	2.5	09/01/2024	7.60	1.1	09/02/2024	7.3	2.1	09/03/2024	7.10	2.60
10/10/2023	7.9	2.6	10/11/2023	7.9	3.1	10/12/2023	7.75	2.4	10/01/2024	7.23	1.5	10/02/2024	7.3	1.25	10/03/2024	7.50	2.50
11/10/2023	8.2	2.4	11/11/2023	8.1	2.1	11/12/2023	7.30	3.1	11/01/2024	7.63	1.5	11/02/2024	7.2	1.4	11/03/2024	7.40	2.10
12/10/2023	7.8	2.5	12/11/2023	8.2	2.5	12/12/2023	7.90	3.2	12/01/2024	7.64	1.2	12/02/2024	7.3	1.9	12/03/2024	7.20	2.90
13/10/2023	7.6	2.1	13/11/2023	7.3	2.4	13/12/2023	8.10	3.3	13/01/2024	7.90	2.2	13/02/2024	7.5	2	13/03/2024	7.30	2.50
14/10/2023	7.6	3	14/11/2023	7.3	2.9	14/12/2023	8.20	3.3	14/01/2024	7.91	2.4	14/02/2024	7.5	2.1	14/03/2024	7.40	2.40
15/10/2023	7.8	2.1	15/11/2023	7.3	2.7	15/12/2023	8.10	2.5	15/01/2024	7.90	2.5	15/02/2024	7.3	2.3	15/03/2024	7.40	2.50
16/10/2023	7.6	3.1	16/11/2023	7.3	2.8	16/12/2023	7.60	2.4	16/01/2024	7.43	2.4	16/02/2024	7.5	2.5	16/03/2024	7.30	2.60
17/10/2023	7.3	2	17/11/2023	7.3	2.4	17/12/2023	7.80	2.5	17/01/2024	7.65	2.9	17/02/2024	7.3	2	17/03/2024	7.50	2.40
18/10/2023	7.3	2.5	18/11/2023	7.3	2.5	18/12/2023	7.60	2.1	18/01/2024	7.63	2.8	18/02/2024	7.2	2.1	18/03/2024	7.40	2.10
19/10/2023	7.3	2.7	19/11/2023	7.3	2.2	19/12/2023	7.60	2.5	19/01/2024	7.60	2	19/02/2024	7.3	2.4	19/03/2024	7.20	2.40
20/10/2023	7.3	2.8	20/11/2023	7.2	3.1	20/12/2023	7.39	2.5	20/01/2024	7.23	3.2	20/02/2024	7.4	2.9	20/03/2024	7.60	2.80
21/10/2023	7.3	2.1	21/11/2023	7.2	3.5	21/12/2023	7.25	2.7	21/01/2024	7.60	3.1	21/02/2024	7.3	2.4	21/03/2024	7.20	2.40
22/10/2023	7.3	2.4	22/11/2023	7.2	3.4	22/12/2023	7.94	2.6	22/01/2024	7.80	3.5	22/02/2024	7.3	2.1	22/03/2024	7.50	2.40
23/10/2023	7.3	2.5	23/11/2023	7.8	3	23/12/2023	7.50	2.4	23/01/2024	7.60	3.1	23/02/2024	7.4	2.3	23/03/2024	7.50	2.50
24/10/2023	7.3	2.1	24/11/2023	7.8	2.5	24/12/2023	7.40	2.1	24/01/2024	7.60	3.3	24/02/2024	7.2	3.2	24/03/2024	7.40	2.60
25/10/2023	7.3	2.4	25/11/2023	7.8	2.7	25/12/2023	7.50	2.3	25/01/2024	7.39	3.2	25/02/2024	7.5	2.2	25/03/2024	7.50	2.40
26/10/2023	7.2	2.5	26/11/2023	8.2	2.7	26/12/2023	7.40	3.2	26/01/2024	7.25	2.1	26/02/2024	7.5	2.4	26/03/2024	7.40	2.10
27/10/2023	7.5	2.1	27/11/2023	7.8	1.5	27/12/2023	7.30	3.1	27/01/2024	7.94	3	27/02/2024	7.4	2.1	27/03/2024	7.30	2.20
28/10/2023	7.4	2.8	28/11/2023	7.6	1.9	28/12/2023	7.20	3.3	28/01/2024	7.91	2	28/02/2024	7.4	2.5	28/03/2024	7.20	2.50
29/10/2023	7.7	2.9	29/11/2023	7.6	1.4	29/12/2023	7.4	2.1	29/01/2024	7.64	2.5	29/02/2024	7.2	2.4	29/03/2024	7.20	2.40
30/10/2023	7.9	2.1	30/11/2023	7.4	2.4	30/12/2023	7.5	1.2	30/01/2024	8.20	2.1	-	-	-	30/03/2024	7.30	2.10
31/10/2023	7.9	3.1	-	-	-	31/12/2023	7.7	1.4	31/01/2024	7.80	2.1	-	-	-	31/03/2024	7.30	2.50

Hindustan Zinc Limited Kayad Mine

Mine pond pH & Trubidity monitoring report Oct 2023 to April 2024

Annexure-V(2)

Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity	Month	pH	Trubidity
01/10/2023	6.9	3.5	01/11/2023	7.3	5.0	01/12/2023	7.4	4.1	01/01/2024	7.3	5.4	01/02/2024	7.7	4.1	01/03/2024	8.0	4.1
02/10/2023	7.0	3.5	02/11/2023	7.2	4.0	02/12/2023	6.5	4.1	02/01/2024	7.3	2.3	02/02/2024	7.9	4.3	02/03/2024	7.9	4.0
03/10/2023	7.0	3.4	03/11/2023	7.2	4.1	03/12/2023	7.6	4.3	03/01/2024	7.3	2.4	03/02/2024	7.2	4.1	03/03/2024	7.7	4.1
04/10/2023	7.1	3.2	04/11/2023	7.6	4.1	04/12/2023	6.4	4.1	04/01/2024	7.3	2.1	04/02/2024	7.8	4.2	04/03/2024	7.9	4.2
05/10/2023	7.1	3.6	05/11/2023	7.8	4.1	05/12/2023	6.6	4.2	05/01/2024	7.3	5.4	05/02/2024	7.7	4.2	05/03/2024	7.2	4.1
06/10/2023	7.1	2.5	06/11/2023	7.0	4.1	06/12/2023	6.6	4.2	06/01/2024	7.3	2.6	06/02/2024	7.6	4.2	06/03/2024	7.8	4.0
07/10/2023	7.1	3.6	07/11/2023	7.1	4.1	07/12/2023	7.4	4.2	07/01/2024	7.3	4.5	07/02/2024	7.8	3.5	07/03/2024	7.7	4.0
08/10/2023	7.1	3.4	08/11/2023	7.5	4.1	08/12/2023	7.7	4.2	08/01/2024	7.3	4.2	08/02/2024	7.8	3.4	08/03/2024	7.6	4.0
09/10/2023	7.1	3.8	09/11/2023	7.6	4.1	09/12/2023	7.4	4.2	09/01/2024	7.3	4.2	09/02/2024	7.3	3.2	09/03/2024	7.8	4.1
10/10/2023	7.1	3.4	10/11/2023	8.5	4.1	10/12/2023	7.1	4.1	10/01/2024	7.3	4.6	10/02/2024	7.9	3.6	10/03/2024	7.3	4.1
11/10/2023	7.0	3.1	11/11/2023	7.5	4.1	11/12/2023	7.8	4.0	11/01/2024	7.3	4.1	11/02/2024	7.3	2.5	11/03/2024	7.3	4.0
12/10/2023	7.0	3.5	12/11/2023	7.0	5.0	12/12/2023	7.4	4.1	12/01/2024	7.8	4.8	12/02/2024	7.3	3.6	12/03/2024	7.3	4.1
13/10/2023	7.1	3.4	13/11/2023	6.9	5.0	13/12/2023	7.4	4.1	13/01/2024	7.7	4.3	13/02/2024	7.3	4.3	13/03/2024	7.3	4.2
14/10/2023	7.0	3.5	14/11/2023	6.6	5.0	14/12/2023	7.4	4.1	14/01/2024	7.6	2.1	14/02/2024	7.3	4.2	14/03/2024	7.3	4.1
15/10/2023	7.0	3.3	15/11/2023	7.2	5.0	15/12/2023	7.5	4.1	15/01/2024	7.8	4.0	15/02/2024	7.7	4.1	15/03/2024	7.3	4.1
16/10/2023	7.1	3.6	16/11/2023	7.8	5.0	16/12/2023	7.4	4.2	16/01/2024	7.8	4.1	16/02/2024	3.8	4.5	16/03/2024	7.3	4.1
17/10/2023	7.0	3.5	17/11/2023	7.8	4.0	17/12/2023	7.4	4.1	17/01/2024	7.3	4.3	17/02/2024	2.6	4.1	17/03/2024	7.3	4.3
18/10/2023	6.9	3.4	18/11/2023	7.5	4.1	18/12/2023	6.9	4.2	18/01/2024	7.9	4.2	18/02/2024	6.7	4.3	18/03/2024	7.3	4.1
19/10/2023	6.7	3.9	19/11/2023	7.7	4.1	19/12/2023	6.8	4.8	19/01/2024	8.1	4.1	19/02/2024	5.1	3.5	19/03/2024	7.3	4.1
20/10/2023	7.1	3.5	20/11/2023	7.5	4.1	20/12/2023	7.4	4.7	20/01/2024	8.2	4.5	20/02/2024	5.4	4.3	20/03/2024	7.3	4.1
21/10/2023	6.9	2.0	21/11/2023	7.1	5.0	21/12/2023	7.8	4.2	21/01/2024	8.1	4.1	21/02/2024	7.2	4.3	21/03/2024	7.2	4.2
22/10/2023	7.1	2.4	22/11/2023	6.9	5.0	22/12/2023	7.3	4.3	22/01/2024	7.6	4.3	22/02/2024	8.1	3.5	22/03/2024	7.2	4.3
23/10/2023	7.2	2.0	23/11/2023	6.9	4.0	23/12/2023	7.4	4.2	23/01/2024	7.8	3.5	23/02/2024	5.7	4.1	23/03/2024	7.6	4.6
24/10/2023	7.2	3.2	24/11/2023	7.5	4.1	24/12/2023	7.4	5.0	24/01/2024	7.6	4.3	24/02/2024	6.5	4.1	24/03/2024	7.6	4.7
25/10/2023	7.2	3.5	25/11/2023	6.5	4.0	25/12/2023	7.4	4.3	25/01/2024	7.6	4.3	25/02/2024	7.0	4.1	25/03/2024	7.6	4.8
26/10/2023	6.7	2.5	26/11/2023	6.9	4.1	26/12/2023	7.4	4.2	26/01/2024	7.0	3.5	26/02/2024	7.6	4.2	26/03/2024	7.3	4.9
27/10/2023	7.2	2.4	27/11/2023	8.3	4.2	27/12/2023	7.5	4.2	27/01/2024	8.0	5.0	27/02/2024	7.5	4.1	27/03/2024	7.9	4.4
28/10/2023	7.2	2.8	28/11/2023	7.1	4.1	28/12/2023	6.8	4.4	28/01/2024	7.9	4.9	28/02/2024	7.9	4.2	28/03/2024	7.2	5.0
29/10/2023	7.3	2.7	29/11/2023	6.6	4.1	29/12/2023	7.4	4.2	29/01/2024	8.2	4.2	29/02/2024	8.3	4.3	29/03/2024	7.8	4.3
30/10/2023	7.2	2.3	30/11/2023	7.2	4.1	30/12/2023	7.4	4.6	30/01/2024	7.8	4.3	—	—	—	30/03/2024	7.9	4.5
31/10/2023	7.6	4.3	—	—	—	31/12/2023	7.3	4.9	31/01/2024	7.6	3.9	—	—	—	31/03/2024	7.9	5.0

ENVIRONMENTAL EXPENDITURE DETAILS

Particulars	FY-2023-24					
	Oct-23 to March 24					
Expenditure	Oct-23	Nov 23	Dec 23	Jan-24	Feb 24	Mar 24
	532,120	999,504	558,117	812,059	490,952	678,853
TOTAL Rs	4071605.00					





TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB

ISO 9001:2015,

ISO 14001:2015,

ISO 45001:2018 (OH&S)

JDA/UDH

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Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23200002766	Date :	18-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Mines
Type of sample / Discipline :	Liquid Effluents / Chemical	Date of Sample Collection/Monitoring :	22-09-2023
Point of Collection :	Mine Water - 2	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 18-10-2023	Sampling Plan :	APHA 2017 : 1060
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol
1	Radioactive Substances:		
2	Gross Alpha(Bq/l)	BDL(<0.1)	IS : 14194(Part-2) 2022
3	Gross Beta (Bq/l)	BDL(<1.0)	IS : 14194(Part-1) 2020

Notes :-

- # The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.
- # This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.
- # The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Sunil Kumar
Sunil Kumar
Senior Analyst

Puran Malviya
Puran Malviya
Authorized Signatory
(Report No: 23200002766)



Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814, 2716813 Fax: 0141-2716814



Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

Order No 2022-2023/Mines/10692

Date: 06/01/2023

Unit Id : 11254

M/s Hindustan Zinc Limited (Kayar Mine)

P.O.- Kayar, Ajmer- 305 023,

District -Ajmer

E-Mail: kastoor.meena@vedanta.co.in

Sub: Grant of Consent to Operate under Section 21(4) of Air (Prevention & Control of Pollution) Act, 1981 and under Section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 for your Major Mineral Mine at near Village-Kayar, Tehsil-Ajmer, District-Ajmer (M.L.No-16/92).

Ref: (I) Your applications dated 23/09/2022
(II) Received on 23/09/2022
(III) Received at Head office on 22/09/2022

Sir,

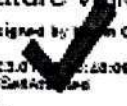
In view of the details submitted vide your above referred applications/ documents, the Consent to Operate under Section 21(4) of Air (Prevention & Control of Pollution) Act, 1981 and under Section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 is hereby granted for carrying mining activities. This consent is subject to the following stipulations:-

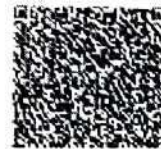
- 1 That this consent is being granted in favour of M/s. Hindustan Zinc Limited (Kayar Mine), a Mine of Major Mineral having M.L.No. 16/92 in an area measuring 480.4500 Hectares at/near Village-Kayar, Tehsil-Ajmer, District-Ajmer.
- 2 That this consent is valid for a period from 01/02/2023 to 31/01/2028
- 3 That this consent is valid for following mining activities :-

Mineral	Permitted Mining Capacity
1 LEAD & ZINC ORE (ROM)	12.0000 LAKHS TONNES/ANNUM

- 4 That the project proponent will comply with the Standard as prescribed vide the Ministry of Environment, Forest and Climate Change notification no. GSR 826(E) dated 16th November, 2009 with respect to National Ambient Air Quality standards.

Signature valid

Digitally signed by  Chand Gupta
Date: 2023.01.06 12:28:08 IST
Reason: Self Attested
Location:





Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814, 2716013 Fax: 0141-2716814

Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

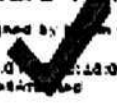
Order No 2022-2023/Mines/10692

Date: 06/01/2023

Unit Id : 11254

- 5 That this consent to establish/consent to operate is only for carrying out mining of mineral/ore and not for any processing/beneficiation or crushing/grinding of ore/mineral for which a separate application for consent to establish and/or consent to operate should be submitted. The project proponent is required to obtain separate consent to establish and consent to operate for carrying out mining of other mineral(s). If any or processing/beneficiation of such mineral(s) and for any addition/modification/alteration or change in process.
- 6 That this Consent to Operate is for mining / processing / beneficiation of product as mentioned above in M.L.No.-16/92 and a separate Consent to Operate is required to be obtained for any other Mineral mining/ processing/ beneficiation Plant/process If any and for any addition/ modification/ alteration or change in process.
- 7 That the occupier/operator of mine shall ensure that all the conditions imposed in the Environmental Clearance granted by MoEF&CC dated 05.02.2018.
- 8 That this consent is valid for production of Lead & Zinc Ore (ROM) @ 1.2 Million TPA Tonnes per Annum. For any change in product and/or increase in capacity/lease area, the mine has to seek fresh Environmental Clearance, consent to establish & consent to operate
- 9 That the lessee shall submit monitoring report of Ambient Air Quality within the lease area, once in 3 months
- 10 That plantation shall be developed so as to cover at least 33% of the total land use for mining and allied activities as given in Approved Mining Plan and shall be maintained at all the time to maintain ambient air quality around the mine.
- 11 That ground water shall not be abstracted without prior permission of the Central Ground Water Authority (CGWA).
- 12 That haul roads should be regularly graded and compacted. Regular water sprinkling should be carried out on haul roads to minimize dust generations
- 13 That adequate measure shall be taken for control of fugitive emissions from the areas prone to air pollution.
- 14 That you shall not operate any stone crusher/mineral grinding/mineral processing plant within said lease without obtaining prior consent of the State Board.
- 15 That this consent to Operate shall not be valid, if the lessee has not obtained permissions required, if any, from NBWL/Forest Department etc. with respect to Wild Life Sanctuary /National Parks/ Critical Tiger Habitats in compliance of various orders passed by any other law/act/rule/regulation or order of MoEF&CC and/or any Court/Tribunal time to time

Signature valid

Digitally signed by  Chandra
Date: 2023.01.06 12:08:15
Reason: Signed
Location:





Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814, 2716813 Fax: 0141-2716814

Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

Order No 2022-2023/Mines/10692

Date: 06/01/2023

Unit Id : 11254

- 16 That regular water sprinkling should be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as on haul road, loading and unloading points and transfer points.
- 17 That the mine shall install adequately designed rain water harvesting structure for prevention and recharge of ground water in and around the lease area.
- 18 That the mine shall not allow making any obstacles to any natural water flow i.e., natural nallah/stream carrying rain water to any water body.
- 19 That the mine shall not allow unauthorized disposal of any solid waste on land inside or outside the premises.
- 20 That this consent to Operate shall be subject to compliance of direction/order passed by Courts of Law in the matter, if any.
- 21 That the lessee should dump the overburden in such a manner that it does not get washed away to nearby water tanks and lakes etc. during rainy season.
- 22 That the lease shall not intersect the ground water table without permission of CGWA.
- 23 This consent shall be subject to validity of mining lease.
- 24 That all other general conditions enclosed as Annexure shall be strictly complied with.
- 25 That this Consent is subject to the conditions as stated above and general conditions as stated in Annexure. Further, the mining unit will comply with the provisions of the Air (Prevention & Control of Pollution) Act, 1981 & Water (Prevention & Control of Pollution) Act, 1974 and any such conditions as may be specified from time to time by the State Board under the provisions of the aforesaid Acts.
- 26 That the grant of this Consent to Operate is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time-being in force, rests with the Industry/ unit/ project proponent.
- 27 That the grant of this Consent to Operate shall not, in any way, adversely affect or jeopardize the legal proceedings, if any, instituted in the past or that could be instituted against you by the State Board for violation of the provisions of the Act or the Rules made thereunder.

Signature valid

Digitally signed by  Anil Kumar
Date: 2023.01.06 11:48:06 IST
Reason: Endorsement
Location:





Head Office (Mines)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-2716814, 2716813 Fax: 0141-2716814

Registered

File No F(Mines)/Ajmer(Ajmer)/303(1)/2017-2018/5559-5563

Order No 2022-2023/Mines/10692

Date: 06/01/2023

Unit Id : 11254

28 That the grant of this consent to establish/operate is issued from the environmental angle only, and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other legal instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time being in force, rests with the industry/unit/project proponent.

This bears approval of the competent authority.

End: As Above

Yours sincerely,

Group Incharge-Mines

(A): Copy To:-

- 1 Director, Department of Mines & Geology, Government of Rajasthan, Shastri Circle, Udaipur..
- 2 Regional Officer, Regional Office, Rajasthan State Pollution Control Board, Kishangarh-please ensure compliance of the consent conditions and monitor time to time
- 3 Mining Engineer, Department of Mines & Geology, Government of Rajasthan, Ajmer -To inform that this consent has been issued from the environmental angle only, and ensuring compliance of any other law/act/rule/regulation or order of any Court /Tribunal is the sole responsibility of the project proponent and the concerned departments
- 4 Master File.

(B):

- 1 The Additional PCDF (WL) and Chief Wildlife Warden, Aranya Bhawan, Jhalana Institutional Area, Jaipur(DGF(WL),Ajmer, To inform that this consent has been issued from the environmental angle only, and ensuring compliance of any other law/act/rule/regulation or order of any Court/Tribunal is the sole responsibility of the project proponent and the concerned departments

Group Incharge-Mines

Signature valid

Digitally signed by Group Incharge
Date: 2023.01.06 14:06 IST
Reason: I am the author
Location:



Environmental Monitoring and Evaluation Studies at Kayad Mines, of Hindustan Zinc limited

Sponsored by
Kayad Mines, Hindustan Zinc Ltd.



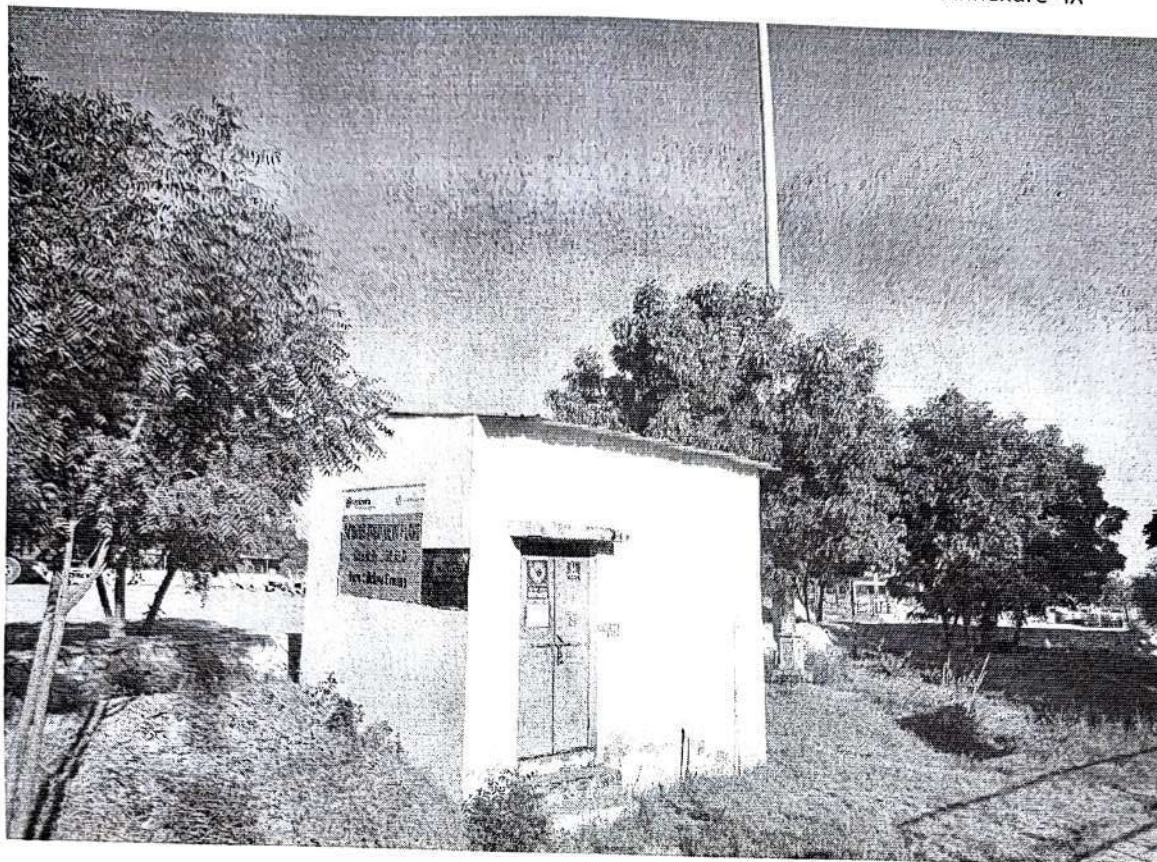
**CSIR-National Environmental
Engineering Research Institute**

Nehru Marg, Nagpur - 440020

February 2021

[illegible]

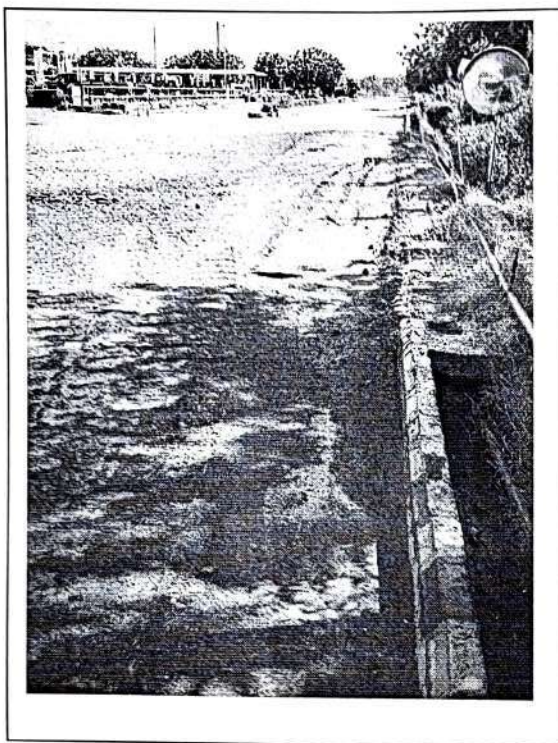
Annexure -IX



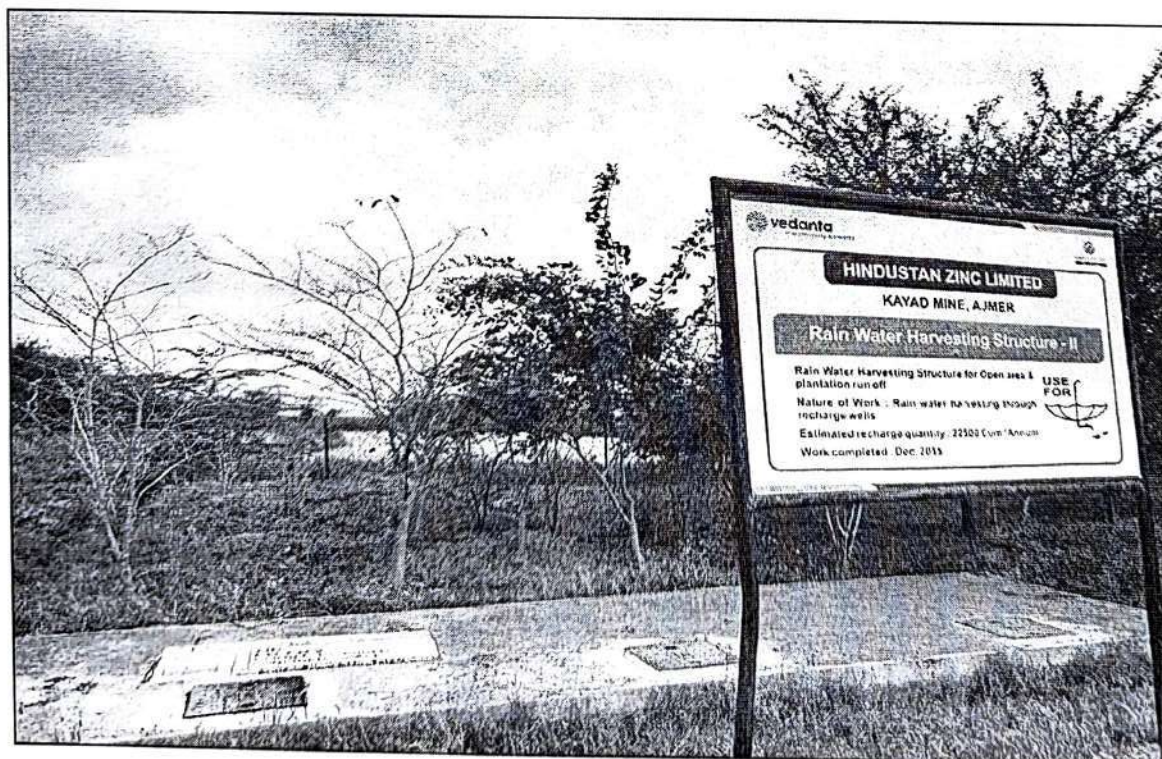
Annexure -X

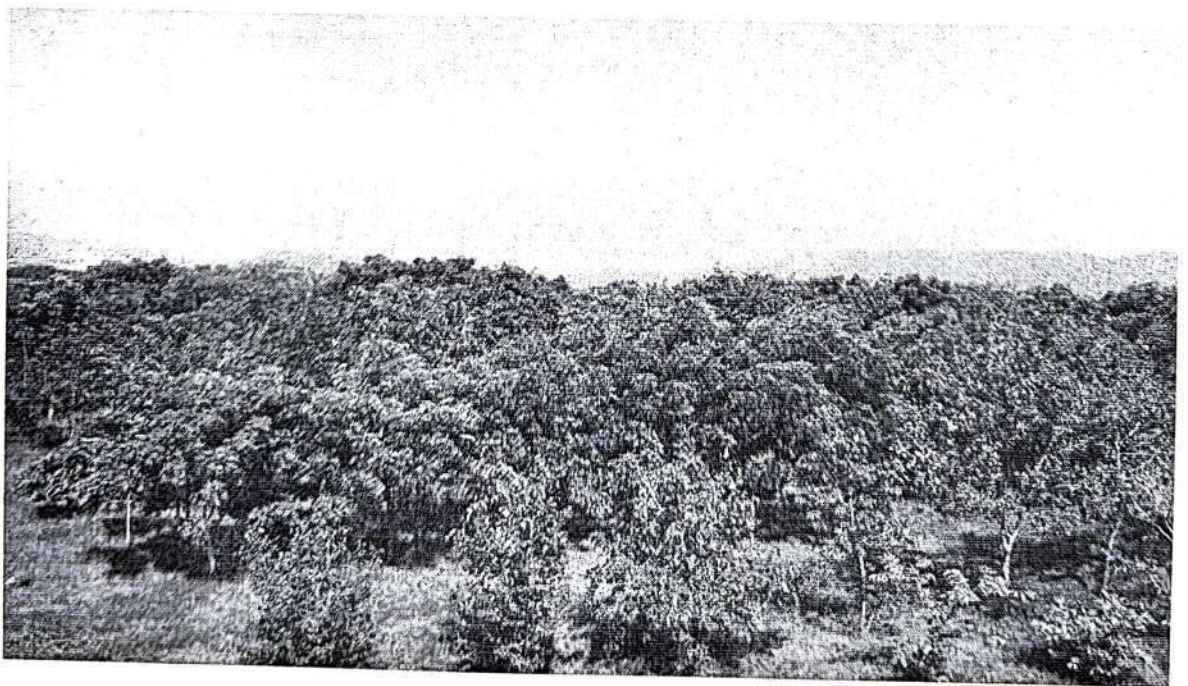
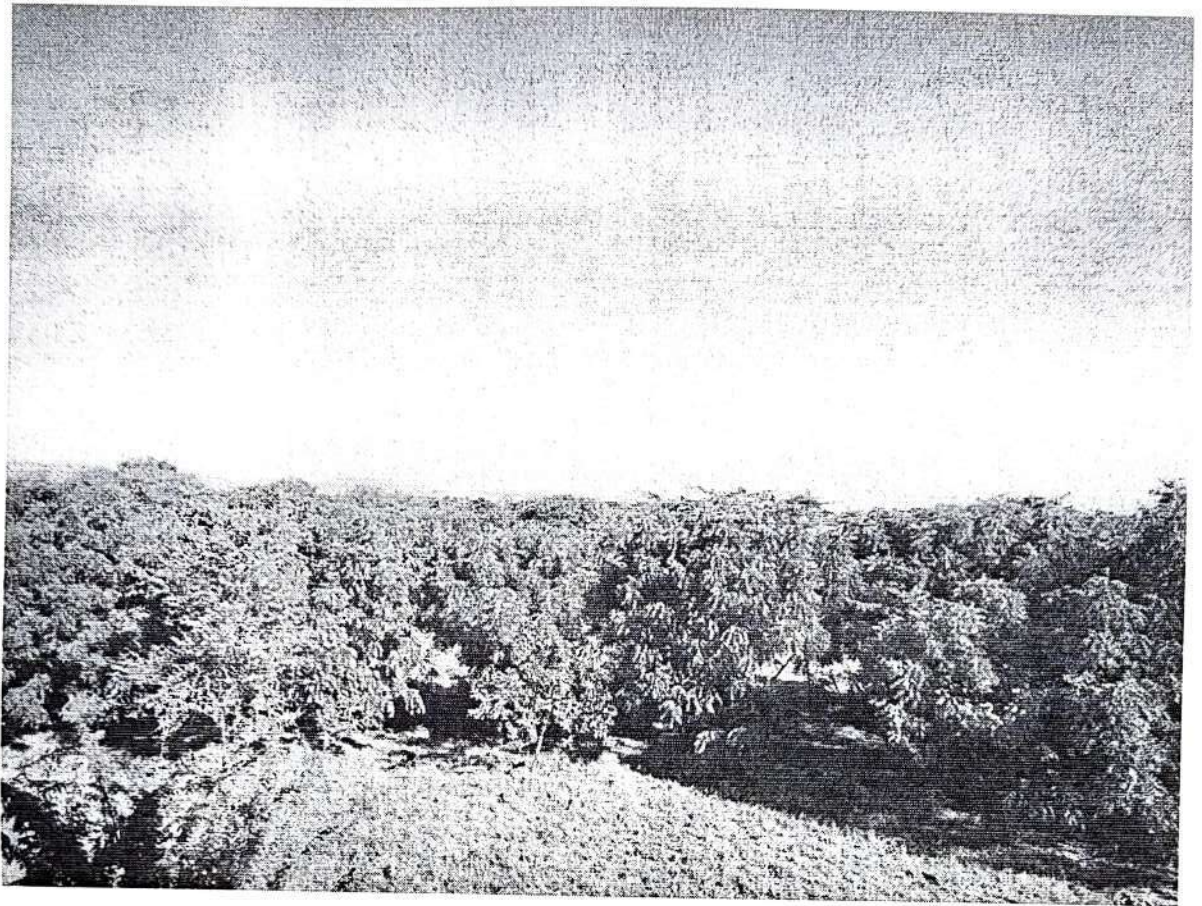


Annexure -XI

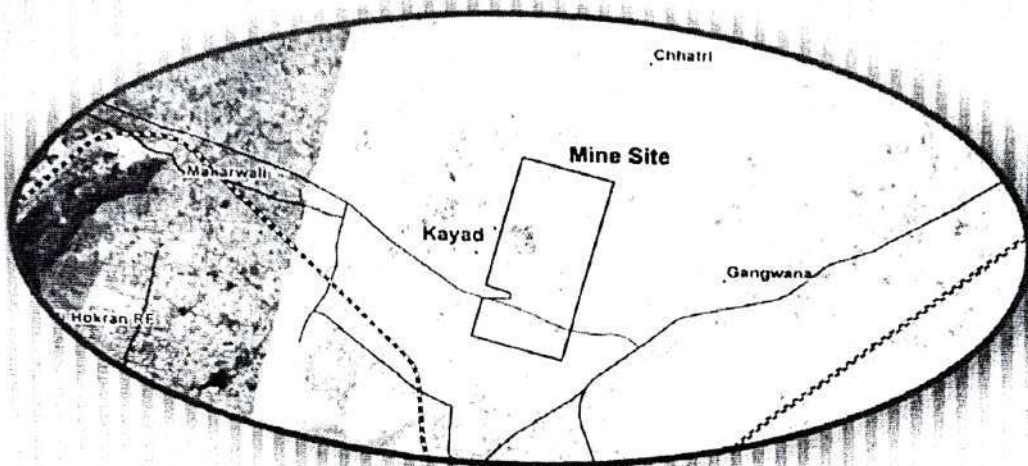


Annexure -XII





LAND USE/LAND COVER STUDY REPORT



Kayad Lead Zinc Mine (M.L. No. Area: 480.45 ha)

At
Village: Kayad,
Tehsil & District: Ajmer (Rajasthan)

PROJECT PROPONENT



HINDUSTAN ZINC

Hindustan Zinc Limited

Regd. Office: Yashod Shawan,
Udaipur
Rajasthan - 313 004

PREPARED BY



J.M. EnviroNet Pvt. Ltd.

(Registered IIA Consultant Organization from NABET-QCI)
Certificate No.: NABET/IIA/2023/SA 0172 (Valid till 7th Aug. 2023)
Ennor Digital Greens, Tower - B, Unit No. 1517,
Golf Course Ex. Road, Sector - 41, Gurgaon (Haryana) - 122 011
E-mail: jmenviron@hotmail.com
NABT Approved Lab: JM EnviroLab Pvt. Ltd.
(Certificate No.: TC-4821)



TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

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ISO 14001:2015,

ISO 45001:2018 (OH&S)

JDA/UDI

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Email : team.bdhead@gmail.com

Laboratory : G1-584, RICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23100001658	Date :	09-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Underground Mines
Type of sample / Discipline :	Water / Chemical & Biological	Date of Sample Collection/Monitoring :	23-09-2023
Point of Collection :	Sarwan Talab (Surface water)	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 09-10-2023	Sampling Plan :	IS 3025:1987(Part 1)RA 2014
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
1	Color [Hazen]	Less than 5	IS 3025 (Part 4) : 1983 RA 2017	5.00	15.00
2	Odour	Agreeable	IS 3025 (Part 5) : 2018	Agreeable	Agreeable
3	Taste	Agreeable	IS 3025 (Part 7) : 2017 & (Part 8) : 1984 RA 2017	Agreeable	Agreeable
4	Turbidity [NTU]	BDL(<0.1)	IS 3025 (Part 10) : 1984 RA 2017	1.00	5.00
5	pH	7.14	IS 3025 (Part 11) : 1983 RA 2017	6.50 - 8.50	-
6	Hardness (total) [mg/l]	1467.89	IS 3025 (Part 21) : 2009 RA 2019	200.00	600.00
7	Iron [mg/l]	0.05	IS 3025 (Part 53) : 2003 RA 2019	1.0	-
8	Chloride [mg/l]	1781.36	IS 3025 (Part 32) : 1988 RA 2019	250.00	1000.00
9	Total Dissolved Solids [mg/l]	4440	IS 3025 (Part 16) : 1984 RA 2017	500.00	2000.00
10	Calcium [mg/l]	447.71	IS 3025 (Part 40) : 1991 RA 2019	75.00	200.00
11	Magnesium [mg/l]	84.71	IS 3025 (Part 46) : 1994 RA 2019	30.00	100.00
12	Copper [mg/l]	0.02	IS 3025 (Part 42) : 1992 RA 2019	0.05	1.50
13	Manganese [mg/l]	0.62	IS 3025 (Part 59) : 2006 RA 2017	0.1	0.3



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Website : www.teamtesthouse.com
Email : team.bdhead@gmail.com

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Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
14	Sulphate [mg/l]	1784	IS 3025 (Part 24) : 1986 RA 2019	200.00	400.00
15	Nitrate [mg/l]	58.27	IS 3025 (Part 34) : 1988 RA 2019	45.00	-
16	Fluoride [mg/l]	1.29	IS 3025 (Part 60) : 2008 RA 2019	1.00	1.50
17	Cadmium [mg/l]	0.04	IS 3025 (Part 41) : 1992 RA 2019	0.003	-
18	Arsenic [mg/l]	BDL(<0.001)	IS 3025 (Part 37) : 1988 RA 2019	0.01	-
19	Lead [mg/l]	0.06	IS 3025 (Part 47) : 1994 RA 2019	0.01	-
20	Zinc [mg/l]	29.89	IS 3025 (Part 49) : 1994 RA 2019	5.00	15.00
21	Alkalinity - T [mg/l]	57.75	IS 3025 (Part 23) : 1986 RA 2019	200.00	600.00
22	Aluminum [mg/l]	BDL(<0.01)	IS 3025 (Part 55) : 2003 RA 2019	0.03	0.2
23	Boron [mg/l]	0.61	IS 13428 (Annexure H)	0.5	2.4
24	sulphide [mg/l]	Less than 0.05	IS 3025 (Part 29) : 1986 RA 2019	0.05	-
25	Total Chromium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.05	-
26	Mercury [mg/l]	BDL(<0.001)	IS 3025 (Part 48) : 1994 RA 2019	0.001	No relaxation
27	Mineral oil [mg/l]	BDL(<0.5)	IS 3025 (Part 39) : 1991 RA 2019	1.0	-
28	Cyanide [mg/l]	BDL(<0.01)	IS 3025 (Part 27) : 1986 RA 2019	0.05	-
29	Anionic Surface Detergents as MBA's [mg/l]	BDL(<0.1)	IS 13428 (Annexure K)	0.20	1.00
30	Nickel [mg/l]	0.06	IS 3025 (Part 54) : 2003 RA 2019	0.02	-
31	Phenolic Compound [mg/l]	BDL(<0.001)	IS 3025 (Part 43) : 1992 RA 2019	0.001	0.002
32	Free residual chlorine [mg/l]	BDL(<0.1)	IS 3025 (Part 26) : 1986 RA 2019	0.2(minimum)	1
33	Barium as Ba++ [mg/l]	BDL(<0.5)	IS 13428 (Annexure F)	0.7	-
34	Ammonia as NH3 [mg/l]	BDL(<0.1)	IS 3025 (Part 34) : 1988 RA 2019	0.5	-
35	Silver as Ag [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.1	-
36	Chloramines [mg/l]	BDL(<0.1)	APHA:2017 : 4500-Cl B	4.0	-



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Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
37	Total coliform [MPN/100ml]	Not Detected	IS 1622 : 1981	Shall not be detectable in 100ml Sample	-
38	E. Coli [MPN/100ml]	Not Detected	IS 5887 (Part 1) : 1976 RA 2018	Shall not be detectable in 100ml Sample	-
39	Selenium [mg/l]	BDL (<0.01)	APHA :2017 :3111- B	0.01	-

Notes :-

- # Limits mentioned as per IS 10500 : 2012 is of Drinking Water. There is no prescribed limit for Surface/Ground water etc.
- # The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.
- # This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.
- # The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Purnan Mal Yogi
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: 23100001658)



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Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23100001659	Date :	09-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Underground Mines
Type of sample / Discipline :	Water / Chemical & Biological	Date of Sample Collection/Monitoring :	22-09-2023
Point of Collection :	Phool Sagar (Surface water)	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 09-10-2023	Sampling Plan :	IS 3025:1987(Part 1)RA 2014
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
1	Color [Hazen]	Less than 5	IS 3025 (Part 4) : 1983 RA 2017	5.00	15.00
2	Odour	Agreeable	IS 3025 (Part 5) : 2018	Agreeable	Agreeable
3	Taste	Agreeable	IS 3025 (Part 7) : 2017 & (Part 8) : 1984 RA 2017	Agreeable	Agreeable
4	Turbidity [NTU]	BDL(<0.1)	IS 3025 (Part 10) : 1984 RA 2017	1.00	5.00
5	pH	7.28	IS 3025 (Part 11) : 1983 RA 2017	6.50 - 8.50	-
6	Hardness (total) [mg/l]	1467.89	IS 3025 (Part 21) : 2009 RA 2019	200.00	600.00
7	Iron [mg/l]	0.03	IS 3025 (Part 53) : 2003 RA 2019	1.0	-
8	Chloride [mg/l]	1472.59	IS 3025 (Part 32) : 1988 RA 2019	250.00	1000.00
9	Total Dissolved Solids [mg/l]	4128	IS 3025 (Part 16) : 1984 RA 2017	500.00	2000.00
10	Calcium [mg/l]	418.35	IS 3025 (Part 40) : 1991 RA 2019	75.00	200.00
11	Magnesium [mg/l]	102.55	IS 3025 (Part 46) : 1994 RA 2019	30.00	100.00
12	Copper [mg/l]	0.02	IS 3025 (Part 42) : 1992 RA 2019	0.05	1.50
13	Manganese [mg/l]	0.55	IS 3025 (Part 59) : 2006 RA 2017	0.1	0.3



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Website : www.teamtesthouse.com
Email : team.hdhead@gmail.com

Laboratory : G1-584, RICO Industrial Area,
Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
14	Sulphate [mg/l]	1525	IS 3025 (Part 24) : 1986 RA 2019	200.00	400.00
15	Nitrate [mg/l]	61.45	IS 3025 (Part 34) : 1988 RA 2019	45.00	-
16	Fluoride [mg/l]	1.20	IS 3025 (Part 60) : 2008 RA 2019	1.00	1.50
17	Cadmium [mg/l]	0.03	IS 3025 (Part 41) : 1992 RA 2019	0.003	-
18	Arsenic [mg/l]	BDL(<0.001)	IS 3025 (Part 37) : 1988 RA 2019	0.01	-
19	Lead [mg/l]	0.05	IS 3025 (Part 47) : 1994 RA 2019	0.01	-
20	Zinc [mg/l]	29.15	IS 3025 (Part 49) : 1994 RA 2019	5.00	15.00
21	Alkalinity - T [mg/l]	34.65	IS 3025 (Part 23) : 1986 RA 2019	200.00	600.00
22	Aluminum [mg/l]	BDL(<0.01)	IS 3025 (Part 55) : 2003 RA 2019	0.03	0.2
23	Boron [mg/l]	0.53	IS 13428 (Annexure H)	0.5	2.4
24	sulphide [mg/l]	Less than 0.05	IS 3025 (Part 29) : 1986 RA 2019	0.05	-
25	Total Chromium [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.05	-
26	Mercury [mg/l]	BDL(<0.001)	IS 3025 (Part 48) : 1994 RA 2019	0.001	No relaxation
27	Mineral oil [mg/l]	BDL(<0.5)	IS 3025 (Part 39) : 1991 RA 2019	1.0	-
28	Cyanide [mg/l]	BDL(<0.01)	IS 3025 (Part 27) : 1986 RA 2019	0.05	-
29	Anionic Surface Detergents as MBA's [mg/l]	BDL(<0.1)	IS 13428 (Annexure K)	0.20	1.00
30	Nickel [mg/l]	0.05	IS 3025 (Part 54) : 2003 RA 2019	0.02	-
31	Phenolic Compound [mg/l]	BDL(<0.001)	IS 3025 (Part 43) : 1992 RA 2019	0.001	0.002
32	Free residual chlorine [mg/l]	BDL(<0.1)	IS 3025 (Part 26) : 1986 RA 2019	0.2(minimum)	1
33	Barium as Ba++ [mg/l]	BDL(<0.5)	IS 13428 (Annexure F)	0.7	-
34	Ammonia as NH3 [mg/l]	BDL(<0.1)	IS 3025 (Part 34) : 1988 RA 2019	0.5	-
35	Silver as Ag [mg/l]	BDL(<0.01)	APHA :2017 :3111- B	0.1	-
36	Chloramines [mg/l]	BDL(<0.1)	APHA:2017 : 4500-Cl B	4.0	-



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Sitapura, Jaipur - 302022, Rajasthan
Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
37	Total coliform [MPN/100ml]	Not Detected	IS 1622 : 1981	Shall not be detectable in 100ml Sample	-
38	E. Coli [MPN/100ml]	Not Detected	IS 5887 (Part 1) : 1976 RA 2018	Shall not be detectable in 100ml Sample	-
39	Selenium [mg/l]	BDL (<0.01)	APHA :2017 :3111- B	0.01	-

Notes :-

- # Limits mentioned as per IS 10500 : 2012 is of Drinking Water. There is no prescribed limit for Surface/Ground water etc.
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- # The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.

Puran Mal Yogi
Senior Analyst

Rajesh Maheshwari
Authorized Signatory
(Report No: 23100001659)



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Phone : +91 9460222039, 9460222049,
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

TEST REPORT

Report No./ULR No. :	23100001657	Date :	09-10-2023
Issued To :	M/S Hindusthan Zinc Limited (Kayad Mines) Village Kayad, District Ajmer (Rajasthan),	Type of Unit :	Underground Mines
Type of sample / Discipline :	Water / Chemical & Biological	Date of Sample Collection/Monitoring :	22-09-2023
Point of Collection :	Kayad Pond (Surface water)	Date of Receipt :	26-09-2023
Date of Test/Analysis :	26-09-2023 to 09-10-2023	Sampling Plan :	IS 3025:1987(Part 1)RA 2014
Quantity of Sample :	2 ltr.	Sample Collected By :	Banwari Lal Kumawat
Unit's representative :	Mr Prakash Sharma	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
1	Color [Hazen]	Less than 5	IS 3025 (Part 4) : 1983 RA 2017	5.00	15.00
2	Odour	Agreeable	IS 3025 (Part 5) : 2018	Agreeable	Agreeable
3	Taste	Agreeable	IS 3025 (Part 7) : 2017 & (Part 8) : 1984 RA 2017	Agreeable	Agreeable
4	Turbidity [NTU]	BDL(<0.1)	IS 3025 (Part 10) : 1984 RA 2017	1.00	5.00
5	pH	8.04	IS 3025 (Part 11) : 1983 RA 2017	6.50 - 8.50	-
6	Hardness (total) [mg/l]	119.27	IS 3025 (Part 21) : 2009 RA 2019	200.00	600.00
7	Iron [mg/l]	BDL (<0.01)	IS 3025 (Part 53) : 2003 RA 2019	1.0	-
8	Chloride [mg/l]	60.8	IS 3025 (Part 32) : 1988 RA 2019	250.00	1000.00
9	Total Dissolved Solids [mg/l]	305	IS 3025 (Part 16) : 1984 RA 2017	500.00	2000.00
10	Calcium [mg/l]	25.69	IS 3025 (Part 40) : 1991 RA 2019	75.00	200.00
11	Magnesium [mg/l]	13.38	IS 3025 (Part 46) : 1994 RA 2019	30.00	100.00
12	Copper [mg/l]	BDL (<0.01)	IS 3025 (Part 42) : 1992 RA 2019	0.05	1.50
13	Manganese [mg/l]	BDL (<0.01)	IS 3025 (Part 59) : 2006 RA 2017	0.1	0.3



TEAM TEST HOUSE
(Unit of Team Institute of Science & Technology Pvt. Ltd.)

Approved by Ministry of Environment and Forest, Government of India as Environmental Laboratory

RSPCB

ISO 9001:2015,

ISO 14001:2015,

ISO 45001:2018 (OH&S)

JDA/UDI

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Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
14	Sulphate [mg/l]	30.16	IS 3025 (Part 24) : 1986 RA 2019	200.00	400.00
15	Nitrate [mg/l]	3.18	IS 3025 (Part 34) : 1988 RA 2019	45.00	-
16	Fluoride [mg/l]	0.21	IS 3025 (Part 60) : 2008 RA 2019	1.00	1.50
17	Cadmium [mg/l]	BDL (<0.001)	IS 3025 (Part 41) : 1992 RA 2019	0.003	-
18	Arsenic [mg/l]	BDL (<0.001)	IS 3025 (Part 37) : 1988 RA 2019	0.01	-
19	Lead [mg/l]	BDL (<0.01)	IS 3025 (Part 47) : 1994 RA 2019	0.01	-
20	Zinc [mg/l]	BDL (<0.01)	IS 3025 (Part 49) : 1994 RA 2019	5.00	15.00
21	Alkalinity - T [mg/l]	107.25	IS 3025 (Part 23) : 1986 RA 2019	200.00	600.00
22	Aluminum [mg/l]	BDL (<0.01)	IS 3025 (Part 55) : 2003 RA 2019	0.03	0.2
23	Boron [mg/l]	0.50	IS 13428 (Annexure H)	0.5	2.4
24	sulphide [mg/l]	Less than 0.05	IS 3025 (Part 29) : 1986 RA 2019	0.05	-
25	Total Chromium [mg/l]	BDL (<0.01)	APHA :2017 :3111- B	0.05	-
26	Mercury [mg/l]	BDL (<0.001)	IS 3025 (Part 48) : 1994 RA 2019	0.001	No relaxation
27	Mineral oil [mg/l]	BDL(<0.5)	IS 3025 (Part 39) : 1991 RA 2019	1.0	-
28	Cyanide [mg/l]	BDL(<0.01)	IS 3025 (Part 27) : 1986 RA 2019	0.05	-
29	Anionic Surface Detergents as MBA's [mg/l]	BDL(<0.1)	IS 13428 (Annexure K)	0.20	1.00
30	Nickel [mg/l]	BDL (<0.01)	IS 3025 (Part 54) : 2003 RA 2019	0.02	-
31	Phenolic Compound [mg/l]	BDL(<0.001)	IS 3025 (Part 43) : 1992 RA 2019	0.001	0.002
32	Free residual chlorine [mg/l]	BDL(<0.1)	IS 3025 (Part 26) : 1986 RA 2019	0.2(minimum)	1
33	Barium as Ba++ [mg/l]	BDL(<0.5)	IS 13428 (Annexure F)	0.7	-
34	Ammonia as NH3 [mg/l]	BDL(<0.1)	IS 3025 (Part 34) : 1988 RA 2019	0.5	-
35	Silver as Ag [mg/l]	BDL (<0.01)	APHA :2017 :3111- B	0.1	-
36	Chloramines [mg/l]	BDL(<0.1)	APHA:2017 : 4500-Cl B	4.0	-

TEAM TEST HOUSE

(Unit of Team Institute of Science & Technology Pvt. Ltd.)

RSPCB

ISO 9001:2015,

ISO 14001:2015,

ISO 45001:2018 (OH&S)

JDA/UDI

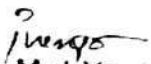
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
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Phone : +91 9460222039, 9460222049.
Email : director@teamtesthouse.com,
Email : marketinglab@teamtesthouse.com

S.No	Parameters	Observed Value	Testing Protocol	Requirement (Acceptable Limit) as per IS 10500 : 2012 (RA 2018) Max.	Standard Permissible limits in the absence of Alternate Sources as per IS 10500 : 2012
37	Total coliform [MPN/100ml]	Not Detected	IS 1622 : 1981	Shall not be detectable in 100ml Sample	-
38	E. Coli [MPN/100ml]	Not Detected	IS 5887 (Part 1) : 1976 RA 2018	Shall not be detectable in 100ml Sample	-
39	Selenium [mg/l]	BDL (<0.01)	APHA :2017 :3111- B	0.01	-

Notes :-

- # Limits mentioned as per IS 10500 : 2012 is of Drinking Water. There is no prescribed limit for Surface/Ground water etc.
- # The results listed refer only to the tested sample (s) & parameters (s). Endorsement of products is neither inferred nor implied.
- # This report is not to be reproduced wholly or in part and can not be used evidence in the court of law and should not be used in any advertising media without our special permission in writing.
- # The samples will be destroyed after 15 days from the date of issue of test report unless otherwise specified.


Purni Mal Yogi
Senior Analyst


Rakesh Maheshwari
Authorized Signatory
(Report No: 23100001657)



HINDUSTAN ZINC
Zinc & Silver of India

Ref: HZL/Kayad/ENV/2023-24/1/2

Date: 26/09/2023

→ Member secretary
Raj. Pollution Control Board
4, Institutional Area
Jhalan Doongri
JAIPUR

Sub: Environmental Statement of Kayad Mine for year 2022-23.

Ref: CTO granted vide File No. F(Mines)/Ajmer (Ajmer)/303(1)/2017-2018/ 9550-9554 dated 17.02.2018.


CTO granted vide File No. F(Mines)/Ajmer (Ajmer)/303(1)/2017-2018/ 5559-5563 dated 06.01.2023.

Dear Sir

Please find enclosed herewith the environmental statement for financial year ending on 31st March 2023.

Thanking you

Yours truly,


(K.C. Meena)
Director SBU (Kayad Mine)

Director (SBU)
Hindustan Zinc Ltd.
Kayad Mine-305023
Dist.-Ajmer (Raj.)

cc to: Regional Officer : for kind information please.
Raj. State Pollution Control Board
SPL-II, RHCO Industrial Area, Phase-V,
Kishangarh, Dist. Ajmer

The Deputy Director (s) / Scientist – C
Ministry of Environment, Forest & Climate Changes,
Integrated Regional Office, A-209 & 218, Aranya Bhawan,
Jhalana Institutional Area Jaipur- 302004

Confidential

CSIR-Central Institute of Mining and Fuel Research
(Council of Scientific & Industrial Research)
Barwa Road, Dhanbad – 826 001



सोएसआईआर
CSIR
भारत का नवाचार इंजन
The Innovation Engine of India

REPORT ON

[STUDY PERIOD APRIL 01, 2023 to MARCH 31, 2024]

Study and advice for optimization of blast design parameters at Kayad underground mine of Hindustan Zinc Limited for the safety and stability of surface structures/dwelling of Kayad village and subsequent continuous monitoring of vibration for their long-term stability



PROJECT NO.: SSP/770/2023-24

MAY 2024



Introduction

Executive (Commercial). Hindustan Zinc Limited approached the Director, CSIR-Central Institute of Mining and Fuel Research, Dhanbad, vide PO No.: 587471 / 4500007631 dated 26.06.2023 for a scientific study and advice for optimization of blast design parameters at Kayad underground mine, Ajmer of M/s Hindustan Zinc Limited, Rajasthan, India with reference to control blast induced vibration within safe limits at Kayad village, surface structures and underground openings of the of the mine.

Rock Excavation Engineering Division Group (Erstwhile Blasting Department) of CSIR-CIMFR conducted 237 blasts at different locations for slot raises and ring during April 01, 2023 to March 31, 2024. The blasting locations includes stopes N25 X 970, N 175, N0 Decline, N95, N400 Stripping, N50, N120 NED Vent., N95 X 760, N120 NED (D12), N412, N95 X 805, N120, N95 HW, N25 X 960, N400 UH, N150 Raise, N169, N50 Vent., N50 Raise, N95 Stripping, N120 Vent., N95 Raise, N275, N150 Connecting, N50 Vent. Raise, N75 Approach, N120 X 815, N180, N180 X-cut, S250, S445 OD-2, S250 Vent. X-cut, S445 OD-1, S250 UR, S425 OD-2, S425 OD-1 stripping, S400, S175, S250 DR, S375 Approach, S375 Chamber stripping, S450 Stripping, S375 Stripping, 23mRL vent. X-cut (M2C), S250 DP Raise, S250 NE Vent. X-cut (M2C), NE Fan X-cut, K21 DSP X-cut, K 21 Exploration, (-)50 Passing Bay, (-)40 Passing Bay, 1S225 DR, NE Exploration, NE Sump, K21 DSP Decline, NE Decline, NE Vent., N50 Sump, N120 X 855 stripping, N120 X 875 (with M2C), NE Vent. 2, N150 stripping, N65 Decline, N25 vent. Raise, K21 Sump, S200 DR, N75 decline, S275 UR, N120 FW Stripping, N(-)90 RL, N90 Sump, N90 (M2C), N/(-)23/N120, N/(-)23/N95, N/(-)95/DSB. etc.

Attempts were made to record 474 ground vibration data out of which 190 ground vibration data were recorded. The instrument has not triggered for 284 instances of ground vibration. In this case, the vibration level was below the pre-set level of the seismograph i.e. 0.5 mm/s. The vibrations were recorded at different locations in the mine premises area and in the periphery of the mine and in the Kayad village. The radial distances of blast vibration monitoring point from the blasting face were in the range of 119 m to 1224 m. The depth of cover of the blasting locations varied between 41 m and 449 m. All the blasts were initiated with electronic delay detonators and with Nonel delay detonators to avoid nuisance to the inhabitants of the Kayad village. The report contains the results of the study, analyses of data, discussions, conclusions, and recommendation for safe and efficient blasting operations. Figure 1. depict the number of blasts (month wise) conducted at Kayad mine during 01.04.2023 to 31.03.2024.

Instrumentations

Blast induced vibrations were monitored by seismographs namely MiniMate Plus and MiniMate Blaster (Made in Canada by M/s Instantel Inc.). MiniMate plus is eight as well as four channel seismographs provided with two/one tri-axial transducer(s) for monitoring vibration (in mm/s) and two/one channel(s) for monitoring air over-pressure/noise in dB(L). MiniMate Blaster is four channel seismographs provided with one tri-axial transducer for monitoring vibration (in mm/s) and one channel for monitoring of air over-pressure/noise in dB (L). All the seismographs record vibration in three directions i.e., Longitudinal (L), Vertical (V) and Transverse (T). They also record dominant peak frequency of vibration and compute the peak vector sum of the vibration.

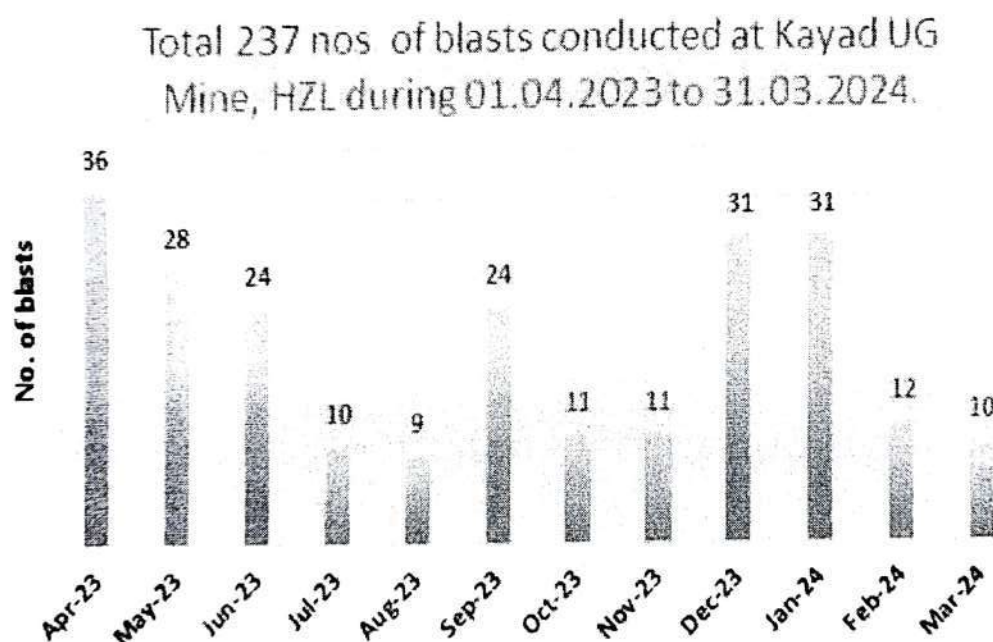


Figure 1. No. of blasts conducted at Kayad UG mine, HZL from 01.04.2023 to 31.03.2023.

DGMS Vibration standard to prevent damage of surface structures

Peak particle velocity has been globally used in practice for assessment of blast-induced damage to structures. Different countries adopt different standards depending on their type of industrial/residential buildings. In India, presently DGMS technical circular 7 of 1997 is considered as vibration standard for the safety of surface structures in mining areas. The DGMS standard is given in Table 1.

Table 1. DGMS technical circular 7 of 1997 concerning to blast vibration standard, in mm/s for the safety of surface structures.

Type of structure	Dominant excitation frequency, Hz		
	< 8 Hz	8-25 Hz	> 25 Hz
(A) Buildings/structures not belong to the owner			
1. Domestic houses/structures (Kuchcha, brick & cement)	5	10	15
2. Industrial buildings	10	20	25
3. Objects of historical importance and sensitive structures	2	5	10
(B) Buildings belonging to owner with limited span of life			
1. Domestic houses/structures	10	15	25
2. Industrial buildings	15	25	50

Blast vibration monitoring

Blast vibration monitoring locations were finalised in consultation with the mine officials. Seismographs were placed at two to three locations. One seismograph was placed at the mine boundary near the important/concerned houses/structures of the Kayad village particularly near Sultan house/Regar house and other near the Administrative building/CRF Plant of Kayad Mine. The maximum vibration recorded was 9.3 mm/s with dominant peak frequency of 49.5 Hz near admin building of Kayad Mine. In the same blast vibration recorded at Mine boundary near Sultan House of Kayad mine was 0.783 mm/s with dominant peak frequency of 29.5 Hz. The blast wave recorded at Admin building of Kayad mine due to blast conducted at S445 Ring blast on 20.06.2023 (PPV- 9.3 mm/s) is presented in Figure 2. The Fast Fourier Transform (FFT) analyses of frequency of vibration (as mention in Figure 2) is shown in Figure 3. The blast wave recorded on 13.07.2023 (PPV – 3.182 mm/s) at mine boundary near house of Mr. Sultan Ahmad due to blast conducted at N 75 STOPE BLAST RING NO.18 is depicted in Figure 4 and its Fast Fourier Transform (FFT) analyses of frequency of vibration is presented in Figure 5. It is evident from the figures that concentration of vibration energy was lie in the range of 25.0 – 80.0 Hz i.e. in high frequency zone (>25 Hz). The recorded dominant peak frequencies of vibration were in the range of 25.75 – 184 Hz.

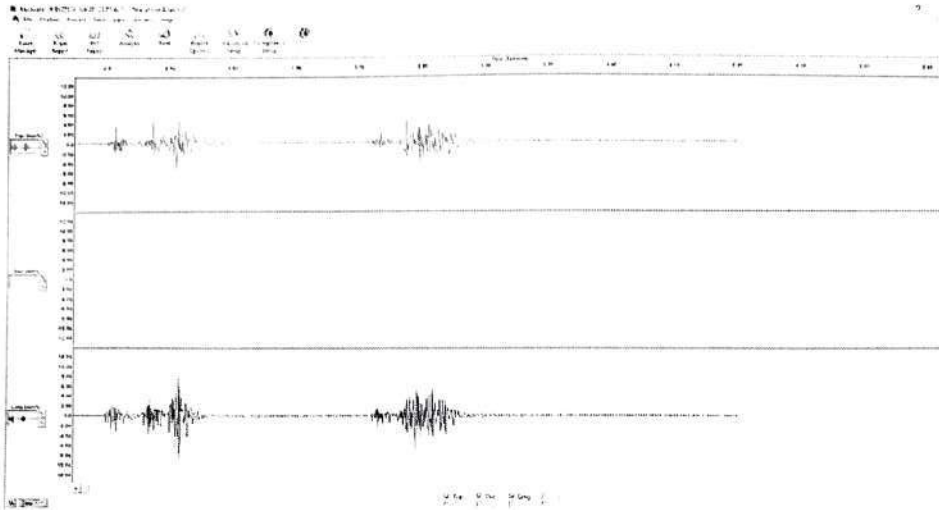


Figure 2. Blast time history recorded on 20.06.2023 at Admin building of Kayad mine.

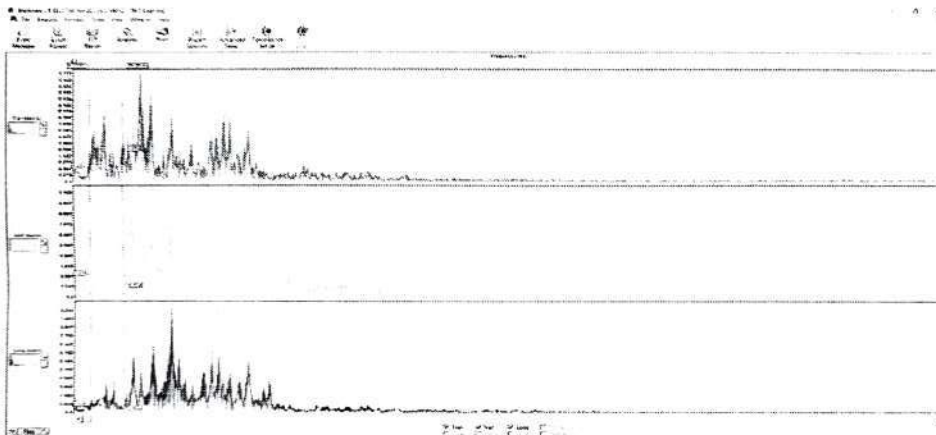


Figure 3. The FFT analyses of frequency of vibration (as mention in Figure 2)

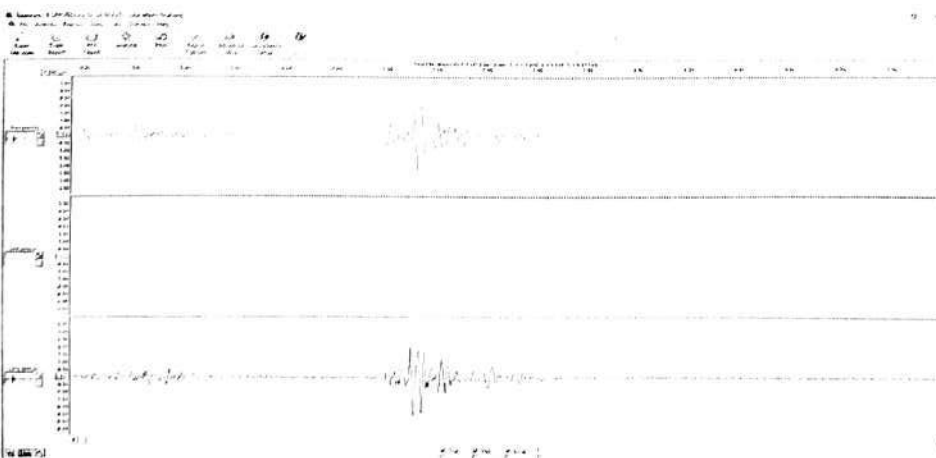


Figure 4. Blast time history recorded on 13.07.2023 at mine boundary near house of Mr. Sultan Ahmad.

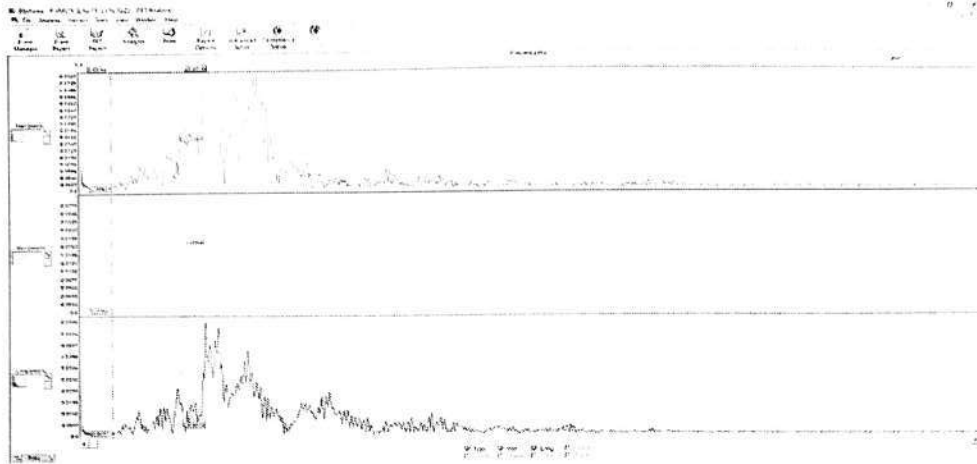


Figure 5. The FFT analyses of frequency of vibration (as mention in Figure 4).

The vibration data recorded due to the blast conducted at Kayad UG Mine during April 01, 2023-March 31, 2024 were analysed. The recorded peak particle velocity (PPV) data were in the range of 0.52 mm/s to 9.3 mm/s. The threshold velocity of vibration as per the DGMS standard is 15 mm/s for Kayad UG Mine considering the dominant frequency range of more than 25 HZ. Figure 6 depicts the plot of recorded vibration data with their corresponding dominant peak frequency. The view of different vibration monitoring locations in the periphery of the mine is shown in Photograph 1.

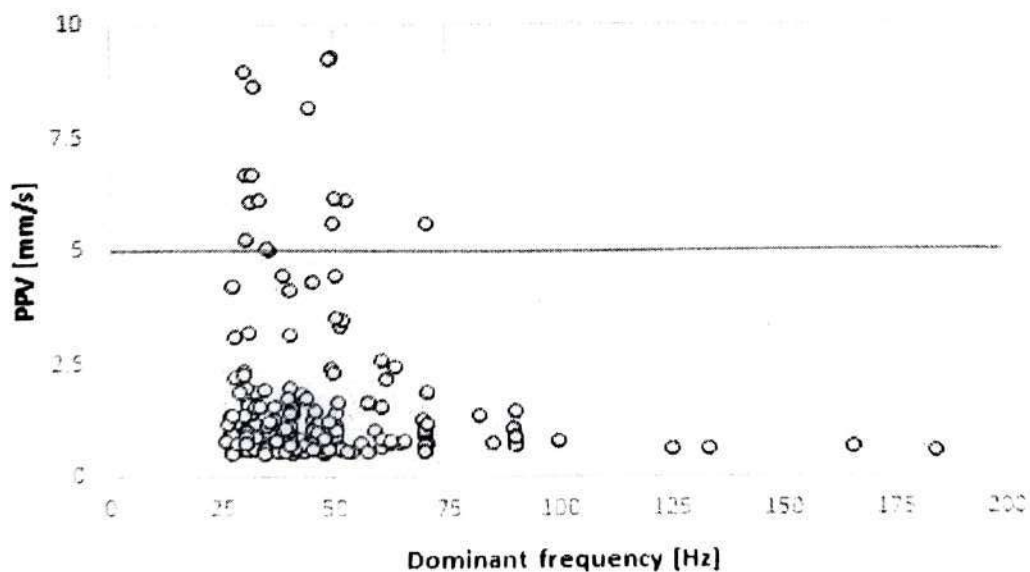
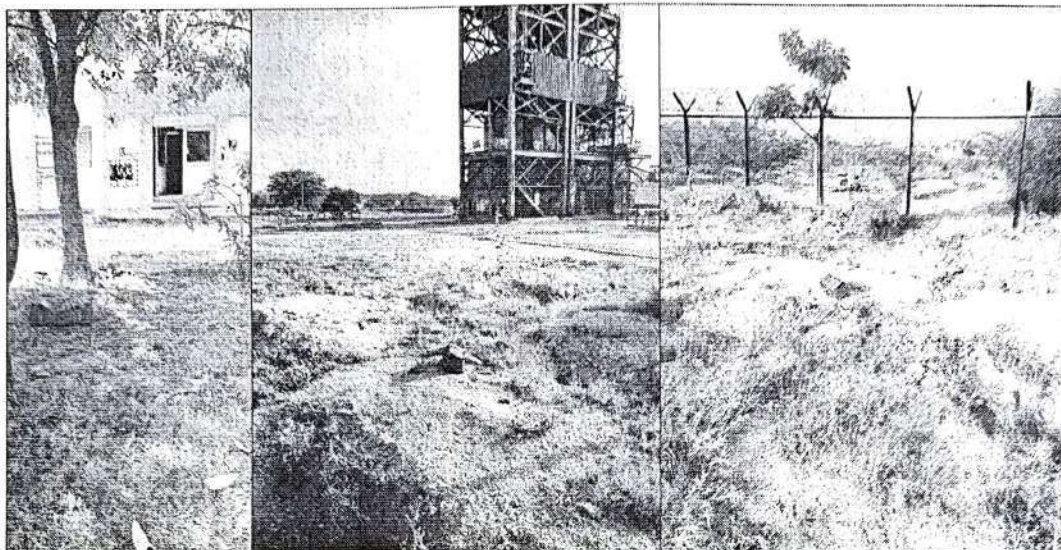


Figure 6. Blast vibration data recorded vibration in the periphery of Kayad UG Mine.



Photograph 1. Monitoring of blast induced ground vibration at different locations in the periphery of Kayad UG mine.

Human response to blasting

The tolerance and reactions of human beings to vibrations are important when standards are based on annoyance, interference, work proficiency and health. Human beings notice and react to blast induced vibrations at levels that are lower than the damage thresholds.

It is impossible to establish a vibration level where nobody will complain. There are always some persons in a population who will complain no matter how small the disturbance is. Several researchers recognised that the duration of the vibration was critical. Most evident was that a higher level could be tolerated if the event was short. Consequently, steady state vibration data could not be realistically applied to blasting except for events that exceed sixty seconds duration. The mine management must convince the nearby house owners that the rattling is to be expected but it may not be damaging.

Conclusions and recommendations

- ❖ Altogether, 237 blasts were conducted for underground slot raise and Ring blasts at different locations of the mine during April 01, 2023 - March 31, 2024. Attempt were made to record 474 vibration data, out of which 284 vibration data were below the pre-trigger level of seismograph i.e., 0.5 mm/s.



- ❖ The recorded blast induced ground vibration data were in the range of 0.52 mm/s to 9.3 mm/s. The radial distances of blast vibration monitoring point from the blasting face were in the range of 119 to 1224 m.
- ❖ The maximum vibration recorded was 9.3 mm/s with dominant peak frequency of 49.5 Hz near Admin building of Kayad Mine. In the same blast vibration recorded at Mine boundary near Sultan House of Kayad mine was 0.783 mm/s with dominant peak frequency of 29.5 Hz.
- ❖ The recorded dominant peak frequencies of vibration were in the range of 25.75 – 184 Hz. Hence, the safe limit of ground vibration (PPV) for the safety of houses and other structures at Kayad village has been taken as 15 mm/s as per the DGMS standard. The recorded vibration levels in the Kayad village due to blasting at Kayad mine were well within the safe limits.
- ❖ There is no danger of damage to the existing houses/structures of Kayad village from the blasting operations being carried out in underground development, raise and ring blasts of South and North section of Kayad underground mine.

Acknowledgements

The research team is thankful to the management of Kayad mine for sponsoring the study. The sincere co-operation and help extended to the team by the all-concern Mine officials in completing the study successfully are thankfully acknowledged. The research team also expresses his gratitude to the villagers of Kayad village for their cooperation in blast vibration monitoring.

M P Roy
22/05/2024

(Murari P Roy)
Chief Scientist & Project Leader
Rock Excavation Engineering Division

C. Sawmliana
22/05/2024

(C. Sawmliana)
Chief Scientist & HoS
Rock Excavation Engineering Division

Sustainable Livelihood



HINDUSTAN ZINC
Zinc & Silver of India

☐ Zinc Kaushal Kendra

Zinc Kaushal Kendra, Kayad has been initiated with the purpose of providing employment to the youth in the trades of assistant electrician, microfinance and customer relationship manager as well as inculcating industry relevant skills among them. The Zinc Kendra, Kayad has trained more 500+ youth till now with an average placement package of 12k+.



☐ Samadhan

The main objective of this project is to provide sustainable livelihood to the farmers in core as well as in periphery villages through integrated farming system and livestock development.

More than 1200 farmers are the beneficiary of this project



Education



HINDUSTAN ZINC
Zinc & Silver of India

❑ Shiksha Sambhal Program:

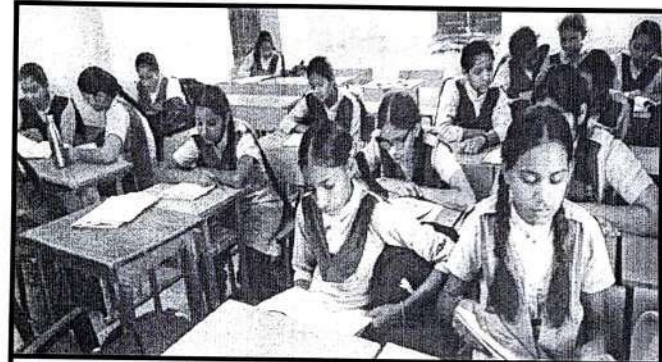
The objective of the programme is to improve the learning environment and outcomes (with special focus on science, maths and English) among children studying in classes 9th to 12th in the government schools in HZL's operational area.

❑ Nandghars

This project aims at strengthening the efficacy of Government ICDS scheme to improve the health, well-being and quality of pre-school education of children below 6 years of age.

❑ Unchi Udaan

Children of classes 8th are given an opportunity for a 4 year IIT coaching classes at Vidya Bhawan Udaipur.



Women empowerment



HINDUSTAN ZINC
Zinc & Silver of India

❑ Sakhi women

The main objective of this project is to promote women run financial institutions and Individual/ collective microenterprises in operational areas of HZL for uplifting the women population.

❑ Pickle unit

With the purpose of providing income opportunity to women, a pickle unit which is run and managed entirely by women is functional in Kayad. The unit employs more than 14 women from the village and produces 12 different varieties of pickle.

