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HINDUSTAN ZINC
Zinc & Silver of India

Ref : HZL/RA/ENV/MoEF&CC/2025-26/ 1043 19.11.2025

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

Sub: Six monthly environmental compliance reports from April 2025 to September 2025.

Ref : Environment Clearances and Amendments	
1.	Environment Clearance vide No. : J-11015/267/2008-IA.II (M) Dtd. 11.12.2009.
2.	Environment Clearance Amendment vide No. J-11015/267/2008-IA.II (M) dtd. 05.03.2012
3.	Environment Clearance Amendment vide No. J-11015/267/2008-IA.II (M) dtd. 22.08.2014
4.	Environment Clearance Amendment vide No. J-11015/267/2008-IA.II (M) dtd. 12.12.2014
5.	Environment Clearance Amendment vide No. J-11015/267/2008-IA.II (M) dtd. 28.12. 2015
6.	Environment Clearance Amendment vide No. J-11015/267/2008-IA.II (M) dtd. 28.02. 2020

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 **April 2025 to September 2025.** along with soft copy in a CD.

Thanking you,

Your faithfully

CEO - IBU Agucha
Hindustan Zinc Limited
Rampura Agucha Mines
PO - Agucha
Distt. - Bhilwara (Raj.)

(Ram Murari)
CEO (Agucha IBU)

Cc to:

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

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

3. The Regional officer
   Rajasthan Pollution Control Board Regional Office,
   18, Azad Nagar, Pannadhay Circle Mining Engineer Office Road
   (Near Telephone Exc.) Bhilwara-311001

Hindustan Zinc Limited
Rampura Agucha Mines, P.O. Agucha, Distt. Bhilwara (Rajasthan) - 311 022
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Registered Office : Yashad Bhawan, Udaipur (Rajasthan) 313 004
CIN No. L27204RJ1966PLC001208

HINDUSTAN ZINC LIMITED RAMPURA AGUCHA MINE

MoEF Environmental Clearance for Expansion of Rampura Agucha Lead and Zinc Opencast and Underground Mining Project (from 5.00 to 6.15 mTPA) and Beneficiation Capacity of Beneficiation Plant (from 5.00 to 6.50mTPA) Env Clearance Vide No. J-11015/267/2008-IA.II (M) Dtd 11.12.2009

S. No.	Condition	Status
	A. Specific Conditions	
i	The project proponent shall obtain Consent to Establish and Consent to Operate from the Rajasthan State Pollution Control Board and effectively implement all the conditions stipulated therein	Consent to establish obtained from RSPCB. Consent to Operate granted by RSPCB vide File F(CPM)/Bhilwara(Hurda)/2(1)/2019-2020/7113-7117 dated 28/02/2023 for mining activity. RSPCB. Consent to Operate granted by RSPCB vide File F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631 dated 14/06/2023 for Beneficiation plant, and the conditions stipulated are implemented.
ii	The environmental clearance is subject to approval of the State Land use Department, Government of Rajasthan for diversion of agricultural land for non-agricultural use.	Land purchased within Mine Lease area and converted in name of HZL for mining.
iii	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations.	No natural watercourse or water resources are obstructed due to mining operations.
iv	The top soil 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.	Top soil utilized on waste dump for its stabilization and plantation.
v	The over burden generated during the mining operation shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time and its phase-wise stabilization shall be carried out. The maximum height of the dump should not exceed 100m having 5 terraces as recommended by the Central Institute of Mining and Fuel Research, Dhanbad. The recommendations made by the Central Institute of Mining and Fuel Research, Dhanbad shall be effectively implemented. The over burden dump shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Lucknow on six monthly basis	Amendment in this condition was granted in EC vide letter No J-11015/267/ 2008-I-A.II (M) dated 22nd August, 2014. The maximum height of the dump shall not exceed 140 m (in two lifts of 20m each). Waste dump vegetated phase manner. Waste dump covered by application of geotextile and plantation.
vi	The void left unfilled in an area of 25 ha shall be converted into water body. The higher benches of excavated void/mining pit shall be	Will be complied during the mine closure.

	terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler. Peripheral fencing shall be carried out along the excavated area.	
vii	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working and over burden dump. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly. Garland drain (size, gradient and length) shall be constructed for both mine pit and over burden dump and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	Garland drain of adequate size is constructed along the waste dump toe & mining pit, along with siltation pond that provides adequate retention time for settling of silts and rain water collection lined sumps of about 8.5 lakh CuM. The water collected is utilized for watering the mine area, roads, green belt development etc Annexure –VIII
viii	Dimension of the retaining wall at the toe of dump and OB benches within the mine to check run-off and siltation should be based on the rain fall data.	The retaining wall at the toe of the OB dump is constructed along with garland drain. Annexure VIII
ix	Regular monitoring of subsidence movement on the surface over working area and impact on water bodies/vegetation/ structures/ surrounding shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material.	A comprehensive assessment and monitoring of subsidence movement on the surface over working area is done by a dedicated team comprising of Rock mechanic engineers. There has been no subsidence or movement observed.
x	All the mine entries shall be above the highest flood level to avoid any anticipated flooding of mine from the surface water during the rainy season	The underground mine opening is at 392 mRL against highest flood level at Agucha reservoir of 391 mRL. Further, A peripheral bund is constructed around the mine pit for protection of the mine from flooding due to rain water.
xi	In areas where subsidence is anticipated in shallow mineral occurrence, such areas be identified and provided with garland drains to ensure draining of water and avoid ingress of the same in to the underground mine.	No subsidence is anticipated in the proposed area.
xii	The project authorities shall check the possibility of existence of fault(s) before	Mining activities are carried out as per Mine plan as approved by IBM.

	deciding about the thickness of safe barrier required to be maintained between the working face and the water bodies, if any, in consultation with the Director General Mines & Safety (DGMS). De-pillaring should also be carried out after taking prior approval of the DGMS.	De-pillaring, if required, shall be carried out after prior approval of the DGMS.
xiii	The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission, without affecting flow of ore in the ore processing and handling areas.	Water sprinklers are installed on conveyer belts, transfer points, and conditioning of ore is done during crushing to mitigate fugitive dust. Annexure- XXXII
xiv	The effluent from the ore beneficiation plant shall be treated to conform to the prescribed standards and the tailings slurry shall be transported through a closed pipeline to the tailing dam.	Tailings are being disposed through closed pipeline to the earmarked Tailing dam after necessary lime treatment. Annexure- XXXIV
xv	The decanted water from the tailing dam shall be re-circulated and there should be zero discharge from the tailing dam. Acid mine water, if any, shall be neutralized and reused within the plant.	Tailing dam water is completely reused in process plant and zero discharge is maintained. There is no acid mine drainage occurring in the mine.
xvi	Plantation shall be raised in an area of 670.7ha including a green belt of adequate width by planting the native species around ML area, OB dump, around tailing dam, around beneficiation plant, roads etc. in consultation with the local DFO / Agriculture Department. In addition, the township area shall also be adequately planted. The density of the trees should be around 1500 plants per ha. Green belt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	Green belt developed all along the acquired mine lease area. Progressive plantation is being carried out on waste dump benches every year Seed spreading and geotextile laying is also carried out on waste dump slopes. As per SRSAC study conducted based on Nov 2021 satellite imagery, 694103 Nos of plants are existing with in 348 Ha area. Further FY 2022-23, FY 2023-24, FY 2024-25, & 2025-26 15000 Nos, 23000 Nos, 15000 Nos, 5000 Nos saplings planted as gap filling. Currently 752103 Nos of plants are exiting in 348 Ha. Detailed SRSAC report attached as Annexure XXXV. Plantation in remaining area will be completed by closure of mine. Additional plantation has been done in 37.70 ha in the township and along roadsides. Annexure –IX.
xvii	Regular water sprinkling should be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading, unloading and transfer points and other vulnerable areas. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Water sprinkling is carried out by 4 Nos. of 40 KL water sprinkler on Haul roads to mitigate air pollution in mine area. Dust extraction system and Water sprinkling nozzles are installed at the crusher, transfer points and coarse stockpiles for dust suppression. The parameters of Ambient Air quality monitored are within the prescribed norm of CPCB. Annexure-X
xviii	The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	3 Nos. of anicuts have been constructed for groundwater augmentation in consultation with the CGWB. 4 anicults constructed in the area under MJSA. 8.72 MCM groundwater recharge work has been completed four blocks of Bhilwara

		district. (Annexure –XI). Detailed report shared in six monthly EC report of Oct-21 to Mar-22. Ref: HZL/RA/ENV/MoEF&CC/2022-23/463
xix	Regular monitoring of ground water level and quality shall be carried out in and around the project area (mine lease, beneficiation plant and tailing dam) by establishing a network of existing wells and installing new piezometers during the operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Lucknow, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	Regular groundwater monitoring is being done by piezometers and wells outside and inside the lease area. Report enclosed as Annexure -I Six monthly reports are submitted to MoEF & CPCB. Quarterly report being sent to RSPCB, CGWA and CGWB.
xx	The project proponent shall ensure that no additional water is drawn for the expansion project. The additional requirement of water will be met out of the water saved by adopting water conservation measures.	No additional water is drawn. The additional requirement of water if any in future will be met out by water conservation measures.
xxi	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	Various rainwater-harvesting measures are implemented including the construction of rainwater collection pond of about 1.5 Lakh cum in the township, collection sumps of 8.5 lakh CuM capacity to collect and reuse the rainwater. Annexure XII
xxii	Regular monitoring of groundwater quality around the tailing dam shall be carried out in consultation with Central Ground Water Authority and records maintained. It shall be ensured that the groundwater quality is not adversely affected due to the project	Groundwater quality is regularly monitored around the tailing dam through piezometers within ML area and wells inside as well as outside the lease area. The groundwater quality report is being submitted to MoEF, CPCB, RSPCB, CGWA and CGWB on regular basis.
xxiii	Groundwater and surface water in and around the mine shall be regularly monitored at strategic locations for heavy metals such as Ni, Co, Cu, Zn and Cd. The monitoring stations shall be established in consultation with the Regional Director, Central Ground Water Board and State Pollution Control Board	Ground and surface water is regularly monitoring for heavy metals. Report enclosed as in point no. xix.
xxiv	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of	Periodic preventive maintenance of vehicles is part of our operations. All the trucks are covered with tarpaulin while transportation of concentrates to the smelters and no overloading

	mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded	is allowed. Annexure -XIII
xxv	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented	Blasting operation is carried out in underground during daytime with various mitigation measures as per DGMS guidelines. The vibrations monitored are well within the prescribed limits by DGMS.
xxvi	Drills shall either be operated with dust extractors or equipped with water injection system	Wet drilling system is adopted.
xxvii	Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Lucknow	Noted. The land use & land cover change study carried out in 2023. Copy attached. Annexure-XIV
xxviii	The tailing dam shall be lined by LDPE lining on the sides as the height of the dam is raised. The ultimate height of the dam shall be maintained to 51m and provided with garland drains. The disaster management plan for tailing dam shall be prepared and implemented	The sides of the tailing dam are lined with HDPE. As per letter No. Environment Clearance Amendment vide No. J-11015/267/2008-IA.II (M) dtd. 28.02. 2020 ultimate height shall be 74m. The present height of tailing dam is 60 meter. Garland drains are constructed around the tailing pond with pumping arrangement to collect any seepage and rainwater runoff back to tailing pond. Disaster management plan for the tailing pond is prepared and implemented. Annexure XV
xxix	The recommendations of the study report of NEERI, Nagpur on pollution vulnerability of aquifer shall be effectively implemented and action taken report submitted to the Ministry and its Regional Office, Lucknow on six monthly basis	Complied on the recommendations of NEERI i.e. network of piezometer established and report submitted on six monthly basis. Report enclosed as point no xix.
xxx	The project proponent shall regularly analyse the waste generated from the mining (at least once a year) for heavy metals such as Ni, Co, Cu, Pb, Zn and Cd and the data thus collected may be sent regularly to Ministry of Environment and Forests and its Regional Office, Lucknow. It should be ensured that the parameters conform to the prescribed norms	Being analyzed and report is submitted on six monthly basis. Annexure II
xxxi	The recommendations of the study report on blood lead levels of children to monitor levels of lead in human system carried out by National Institute of Occupational Health, Ahemdabad shall be effectively implement and action taken report submitted to the Ministry and its Regional Office, Lucknow on six monthly basis.	As recommended by the NIOH, regular health checkups are carried out for the mine personnel and regular health checkup organized in nearby villages to keep a track of the health status. Annexure XX
xxxii	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and	Pre-placement medical examination and periodical medical examination of the employees are being carried out at regular interval as per

	records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly	the Mine Act.
xxxiii	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and the wastewater generated during mining operation	Sewage treatment plant of 425 KLD capacity in colony and 300 KLD in mine area operating efficiently. Oil & Grease Traps installed and water reused in process. Annexure XVI
xxxiv	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project	No construction labour housing is proposed in mining area. However, the sanitation and drinking water facility is provided to the workers, working at site.
xxxv	Acid mine water, if any, has to be treated and disposed of after conforming to the standard prescribed by the competent authority	No acid mine water generated & mine pit water is used in process plant.
xxxvi	The critical parameters such as RSPM (Particulate matter with size less than 10µm i.e., PM_{10} and with size less than 2.5µm i.e., $PM_{2.5}$), NOX in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance	Monitoring of Ambient air at 3 locations inside mine and 3 locations outside the mine area is regularly carried out. Monitoring report is enclosed as Annexure III. Peak Particle velocity of blast vibration is being monitored for every blast & records are maintained. No effluent, treated or untreated, is discharged outside the project area as Zero discharge is maintained at all times. Monitoring data are displayed at Main Gate. Annexure XVII.
xxxvii	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval	A Final Mine Closure Plan along with details of Corpus Fund will be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

CEO - IBU Agucha
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Rampura Agucha Mines
PO - Agucha
Distt. - Bhilwara (Raj.)

Sr. No	Condition	Status
i	In the environment clearance letter dated 11th December, 2009, in para number 1, the words "The mineral will be transported through the road." will be substituted by the words "The mineral will be transported through the rail".	Amendments granted by MoEF vide letter dated 28.12.2015 "The mineral will be transported both through road and rail". Railway line commissioned but not operative.
ii (a)	All the requisite prior clearance from the concerned authorities, as may be applicable to such project shall be obtained and the conditions, if any, stipulated there under shall be effectively implemented.	All the requisite prior clearance from the concerned authorities, as may be applicable to such project shall be obtained and the conditions, if any, stipulated there under shall be effectively implemented.
ii (b)	The project affected people whose land will be acquired for laying of the railway track shall be compensated as per the National / State Policy in this regard.	Compensation given to land owners done by RIICO, GOR as per the norms.
ii (c)	The company shall submit within 3 months their policy towards Corporate Environment Responsibility which should inter alia provide for (i) Standard operating process / process to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions, (ii) Hierarchical system or administrative order of the company to deal with the environmental issues and for ensuring compliance with the EC conditions and (iii) System of reporting of non compliance s / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.	Policy towards Corporate Environment Responsibility enclosed.

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Specific Condition		
S.No	Condition	Status
i	The Open crack, whenever developed in the partially consolidated new dump mass, should be consolidated with proper filling/ leveling with the help of dozer/ compactors.	In such case, we shall consolidate with proper filling/ leveling with the help of dozer.
ii	Dump foundation preparation should be done by excavating and removing soil before dumping, to improve the frictional resistance at the base of dump. It should be filled with over burden containing stones.	Complied
iii	There should not be any dumping in pool water or on slushy ground.	No dumping is done in water pooled / slushy ground
iv	Discontinuous dumping should be avoided to check water accumulation between two isolated dumps.	Dumping is done at a single earmarked area.
v	During rainy season, an officer should be deputed to go in and around the dump site every morning to see the effectiveness of drain. If any blockage is observed, immediately steps should be taken to make it effective.	Mining officer is always deputed during rainy season to ensure smooth flow of runoff water.
vi	The dump should be surveyed periodically to produce up-to-date and accurate dump geometry.	Survey team survey the dump once in a month to produce up-to-date and accurate dump geometry.
vii	The slope and stability monitoring by Radar should be done and its report should be sent to MoEF and its Regional Office every six – months.	Stability monitoring by Radar. Report enclosed as Annexure VII
viii	The dump design should be reviewed by CIMFR or any other scientific agency after reaching dump height of 120m and its report sent to MoEF and its Regional office.	Complied. Waste dump design and slope stability is being reviewed yearly by CIMFR and report being submitted to MoEF Regional Office. Latest report is attached as Annexure XXI. Recommendations of current 2 quarters also attached.
ix	Waste dump has to be managed as per the guidelines of DGMS and quarterly monitoring report to be submitted to DGMS and regional office	Waste dump is being managed as per the DGMS guidelines and quarterly monitoring report shall be submitted to DGMS and regional office.
x	On stabilized dumps, more species such as Pongamia, Bombax ceiba, Tamarind, Arjun, Gravillea robusta and Amla to be planted.	Plantation of Pongamia, Bombax ceiba, Tamarind, Arjun, Gravillea robusta, Amla and other species has been done on stabilized dumps.

xi	The Radar monitoring system should satisfactorily sub- serve the dual objectives viz.(a) Investigative monitoring to provide an understanding of the slope behavior over time and typical response to external events (e.g. Precipitation and seasonal fluctuations) and (b). Predictive Monitoring: To provide a warning of a change in behavior, enabling the possibility of limiting or intervening to prevent hazardous sliding. The data so analyzed should be provided with reference to the above.	The analyzed data is enclosed Annexure – VII
xii	Paved drains are to be provided to protect the slope surface against rain-cuts and seepage during rains to make a safe way to discharge top and surface water to the bottom of the dump. Constant vigilance on the condition of dumps with special reference to accumulation of water and development of cracks.	Paved drains are provided. Constant vigilance shall be given on the dump condition with special reference to water accumulation and development of cracks.
xiii	Regular Monitoring of above mentioned specific conditions shall be included in the monitoring plan and report submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office located at Lucknow on six monthly basis.	Regular monitoring of the above mention conditions conducted and report is enclosed. Annexure – XXI. Recommendations of current quarters also attached.

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A) Additional Specific Conditions		
S.No.	**Condition**	**Status**
1.	PP shall ensure that the recommendation provided in study conducted by Indian Institute of Science, Bangalore shall be complied for increasing the height of the tailing dam.	Height raising of the tailing dam is done as per the recommendations of Indian Institute of Science, Bangalore study.
2	The risk arising due to surface runoff during rainy season or otherwise, from the tailing area/heap, shall be assessed on regular basis and corrective measures shall be undertaken and reported to SPCBs.	Tailing Dam is always having freeboard and there is no risk of surface runoff from the area.
3	PP shall engage suitable agency for conducting subsidence study for increasing the depth of working from 1000 mbgl to 1500mbg. The report shall be submitted to Ministry within 6 months.	Study conducted by Central Institute of Mining & Fuel Research (CSIR- CIMFER). Copy of the study report "Numerical Modelling Studies for Subsidence predication at Rampura Agucha Mine, HZL" submitted vide letter No. HZL/RAM/ENV/2020-2021/789 dated 28.08.2020. Report cover page – XXXIII
4	No waste to be transported outside the mining lease area.	No waste is transported outside the lease area. If required to be done in future, necessary approvals will be taken.
B) Standard Conditions: (As Ministry's O.M No 22-34/2018-IA.III dated 8.01.2019 and Ministry's O.M No 22-34/2018-IA.III dated 16.01.2020) I. Statutory compliance		
1	This Environmental Clearance (EC) is subject to orders/ judgment of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.	All applicable orders/ and Judgment will be complied.
2	The Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors before commencing the mining operations.	Till date no liability raised by state government. If raised any in future, same will be complied.
3	The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India &Ors.	Till date no liability raised by state government. If raised any in future, same will be complied.
4	This Environmental Clearance shall become operational only after receiving formal NBWL	Not Applicable for our operations.

	Clearance from MoEF&CC subsequent to the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project.	
5	This Environmental Clearance shall become operational only after receiving formal Forest Clearance (FC) under the provision of Forest Conservation Act, 1980, if applicable to the Project.	Forest clearance not applicable as there is no forest land in Mine Lease area.
6	Project Proponent (PP) shall obtain Consent to Operate after grant of EC and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish/ Consent to Operate from the concerned State Pollution Control Board/Committee.	Consent to Establish was granted by RSPCB vide letter No. F(Mines)/Bhilwara (Hurda)/1(1)2009-2010/4792 dtd 21/01/2010 (Copy attached as Annexure - XXXII). Consent to Operate granted by RSPCB vide File F(CPM)/Bhilwara(Hurda)/2(1)/2019-2020/7113-7117 dated 28/02/2023 for mining activity. RSPCB. Consent to Operate granted by RSPCB vide File F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631 dated 14/06/2023 for Beneficiation plant, and the conditions stipulated are implemented. (Copies attached as Annexure -XXXIII) There is no requirement of obtaining CTE & CTO afresh as this is an amendment in existing EC.
7	The PP shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development & Regulation), Act, 2015 and rules & regulations made there under. PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.	Adherence to all provisions of Mines Act, MMDR Act and circulars of DGMS & IBM is ensured.
8	The Project Proponent shall obtain consents from all the concerned land owners, before start of mining operations, as per the provisions of MMDR Act,1957 and rules made there under in respect of lands which are not owned by it.	All the land is owned by HZL. Operations were started in the year 1991.
9	The Project Proponent shall follow the mitigation measures provided in MoEF&CC's Office Memorandum No. Z-11013/57/2014-IA. II (M), dated 29th October, 2014, titled "Impact of mining 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"	No village and Habitation are part of mining lease area.
10	The Project Proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and from CGWA for withdrawal of ground water for the project.	Permission for mine dewatering issued by CGWA vide NOC No. CGWA/NOC/MIN/REN/2/2022/7143 valid till 07.07.2024. (Annexure XXIV). NOC of water withdrawal from Banas radial well has been renewed vide no. CGWA/NOC/MIN/REN/3/2023/7399 same is valid till

		07/07/2024 (Annexure XXV). Renewal application submitted
11	A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any, from whom suggestion/ representation has been received while processing the proposal.	Copy of EC letter was submitted to Panchayat in 2009.
12.	State Pollution Control Board/Committee shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector's office/ Tehsildar's Office for 30 days.	Copy is marked to Rajasthan State Pollution Control Board.
13	The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board/Committee and web site of the Ministry of Environment, Forest and Climate Change (www.parivesh.nic.in). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record.	Copy of the advertisement was sent to MoEF &CC, Lucknow vide letter No HZL/RAM/Env/Exp/2009 Advertised in two News papers on 03.01.2010.
14	The Project Proponent shall inform the MoEF&CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred than mining operation shall only be carried out after transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.	Will inform as per EIA notification in case of any change in ownership or transfer of the mining lease.
15	In pursuant to Ministry's O.M. No 22-34/2018-IA.III dated 16.01.2020 to comply with the direction made by Hon'ble Supreme Court on 8.01.2020 in W.P. (Civil) No 114/2014 in the matter Common Cause vs Union of India, the mining lease holder shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.	Reclamation is carried out progressively for growth of flora and fauna.
II. Air quality monitoring and preservation		
16	The Project Proponent shall install a minimum of 3 (three) online Ambient Air Quality Monitoring Stations with 1 (one) in upwind and 2 (two) in downwind direction based on long	Three Online Ambient Air Quality Monitoring Stations are in place, 1 in upwind and 2 in downwind direction. Six Ambient air monitoring locations, three each in

	term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, N02, CO and S02 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I, dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.	core and buffer zone each are selected in consultation with the SPCB. AAQ monitoring is carried out every fortnightly Data digitally displayed at main gate. Attached as Annexure-XXVI.
17	Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM 10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from all sources shall be regularly controlled by installation of required equipment's/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured that air pollution level conform to the standards prescribed by the MoEFCC/ Central Pollution Control Board.	Water sprinkling is carried out by 4 Nos. of 40 KL water sprinkler on Haul roads to mitigate air pollution in mine area Annexure-X. Dust extraction system and Water sprinkling nozzles are installed at the crushers, transfer points and coarse stockpiles for dust suppression. Industrial roads are cleaned by using Truck mounted vacuum road sweepers. (Annexure-XXII) The parameters of Ambient Air quality monitored are within the prescribed norm of CPCB.
	III. Water quality monitoring and preservation	
18	In case, immediate mining scheme envisages intersection of ground water table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEFCC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.	Permission for mine dewatering issued by CGWA vide NOC No. CGWA/NOC/MIN/REN/2/2022/7143 valid till 07.07.2024. (Annexure XXIV). NOC of water withdrawal from Banas radial well has been renewed vide no. CGWA/NOC/MIN/REN/3/2023/7399 same is valid till 07/07/2024 (Annexure XXV). and renewal application submitted and attached with annexure XXIV and XXV.
19	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and	There is no perennial nallahs in and around mine lease. Not disturbed any village's natural water bodies or streams.

	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. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department/ State Pollution Control Board.	Regular water monitoring carried out for open dug well / piezometers near mining area and water level and water quality report Quarterly to CGWA, GCWB & State Pollution Control Board. Drinking water is provided to the nearby villages through tankers. Report Submitted to MoEF&CC on six monthly basis. Attached as Annexure –I
20	Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry,CGWA and State Groundwater Department/ State Pollution Control Board	Ground water level and water quality monitoring done regular basis and report submitted to CGWA, State Pollution Control Board and MoEF&CC on quarterly basis and six- monthly basis.
21	The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease and maintain its records. The project proponent shall undertake regular monitoring of water quality upstream and downstream of water bodies passing within and nearby/ adjacent to the mine lease and maintain its records. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. PP shall carryout regular monitoring w.r.t. pH and included the same in monitoring plan. The parameters to be monitored shall include their water quality vis-a-vis suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/ or alteration be made to water bodies during mining operations without justification and prior approval of MoEFCC. The monitoring of water courses/ bodies existing in lease area shall be carried out four times in a	There is no perennial nallahs in and around mine lease. Regular Monitoring of natural water resources around mining lease is carried out. Regular water monitoring carried out for open dug well / piezometers near mining area and water level and water quality report Quarterly to CGWA, GCWB & State Pollution Control Board. (Annexure- I (1, 2 & 3).

	year viz. pre- monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data 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, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.	
22	Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS), Dissolved Oxygen (DO), pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular No. J- 20012/1 /2006-IA. II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.	Water generated from mining operations is utilized in Beneficiation Plant and zero discharge is maintained. There is no acid mine drainage occurring in the mine. Garland drains are constructed around the tailing dam and waste dump with collection sumps.
23	Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.	Garland drains are constructed around the tailing dam and waste dump with collection sumps of 8.5 lakh CuM capacity to collect and reuse the rain water. Collection pond of 1.5 lakh CuM has been constructed in the township. 3 Nos. of anicuts have been constructed for groundwater augmentation in consultation with CGWB. 4 anicults constructed in the area under MJSA. 8.7 MCM groundwater recharge work has been completed in four blocks of Bhilwara district.
24	Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap	No waste water generation from mining. Water generated during mining intersection is used in sprinkling and beneficiation process. Water from tailing dam is recycled back to the Beneficiation Plant and zero discharge is maintained. Oil & Grease traps are installed near work shop and water reused in beneficiation process. Annexure V & Annexure XVIII.
25	The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF&CC and State Pollution Control Board/Committee.	Water balance attached as annexure XXVII
IV. Noise and vibration monitoring and prevention		

26	The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines	Peak particle velocity monitoring done as per guidelines. Annexure-XXIII
27	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 /night hours.	Lights are installed in a manner so that no disturbance to the villagers. Noise levels are also within prescribed limits. Annexure- IV
28	The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.	PPEs like ear plugs / muffs, dust masks, safety goggles, safety shoes etc. provided to all workers/ personals/ laborers. Adequate trainings provided to all concerned and toolbox talks are carried out before starting work. Noise monitoring done as per guideline report attached as per Annexure –IV
	V. Mining plan	
29	The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management , OB & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form to Short Term Permit (STP), Query license or any other name.	Working as per mining plan. There is no changes in mining technology scope of work, method of mining, overburden & dump management, OB & dump mining, mineral transportation mode, ultimate depth of mining. As per the latest MoEF&CC O.M. No. 22-44/2018-IA.III dated 14.05.2020, production will not be extended beyond EC approved quantity.
30	The Project Proponent shall get the Final Mine	Progressive Mine Closure Plan is part of approved

	Closure Plan along with Financial Assurance approved from Indian Bureau of Mines/Department of Mining & Geology as required under the Provision of the MMDR Act, 1957 and Rules/ Guidelines made there under. A copy of approved final mine closure plan shall be submitted within 2 months of the approval of the same from the competent authority to the concerned Regional Office of the Ministry of Environment, Forest and Climate Change for record and verification.	Mining Plan. Final Mine Closure Plan along with details of Corpus Fund will be got approved from IBM and copy of the same will be submitted to MoEF&CC well in advance of final mine closure.
31	The land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life shall be governed as per the approved Mining Plan. The excavation vis-a-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office.	Land use of mine lease area, excavation and afforestation and reclamation are done as per approved mining plan.
	VI. Land reclamation	
32	The Overburden (OB) generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by D.G.M.S w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of top soil/OB dumps. The topsoil shall be used for land reclamation and plantation.	Overburden burden is stacked at earmarked Waste Dump site. Physical parameters maintain as per mining plan and DGMS guidelines and circulars. The topsoil is used for land reclamation and plantation. In current FY there is no top soil generation.
33	The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.	Overburden is stacked at earmarked Waste Dump site. Physical parameters maintain as per mining plan and DGMS guidelines and circulars. stability monitoring by Radar Report enclosed as Annexure –VII
34	The reclamation of waste dump sites shall be done in scientific manner as per the Approved Mining Plan cum Progressive Mine Closure Plan.	Reclamation of waste dump site as per mining plan.
35	The slope of dumps shall be vegetated in	Slopes of waste dumps are stabilized and vegetated

	scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, use of geo textiles/ gee-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.	in scientific manner using geotextile and with native and arid zone seeds (like *Acacia nitolica ,Ziziphus Jojoba ,Prosopis cineraria, Alkanna Tinctoria, Capparis decidua, Gundi, Salvadorapersica* spread on waste dump slopes. Aloe Vera and Vetiver grass planted during laying of geotextiles Annexure XXVIII
36	The Project Proponent shall carry out slope stability study in case the dump height is more than 30 meters. The slope stability report shall be submitted to concerned regional office of MoEF&CC.	Waste dump design and slope stability is being reviewed yearly by CIMFR and report being submitted to MoEF&CC Regional Office. Latest report enclosed as Annexure XXI.
37	Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil/OB/Waste dumps to prevent run off of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly	Garland drains of adequate size are constructed along the waste dump toe & mining pit, along with lined collection sumps of about 8.5 lakh CuM . The water collected is utilized for various purposes. De-silting sump and drains are de-silted on regular basis. Annexure –VIII
38	Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The sedimentation pits/ sumps shall be constructed at the corners of the garland drains.	Garland drains of adequate size are constructed along the waste dump toe & mining pit, along with lined collection sumps of about 8.5 lakh CuM . The water collected is utilized for various purposes. De-silting sump and drains are de-silted on regular basis. Annexure –VIII
39	The top soil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the top soil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS w.r.t.	The topsoil has been utilized for land reclamation and plantation. At present no top soil dump at site.

	safety in mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose.	
	VII. Transportation	
40	No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.	Ore transportation is being done within acquired land and not passing through any village / habitation. Regular water sprinkling is done on haul roads (Annexure X). Industrial roads are cleaned using truck mounted vacuum Road Sweepers (Annexure-XXII). Periodic preventive maintenance of vehicles is part of our operations. All the trucks are covered with tarpaulin while transportation of concentrates to the smelters. PUC certificate is ensured for every truck prior to entry in the premises. Annexure XIII
41	The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.	Regular water sprinkling is done on haul roads (Annexure X). Dust extraction system and Water sprinkling nozzles are installed at the crushers, transfer points and coarse stockpiles for dust suppression. Industrial roads are cleaned by using Truck mounted vacuum road sweepers. (Annexure-XXII) The parameters of Ambient Air quality monitored are within the prescribed norm of CPCB.
	VIII. Green Belt	
42	The Project Proponent shall develop greenbelt	Green belt developed all along the acquired area.

	in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan.	
43	The Project Proponent shall carryout plantation/ afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/ Agriculture Department/ Rural development department/ Tribal Welfare Department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per Hectare. Adequate budgetary provision shall be made for protection and care of trees.	Green belt developed all along the acquired area. Progressive plantation is being carried out on waste dump benches every year. Seed spearing and geotextile laying is also carried out on waste dump slopes. As per SRSAC study conducted based on Nov 2021 satellite imagery, 694103 Nos of plants are existing within 348 Ha area. Further FY 2022-23, FY 2023-24, FY 2024-25, and 2025-26 15000 Nos, 23000 Nos, 15000 Nos and 5000 saplings planted as gap filling. Currently 752103 Nos of plants are exiting in 348 Ha. Detailed SRSAC report attached as Annexure XXXV. Additional plantation has been done in 37.70 ha in the township and along roadside. Density of the plantation will be increased in phase manner. (Annexure –IX)
44	The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/ protected against felling and plantation of such trees should be promoted.	Hindustan Zinc Ltd. is carrying out various work for livestock and agriculture development under its flagship project named "Samadhan" in collaboration with BAIF (National level Origination)
45	The Project Proponent shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-I species during mining operation. A Wildlife Conservation Plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life Warden of the State Govt.	Not applicable there is no Shedule-1 species in mining area
46	And implemented in consultation with the	Not applicable There is no Shedule-1 species in

	State Forest and Wildlife Department. A copy of Wildlife Conservation Plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.	mining area
	IX. Public hearing and human health issues	
47	The Project Proponent shall appoint an Occupational Health Specialist for Regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records shall be maintained properly. PP shall also carryout Occupational health check-ups in respect of workers which. are having ailments like BP, diabetes, habitual smoking, etc. The check-ups shall be undertaken once in six months and necessary remedial/ preventive measures be taken. A status report on the same may be sent to MoEFCC Regional Office and DGMS on half-yearly basis.	Appointed Occupational Health Specialist. Regular as well as Periodical medical examination of the workers are carried out as per Mines Act. Copy of the return submitted to DGMS is attached as annexure –XXIX
48	The Project Proponent must demonstrate commitment to work towards 'Zero Harm' from their mining activities and carry out Health Risk Assessment (HRA) for identification workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community. The proponent shall maintain accurate and systematic records of the HRA. The HRA for neighborhood has to focus on Public Health Problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under five, respiratory infections due to bio mass cooking. The proponent shall also create awareness and educate the nearby community and workers for Sanitation, Personal Hygiene, Hand washing, not to defecate in open, Women Health and Hygiene (Providing Sanitary Napkins), hazard of tobacco and alcohol use. The Proponent shall carryout base line HRA for all the category of workers and there after every five years.	We are committed for Zero Harm from our mining activities. Various studies have been done for health risk assessment regarding identification and control measures for workplace hazards. Regular health check-ups of nearby community are done through "Government PHC (Primary Health Center)" (Annexure-XX) and awareness sessions are also conducted.
49	The Proponent shall carry out Occupational health surveillance which be a part of HRA and include Biological Monitoring where practical and feasible, and the tests and investigations relevant to the exposure (e.g. for Dust a X-Ray chest; For Noise Audiometric; for Lead Exposure Blood Lead, For Welders Full Ophthalmologic Assessment; for Manganese Miners a complete Neurological Assessment by	Biological monitoring and tests and investigations relevant to the exposure are carried out and record maintain by Occupational health team. No manganese and chromium mining so Mn & Cr monitoring not applicable. Blood lead monitoring is done on regular basis.

	a Certified Neurologist, and Manganese (Mn) Estimation in Blood; For Inorganic Chromium- Fortnightly skin inspection of hands and forearms by a responsible person. Except routine tests all tests would be carried out in a Lab accredited by NABH. Records of Health Surveillance must be kept for 30 years, including the results of and the records of Physical examination and tests. The record of exposure due to materials like Asbestos, Hard Rock Mining, Silica, Gold, Kaolin, Aluminium, Iron, Manganese, Chromium, Lead, Uranium need to be handed over to the Mining Department of the State in case the life of the mine is less than 30 years. It would be obligatory for the State Mines Departments to make arrangements for the safe and secure storage of the records including X-Ray. Only conventional X-Ray will be accepted for record purposes and not the digital one). X-Ray must meet ILO criteria (17 x14 inches and of good quality).	
50	The Proponent shall maintained a record of performance indicators for workers which includes (a) there should not be a significant decline in their Body Mass Index and it should stay between 18.5 -24.9, (b) the Final Chest X-Ray compared with the base line X-Ray should not show any capacities ,(c) At the end of their leaving job there should be no Diminution in their Lung Functions Forced Expiratory Volume in one second (FEV1),Forced Vital Capacity (FVC), and the ratio) unless they are smokers which has to be adjusted, and the effect of age, (d) their hearing should not be affected. As a proof an Audiogram (first and last need to be presented), (e) they should not have developed any Persistent Back Pain, Neck Pain, and the movement of their Hip, Knee and other joints should have normal range of movement, (f) they should not have suffered loss of any body part. The record of the same should be submitted to the Regional Office, MoEF&CC annually along with details of the relief and compensation paid to workers having above indications.	Periodical medical examination of the workers are being carried out as per DGMS guidelines and records are being maintained. Further, as no changes in the performance indicators have been reported, the need for paying compensation didn't arise.
51	The Project Proponent shall ensure that 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.	Dust masks are provided to all workers/ personals/ laborers. Adequate trainings provided to all concerned and toolbox talks are carried out before starting of work.

52	Project Proponent shall make provision for the housing for workers/ labors or shall construct labor camps within/ outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The domestic waste water should be treated with STP in order to avoid contamination of underground water.	No construction labor housing is proposed in mining area. However, the sanitation and drinking water facility is provided to the workers, working at site. Sewage Treatment Plants are also installed at mining area and township.
53	The activities proposed in Action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status Report on implementation of Action Plan shall be submitted to the concerned Regional Office of the Ministry along with District Administration.	All the issues raised during Public Hearing in the year 2009 were addressed.
	X. Corporate Environment Responsibility (CER)	
54	The activities and budget earmarked for Corporate Environmental Responsibility (CER) as per Ministry's O.M No 22-65/2017-IA. II (M) dated 01.05.2018 or as proposed by EAC should be kept in a separate bank account. The activities proposed for CER shall be implemented in a time bound manner and annual report of implementation of the same along with documentary proof viz. photographs, purchase documents, latitude & longitude of infrastructure developed & road constructed needs to be submitted to Regional Office MoEF&CC annually along with audited statement.	Separate Cost center and GL account are maintained. Activities proposed for CER will be implemented in time bound manner.
55	Project Proponent shall keep the funds earmarked for environmental protection measures in a separate account and refrain from diverting the same for other purposes. The Year wise expenditure of such funds should be reported to the MoEFCC and its concerned Regional Office.	Environmental funds are earmarked for environment work only. Separate Cost center and GL account are maintained. Environmental expenditure is reported on six monthly basis enclosed as Annexure -VI
	XI. Miscellaneous	

56	The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEFCC.	The land use & land cover change study carried out in 2023. Copy attached Annexure-XIV
57	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.	Being operational unit, condition is not applicable.
58	The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEFCC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.	Compliances report submitted to MOEF & CC & Regional Office, Central Pollution Control Board and State Pollution Control Board. Environment statement submitted on 27th September 2025. Annexure-XIX.
59	A separate 'Environmental Management Cell' with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEF&CC.	Environment Management Cell has been set up having adequate qualified Executives and a Senior executive who reports to IBU CEO directly. Adequate number of mining engineers are appointed for mine planning, execution, Geotech etc.
60	The concerned Regional Office of the MoEF&CC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEF&CC officer(s) by furnishing the requisite data / information / monitoring reports.	Noted

CEO - IBU Agucha
Hindustan Zinc Limited
Rampura Agucha Mines
PO - Agucha
Distt. - Bhilwara (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 uints 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 aspect, 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
Zinc & Silver of India

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.
- Engage with relevant stakeholders in building capacity and capability to identify and proactively manage environmental related issues.
- 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 our 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.

Arun Misra

Arun Misra
CEO & Whole Time Director, HZL

Date: 05th June, 2025

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HINDUSTAN ZINC

Biodiversity Policy

Purpose:

Protecting and enhancing biodiversity is an integral part of Hindustan Zinc's commitment to sustainable development. We are conscious of the potential impacts and dependencies of our business on the environment in general and on biodiversity. Integrating the need for biodiversity conservation into operational decision-making processes and taking measures to minimize impacts is a commitment across the company with a vision of Nature Positive.

Biodiversity is a complex phenomenon that needs to be identified, understood, and valued from a biological and societal (i.e., in terms of ecosystem services) perspective and the Company is conscious of the potential impacts and dependencies of our business on the environment in general and on biodiversity in particular. This biodiversity policy shall help us define, strategize, plan, and implement the essential roadmap, guidance, and measurement towards achieving sustainability goals.

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

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 value chain.

Objectives of the Biodiversity Policy:

Hindustan Zinc will strive to:

- Achieve nature positive impacts to biodiversity values by implementing intense management actions either on site or off site, to compensate for any project impacts to areas recognized nationally or internationally for their high values of threatened, endemic or migratory / congregatory species or unique and threatened ecosystems.
- Comply with, and exceed whenever feasible, the local, regional, and national legislative requirements concerning land management and biodiversity conservation, as well as relevant international agreements, in all jurisdictions where we operate.
- Avoid deforestation and habitat loss and respect internationally recognized areas such as World Heritage Sites, IUCN Category (I - IV) Protected areas, legally designated protected areas, and Key Biodiversity Areas.
- Compensate with future reforestation (no net deforestation) by appropriate on or off-site habitat restoration. Plan to achieve No Gross Deforestation in protected areas and strive to achieve No Net Deforestation in operating sites by 2050 against the baseline of 2020.
- Plan and strive to achieve No Net Loss (NNL) of biodiversity at all mine sites by closure through applying mitigation hierarchy and ensure that we will operate on the principles of Net Positive Impact (NPI) for critical habitat * to support halting and reversing biodiversity loss by 2030 from a 2020 baseline.
- Set targets and objectives to avoid, reduce or mitigate biodiversity and nature-based impacts on people and planet.
- Analyze Nature related financial risks arising in our operations and integrate relevant nature considerations into our strategic approach, financial planning. Also analyzing the nature-related opportunities throughout the project lifecycle, including decommissioning, closure, and rehabilitation.
- Conduct biodiversity risk assessment and apply the mitigation hierarchy to avoid or minimize biodiversity and nature-based risks.
- Ensure continuous improvements in biodiversity performance through effective management and implementation of action plans in alignment with the "Nature-Based Solutions" approach.
- Review the performance against the policy on a periodic basis to ensure management of biodiversity as per our objectives including the sharing of good practices throughout the organization and stakeholders.
- Align with local, national, and global conservation initiatives by collaborating with conservation experts, Indigenous Peoples, local communities, affected stakeholders, and organizations. Support joint efforts by the private and public sectors, and foster knowledge, awareness, and participation among relevant stakeholders, including employees, to collectively address biodiversity and nature-related challenges.
- Engage and raise awareness amongst our employees, business partners, supply chain and other stakeholders to enhance their knowledge and understanding of biodiversity and ecosystem management practices.
- Actively encourage value chain partners and suppliers to align with this policy and avoid operational activities near sites containing globally or nationally important biodiversity.

Responsibility & Review:

This policy aligned with Kunming-Montreal Global Biodiversity Framework is part of our Sustainability Framework, and each Hindustan Zinc business shall implement this policy. 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. Board ESG will review this policy annually and recommend appropriate revisions to the Board as may deem necessary.

*Critical habitats include biodiversity hotspots, ecologically sensitive zones, IUCN Category I-IV protected areas, regions adjacent to World Heritage Sites, and other ecologically significant habitats and ecosystems.

Arun Misra

Date: 05th June, 2025

Arun Misra
CEO & Whole Time Director, HZL

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Annexures Table

S. No.	Descriptions	Annexure No.
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3	Ambient air quality data	Annexure III
4.	Noise level monitoring	Annexure IV
5.	Oil & Grease separator water analysis	Annexure V
6.	Environmental Expenditure	Annexure VI
7.	Dump Slope monitoring Data: Radar & Prism data	Annexure VII
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10	Water sprinklers in mining haul road	Annexure X
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24	existing CGWA NOC for mine water intersection and renewal application	Annexure XXIV
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34	Tailing through closed pipeline	Annexure XXXIV
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HINDUSTAN ZINC LIMITED

RAMPURA AGUCHA MINE

WELL WATER ANALYSIS REPORT April-2025 to September- 2025

S. No	1		2		3		4		5		6		7		8		9		10		11	
Code	WW-10		ww-22		GWD		WW-13		HP-1		WW-15		WW-16		WW-23		PRK-1		KOT-1		WW-14	
Month	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25
pH	6.82	7.48	7.50	8.15	7.20	7.83	8.23	8.02	7.42	7.86	8.36	8.13	7.42	8.03	7.95	8.42	7.47	8.23	7.16	8.25	7.41	7.94
Alkalinity	219.52	227.74	192.08	119.66	227.36	193.00	180.32	127.38	329.28	312.66	568.40	579.00	384.16	347.40	137.20	123.52	282.24	115.80	356.72	135.10	441.00	386.00
Chlorides	213.41	220.14	42.19	29.35	258.08	225.04	21.84	17.61	124.08	112.52	238.22	283.74	218.37	195.68	54.59	44.03	367.26	117.41	307.71	102.73	173.71	136.98
Sulphate	391.70	362.20	40.76	21.83	171.60	142.65	23.52	11.80	357.80	304.23	114.55	136.41	191.67	162.05	20.72	26.19	162.78	54.10	178.30	62.46	171.80	152.46
CN	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Pb	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Zn	0.420	0.440	<0.01	<0.01	0.020	0.010	<0.01	<0.01	0.08	0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.020	0.190	0.030	0.020	0.020	<0.01
Fe	0.180	0.040	<0.01	<0.01	0.100	0.060	<0.01	<0.01	0.03	0.03	0.030	<0.01	0.070	0.040	<0.01	<0.01	0.070	<0.01	0.090	0.010	0.080	0.040
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Co	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ni	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

All figures are in mg/l except pH

Rahul

HINDUSTAN ZINC LIMITED

RAMPURA AGUCHA MINES

Annexure - I (2/3)

PIEZOMETER WATER ANALYSIS REPORT – April -2024 to September- 2025

S. No.	1		2		3		4		5		6		7		8	
Code	P		H		E1		G1		I1		K		A		Adm	
Months	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25	May-25	Aug-25
pH	7.22	7.74	7.41	7.25	7.45	7.45	7.52	7.64	7.19	7.94	8.23	7.62	7.52	7.85	7.65	7.79
Alkalinity	392.00	366.70	274.40	231.60	148.96	138.96	352.80	308.80	137.20	123.52	245.00	212.30	294.00	250.90	235.20	193.00
Chlorides	322.60	293.53	327.56	293.53	545.93	489.21	208.45	190.79	277.93	249.50	292.82	303.31	302.74	259.28	238.22	200.58
Sulphate	334.82	289.76	361.52	272.44	213.70	206.40	340.22	296.36	254.20	216.92	225.70	193.19	353.40	280.76	253.29	192.76
CN	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Pb	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.010	<0.01	<0.01	<0.01	<0.01
Zn	0.030	0.040	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	0.020	<0.01	0.060	<0.01	0.02	<0.01	0.05	0.02
Fe	0.11	0.08	<0.01	<0.01	0.060	0.040	<0.01	<0.01	0.060	0.030	<0.01	<0.01	0.08	0.02	0.09	0.05
Cd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Co	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ni	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
As	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Ca	196.08	156.86	196.08	176.47	164.71	156.86	243.14	227.45	258.82	235.29	98.04	101.96	176.47	149.02	78.43	66.67
Mg	21.44	38.12	100.06	102.44	42.88	38.12	88.15	83.38	47.65	52.41	35.74	47.65	30.97	23.82	35.74	30.97

Walid

Annexure I (3/3)

HINDUSTAN ZINC LTD
RAMPURA AGUCHA MINE
WELL WATER LEVEL MONITORING
(Below the ground level in meters)

Months	W-10	W-22	W-13	W-14	W-15	W-16	W-23	GWD	PRK-1	KOT-1
April-25	8.8	3.9	3.6	6.1	4.9	15	5.1	8.8	4.1	5.2
May-25	8.3	4.1	8.8	9.0	4.8	8.3	5.5	10.13	7	20.65
June-25	9	4.4	9	8.3	5.4	16.9	5.9	10.2	7.2	9
July-25	5.3	2.8	2.3	4.3	4.1	8	3.5	4.3	2.5	2.7
August-25	3.6	1.5	1.5	3.1	2.9	4.1	2.4	2.6	1.9	1.8
September-25	2	1.1	1	1.5	0.8	3.4	1.3	1.1	0.8	1.2

Annexure - II

Analysis of Waste Dump Rocks

Location : Waste Dump

Element	Range		
Pb	0.0001%	-	0.0062%
Zn	0.0049%	-	0.0978%
Cu	0.0002%	-	0.0036%
Cd	0.0001%	-	0.0003%
Ni	0.0014%	-	0.0090%
Co	0.0011%	-	0.0087%

HINDUSTAN ZINC LIMITED RAMPURA AGUCHA MINE

AIR MONITORING: AMBIENT AIR & STACK : April 2025 to September 2025

Location		Mine Site						Main Gate						Mine Tower					
month/ year	Fortnight	SPM (µg/m3)	PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	SO_2 (µg/m3)	NO_x (µg/m3)	CO (µg/m3)	SPM (µg/m3)	PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	SO_2 (µg/m3)	NO_x (µg/m3)	CO (µg/m3)	SPM (µg/m3)	PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	SO_2 (µg/m3)	NO_x (µg/m3)	CO (µg/m3)
April-25	I st	156.43	78.87	32.46	6.59	14.27	390.00	143.80	71.20	28.58	6.38	14.10	380.00	176.26	89.50	37.63	6.75	14.03	410.00
	II nd	151.87	79.98	33.48	6.60	14.60	420.00	129.36	69.38	29.79	6.77	14.46	380.00	158.20	81.80	35.23	7.14	17.00	390.00
May-25	I st	151.10	78.10	36.86	6.86	15.30	410.00	148.05	78.09	30.30	6.75	14.24	360.00	165.82	85.94	38.18	6.76	14.71	390.00
	II nd	150.31	86.03	36.91	6.16	14.76	360.00	132.36	74.41	30.47	<6	14.56	340.00	141.15	80.43	33.86	6.38	15.20	380.00
June-25	I st	145.76	79.84	34.14	6.77	14.99	340.00	136.57	77.56	35.63	6.59	13.48	320.00	138.92	80.35	38.49	6.34	14.78	360.00
	II nd	130.07	74.64	25.81	6.75	14.36	280.00	130.72	70.35	29.49	6.04	14.49	290.00	131.03	73.01	35.29	6.33	14.39	310.00
July-25	I st	128.38	67.41	31.22	6.78	14.55	290.00	105.26	59.23	29.95	6.39	14.47	260.00	104.86	60.56	32.41	6.70	14.56	270.00
	II nd	82.12	52.58	25.47	6.11	13.89	230.00	75.36	53.39	20.86	<6.0	13.12	240.00	92.75	54.72	26.95	6.13	14.20	270.00
Aug-25	I st	134.78	76.89	32.07	6.66	14.83	280.00	122.07	65.90	30.32	6.41	14.62	260.00	117.47	66.25	34.56	6.17	14.38	290.00
	II nd	81.41	55.85	23.16	6.44	13.73	240.00	78.12	46.75	22.78	<6	12.76	230.00	77.64	56.03	22.32	6.39	14.63	260.00
Sept-25	I st	119.47	62.25	28.62	6.02	14.95	340.00	112.19	55.45	28.60	6.15	14.69	320.00	116.79	65.82	30.89	6.12	14.72	360.00
	II nd	166.47	79.42	31.79	6.58	14.15	360.00	140.18	77.06	29.99	6.41	14.15	340.00	140.27	68.30	31.97	6.26	14.00	380.00

Location-		Agucha village						Kothiya village						Bherukhera village					
month/ Year	Fortnight	SPM (µg/m3)	PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	SO_2 (µg/m3)	NO_x (µg/m3)	CO (µg/m3)	SPM (µg/m3)	PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	SO_2 (µg/m3)	NO_x (µg/m3)	CO (µg/m3)	SPM (µg/m3)	PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	SO_2 (µg/m3)	NO_x (µg/m3)	CO (µg/m3)
April-25	I st	123.85	70.39	27.17	<6	13.28	260.00	136.44	64.30	23.43	<6	13.53	220.00	121.28	69.54	23.24	<6	13.36	240.00
	II nd	125.00	68.50	28.34	<6	13.68	270.00	124.85	53.37	26.26	<6	12.80	230.00	121.95	63.59	25.67	<6	13.42	260.00
May-25	I st	133.63	63.75	27.76	<6	13.49	270.00	121.96	64.17	24.97	<6	13.43	260.00	120.71	60.93	26.70	<6	13.73	280.00
	II nd	130.27	69.80	24.55	<6	13.51	220.00	115.96	68.12	24.62	<6	13.27	240.00	114.80	64.02	27.37	<6	13.35	210.00
June-25	I st	120.03	52.19	23.26	<6	12.75	210.00	122.55	68.72	25.68	<6	13.95	240.00	106.43	55.83	26.22	<6	13.60	230.00
	II nd	133.48	60.82	26.20	<6	13.54	230.00	115.83	59.94	25.87	<6	13.14	220.00	119.54	56.22	26.45	<6	13.22	240.00
July-25	I st	89.02	43.17	25.47	<6	13.65	220.00	86.46	47.70	21.75	<6	13.91	240.00	84.47	42.13	25.15	<6	13.32	230.00
	II nd	53.97	39.92	13.41	<6	13,61	220.00	57.35	31.06	10.57	<6	13.02	180.00	60.58	28.72	20.30	<6	<10	180.00
Aug-25	I st	98.63	60.40	23.08	<6	13.39	230.00	88.16	43.21	22.07	<6	13.43	220.00	104.99	48.03	24.34	<6	13.18	210.00
	II nd	49.03	29.35	16.32	<6	11.61	190.00	53.30	31.22	17.52	<6	11.59	170.00	66.92	36.82	17.58	<6	12.62	180.00
Sept-25	I st	82.89	41.85	19.52	<6	11.95	180.00	81.75	40.07	19.82	<6	11.99	170.00	69.31	42.62	22.37	<6	11.39	170.00
	II nd	120.07	62.89	25.41	<6	13.46	320.00	125.79	72.44	27.49	<6	13.78	290.00	113.71	57.47	23.13	<6	13.34	280.00

All figures are in (µg/m3)

STACK MONITORING SPM

Month-Yr	Fortnight	Pr Crusher (SPM)	New Pr Crusher (SPM)	
April-25	I st	34.85	37.16	All figures are in (mg/Nm3)
	II nd	36.58	39.46	
May-25	I st	34.20	37.39	
	II nd	34.83	26.00	
June-25	I st	36.96	25.45	
	II nd	38.55	27.08	
July-25	I st	36.08	24.93	
	II nd	34.19	26.92	
Aug-25	I st	35.18	25.64	
	II nd	26.03	19.20	
Sept-25	I st	38.43	35.5	
	II nd	34.20	37.39	

Month	CO (mg/Nm3)	Particular Matter, (mg/Nm3)	NOx, (ppm)	NMHC (mg/Nm3)
May-25	113	54.6	265	37
Aug-25	97	55.32	275	35

Annexure-IV

SNo.	Area of Monitoring	NOISE LEVEL AT WORK ENVIRONMENT IN dB(A)						Equipment Condition
		April-25	May-25	June-25	July-25	Aug-25	Sept-25	
1	BENEFICIATION PLANT							
	a. Mill Ambient	74.50/64.60	74.20/64.80	74.70/64.50	74.90/63.90	74.30/63.86	74.10/64.10	Day/ Night
	b. Mill- Grinding Area	75.30	75.40	75.10	74.20	75.10	74.90	Plant is in running condition.
	c. Operators cabin mill area	71.40	72.50	73.70	72.50	72.60	72.70	--do--
	d. Flotation cell area	74.70	73.40	74.90	74.90	74.80	73.90	--do--
	e. AFM's cabin cell area	72.60	72.80	71.90	71.10	72.10	71.90	--do--
	f. Shift engineer's room	73.50	72.40	72.10	72.80	72.90	72.90	--do--
	g. Control room	71.30	72.10	72.70	73.20	73.80	72.90	--do--
	h. Work Shop	74.90	74.80	74.80	74.80	73.90	74.40	--do--
	i. Mine Tower	72.50/63.80	70.80/62.80	71.20/63.50	73.22/64.00	71.45/62.00	72.50/62.60	--do--
2	PRIMARY CRUSHER							
	a. Primary Crusher I Control Room	72.60/64.00	73.50/63.90	73.00/64.10	73.20/62.90	72.80/63.20	72.75/62.80	Day/ Night
	b. Primary Crusher II Control Room	72.80/64.20	73.60/64.30	73.90/64.50	73.50/63.30	72.60/64.30	71.50/63.80	Day/ Night
3	SEC./TERT. CRUSHER							
	a. Shift Room Sec. Crusher	74.80/64.70	74.90/64.90	74.80/64.30	74.10/63.20	74.80/63.90	73.90/64.70	Day/Night
	b. Secondary crusher control room	74.90	74.80	73.50	74.20	73.80	73.20	Plant is in running condition.
	Ambient Mine Pit	72.80/61.50	73.60/62.90	74.70/64.50	72.90/62.80	73.60/63.30	73.70/63.30	Day/ Night
4	Ambient Noise							
	Main Gate	61.00/59.00	61.50/58.90	60.80/59.50	62.35/59.30	61.30/59.44	61.40/60.12	Day/ Night
5	Village monitoring							
	Agucha	51.00/44.20	51.50/44.50	51.20/42.80	52.80/43.10	52.78/43.28	52.90/44.76	Day/ Night
	Bherukhera	50.00/44.90	51.20/43.80	50.20/43.50	51.20/43.29	50.30/44.10	50.70/43.20	Day/ Night
	Kothiya	49.90/44.10	50.30/44.60	50.10/43.90	50.10/43.20	49.80/43.11	51.05/44.10	Day/ Night

DG set Noise Monitoring			
Month		Location	Noise level(dB)
1	May-25	DG set Operator's room	71.50
		DG set Hall	96.70
2	Aug-25	DG set Operator's room	69.55
		DG set Hall	95.90

Walid

Annexure -V

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

Office : E-6S, Chitranjan Marg,
C-Scheme, Jaipur - 302001, Rajasthan
Phone : +91 6377210064, 9414077379,
Website : www.teamtesthouse.com
Email : team.hdhead@gmail.com

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

TEST REPORT

Report No./ULR No. :	25200000687	Date :	26-06-2025
Issued To :	M/S Hindustan Zinc Ltd (Agucha) Rampura Agucha Mines PO : Agucha 311029 Gulabpura, District : Bhilwara (Rajasthan).	Type of Unit :	Mines
Type of sample / Discipline :	Liquid Effluents / Chemical	Date of Sample Collection/Monitoring :	12-06-2025
Point of Collection	Oil Grease Separator Outlet Water (HEMM Workshop)	Date of Receipt :	13-06-2025
Date of Test/Analysis :	13-06-2025 to 26-06-2025	Sampling Plan :	APHA 2017 ; 1060
Quantity of Sample :	2 Ltr	Sample Collected By :	Rakesh Sharma
Unit's representative :	Mr Dinesh Kumar Paliwal	Condition of Sample :	Fit for testing

RESULTS

S.No	Parameters	Observed Value	Testing Protocol	Limits as per Environment protection rules, 1986
1	Total Suspended Solids [mg/l]	39	2540-D , APHA 24th Edition	100
2	Biochemical Oxygen Demand (BOD) [mg/l]	28.25	5210-B , APHA 24th Edition	30
3	Chemical Oxygen Demand (COD) [mg/l]	229.68	5220-C , APHA 24th Edition	250
4	pH	6.83	4500 H+B , APHA 24th Edition	5.5 - 9.0
5	Oil & Grease [mg/l]	7	5520- B , APHA 24th Edition	10

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
Senior Analyst

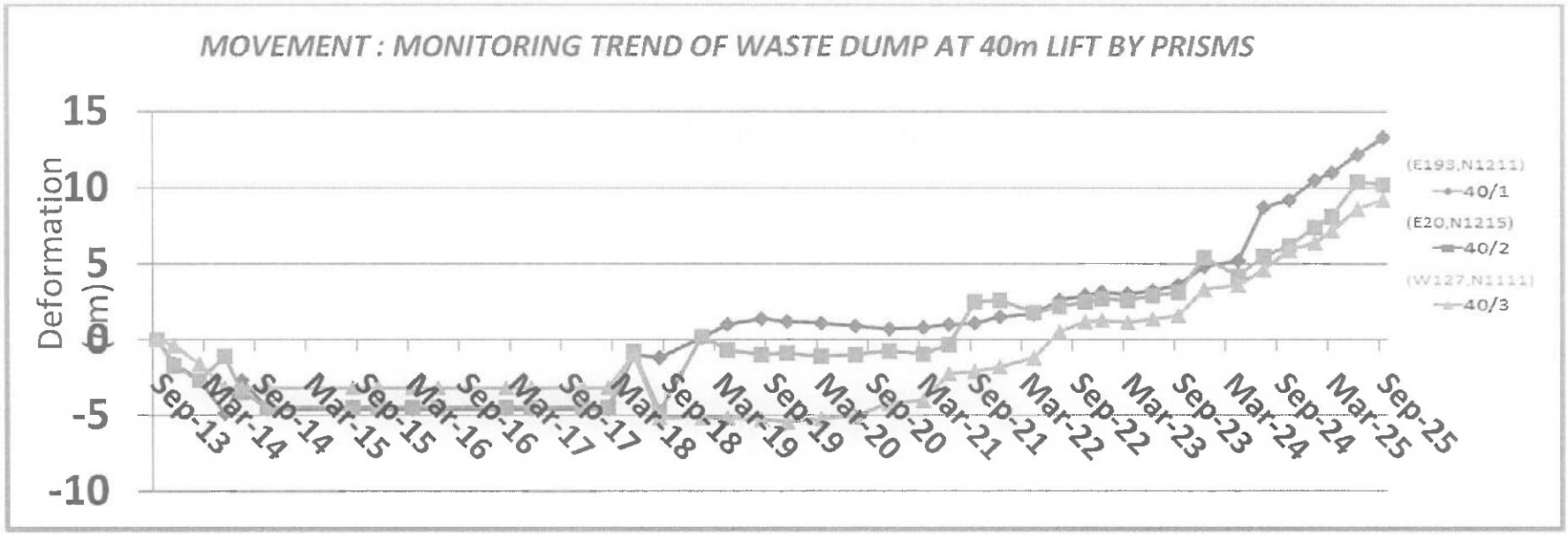
Rajesh Maheshwar
Authorized Signatory
(Report No: 25200000687)

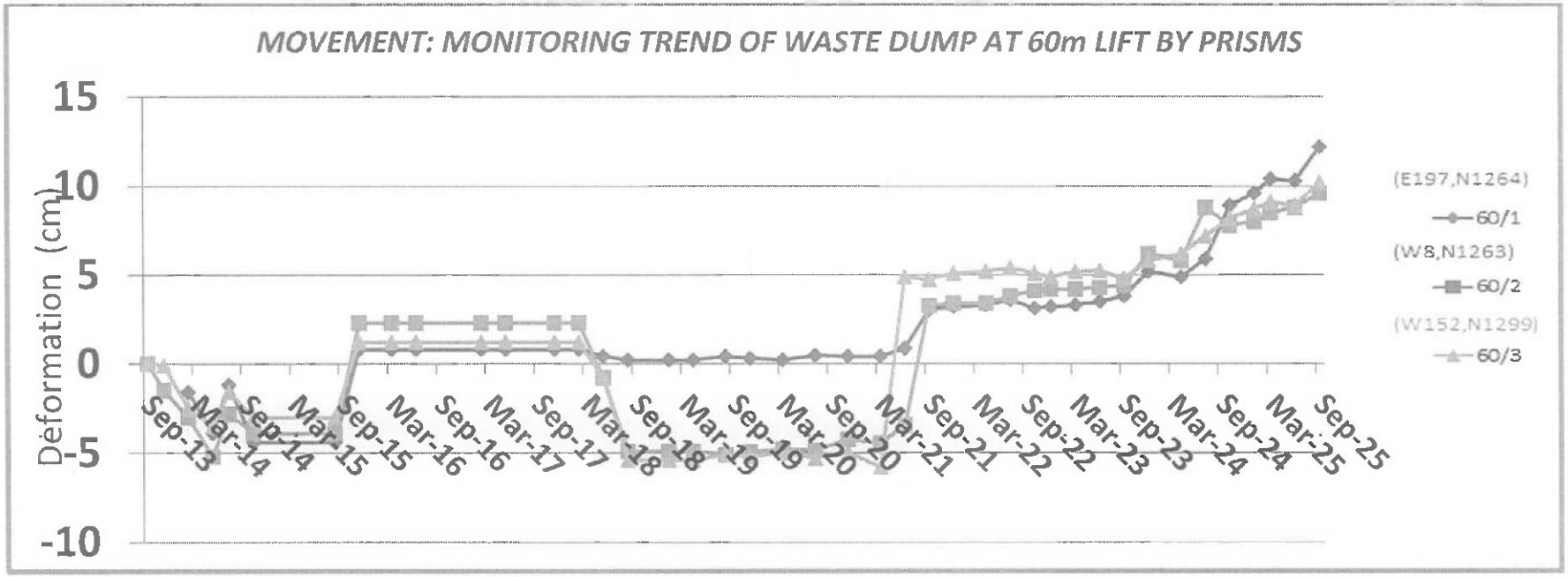
Annexure -VI

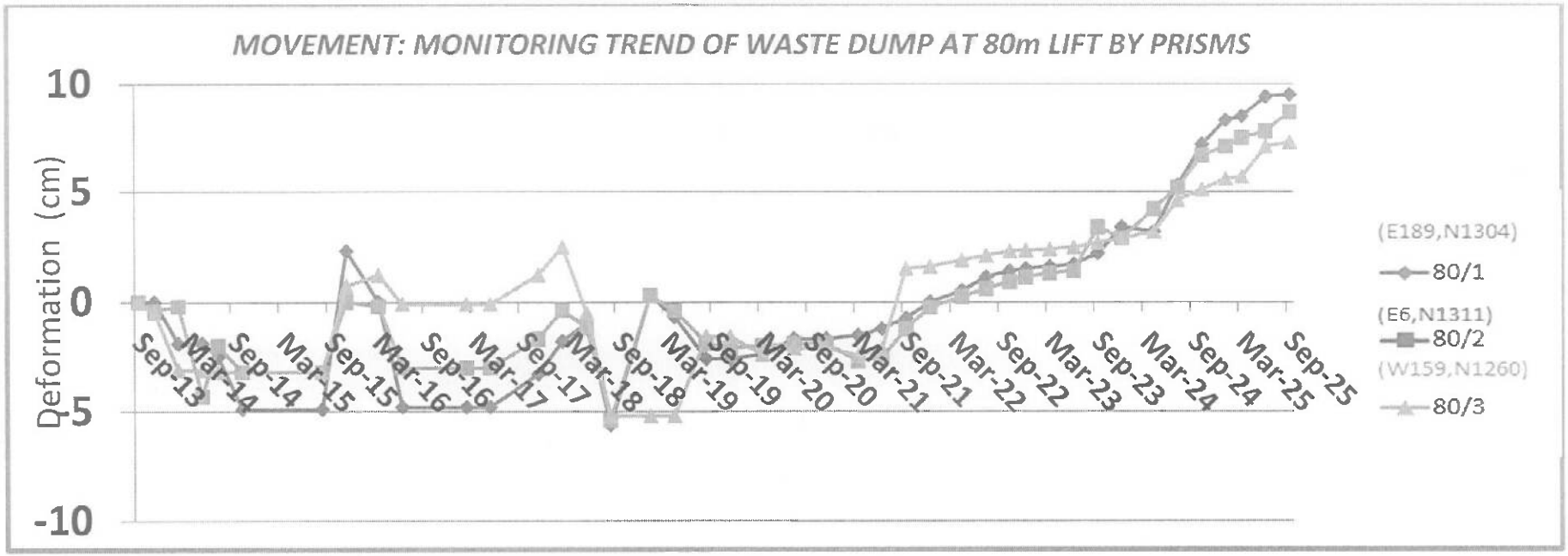
ENVIRONMENTAL EXPENDITURE DETAILS

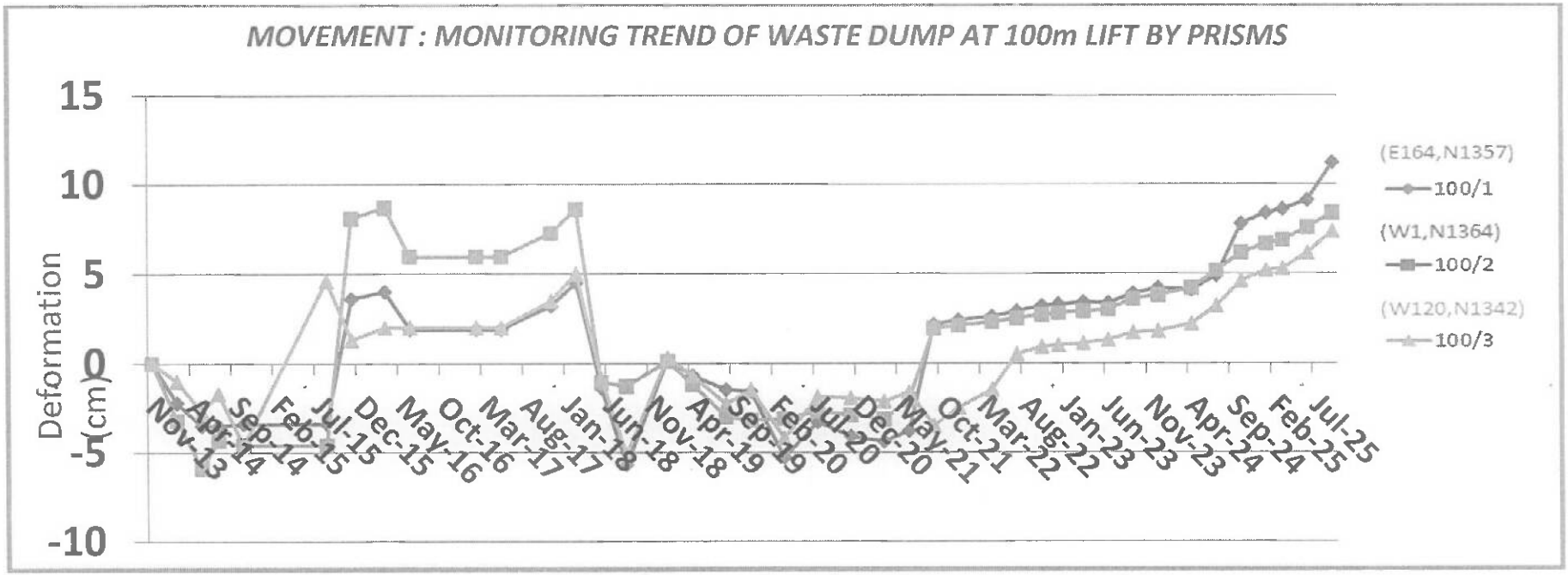
Particulars	2025					
	April 2025 to September 2025					
Expenditure	April-25	May-25	June-25	July-25	Aug-25	Sept-25
	24.26	15.39	9.57	20.25	42.17	23.11
TOTAL Rs (Lacs)	134.75					

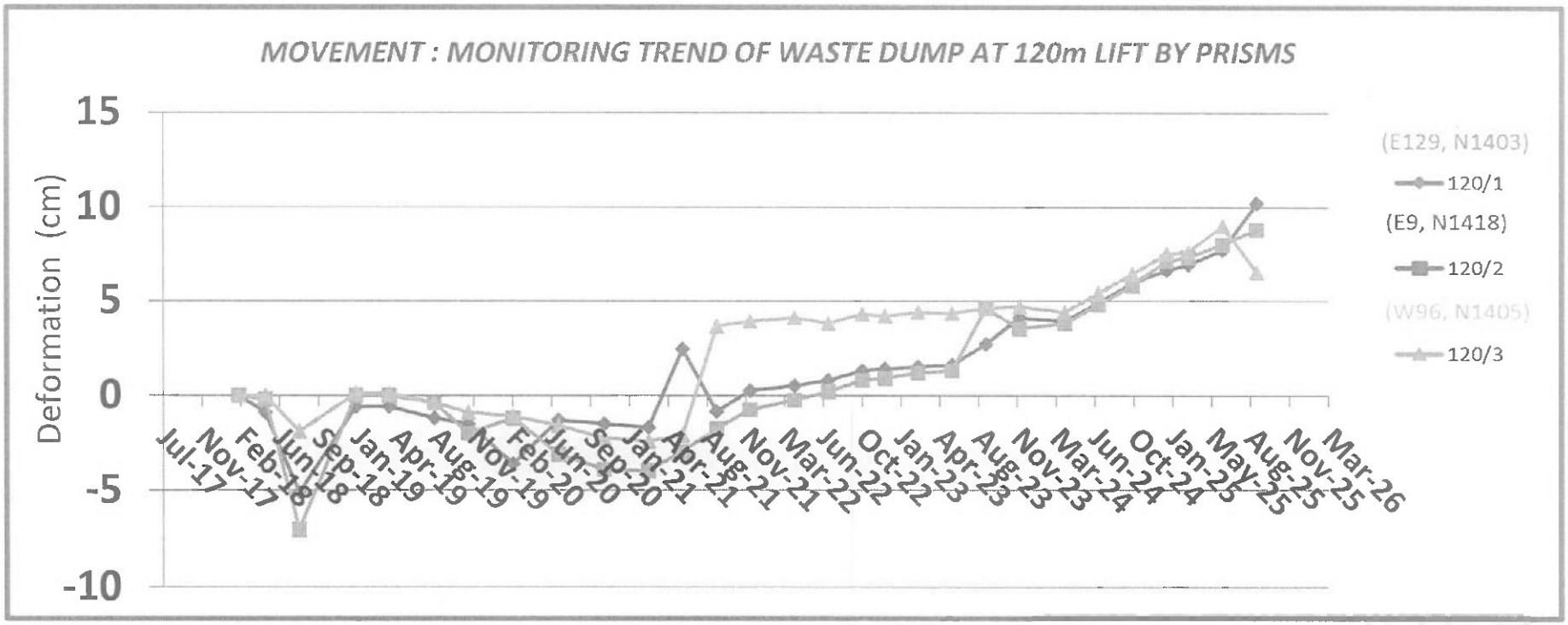
Dump Slope monitoring Data: Radar & pillar-prism Monitoring data for MOEF_ Oct2025


MOVEMENT : MONITORING TREND OF WASTE DUMP AT 40m LIFT BY PRISMS
Deformation (cm)
15
10
5
0
-5
-10
Sep-13
Mar-14
Sep-14
Mar-15
Sep-15
Mar-16
Sep-16
Mar-17
Sep-17
Mar-18
Sep-18
Mar-19
Sep-19
Mar-20
Sep-20
Mar-21
Sep-21
Mar-22
Sep-22
Mar-23
Sep-23
Mar-24
Sep-24
Mar-25
Sep-25
(E193,N1211)
40/1
(E20,N1215)
40/2
(W127,N1111)
40/3

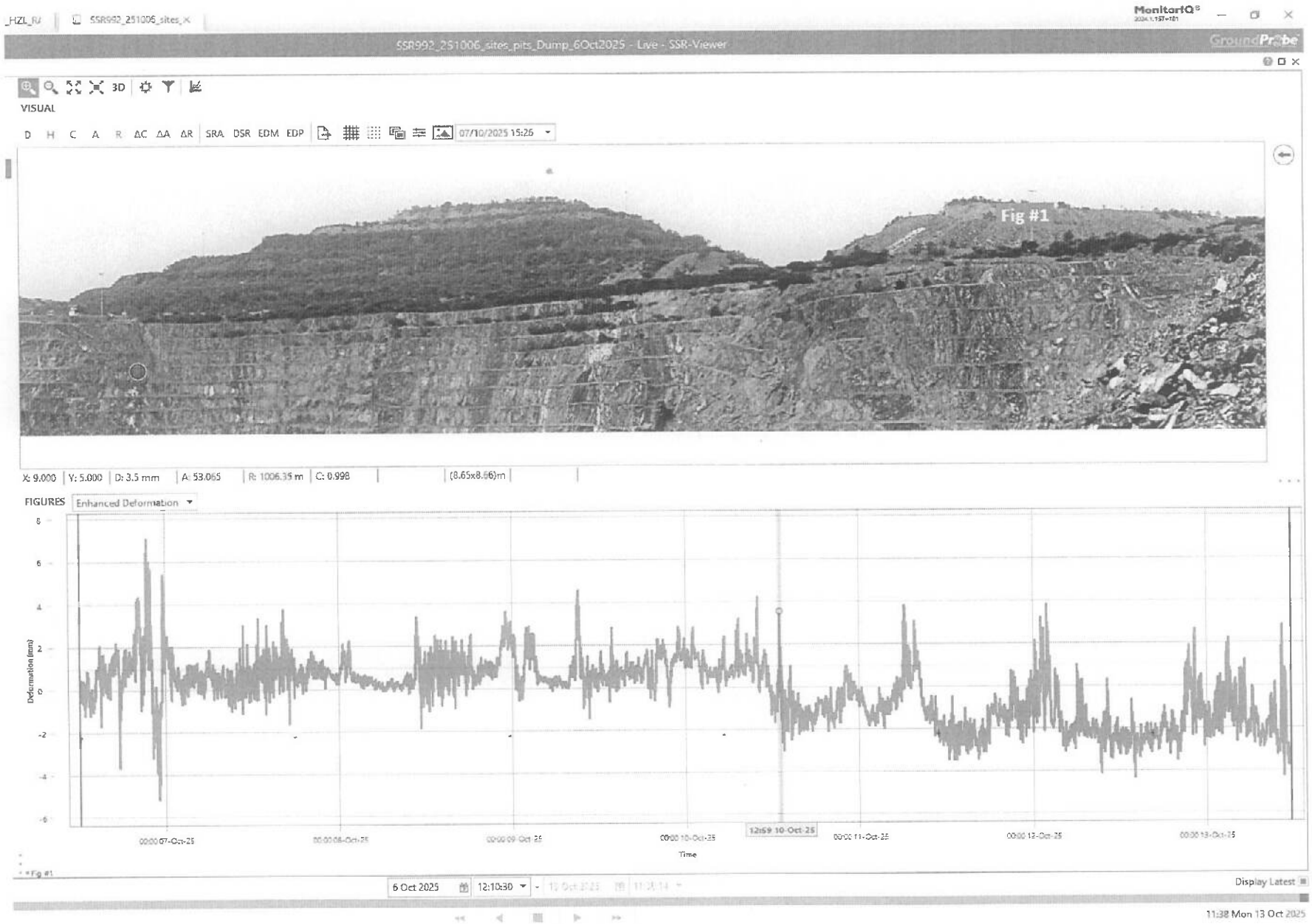

MOVEMENT: MONITORING TREND OF WASTE DUMP AT 60m LIFT BY PRISMS
Déformation (cm)
15
10
5
0
-5
-10
Sep-13
Mar-14
Sep-14
Mar-15
Sep-15
Mar-16
Sep-16
Mar-17
Sep-17
Mar-18
Sep-18
Mar-19
Sep-19
Mar-20
Sep-20
Mar-21
Sep-21
Mar-22
Sep-22
Mar-23
Sep-23
Mar-24
Sep-24
Mar-25
Sep-25
(E197,N1264)
60/1
(W8,N1263)
60/2
(W152,N1299)
60/3


MOVEMENT: MONITORING TREND OF WASTE DUMP AT 80m LIFT BY PRISMS
Deformation (cm)
10
5
0
-5
-10
Sep-13
Mar-14
Sep-14
Mar-15
Sep-15
Mar-16
Sep-16
Mar-17
Sep-17
Mar-18
Sep-18
Mar-19
Sep-19
Mar-20
Sep-20
Mar-21
Sep-21
Mar-22
Sep-22
Mar-23
Sep-23
Mar-24
Sep-24
Mar-25
Sep-25
(E189,N1304)
80/1
(E6,N1311)
80/2
(W159,N1260)
80/3

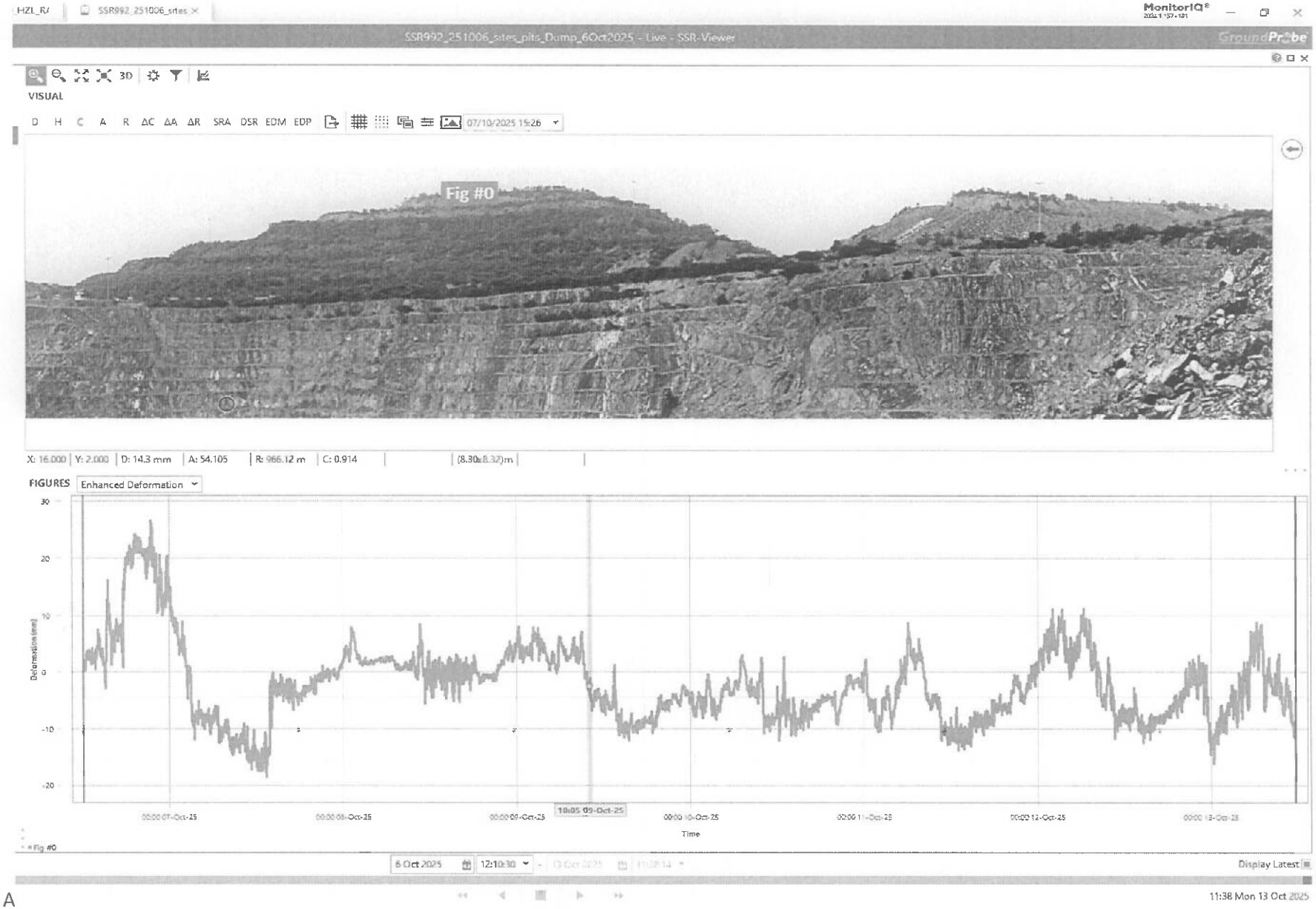

MOVEMENT : MONITORING TREND OF WASTE DUMP AT 100m LIFT BY PRISMS
Deformation (cm)
15
10
5
0
-5
-10
Nov-13
Apr-14
Sep-14
Feb-15
Jul-15
Dec-15
May-16
Oct-16
Mar-17
Aug-17
Jan-18
Jun-18
Nov-18
Apr-19
Sep-19
Feb-20
Jul-20
Dec-20
May-21
Oct-21
Mar-22
Aug-22
Jan-23
Jun-23
Nov-23
Apr-24
Sep-24
Feb-25
Jul-25
(E164,N1357)
100/1
(W1,N1364)
100/2
(W120,N1342)
100/3


MOVEMENT : MONITORING TREND OF WASTE DUMP AT 120m LIFT BY PRISMS
Deformation (cm)
15
10
5
0
-5
-10
Jul-17
Nov-17
Feb-18
Jun-18
Sep-18
Jan-19
Apr-19
Aug-19
Nov-19
Feb-20
Jun-20
Sep-20
Jan-21
Apr-21
Aug-21
Nov-21
Mar-22
Jun-22
Oct-22
Jan-23
Apr-23
Aug-23
Nov-23
Mar-24
Jun-24
Oct-24
Jan-25
May-25
Aug-25
Nov-25
Mar-26
(E129, N1403)
120/1
(E9, N1418)
120/2
(W96, N1405)
120/3

Slope Stability Radar monitoring on waste Dump Area

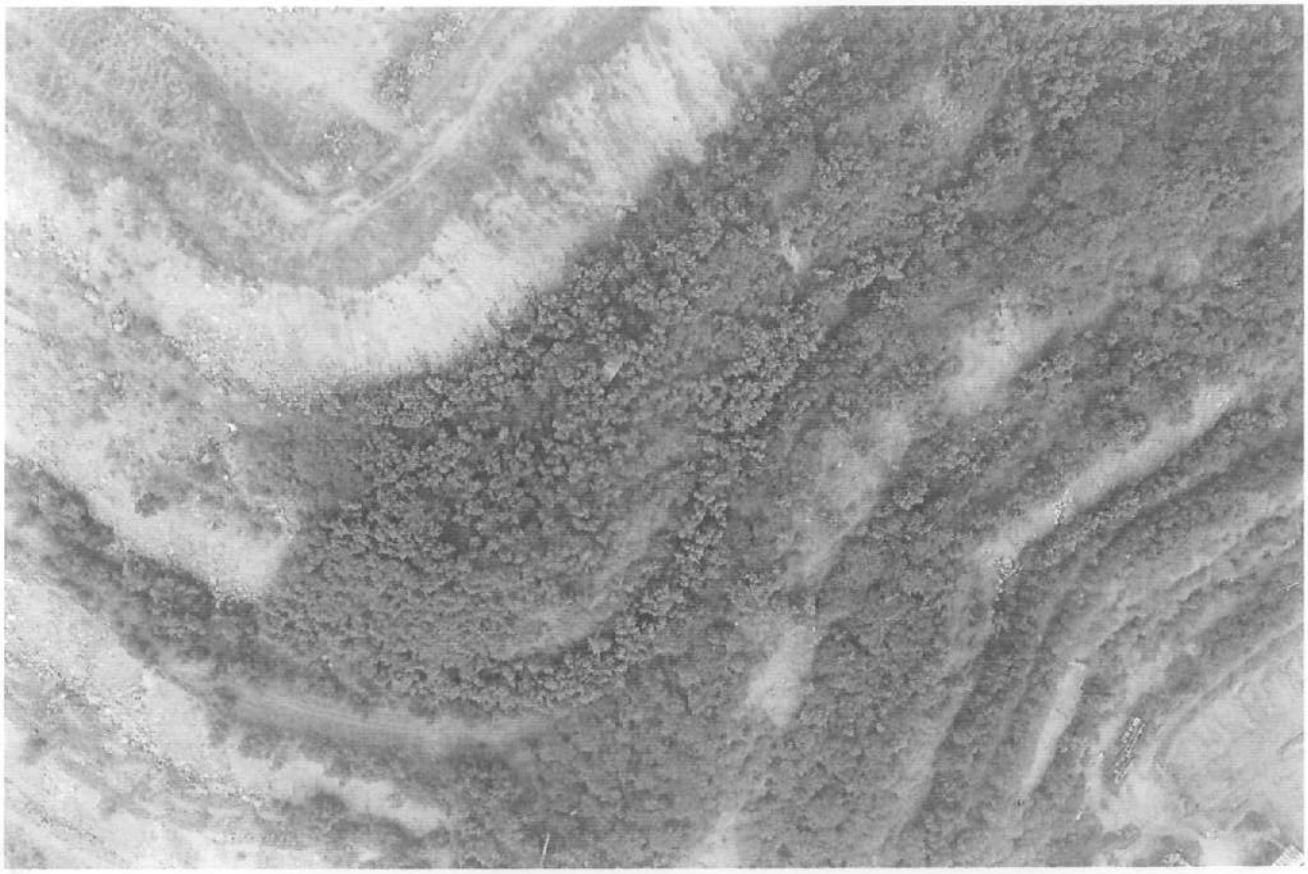


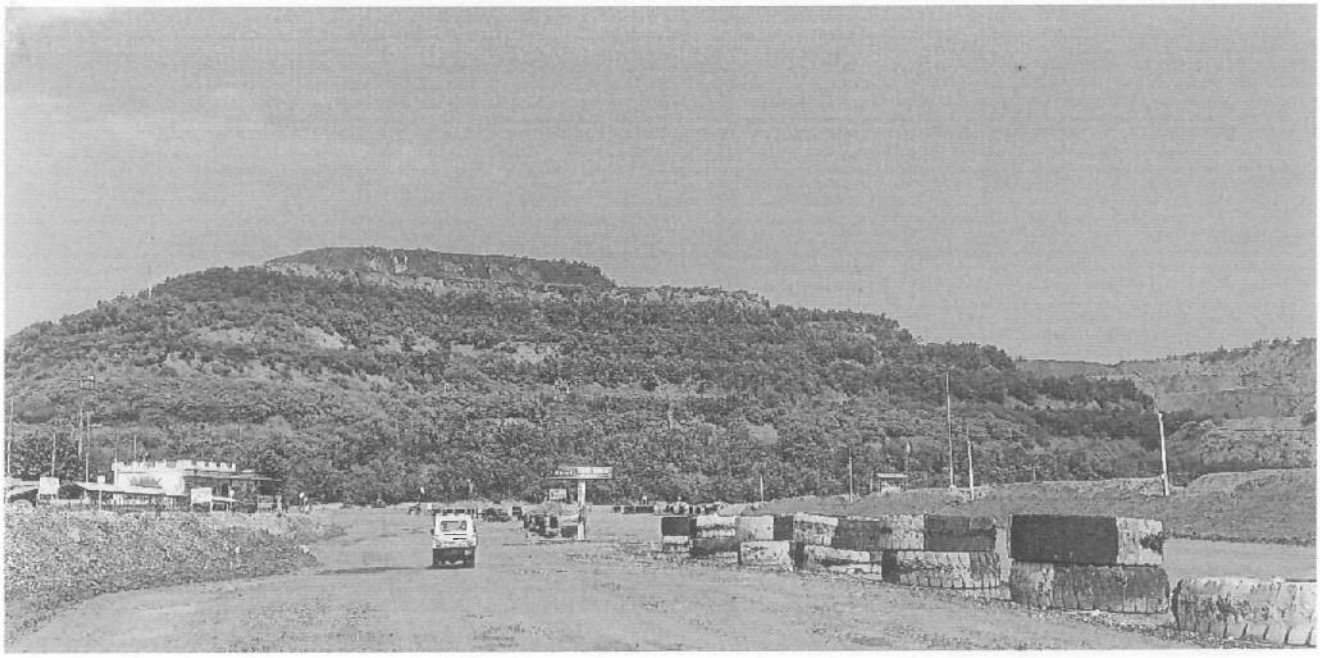
Slope Stability Radar monitoring on waste Dump Area



A

Garland Drain Photo





Plantation

40KL Water sprinkler

Annexure XI

Anicut Photos

Annexure -XII

Pond Photo

Annexure-XIII

Truck covered with tarpaulin

Land use mapping of 15 km radius area of Rampura-Agucha mine of the year 2023 using remote sensing techniques and showing the changes in land use in the last five years

Sponsor: Hindustan Zinc Limited, Rampura-Agucha Mine, Bhilwara

Studied by:

Estb: 1988

Studied for:

Hydro-Geosurvey Consultants Private Limited

NABET QCI

CERTIFICATE NO.: NABET/GWCO/IA/GW003

Address: C-103, Shastri Nagar, Jodhpur- 342003
Phone: - 0291-2431754
Web: www.hydrogeosurvey.com, E-mail: - hydro.geosurvey@yahoo.com

June, 2023

Annexure -XV

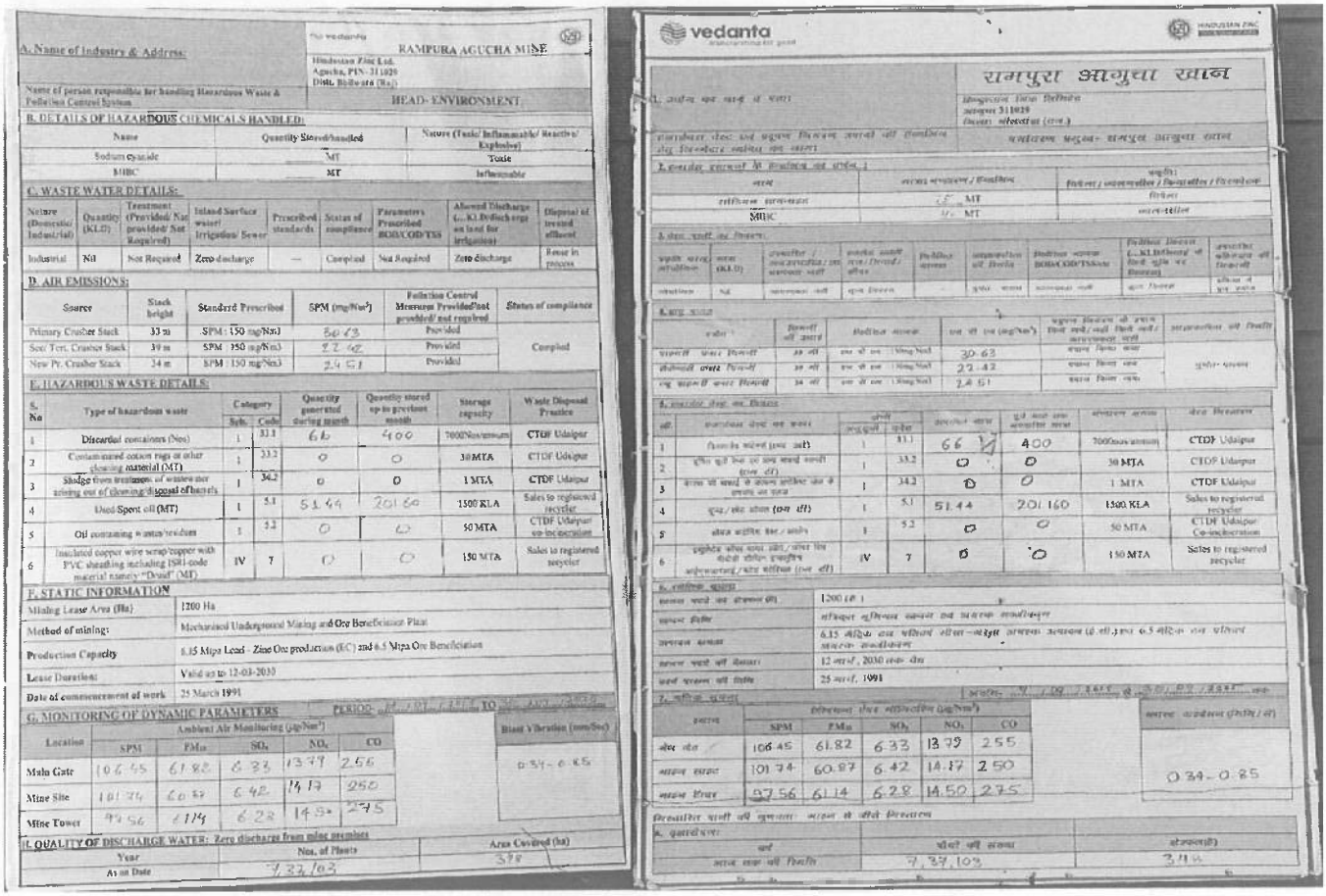
HDPE laying in talling dam

Annexure-XVI

STP (300KLD) in plant premises

STP (425KLD) in plant premises

Annexure -XVII



A. Name of Industry & Address: RAMPURA AGUCHA MINE
Hindustan Zinc Ltd.
Agucha, PIN- 311029
Distt. Bhilwara (Raj.)

Name of person responsible for handling Hazardous Waste & Pollution Control System: HEAD- ENVIRONMENT

B. DETAILS OF HAZARDOUS CHEMICALS HANDLED:

Name	Quantity Stored/handled	Nature (Toxic/ Inflammable/ Reactive/ Explosive)
Sodium Cyanide	MT	Toxic
SIBC	MT	Inflammable

C. WASTE WATER DETAILS:

Nature (Domestic/ Indust./all)	Quantity (KLD)	Treatment (Provided/ Not provided/ Not Required)	Inland Surface water/ Irrigation/ Sewer	Prescribed standards	Status of compliance	Parameters Prescribed BOD/COD/TSS	Allowed Discharge (...KL/Drifferent on land for irrigation)	Disposal of treated effluent
Industrial	Nil	Not Required	Zero discharge	—	Complied	Not Required	Zero discharge	Reuse in process

D. AIR EMISSIONS:

Source	Stack height	Standard Prescribed	SPM (mg/Nm³)	Pollution Control Measures Provided/Not provided/ not required	Status of compliance
Primary Crusher Stack	33 m	SPM : 150 mg/Nm3	30.63	Provided	Complied
Scn/ Tert. Crusher Stack	39 m	SPM : 150 mg/Nm3	22.42	Provided	
New Pr. Crusher Stack	34 m	SPM : 150 mg/Nm3	24.51	Provided	

E. HAZARDOUS WASTE DETAILS:

S. No	Type of hazardous waste	Category Sch.	Category Code	Quantity generated during month	Quantity stored up in previous month	Storage capacity	Waste Disposal Practice
1	Discarded containers (Nos)	1	33.1	66	400	7000Nos/annum	CTDF Udaipur
2	Contaminated cotton rags or other cleaning material (MT)	1	33.2	0	0	30 MTA	CTDF Udaipur
3	Sludge from treatment of wastes for arising out of cleaning/disposal of barrels	1	34.2	0	0	1 MTA	CTDF Udaipur
4	Used/Spent oil (MT)	1	5.1	51.44	201.60	1500 KLA	Sales to registered recycler
5	Oil containing wastes/residues	1	5.2	0	0	50 MTA	CTDF Udaipur/ co-incineration
6	Insulated copper wire scrap/copper with PVC sheathing including 1941-code material namely "Druid" (MT)	IV	7	0	0	150 MTA	Sales to registered recycler

F. STATIC INFORMATION

Mining Lease Area (Ha)	1200 Ha
Method of mining:	Mechanized Underground Mining and Ore Beneficiation Plant
Production Capacity	6.35 Mtpa Lead - Zinc Ore production (EC) and 6.5 Mtpa Ore Beneficiation
Lease Duration:	Valid up to 12-03-2030
Date of commencement of work	25 March 1991

G. MONITORING OF DYNAMIC PARAMETERS PERIOD: ... TO ...

Ambient Air Monitoring (µg/Nm³)

Location	SPM	PM10	SO_2	NO_x	CO
Main Gate	106.45	61.82	6.33	13.79	255
Mine Site	101.74	60.87	6.42	14.17	250
Mine Tower	97.56	61.14	6.28	14.50	275

Blast Vibration (mm/Sec): 0.34-0.85

H. QUALITY OF DISCHARGE WATER: Zero discharge from mine premises

	Nos. of Plants	Area Covered (ha)
Year		
As on Date	7,37,103	378

vedanta

रामपुरा अगुचा खान

Display board at Main gate

Oil trap

vedanta
transforming for good

HINDUSTAN ZINC
Zinc & Silver of India

HZL/RAM/Env/2025-2026/ 755

September 27, 2025

Member secretary,
Rajasthan Pollution Control Board,
4, Institutional Area,
Jhalana Doongri,
Jaipur.

Sub : Environment Statement of Rampura Agucha Mine for year 2024-2025.

Ref: CTO Mine order No 2022-2023/Mines/10762 dated 28/02/2023.
CTO Mill order No 2023-2024/HDF/9370 dated 14/06/2023.
EC Letter No J-11015/267/2008-IA.II (M) dated 11.12.2009.

Sir,

Please find enclosed herewith the environmental statement for financial year ending on 31st March 2025.

Thanking you

Yours truly,

(Ram Murari)
CEO Agucha IBU

CEO - IBU Agucha
Hindustan Zinc Limited
Rampura Agucha Mines
PO - Agucha
Distt. - Bhilwara (Raj.)

cc to: Regional Officer,
Rajasthan State Pollution Control Board,
18, Azad Nagar, Pannadhay Circle,
Mining Engineer Office Road (Near Telephone Exchange)
Bhilwara (Raj.)

The Joint Director,
Ministry of Environment, Forest & Climate Change,
Integrated Regional Office, A-209&218, Aranya Bhawan,
Jhalana Institutional area Jaipur-302004.

O/c-Env.

Hindustan Zinc Limited
Rampura Agucha Mines, P.O. Agucha, Dist. Bhilwara (Rajasthan) - 311 022
M +91-9001294956-57 www.hzlindia.com

Registered Office : Yashad Bhawan, Udaipur (Rajasthan) 313 004
CIN No. L27204RJ1966PLC001208

showing the infectious and other diseases treated in hopital / dispensary

sr. no.	causes	code no.	patienrs treated					
			outdoor		indoor		indoor deaths	
			male	female	male	female	male	female
1	typhoid fever	A01	47	68	10	18		
2	food poisoning	A05	7	14	3	8		
3	infectious colitis, enteritis & gastroenteritis	A09	1689	2287	17	24		
4	other ill-defined intestinal infections	A08	1944	2917	13	29		
5	pulmonary tuberculosis	A15	50	23				
6	tuberculosis of meninges & central nervous system	A17	1	0				
7	tuberculosis of genito urinary system	A18	0	1				
8	small pox	B03						
9	rabies (dog bite)	A82	263	116				
10	malaria	B50	1	1				
11	disorders of thyroid glands	E00-E07	15	21				
12	diabetes mellitus	E10-E14	647	598				
13	anaemias	D50-D64	140	221	0	421		
14	glaucoma	1140	4	14				
15	cataract	1125-1128	7	9				
16	conjunctivitis	1110-1113	2314	3445				
17	ctitis media and mastoiditis	1165-1167	226	449				
18	actue rheumatic fever	100-102	9	9				
19	hypertensive heart diseases	111	912	737				
20	acute myocardial infraction	121	4	7				
21	haemorrhoids	184	377	261	0	5		
22	chronic disease of tonsils and adenoids	J03	2137	4651				
23	acute bronchitis and bronchiolitis	J20-21	2918	1202	2			
24	pneumonia	J12-J18	89	203				
25	bronchitis, chronic & unspecifed emphysema and asthma	J40-J47	1837	2968	0	5		
26	diseases of teeth and suppoting structures	K00-K09	337	418				
27	cholelithiasis and cholecystitis	K80-K87	29	37	0			
28	urinary calculus	N21	48	51				
29	hyper-plasia of prostate	N40	13	0				
30	hydrocele	N43	2	0				
31	menstrual deisorders	N92		427				
32	infections of genito urinary tract in pregnancy	O-23	0	428				
33	normal delivery / tissues	O80		0	269	736		
34	diseases of skin & sudcuta- neoua tissue	L00-L99	2745	1891				
35	rheumatoid arthritis , except spine	M05	171	219				
36	fracture of skull and face	s02	3	2				
37	fracture of neck and trunk	s12						
38	fracture of upper limb	T10-T11	4	3				
39	fracture of lower limb	T12-T13	2	1				
40	open wound and injdries to blood vessels	T12	988	2074				
41	effects of foreign body entering through officer	T15-T19	118	177				
42	burns	T20-T32	79	98				
43	other injuries, early complications of trauma	T66-T78	934	1761				
44	motor vehicle traffic accidents	V50-V79	489	197				
45	other road vehicle accidents	V80-V89	117	49				
46	accidental poisoning	X40-X49	4	3				
47	accidents falls	W00-W19	9	6				
48	accidental caused by fire and flames	X00-X09	25	37				
49	drug, medicaments causing adverse effects therapeutic use	Y40-Y84	4	5				
			21759	28101	314	1246		

चिकित्सा अधिकारी प्रभारी
आदर्श प्राथमिक स्वास्थ्य केन्द्र
हुरड़ा (भीलवाड़ा) राज.

Rajasthan Government

Primary Health Centre, Kothiya

Total OPD: 4444

Total IPD: 21

July 2025 to sep.2025

S.No.	Disease	Total
1	Back Pain	106
2	PUD	87
3	Common Cold	846
4	Vomiting	130
5	Diarrhoea	67
6	Anaemia	102
7	Dog Bite	19
8	Snake Bite	0
9	Accident RTA	66
10	Scabies	141
11	Fungal Infection	137
12	HTN	173
13	DM	119
14	Typhoid	33
15	Pneumonia	07
16	Malaria	0
17	Dengue	0
18	Asthma	238
19	COPD	44
20	TB	06
21	CAD	59
22	Burn	30
23	Gastritis	167
24	Acne	42
25	Ear Infection	98
26	Eye Infection	127
27	Glaucoma	04
28	Cataract	07
29	DNS	0
30	Thalassemia	0
31	Arthritis	70
32	PICA	07
33	Etc.	1512
	TOTAL	4,444

चिकित्सा अधिकारी प्रभारी
राजकीय प्राथमिक स्वास्थ्य केन्द्र
कोठिया (भीलवाड़ा)

कार्यालय चिकित्सा अधिकारी प्रभारी आर्दश प्राथमिक स्वास्थ्य केन्द्र रूपाहेली कलां

TOTAL OPD = 10958 IPD =276

दिनांक 1 अप्रैल 2025 से 30 सितम्बर 2025 तक

S.No	DISEASES	TOTAL
1	BACK PAIN	1090
	PUD	1260
3	COMMON COLD	2591
4	VOMITING	364
	DIAIRIA	436
6	ANEMIA	364
7	DOG BITE	24
8	SNAKE BITE	0
9	ACCIDENT RTA	91
10	SCABIESH	70
11	FUNGAL INFECTION	514
12	HTN	669
13	DM	592
14	TYPHOID	10
15	PNEAUMIA	20
16	MALARIA	0
17	DENGUE	0
18	ASTHMA	245
19	COPD	86
20	TB	25
21	CAD	159
22	BURN	36
23	GASTRITIS	75
24	ACNE	122
25	EAR INFECTION	212
26	EYE INFECTION	164
27	GLUCAUMA	10
28	CATARACT	20
29	DNS	10
30	THALASEMIA	1
31	ARTHRITIS	56
32	PICA	80
33	ETC.	1562
	TOTAL	**10958**

चिकित्सा अधिकारी प्रभारी
प्राथमिक स्वास्थ्य केन्द्र रूपाहेली कलां

सीएसआईआर - केन्द्रीय खनन एवं ईंधन अनुसंधान संस्थान, धनबाद
CSIR-CENTRAL INSTITUTE OF MINING AND FUEL RESEARCH, DHANBAD
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
(Council of Scientific & Industrial Research)

शीर्षक

मेसर्स हिंदुस्तान जिंक लिमिटेड की रामपुर अगुचा खदान के पिट, अपशिष्ट डंप की ढलान स्थिरता और ज़मीनी हलचल का आकलन

Title

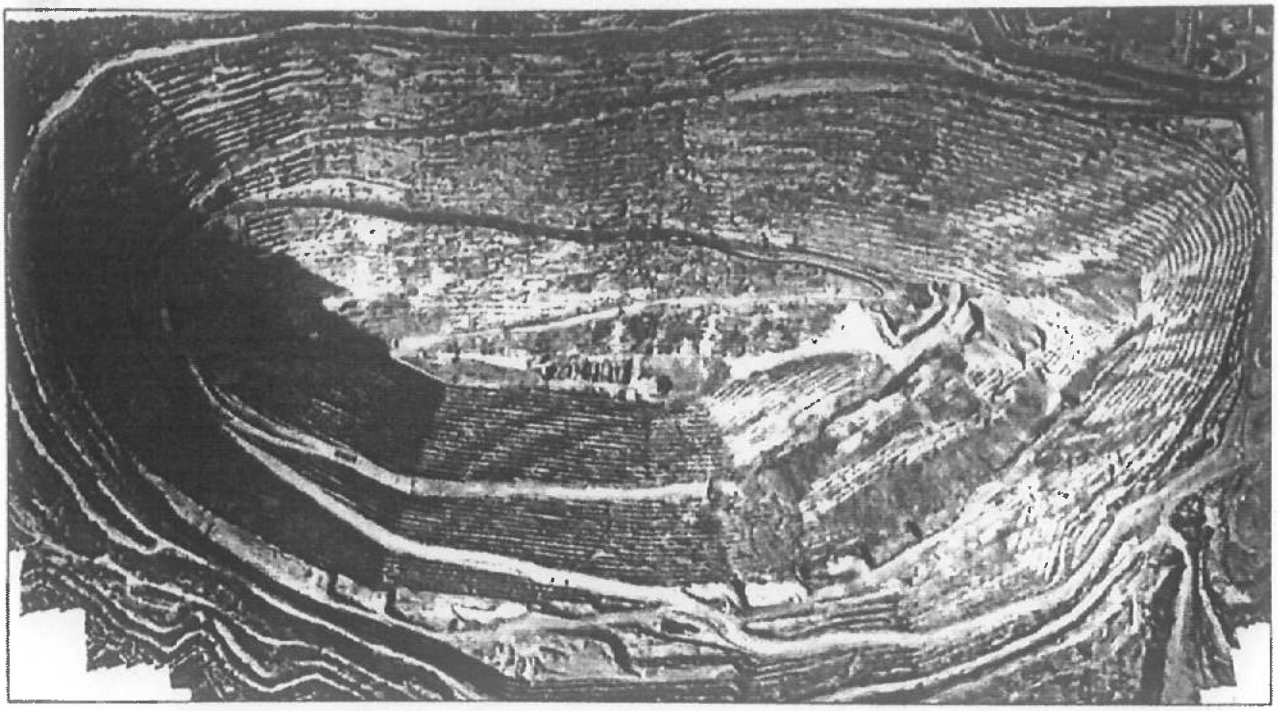
ASSESSMENT OF SLOPE STABILITY OF PIT, WASTE DUMP AND GROUND MOVEMENT OF RAMPUR AGUCHA MINE OF M/S HINDUSTAN ZINC LIMITED

परियोजना क्रमांक / PROJECT NO. – SSP/888/2024-25

प्रायोजक / Sponsor: M/s Hindustan Zinc Limited

अंतिम रिपोर्ट / FINAL REPORT

अप्रैल / APRIL, 2025



सीएसआईआर - केन्द्रीय खनन एवं ईंधन अनुसंधान संस्थान, धनबाद
CSIR-CENTRAL INSTITUTE OF MINING AND FUEL RESEARCH, DHANBAD
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
(Council of Scientific & Industrial Research)

परियोजना का शीर्षक / Title of the Project

मेसर्स हिंदुस्तान जिंक लिमिटेड की रामपुर अगुचा खदान के पिट, अपशिष्ट डंप की ढलान स्थिरता और ज़मीनी हलचल का आकलन

ASSESSMENT OF SLOPE STABILITY OF PIT, WASTE DUMP AND GROUND MOVEMENT OF RAMPUR AGUCHA MINE OF M/S HINDUSTAN ZINC LIMITED

प्रायोजक / Sponsor: M/s Hindustan Zinc Limited

अप्रैल / APRIL, 2025

Name of Contributor's with designation

1. Dr. Sanjay Kumar Roy, Chief Scientist
2. Mr. Kartik Varwade, Senior Scientist
3. Mr. Anand Singh, Scientist
4. Mr. Rakesh Kumar Singh, Senior Technical Officer (2)
5. Mr. Manish Kumar, Senior Technical Officer (2)
6. Mr. Prince Kumar, Technical Assistant
7. Mr. Swapan Mahato, Technician

परियोजना प्रस्तावकों के हस्ताक्षर / Signature of Project Proponents

Manish Kumar 22.4.2025	22/04/2025	22/04/2025
रियोजना नायक / Project Leader	परियोजना नायक / Project Leader	परियोजना समन्वयक / अनुसंधान समूह प्रमुख
Manish Kumar, S.T.O. (2)	Dr. Sanjay Kumar Roy, Chief Scientist	Project Coordinator / HoRG Dr. Sanjay Kumar Roy, Chief Scientist

सीएसआईआर-सीआईएमएफआर अधिकृत हस्ताक्षर / CSIR-CIMFR Authorised Signature

23/04/2025	24/4/2025
प्रमुख / Head	समन्वयक / Coordinator
परियोजना योजना और निगरानी Project Planning and Monitoring	परियोजना योजना एवं उद्योग इंटरफ़ेस Project Planning & Industry Interface

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INDEX

Executive Summary

The main objective of slope monitoring study is to detect any slope instability well in advance so that any damage to men and machineries can be avoided. If the failure is unavoidable then it can be brought down in a predictable manner. The instability detected in the early stage can be stabilized by applying a suitable remedial measure.

M/s Hindustan Zinc Limited have given the work related to monitoring of stability of pit and dump slopes and analysis of ground movement data of Rampur Agucha Mine to CSIR-Central Institute of Mining and Fuel Research (CSIR-CIMFR), Dhanbad vide P.O. no. 3215866900 / 5100032522 dated 29.01.2022 with amendment dated 20.02.2024 for one year.

As per the work order, CSIR-CIMFR team made four visits to Rampur Agucha Mine of M/s Hindustan Zinc Limited during 19-20 March 2024 (1st visit), 18-19 June 2024 (2nd visit), 12-13 September 2024 (3rd visit) and 7-8 January 2025 (4th visit).

Based on the set of monitoring data recorded and shared by the mine management, physical observations by CSIR-CIMFR team during the four visit to the mine, in presence of CSIR-CIMFR officials during four visits their comparison with initial data taken in the first visit, visual observations during the site visit and discussions with the mine management, it can be said that there are slow progressive movement in different monitoring stations but their rate of movement are within the safe limit.

Average rate of movement of monitoring stations installed in hangwall side was found to be more than that for monitoring stations installed in footwall side. Analysed data is showing that maximum displacement observed at Hangwall central bottom slope. Particularly in monsoon time displacement rate is higher than rest of the time. Mine management shall ensure surface rainwater management system in pit periphery, urface area and dump also. Mine management should continue slope monitoring of pit and dump areas using the previously established system of slope stability radar and prism so that accelerated slope movement in any part of the mine is detected to take necessary precautionary / corrective measures.

1. INTRODUCTION

The importance of safe, properly designed and scientifically engineered slope is well known. The benefit of an openpit operation largely depends on the use of the steepest slopes possible, which should not fail during the life of the mine. So, the design engineer is faced with the two opposite requirements, stability and steepness, in designing the deep Openpit slopes. Steepening the slopes, thereby reducing the amount of material to be excavated, can save a vast sum of money. At the same time excessive steepening may result into slope failure leading to loss of production, extra stripping costs to remove failed material, reforming of benches, rerouting of haul roads and production delays. The Directorate of Mines Safety may even close the mine, in case unsafe conditions are created. Therefore, it is necessary that a balance between economics and mine safety should be achieved.

Rampura Agucha mining complex is situated in Tehsil- Hurda, District- Bhilwara in Rajasthan and connected by road from Gulabpura railway station on Delhi-Udaipur railway line. Opencast mine of about 390m depth has been created with overall slope of about 35° on footwall side and 42° on the hangwall side. Presently, underground mining operations are going on below the open pit working by keeping a 60m crown pillar between the open pit and underground mines. The underground mining is carried out by Long Hole Open Stopping (LHOS) with paste fill. Presently there is no mining operation in open pit, however pit slope monitoring is being continued in order to determine any movement in and around the mine and dump to take care of safety of opencast as well as underground mining and other operations nearby.

Mine management of Rampur Agucha mine entrusted the work related to slope stability and slope monitoring studies to CSIR-CIMFR, in consultation with DGMS, along with the slope steepening for years. This report is for assessment of open pit slope stability, waste dump stability and ground surface movement through monitoring and data analysis at Rampura Agucha Mine of HZL for one year from March 2024 to March 2025.

2. SLOPE MONITORING

With reference to P.O. no. 3215866900 / 5100032522 dated 29.01.2022 with amendment dated 20.02.2024, CSIR-CIMFR team made its first visit, second visit, third and fourth visit for slope monitoring of pits and dumps of Rampura Agucha Mine during 19-20 March 2024, 18-19 June 2024, 12-13 September 2024 and 7-8 January 2025. As per the observations during the site visit, review of slope monitoring data collected during the visit period and discussions with the concerned HZL official on the subject, our observations and suggestions have been incorporated in this report. As per the second visit report, for most of the monitoring stations initial reading taken on 19.03.2024 has been taken as reference to calculate the change in movement. For some of the monitoring stations installed after 19.03.2024, date of their initial reading has been taken as 15.05.2024. As some of the monitoring stations had shifted significantly from their original positions, mine management decided to reset the initial reading from 15.05.2024. Therefore, change of movement calculated during 19.03.2024 to 13.05.2024 and during 15.05.2024 to 18.06.2024 have been calculated separately and added together to get the total displacement between first visit (i.e. 19.03.202) and second visit (i.e. 18.06.2024). Similarly, change in the horizontal distance of the monitoring pillars were calculated separately from 18.06.2024 to 12.09.2024 and 12.09.2024 to 08.01.2025 and added together to get the total displacement between first visit (i.e. 19.03.2024) to fourth visit (i.e. 08.01.2025). In order to calculate the displacement, current reading has been subtracted from initial reading. Therefore, positive reading of horizontal displacement indicates displacement of the point towards the base stations and vice versa. Similarly, positive reading of vertical displacement indicates lower RL value of current reading in comparison to initial reading (i.e. subsidence of the point) and vice versa.

2.1 Monitoring of Horizontal Displacement of Monitoring Stations Installed in Footwall side of Pit

Total 194 monitoring stations installed in the footwall side of the pit were monitored for ground movement during the third visit of CSIR-CIMFR team from 07-08 January 2025. Out of 193 monitoring stations measured during the third visit, horizontal distance of 1 monitoring station was measured for the first time and horizontal distance of that monitoring station has been considered as initial. Measurement of coordinates and calculation of horizontal distance of monitoring stations installed in footwall side between first visit (19.03.2024) and fourth visit (08.01.2025) have been listed in Annexure-1. From the analysis of data shown in Annexure-1, the range of horizontal displacement of different monitoring station have been summarized below in table 1.

Table 1: Range of horizontal displacement of different monitoring station installed in the footwall side of the pit

Range of horizontal displacement	Number of monitoring stations having horizontal displacement in the specified range			
	19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 08.01.25	19.03.24 to 08.01.25
>-300 cm	2	0	0	2
>-300 cm to -75 cm	0	0	0	0
-75 cm to -40 cm	07	0	0	04
-40 cm to -30 cm	17	0	0	10
-30 cm to -20 cm	2	0	0	10
-20 cm to -10 cm	4	0	0	06
-10 cm to 0 cm	26	20	20	25
0 cm to 10 cm	106	151	158	69
10 cm to 25 cm	21	2	0	66
Total	185	173	178	185

From table 1 above, it is evident that

(i) There is one monitoring pillar (ID No. 30 mRL S-150) whose data was not recorded during previous three visits of CSIR-CIMFR slope monitoring team and hence, those coordinate measurements have been considered as initial during the fourth visit of CSIR-CIMFR slope monitoring team.

(ii) 15 monitoring pillars were not visible during the fourth visit of CSIR-CIMFR slope monitoring team. This may be because those monitoring stations were either broken or their coordinated had shifted significantly from their originally fed coordinates in total stations and hence they were not getting detected by total stations for coordinate measurement.

(iii) Two monitoring stations (namely 280 mRLS Zone S-685 / 280 mRL S Zone S-683 and 300 mRLS Zone S-700 / 300 mRL S Zone S-696) were found to have horizontal displacement of -308.3 cm and -307.7 cm respectively during 19.03.24 to 07.01.25. But, horizontal displacements of these two pillars during 18.06.24 to 07.01.2025 were found to be 0.6 cm and 0.2 cm respectively only.

(iv) Maximum positive horizontal displacement observed during 19.03.24 to 07.01.25 for any monitoring station installed in footwall side is not exceeding 23.5cm which corresponds to 0.80mm/day only.

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2.2 Monitoring of Horizontal Displacement of Monitoring Stations Installed in Hangwall side of Pit

Total 150 monitoring stations installed in the hangwall side of the pit were monitored for ground movement during the fourth visit of CSIR-CIMFR team from 07-08 January 2025. Measurement of coordinates and calculation of horizontal displacement of monitoring stations installed in hangwall side between first visit (19.03.2024) and fourth visit (08.01.2025) have been listed in Annexure-2. From the analysis of data shown in Annexure-2, the range of horizontal displacement of different monitoring station have been summarized below in table 2.

Table 2: Range of horizontal displacement of different monitoring station installed in the hangwall side of the pit.

Range of horizontal displacement	Number of monitoring stations having horizontal displacement in the specified range			
	19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 08.01. 25	19.03.24 to 08.01.25
<-10 cm	0	0	0	0
-10 cm to 0 cm	0	0	3	0
0 cm to 10 cm	35	110	122	25
10 cm to 20 cm	40	19	2	27
20 cm to 30 cm	28	1	0	32
30 cm to 40 cm	24	0	0	31
40 cm to 50 cm	12	0	0	16
>50 cm	3	0	0	16
Total	142	130	127	147

From table 2 above, it is evident that

(i) All the monitoring stations situated in hangwall side were found to have horizontal displacement in positive value (i.e. towards the footwall side where base station is situated). Most of the pillars (except two monitoring stations nos. 300 mRL N-300 & 30 mRL N-175) in hangwall side were found have horizontal displacement below 10 mm during third visit to fourth visit which correspond to horizontal displacement of less than 01 mm/ day. Monitoring stations nos. 300 mRL N-300 & 30 mRL N-175) were found to have horizontal displacement of 14.9 and 14.8 mm between second visit and fourth visit which correspond to horizontal displacement of less than 01 mm/ day because reading of third visit of these two monitoring stations could not be recorded during third visit.

(ii) All the monitoring stations situated in hangwall side were found to have horizontal displacement in the range of 0 to 72.3cm between first visit on 19.03.2024 to fourth visit on 08.01.2025 which corresponds to maximum movement rate of 2.5 mm/day. But, all the monitoring stations situated in hangwall side were found to have horizontal displacement in the range of 0 to 20.5 cm between second visit on 18.06.2024 to fourth visit on 08.01.2025 which corresponds to maximum movement rate of about 1.0 mm/day only. Rate of positive horizontal displacement of monitoring stations installed in hangwall side were more than that observed in the footwall side.

(iii) Scatter plot of the horizontal displacement Vs Y coordinate shown in figure 1 below clearly indicates that range of horizontal displacement for monitoring stations situated in the central portion of pit in hangwall side (i.e. from +300N to -300S) were comparatively more than those observed for other region. Higher horizontal displacement of monitoring stations installed in central part of the pit in hangwall side may be due to cracked region which have formed in before the first visit of CSIR-CIMFR team in March 2024.

(iv) Although, the crack portion has been filled and compacted by the mine management, but, it was still showing some displacement which can be due to the resettling of the cracked portion. There was another small failure which happened before the third visit of CSIR-CIMFR team in the north eastern side of hangwall which has disturbed the monitoring pillars and mine management is advised to do slope monitoring of that area remotely like drone survey (LiDAR drone survey) monitoring, satellite monitoring, SSR monitoring etc..

(v) As the rate of movement increase during the rainy season, mine management is advised to do slope monitoring of all monitoring stations installed in the pit and dumps (especially hangwall side having developed crack in recent past and slope failure) so that any rapid / accelerated movement can be detected in advance by the management for appropriate preventive / remedial measures to eliminate risks to men/machine.

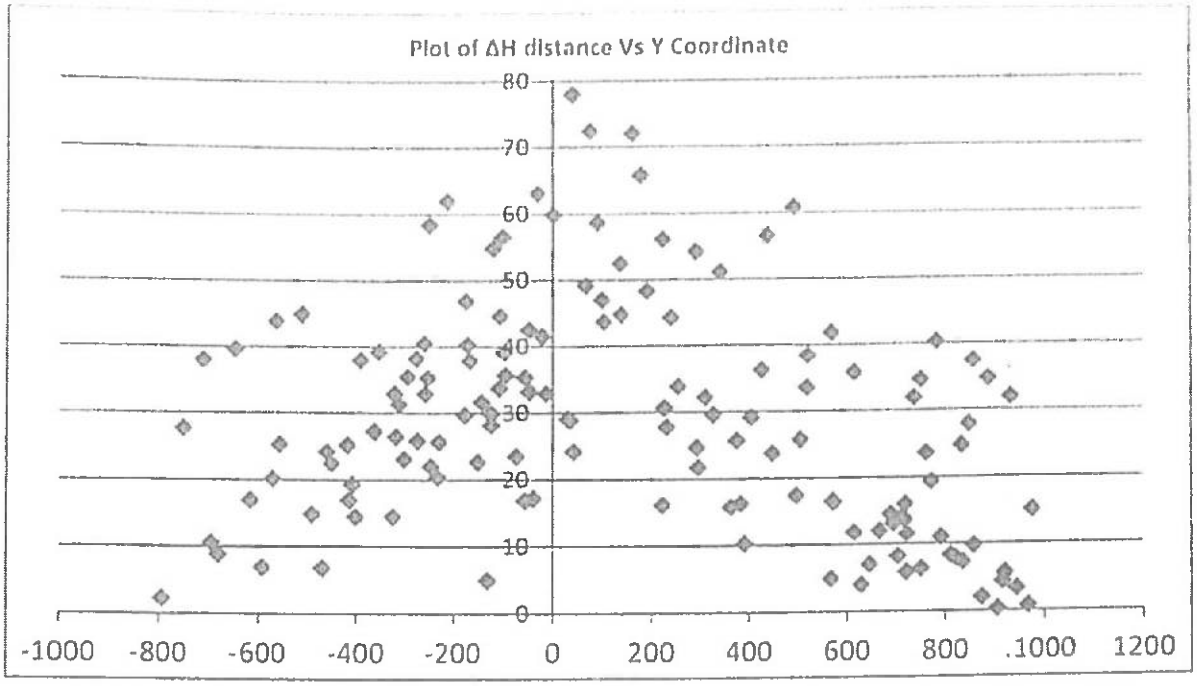

Fig 1: Plot of ΔH distance vs Y coordinate of monitoring stations installed in hangwall side of pit

(vi) Mine management should ensure proper rain-water drainage system in place, so that catchment runoff water should not enter in cracked zone and failure zone.

2.3 Monitoring of Horizontal Displacement of Monitoring Stations Installed in Dump

Total 32 monitoring stations installed in different parts and terraces of waste dump were monitored during the fourth visit of CSIR-CIMFR team on 08.01.2025 for their movement with respect to their base stations and have been listed in Annexure-3. Horizontal distance of these 32 monitoring stations installed in different parts and terraces of waste dump were compared with their initial readings taken during first visit on 19.03.2024 to find out their horizontal displacement along the line of sight from base station. The range of horizontal displacement of different monitoring station installed in dump have been summarized below in table 3

Table 3: Range of horizontal displacement of different monitoring station installed in dump

Range of horizontal displacement	Number of monitoring stations having horizontal displacement in the specified range during 19.03.24 to 08.01.25
-25 cm to -10 cm	3
-10 cm to 0 cm	7
0 cm to 10 cm	6
10 cm to 20 cm	11
20 cm to 30 cm	5
Total	32

From table 3 above, it is evident that

(i) Changes in horizontal displacement of different monitoring stations installed as 32 monitoring pillars were found vary between -22.1cm to 24.9cm.

(ii) 22 monitoring stations were found to have positive displacement between the ranges of 0.2cm to 24.9cm. Similarly, 10 monitoring stations were found to have negative displacement between the ranges of -3.9cm to -22.1cm.

(iii) Maximum positive displacement of 24.9cm was observed at monitoring station number WD 515 mRL E-130 installed at 515mRL bench. Similarly, maximum negative displacement of -22.1cm was observed at monitoring station number WD 455 mRL N-1875 installed at 455mRL bench.

(iv) Maximum positive displacement of 24.9cm observed at monitoring station number WD 495 mRL W-715 correspond to average movement of about 1.0 mm/day between first visit to fourth visit. But, maximum positive displacement of only 2.2cm was observed during second visit to fourth visit correspond to average movement of about 0.1 mm/day only between second visit to fourth visit.

2.4 Ground Movement in Vertical Direction (ΔZ) (i.e. subsidence) Monitoring

Total 42 monitoring stations earmarked for subsidence measurement were monitored for their ground movement in vertical direction (ΔZ) during the fourth visit of CSIR-CIMFR team on 08.01.2025 and the monitoring data have been listed in Annexure-4. Out of 42 monitoring pillars, eleven monitoring stations were not visible during the fourth visit of CSIR-CIMFR team. Details of the monitoring stations, their location and range of vertical movement are given in table 4.

Table 4: Results of the subsidence monitoring of the monitoring stations

Location of monitoring stations	Hangwall Side		Footwall Side	
	On Surface	In Pit	On Surface	In Pit
Number of monitoring stations	10	22	3	7
Range of vertical movement (ΔZ)	-16 mm to 34 mm	-39 mm to 42 mm	-22 mm to 49 mm	-20 mm to 47 mm
Monitoring station no. having maximum positive ΔZ movement	N-626	N-820	N-61	S-421
Monitoring station no. having maximum negative ΔZ movement	N-115	N-300	N-905	N-175

From table 4 above, it is evident that

(i) Changes in vertical displacement of different monitoring stations earmarked for subsidence measurement installed in 42 monitoring stations were found vary movement in vertical direction (ΔZ) between -39 mm to 49 mm.

(ii) 21 monitoring stations were found to have positive vertical displacement between the ranges of 0.0 mm to 49 mm. Similarly, 21 monitoring stations were found to have negative vertical displacement between the ranges of -2.0 mm to -39 mm.

(iii) Maximum positive vertical displacement of 49 mm from first visit on 19.03.2024 to fourth visit on 08.01.2025 was observed at monitoring station number N-61 installed in pit in footwall side which correspond to average movement of about 0.17 mm/day.

(iv) Positive reading of vertical displacement indicates lower RL value of current reading in comparison to initial reading (i.e. subsidence of the point). But, negative reading of vertical displacement indicates higher RL value of current reading in comparison to initial reading (i.e. upheaval of the point). Observance of positive reading of vertical displacement of different monitoring stations (21 nos.) may be thought to be attributed to subsidence due to effect of underground mining. But, observance of negative readings of vertical displacement of different monitoring stations (21 nos.) signifies that the presence of instrumental, environmental and human error in measurement of RL values of different monitoring stations using total station.

(v) Thus, changes in vertical displacement of different monitoring stations observed over last four visits (i.e. -39 mm to 49 mm) cannot be considered to be significant to suggest any subsidence pattern and may be considered to be due to instrumental, environmental and human error in measurement of RL values of different monitoring stations using total station.

3. Conclusions & Recommendations

Based on the set of monitoring data recorded during first visit during 19-20 March 2024, second visit during 18-19 June 2024, third visit during 12-13 September 2024 and fourth visit during 07-08 January 2025, their comparison with initial data taken in the first visit, visual observations during the site visit and discussions with the mine management, it can be said that there are slow progressive movement in different monitoring stations but their rate of movement are within the safe limit. As some of the monitoring stations had shifted significantly from their original positions, decision to reset the initial reading from 15.05.2024 and establishment of additional back sight stations has led to increase in accuracy of displacement measurement. Average rate of movement of monitoring stations installed in hangwall side was found to be more than that for monitoring stations installed in footwall side. Analysed data is showing that maximum displacement observed at Hangwall central bottom slope. Particularly in monsoon time displacement rate is higher than rest of the time. Mine management shall ensure surface rainwater management system in pit periphery and surface area also. A detailed plan for in-pit surface water management should be developed and maintained also, so that catchment runoff water should not enter in old failure zone (FW SW Shear Zone) which was remediated. Mine management should continue slope monitoring of pit and dump areas using the previously established system of slope stability radar and prism so that accelerated slope movement in any part of the mine is detected to take necessary precautionary / corrective measures. The dump mass should be maintained in drained condition. This dump is likely be safe in good drainage condition. Suitable drainage system must be placed in dump area. Dump plantation to be maintain properly. Mine management should also continue slope monitoring of pit and dump areas using the total station & prism as well as visual observation every day during the rainy season. If any acceleration movement is observed in pit slope, then mine management may inform and share the recent movement data to CIMFR team for details analysis of pit slope movement. Moreover, mine management may kindly make available, historical monitoring data taken by the mine management so that rate of movement in the recent past can also be calculated in addition to the movement from the first visit.

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Annexure-1: Measurement of coordinates and calculation of horizontal displacement of monitoring stations installed in footwall side

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
1	395 mRL N-925 / 395 mRL N-935	07-Jan-25	-25.942	935.710	394.790	1362.796	-0.8	0.1	0.1	-0.6
2	330 mRL N-900 / 330 mRL N-907	07-Jan-25	67.609	907.829	333.456	1281.404	-3.3	0.0	-0.1	-3.4
3	395 mRL N-900 / 395 mRL N-880	07-Jan-25	-64.904	880.888	395.032	1348.620	0.6	0.3	0.2	1.1
4	395 mRL N-825 / 395 mRL N-820	07-Jan-25	NV	NV	NV	NV	2.8	0.6	-	3.4
5	330 mRL N-775 /330 mRL N-770	07-Jan-25	-11.830	772.822	332.746	1234.443	0.1	0.7	0.3	1.1
6	330 mRL N-700	07-Jan-25	-41.045	692.083	334.103	1201.257	3.0	-	0.3	3.3
7	390 mRL N-675	07-Jan-25	-164.872	672.553	392.790	1285.870	4.7	1.1	0.5	6.3
8	390 mRL N-650	07-Jan-25	-172.396	650.243	392.555	1278.849	4.7	1.2	0.5	6.4
9	390 mRL N-625	07-Jan-25	-178.322	621.654	392.361	1267.361	2.2	1.2	0.6	4.0
10	330 mRL N-600	07-Jan-25	-67.689	600.786	331.705	1165.060	5.7	1.4	0.7	7.8
11	354 mRL N-600	07-Jan-25	-103.633	599.826	355.650	1193.591	3.8	1.4	0.7	5.9
12	390 mRL N-600	07-Jan-25	-186.862	595.150	392.317	1259.775	4.8	0.4	0.7	5.9
13	390 mRL N-575	07-Jan-25	-196.310	572.054	392.216	1255.332	4.4	1.6	0.6	6.6
14	390 mRL N-550	07-Jan-25	-208.654	549.995	392.214	1254.392	4.8	1.3	0.9	7.0
15	290 mRL N-500	07-Jan-25	-40.049	513.652	292.711	1092.335	4.6	1.8	1.6	8.0
16	330 mRL N-500	07-Jan-25	-90.962	502.623	331.807	1129.207	6.1	1.8	0.9	8.8
17	390 mRL N-500	07-Jan-25	-231.799	502.012	392.051	1250.839	4.5	1.3	1.0	6.8
18	354 mRL N-500	07-Jan-25	-129.054	500.841	356.294	1160.850	5.0	1.9	0.7	7.6
19	220 mRL N-500	07-Jan-25	46.296	499.897	222.934	1013.511	3.1	2.4	1.1	6.6
20	140 mRL N-493	07-Jan-25	143.860	493.700	141.967	653.677	4.6	3.3	2.3	10.2
21	342 mRL N-475	07-Jan-25	-25.942	935.710	394.790	1362.796	6.0	1.9	-	7.9

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
22	330 mRL N-475	07-Jan-25	-99.819	482.512	332.607	1126.354	5.4	2.1	1.0	8.5
23	390 mRL N-475	07-Jan-25	-239.098	475.713	391.532	1245.055	5.8	2.6	0.8	9.2
24	170 mRL N-450	07-Jan-25	99.496	452.600	172.095	942.731	-8.8	2.4	2.0	-4.4
25	330 mRL N-450	07-Jan-25	-105.032	451.970	332.087	1115.633	5.3	2.2	0.8	8.3
26	390 mRL N-425	07-Jan-25	-250.847	427.808	389.933	1234.597	6.2	1.8	1.0	9.0
27	342 mRL N-410	07-Jan-25	-127.468	410.219	343.105	1115.866	7.8	2.4	0.7	10.9
28	390 mRL N-400	07-Jan-25	-256.077	403.540	390.739	1229.361	5.9	2.1	0.8	8.8
29	170 mRL N-400	07-Jan-25	89.260	402.674	172.865	923.419	11.1	2.7	2.0	15.8
30	330 mRL N-400	07-Jan-25	NV	NV	NV	NV	6.2	-	-	6.2
31	354 mRL N-400	07-Jan-25	-145.666	401.516	354.879	1128.310	7.7	2.6	0.7	11.0
32	140 mRL N-400 / 140 mRL N-398	07-Jan-25.	124.026	398.107	142.987	891.740	2.1	2.7	2.2	7.0
33	140 mRL N-398	07-Jan-25	124.035	398.031	143.007	617.848	-33.7	3.8	3.2	-26.7
34	220 mRL N-400	07-Jan-25	NV	NV	NV	NV	6.6	-	-	6.6
35	180 mRL N-375 / 180 mRL N-400	07-Jan-25	NV	NV	NV	NV	4.9	2.9	-	7.8
36	160 mRL N-375	07-Jan-25	97.091	382.814	163.208	906.253	2.9	-	4.9	7.8
37	270 mRL N-400 / 270 mRL N-350	07-Jan-25	-43.469	358.658	270.685	1017.682	4.1	3.2	1.3	8.6
38	390 mRL N-350	07-Jan-25	-264.105	352.886	391.271	1217.297	4.3	2.2	1.0	7.5
39	260 mRL N-350	07-Jan-25	-33.147	341.528	261.935	1000.899	11.2	3.7	1.3	16.2
40	170 mRL N-325 / 170 mRL N-300	07-Jan-25	-76.345	331.484	174.043	898.684	-1.0	3.1	2.4	4.5
41	390 mRL N-325	07-Jan-25	-269.241	326.916	391.214	1212.864	4.1	2.1	0.9	7.1
42	140 mRL N-325	07-Jan-25	NV	NV	NV	NV	-9.0	3.1	-	-5.9
43	342 mRL N-300	07-Jan-25	-137.103	301.064	343.360	1080.142	6.1	3.0	0.8	9.9
44	330 mRL N-300	07-Jan-25	-122.863	299.260	331.910	1066.228	6.7	3.0	1.3	11.0

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
45	390 mRL N-300	07-Jan-25	-271.314	298.056	391.862	1205.160	7.3	2.4	0.8	10.5
46	290 mRL N-300	07-Jan-25	-72.567	295.352	292.357	1018.116	6.0	3.4	1.4	10.8
47	366 mRL N-150	07-Jan-25	-238.093	289.184	368.991	1170.858	1.9	2.4	0.7	5.0
48	366 mRL N-275	07-Jan-25	-238.080	289.112	368.993	1170.823	8.8	2.3	0.8	11.9
49	160 mRL N-275	07-Jan-25	81.207	271.324	162.914	867.528	7.1	4.0	2.2	13.3
50	330 mRL N-250	07-Jan-25	-123.724	252.822	331.516	1050.886	6.2	2.8	1.4	10.4
51	90 mRL N-249	07-Jan-25	216.528	249.933	93.517	472.683	-32.8	4.5	3.2	-25.1
52	390 mRL N-250	07-Jan-25	-271.866	246.632	391.499	1190.037	8.1	2.0	0.9	11.0
53	170 mRL N-250 / 160 mRL N-375	07-Jan-25	67.225	245.765	173.159	870.002	1.0	4.4	2.0	7.4
54	90 mRL N-217	07-Jan-25	223.700	217.720	93.210	456.404	-32.8	5.0	3.5	-24.3
55	330 mRL N-200	07-Jan-25	NV	NV	NV	NV	5.0	3.1	-	8.1
56	220 mRL N-200	07-Jan-25	8.649	203.571	223.755	909.686	12.7	4.0	2.1	18.8
57	260 mRL N-200	07-Jan-25	-37.307	202.646	261.755	952.978	9.3	3.8	1.6	14.7
58	290 mRL N-200	07-Jan-25	NV	NV	NV	NV	4.3	3.4	-	7.7
59	90 mRL N-200	07-Jan-25	224.049	190.359	93.429	449.657	-32.8	5.3	3.5	-24.0
60	110 mRL N-176	07-Jan-25	166.811	176.636	111.984	503.484	2.2	5.4	3.4	11.0
61	390 mRL N-175	07-Jan-25	-269.015	174.134	391.539	1168.691	9.1	2.5	0.9	12.5
62	310 mRL N-175	07-Jan-25	-101.975	169.650	311.944	1005.585	9.3	4.4	1.8	15.5
63	90 mRL N-168 / 90 mRL N-175	07-Jan-25	226.220	168.517	93.508	443.538	-30.8	5.4	3.6	-21.8
64	90 mRL N-141 / 90 mRL N-150	07-Jan-25	218.167	141.127	93.111	448.026	-30.0	5.0	3.7	-21.3
65	330 mRL N-125	07-Jan-25	-128.134	133.686	330.655	1022.326	4.6	3.0	1.3	8.9
66	330 mRL N-100	07-Jan-25	-129.983	110.170	330.545	1019.203	8.2	2.9	1.6	12.7
67	310 mRL N-100	07-Jan-25	-106.508	105.188	311.550	995.206	10.9	3.1	1.4	15.4

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
68	90 mRL N-103 / 90 mRL N-100	07-Jan-25	209.818	104.032	91.669	454.331	-25.0	4.3	3.6	-17.1
69	220 mRL N-100	07-Jan-25	1.377	101.581	223.338	888.926	8.1	4.1	2.5	14.7
70	260 mRL N-100	07-Jan-25	-45.606	101.434	262.667	934.806	7.5	3.7	2.0	13.2
71	290 mRL N-100	07-Jan-25	-83.672	100.923	292.171	971.978	7.5	3.2	1.9	12.6
72	120 mRL N-90	07-Jan-25	147.629	90.550	123.556	516.532	-71.2	15.4	2.4	-53.4
73	390 mRL N-75	07-Jan-25	-251.049	75.328	392.692	1132.443	9.6	1.7	1.3	12.6
74	390 mRL N-50	07-Jan-25	-249.571	50.733	392.811	1127.604	6.6	1.3	1.4	9.3
75	366 mRL N-50	07-Jan-25	-214.119	50.554	367.903	1092.423	8.7	1.9	1.3	11.9
76	340 mRL N-25 / 340 mRL N-50	07-Jan-25	-180.914	35.240	342.481	1057.558	8.7	2.3	1.3	12.3
77	310 mRL N-25	07-Jan-25	-108.929	26.951	313.136	985.100	10.9	4.5	1.9	17.3
78	390 mRL N-25	07-Jan-25	-248.517	22.110	392.324	1123.289	7.5	1.7	1.8	11.0
79	100 mRL -20	07-Jan-25	168.767	19.723	102.125	501.482	-12.0	3.0	3.3	-5.7
80	220 mRL NS-00	07-Jan-25	-0.768	2.191	221.718	874.815	7.4	4.7	2.4	14.5
81	366 mRL NS-00	07-Jan-25	-212.939	0.783	367.819	1085.870	9.2	1.8	1.3	12.3
82	390 mRL NS-0	07-Jan-25	-246.853	0.505	391.801	1119.641	8.3	1.8	1.3	11.4
83	290 mRL NS-0	07-Jan-25	-83.532	-0.761	291.333	956.853	14.1	4.2	2.1	20.4
84	260 mRL NS-00	07-Jan-25	-48.446	-1.775	262.886	921.833	10.4	4.6	2.5	17.5
85	390 mRL S-25	07-Jan-25	-244.914	-24.531	391.230	1115.914	7.9	2.1	1.1	11.1
86	180 mRL S-25	07-Jan-25	49.191	-31.992	182.499	821.961	5.9	3.9	2.6	12.4
87	160 mRL S-50	07-Jan-25	104.196	-39.750	162.065	766.546	7.3	4.5	2.8	14.6
88	366 mRL S-50	07-Jan-25	-204.597	-51.031	366.419	1074.336	9.7	11.8	2.0	23.5
89	390 mRL S-50 /390 mRL S-53	07-Jan-25	-244.564	-53.225	391.489	1114.196	7.9	1.9	0.8	10.6
90	100 mRL S-75 /100 mRL S-100.9	07-Jan-25	177.684	-61.506	101.135	511.899	-34.9	3.9	3.2	-27.8

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
91	180 mRL S-75	07-Jan-25	53.212	-70.865	182.972	816.018	8.9	4.3	2.5	15.7
92	390 mRL S-75 / 390 mRL S-99	07-Jan-25	-239.589	-77.588	390.499	1108.639	7.0	4.5	1.2	12.7
93	220 mRL S-100	07-Jan-25	NV	NV	NV	NV	12.7	3.7	-	16.4
94	260 mRL S-100	07-Jan-25	-37.957	-99.308	262.099	906.941	15.9	3.9	2.5	22.3
95	390 mRL S-100	07-Jan-25	-237.657	-99.629	390.883	1106.638	7.7	4.2	1.4	13.3
96	330 mRL S-100	07-Jan-25	-151.918	-100.969	331.765	1020.912	6.6	0	6.0	12.6
97	366 mRL S-100	07-Jan-25	-201.595	-101.188	367.870	1070.589	10.1	5.9	1.6	17.6
98	290 mRL S-100	07-Jan-25	-72.904	-102.860	291.931	941.921	14.5	4.3	2.2	21.0
99	170 mRL S-100	07-Jan-25	100.154	-113.562	173.144	769.102	14.8	3.8	2.5	21.1
100	390 mRL S-125	07-Jan-25	-234.089	-124.517	390.478	1103.522	8.2	3.9	1.5	13.6
101	366 mRL S-150	07-Jan-25	-200.813	-150.815	366.922	1071.380	10.4	4.5	1.9	16.8
102	80 mRL S-156	07-Jan-25	203.324	-156.396	82.476	526.335	-35.4	2.6	2.9	-29.9
103	100 mRL S-161	07-Jan-25	181.727	-161.030	101.808	547.519	-36.1	2.6	2.8	-30.7
104	390 mRL S-175	07-Jan-25	-236.315	-173.397	391.081	1108.260	10.8	3.4	1.4	15.6
105	70 mRL S-175 / 70 mRL S-184.48	07-Jan-25	215.981	-184.289	70.347	529.617	-42.2	2.6	2.1	-37.5
106	220 mRL S-200	07-Jan-25	7.873	-199.132	223.208	867.715	10.2	3.5	2.6	16.3
107	390 mRL S-200	07-Jan-25	-236.834	-199.553	391.984	1111.003	10.3	2.9	0.7	13.9
108	366 mRL S-200	07-Jan-25	-203.324	-199.942	367.381	1077.693	9.4	3.3	1.5	14.2
109	260 mRL S-200	07-Jan-25	-39.563	-200.640	261.442	914.985	12.5	3.8	2.1	18.4
110	330 mRL S-200	07-Jan-25	-154.249	-203.059	332.184	1029.208	10.6	3.8	1.5	15.9
111	390 mRL S-225	07-Jan-25	-238.151	-226.127	391.673	1115.195	8.4	2.6	0.8	11.8
112	80 mRL S-242	07-Jan-25	201.591	-242.388	81.150	574.261	-44.8	1.5	2.9	-40.4
113	390 mRL S-250	07-Jan-25	-237.093	-244.259	390.752	1116.472	7.5	2.8	1.0	11.3

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
114	160 mRL S-250 / 160 mRL S-246	07-Jan-25	107.993	-245.769	162.421	776.333	16.0	3	3.0	22.0
115	160 mRL S-246 /160 mRL S-250	07-Jan-25	108.055	-245.831	162.502	653.760	-32.7	2.4	2.5	-27.8
116	366 mRL S-250	07-Jan-25	-204.619	-249.885	366.970	1085.114	8.4	2.8	1.2	12.4
117	70 mRL S-250 / 70 mRL S-254.01	07-Jan-25	213.373	-253.800	72.159	571.766	-43.8	1.6	2.2	-40.0
118	70 mRL S-300 / 70 mRL S-292.81	07-Jan-25	215.006	-292.602	72.210	595.193	-39.4	1.2	2.1	-36.1
119	180 mRL S-300	07-Jan-25	85.233	-298.199	182.226	810.382	9.6	3.0	2.6	15.2
120	220 mRL S-300	07-Jan-25	7.835	-299.595	222.221	885.778	8.8	3.1	2.0	13.9
121	260 mRL S-300	07-Jan-25	-39.455	-300.970	264.049	932.125	1.7	3.2	2.0	6.9
122	330 mRL S-300	07-Jan-25	-153.223	-302.246	331.397	1043.566	8.2	3.3	1.4	12.9
123	390 mRL S-300	07-Jan-25	-235.488	-303.144	390.088	1124.436	8.1	3.2	0.8	12.1
124	170 mRL S-300	07-Jan-25	98.058	-303.862	171.623	799.467	-5.2	2.7	1.8	-0.7
125	100 mRL S-317	07-Jan-25	179.395	-317.376	103.062	638.338	-36.3	0.9	1.8	-33.6
126	190 mRL S-325	07-Jan-25	74.519	-328.185	192.933	828.789	14.0	2.5	2.7	19.2
127	160 mRL S-330	07-Jan-25	110.638	-330.163	161.161	699.744	-41.7	1.4	2.0	-38.3
128	80 mRL S-333	07-Jan-25	204.339	-332.915	83.564	630.134	-37.8	0.5	1.9	-35.4
129	70 mRL S-350	07-Jan-25	216.728	-356.291	72.832	637.592	-42.5	1.1	1.2	-40.2
130	190 mRL S-375 / 190 mRL S-350	07-Jan-25	75.483	-363.695	193.627	838.685	12.0	2.2	2.3	16.5
131	390 mRL S-375	07-Jan-25	-244.578	-378.575	389.673	1149.806	5.0	2.5	0.8	8.3
132	160 mRL S-380	07-Jan-25	110.399	-380.328	162.721	731.697	-32.3	1.0	1.8	-29.5
133	390 mRL S-400	07-Jan-25	-249.023	-401.574	389.234	1160.036	6.9	2.0	0.8	9.7
134	330 mRL S-400	07-Jan-25	-162.915	-401.577	332.583	1077.296	5.5	3.1	1.0	9.6
135	170 mRL S-401	07-Jan-25	96.812	-401.642	173.322	755.948	-37.9	1.2	1.2	-35.5
136	260 mRL S-400	07-Jan-25	-48.383	-403.419	262.175	968.744	9.4	2.5	1.5	13.4

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
137	100 mRL S-410	07-Jan-25	177.768	-410.383	104.399	703.543	-38.6	-0.7	2.1	-37.2
138	180 mRL S-425	07-Jan-25	81.047	-418.950	183.087	853.035	-2.3	2.1	1.9	1.7
139	160 mRL S-425	07-Jan-25	106.864	-425.085	162.878	764.284	-32.8	1.2	0.3	-31.3
140	390 mRL S-425	07-Jan-25	-251.716	-425.450	388.759	1169.214	7.0	2.1	0.9	10.0
141	390 mRL S-450	07-Jan-25	-252.431	-449.649	388.817	1177.026	5.5	1.9	0.6	8.0
142	390 mRL S-475	07-Jan-25	-251.704	-474.152	388.183	1184.011	4.5	1.8	0.6	6.9
143	170 mRL S-487	07-Jan-25	94.319	-487.115	172.338	816.708	-41.5	0.7	0.5	-40.3
144	390 mRL S-500	07-Jan-25	-250.952	-493.591	387.650	1189.720	3.6	1.6	0.6	5.8
145	330 mRL S-500	07-Jan-25	-171.094	-504.926	332.791	1119.007	3.6	2.0	0.9	6.5
146	100 mRL S-510	07-Jan-25	178.260	-510.335	103.196	778.536	-38.9	-	-0.1	-39.0
147	390 mRL S-525	07-Jan-25	-248.297	-520.869	386.873	1196.723	7.4	-	2.2	9.6
148	390 mRL S-550	07-Jan-25	-247.477	-548.285	386.803	1206.060	3.1	0.8	0.3	4.2
149	390 mRL S-575	07-Jan-25	-244.976	-571.488	387.026	1212.730	1.7	0.8	0.5	3.0
150	270 mRL S-575	07-Jan-25	NV	NV	NV	NV	1.2	-	-	1.2
151	390 mRL S-600	07-Jan-25	-236.376	-598.217	387.375	1215.719	2.1	0.8	0.4	3.3
152	330 mRL S-600	07-Jan-25	-151.843	-602.257	333.011	1141.207	1.5	1.0	0.7	3.2
153	220 mRLS Zone S-610	07-Jan-25	NV	NV	NV	NV	6.7	-	-	6.7
154	220 mRLS Zone S-620	07-Jan-25	56.407	-618.640	222.770	968.271	0.7	0.6	0.5	1.8
155	390 mRL S-625	07-Jan-25	-224.959	-627.995	386.977	1218.154	1.5	0.6	0.2	2.3
156	390 mRL S-650	07-Jan-25	-215.218	-659.195	386.551	1223.560	0.7	0.2	0.3	1.2
157	280 mRLS Zone S-685 / S-683	07-Jan-25	-60.812	-683.109	281.273	1101.743	-308.9	0.1	0.5	-308.3
158	230 mRLS Zone S-685	07-Jan-25	70.918	-684.113	232.529	993.693	-1.6	-	0.7	-0.9
159	300 mRLS Zone S-700 / S-696	07-Jan-25	-81.852	-696.248	300.869	1126.548	-307.9	0.1	0.1	-307.7

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
160	230 mRLS Zone S-700	07-Jan-25	84.408	-699.813	232.893	992.428	1.2	0.2	0.3	1.7
161	275 mRLS Zone S-710 / 275 mRLS Zone S-725	07-Jan-25	-27.563	-710.003	275.379	1088.867	-2.7	-0.2	0.2	-2.7
162	330 mRLS Zone S-775 / 330 mRLS Zone S-763	07-Jan-25	-90.305	-762.844	332.319	1170.542	-3.1	-0.1	0.0	-3.2
163	350 mRLS Zone S-765	07-Jan-25	-123.594	-764.160	347.554	1198.712	-0.6	-0.2	0.0	-0.8
164	280 mRLS Zone S-775 / 280 mRLS Zone S-767	07-Jan-25	-0.112	-767.085	283.578	1100.444	-3.8	-0.3	0.3	-3.8
165	350 mRLS Zone S-775 / 350 mRLS Zone S-770	07-Jan-25	-131.721	-771.209	351.261	1209.394	-3.4	0.3	-0.2	-3.3
166	360 mRLS Zone S-775	07-Jan-25	NV	NV	NV	NV	-2.2	-	-	-2.2
167	386 mRLS Zone S-779 / 386 mRLS Zone S-780	07-Jan-25	-186.189	-778.979	386.738	1259.057	1.3	0.1	-0.3	1.1
168	386 mRLS Zone S-775 / 386 mRLS Zone S-780	07-Jan-25	-186.189	-778.980	386.733	1259.058	-1.9	0.1	-0.4	-2.2
169	340 mRLS Zone S-790 / 340 mRLS Zone S-786	07-Jan-25	-98.278	-786.505	344.426	1190.729	-0.2	-0.4	-0.2	-0.8
170	330 mRLS Zone S-800 / 330 mRLS Zone S-798	07-Jan-25	-55.283	-797.740	328.116	1162.860	0.4	-0.6	-0.1	-0.3
171	350 mRLS Zone S-800	07-Jan-25	-106.016	-803.216	347.599	1206.794	-2.8	-	-	-2.8
172	350 mRLS Zone S-810 / 350 mRLS Zone S-809	07-Jan-25	-118.106	-809.746	353.117	1220.412	-2.0	-0.4	-0.3	-2.7
173	360 mRLS Zone S-810	07-Jan-25	-137.885	-810.144	362.014	1236.694	-1.3	-	-	-1.3
174	367 mRLS Zone S-825	07-Jan-25	-143.584	-820.668	367.751	1247.457	0.2	-0.2	-0.2	-0.2
175	385 mRLS Zone S-825 / 385 mRLS Zone S-827	07-Jan-25	-174.823	-827.039	383.399	1276.601	1.2	-0.3	-0.5	0.4
176	383 mRLS Zone S-825 / 383 mRLS Zone S-827	07-Jan-25	-174.874	-826.967	383.432	1276.601	-1.3	-0.2	-0.5	-2.0
177	320 mRL S-850	07-Jan-25	-6.459	-846.390	321.733	1155.601	-6.4	-0.9	-0.4	-7.7
178	30 mRL S-45	07-Jan-25	266.075	-46.575	32.755	423.467	Initial	-	1.3	1.3

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
179	385 mRLS Zone S-850 / 385 mRLS Zone S-860	07-Jan-25	-139.740	-858.097	386.278	1266.619	-5.2	-0.4	-0.5	-6.1
180	360 mRL S-875 / 360 mRL S-865	07-Jan-25	-68.489	-868.350	361.786	1217.159	-5.4	-1.0	-0.6	-7.0
181	320 mRL S-885	07-Jan-25	51.436	-885.722	321.643	1139.427	-9.7	-1.4	-0.9	-12.0
182	320 mRL S-890	07-Jan-25	197.991	-893.858	323.657	1045.532	-14.4	-2.0	-1.0	-17.4
183	320 mRL S-905	07-Jan-25	121.050	-905.221	322.533	1104.832	-8.1	-1.9	-1.2	-11.2
184	360 mRL S-950 / 360 mRL S-920	07-Jan-25	-0.120	-920.570	361.804	1200.741	-5.8	-1.5	-1.0	-8.3
185	360 mRL S-940	07-Jan-25	161.249	-940.438	363.051	1104.835	-11.8	-1.6	-1.4	-14.8
186	360 mRL S-950 / 360 mRL S-945	07-Jan-25	102.468	-946.562	362.245	1147.929	-10.9	-2.2	-1.1	-14.2
187	30 mRL N-80	07-Jan-25	269.841	80.602	31.512	394.649	-	Initial	5.4	5.4
188	S Zone S-575	07-Jan-25	-87.308	-571.715	273.236	1069.827	-	Initial	0.6	0.6
189	340 HW S-196	07-Jan-25	707.5488	-196.305	341.0030	192.0997	-	Initial	0.0	0.0
190	340 HW S-254	07-Jan-25	709.9244	-254.037	340.4683	226.9478	-	Initial	0.8	0.8
191	340 HW S-243	07-Jan-25	NV	NV	NV	NV	-	Initial	-	0.0
192	340 HW S-273	07-Jan-25	705.4610	-273.605	340.2032	244.2635	-	Initial	1.1	1.1
193	340 HW S-280	07-Jan-25	731.8869	-280.913	341.2389	233.3012	-	Initial	1.5	1.5
194	30 mRL S-150	07-Jan-25	282.983	-148.570	32.233	453.921	-	-	Initial	-

Annexure-2: Measurement of coordinates and calculation of horizontal displacement of monitoring stations installed in hangwall side

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
1	380 mRL N-974	07-Jan-25	124.729	974.228	382.545	1052.500	14.6	0.2	0.1	14.9
2	380 mRL N-967	07-Jan-25	33.324	967.302	382.615	1016.455	0.4	0.4	-0.2	0.6
3	380 mRL N-944	07-Jan-25	232.775	944.211	381.475	1069.302	2.8	0.4	0.0	3.2
4	360 mRL N-925	07-Jan-25	NV	NV	NV	NV	31.4	0.4	-	31.8
5	330 mRL N-925 / 330 mRL N-920	07-Jan-25	130.887	920.232	332.342	1004.673	5.4	0.0	0.1	5.5
6	380 mRL N-910	07-Jan-25	NV	NV	NV	NV	3.2	1.0	-	4.2
7	330 mRL N-900 / 330 mRL S-850	07-Jan-25	182.604	905.135	332.573	1012.004	0.3	0.0	-0.1	0.2
8	350 mRL N-875	07-Jan-25	297.779	885.209	352.327	1049.856	33.7	0.7	0.2	34.6
9	360 mRL N-875	07-Jan-25	349.945	873.120	362.364	1068.238	1.2	0.8	-0.1	1.9
10	380 mRL N-855	07-Jan-25	420.961	856.563	383.583	1096.895	7.4	1.8	0.4	9.6
11	370 mRL N-855 / 370 mRL N-850	07-Jan-25	393.972	855.128	371.762	1079.331	36.9	0.0	0.4	37.3
12	290 mRL N-850	07-Jan-25	233.056	846.973	292.521	983.899	26.6	0.9	0.3	27.8
13	360 mRL N-850	07-Jan-25	NV	NV	NV	NV	5.8	1.3	-	7.1
14	370 mRL N-830 / 370 mRL N-825	07-Jan-25	425.475	831.557	371.216	1080.145	24.0	0.0	0.6	24.6
15	270 mRL N-825	07-Jan-25	NV	NV	NV	NV	7.1	0.7	-	7.8
16	360 mRL N-800	07-Jan-25	NV	NV	NV	NV	6.2	2.0	-	8.2
17	380 mRL N-790	07-Jan-25	493.255	790.632	382.412	1093.858	5.1	4.4	1.4	10.9
18	350 mRL N-780 / 350 mRL N-775	07-Jan-25	438.276	780.734	351.952	1049.568	39.0	0.0	1.2	40.2
19	360 mRL N-775	07-Jan-25	NV	NV	NV	NV	5.8	13.4	-	19.2
20	370 mRL N-760	07-Jan-25	NV	NV	NV	NV	23.5	-	-	23.5
21	260 mRL N-750	07-Jan-25	281.230	750.295	264.570	928.178	4.5	1.2	0.5	6.2

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
22	290 mRL N-750	07-Jan-25	388.630	748.050	291.057	992.365	30.2	3.5	0.8	34.5
23	360 mRL N-725	07-Jan-25	NV	NV	NV	NV	4.5	27.3	-	31.8
24	260 mRL N-725	07-Jan-25	308.481	720.911	262.583	920.762	9.1	1.3	1.0	11.4
25	390 mRL N-720	07-Jan-25	674.234	720.608	389.649	1180.324	3.2	1.6	0.9	5.7
26	370 mRL N-725	07-Jan-25	NV	NV	NV	NV	10.2	5.7	-	15.9
27	380 mRL N-715	07-Jan-25	555.849	716.353	379.965	1086.757	8.1	3.9	1.6	13.6
28	380 mRL N-705	07-Jan-25	NV	NV	NV	NV	10.0	3.9	-	13.9
29	350 mRL N-700	07-Jan-25	NV	NV	NV	NV	8.1	-	-	8.1
30	360 mRL N-700	07-Jan-25	541.617	694.341	361.666	1061.503	7.0	4.4	1.6	13.0
31	270 mRL N-675	07-Jan-25	366.411	688.741	272.323	933.054	11.5	2.1	0.8	14.4
32	360 mRL N-650	07-Jan-25	606.565	665.554	362.534	1093.104	8.2	2.2	1.5	11.9
33	360 mRL N-625	07-Jan-25	NV	NV	NV	NV	4.5	2.4	-	6.9
34	380 mRL N-630 / 390 mRL N-630	07-Jan-25	739.702	628.175	387.825	1180.270	2.5	0.0	1.4	3.9
35	280 mRL N-612	07-Jan-25	443.609	612.721	283.159	934.015	6.2	-	5.5	11.7
36	280 mRL N-625	07-Jan-25	443.678	612.646	283.171	934.017	30.2	4.1	1.4	35.7
37	360 mRL N-575	07-Jan-25	691.821	571.705	362.006	1109.728	10.8	3.3	2.2	16.3
38	310 mRL N-575	07-Jan-25	599.257	570.248	312.205	1031.085	9.4	5.1	1.9	16.4
39	280 mRL N-566 / 280 mRL N-565	07-Jan-25	477.850	566.691	280.233	930.810	3.7	0	1.1	4.8
40	280 mRL N-575	07-Jan-25	477.837	566.683	280.110	930.795	28.9	8.7	4.1	41.7
41	340 mRL N-525	07-Jan-25	690.806	517.908	341.276	1081.736	30.6	4.7	3.0	38.3
42	280 mRL N-525	07-Jan-25	516.528	517.166	282.253	932.823	13.8	15.0	4.7	33.5
43	310 mRL N-500 / 310mRL N-505	07-Jan-25	642.261	503.902	312.046	1032.561	23.3	0	2.4	25.7
44	380 mRL N-495	07-Jan-25	785.286	494.951	381.029	1155.059	11.9	3.3	2.1	17.3

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
45	280 mRL N-475	07-Jan-25	543.820	489.550	281.734	940.633	41.6	14.4	4.7	60.7
46	340 mRL N-450	07-Jan-25	721.828	446.430	341.344	1076.933	15.5	5.3	2.8	23.6
47	290 mRL N-425	07-Jan-25	579.803	436.763	291.436	945.447	38.9	13.0	4.5	56.4
48	310 mRL N-425	07-Jan-25	671.436	423.964	311.813	1021.767	23.0	9.5	3.7	36.2
49	290 mRL N-400	07-Jan-25	579.479	402.870	291.018	929.712	13.0	11.7	4.4	29.1
50	380 mRL N-390	07-Jan-25	NV	NV	NV	NV	10.1	-	-	10.1
51	290 mRL N-375	07-Jan-25	600.824	382.128	291.042	940.129	11.7	0.0	4.4	16.1
52	350 mRL N-375	07-Jan-25	773.700	373.992	351.746	1096.941	18.0	4.8	2.8	25.6
53	130 mRL N-375	07-Jan-25	322.938	361.861	131.170	512.096	5.8	-	9.8	15.6
54	300 mRL N-350	07-Jan-25	NV	NV	NV	NV	40.4	10.6	-	51.0
55	310 mRL N-325	07-Jan-25	693.392	325.298	311.139	1004.868	14.7	10.4	4.4	29.5
56	350 mRL N-310	07-Jan-25	791.871	309.178	352.617	1093.498	17.5	10.0	4.6	32.1
57	130 mRL N-300	07-Jan-25	370.952	295.526	133.024	530.388	9.2	10.3	2.1	21.6
58	380 mRL N-290	07-Jan-25	830.784	292.895	378.791	1126.348	11.3	8.8	4.5	24.6
59	300 mRL N-300	07-Jan-25	639.635	290.023	300.891	942.589	39.3	-	14.8	54.1
60	70 mRL N-250	07-Jan-25	321.838	254.242	73.115	471.238	20.3	10.7	2.8	33.8
61	310 mRL N-250	07-Jan-25	648.735	239.234	310.878	936.588	29.7	10	4.5	44.2
62	80 mRL N-225	07-Jan-25	345.659	231.060	81.711	488.702	13.6	11.3	2.8	27.7
63	350 mRL N-265	07-Jan-25	812.651	226.484	352.948	1092.765	16.5	9.4	4.7	30.6
64	130 mRL N-225	07-Jan-25	423.781	222.324	132.337	563.690	12.8	0.0	3.2	16.0
65	130 mRL N-225	07-Jan-25	423.867	222.171	132.386	716.445	41.7	10.8	3.5	56.0
66	310 mRL N-200	07-Jan-25	655.882	191.647	309.985	932.173	34.1	9.4	4.7	48.2
67	50 mRL N-175	07-Jan-25	351.136	178.713	52.157	485.625	49.2	12.8	3.6	65.6

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
68	30 mRL N-175	07-Jan-25	340.839	162.575	31.557	473.873	57.0	-	14.9	71.9
69	130 mRL N-150 / 130 mRL N-125	07-Jan-25	460.632	139.092	132.058	730.266	29.3	10.5	4.9	44.7
70	320 mRL N-150	07-Jan-25	665.735	136.873	320.764	931.759	38.4	9.1	4.9	52.4
71	70 mRL N-100	07-Jan-25	409.255	104.436	73.056	541.308	23.5	13.7	6.4	43.6
72	180 mRL N-100	07-Jan-25	537.937	100.010	182.705	799.965	36.9	6.1	3.9	46.9
73	320 mRL N-100	07-Jan-25	665.222	90.536	319.625	925.202	45.0	8.6	5.0	58.6
74	50 mRL N-75	07-Jan-25	391.151	74.775	52.331	525.280	51.8	13.8	6.7	72.3
75	130 mRL N-50 / 130 mRL N-75	07-Jan-25	463.882	65.969	130.528	722.399	35.1	8.9	5.1	49.1
76	200 mRL N-50	07-Jan-25	558.847	42.329	201.801	815.144	14.8	5.9	3.4	24.1
77	180 mRL N-50	07-Jan-25	540.273	35.373	181.471	796.200	19.5	6.2	3.1	28.8
78	250 mRL N-25	07-Jan-25	604.985	30.234	252.518	860.585	17.8	7.3	3.9	29.0
79	310 mRL N-00 / 310 mRL N-2	07-Jan-25	657.401	2.256	311.025	912.226	47.1	7.9	4.7	59.7
80	160 mRL S-25 / 165mRL S-13	07-Jan-25	505.165	-13.373	167.127	759.960	25.4	4.4	3.0	32.8
81	130 mRL S-25	07-Jan-25	461.965	-21.272	131.203	716.870	31.1	6.1	4.3	41.5
82	30 mRL S-25 / 30 mRL S-30	07-Jan-25	369.310	-31.197	31.261	525.025	43.9	13.1	5.9	62.9
83	50 mRL S-25	07-Jan-25	NV	NV	NV	NV	17.1	-	-	17.1
84	180 mRL S-50	07-Jan-25	535.496	-47.518	182.093	791.282	24.3	5.4	3.4	33.1
85	380 mRL S-50	07-Jan-25	858.596	-48.507	383.215	1114.124	29.4	7.8	5.3	42.5
86	160 mRL S-50	07-Jan-25	488.371	-48.589	162.340	744.280	24.6	5.2	3.3	33.1
87	200 mRL S-50.5 / 200 mRL S-56	07-Jan-25	553.713	-56.479	202.202	809.968	26.0	5.8	3.5	35.3
88	200 mRL S-50	07-Jan-25	553.713	-56.485	202.200	809.969	7.3	6.2	3.3	16.8
89	190 mRL S-75	07-Jan-25	541.919	-73.200	192.321	799.398	14.7	5.2	3.5	23.4
90	360 mRL S-95 / 360 mRL S-94	07-Jan-25	840.923	-94.906	361.890	1099.177	22.7	7.7	5.2	35.6

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
91	200 mRL S-100	07-Jan-25	548.672	-96.843	201.447	808.399	30.4	5.1	3.6	39.1
92	30 mRL S-100	07-Jan-25	361.374	-99.786	31.771	542.249	38.1	12.5	5.9	56.5
93	260 mRL S-100	07-Jan-25	601.729	-104.988	262.117	862.033	33.0	6.7	4.8	44.5
94	50 mRL S-100	07-Jan-25	380.059	-106.485	51.723	562.029	19.3	9.2	5.1	33.6
95	130 mRL S-125	07-Jan-25	451.790	-118.913	131.485	715.294	40.4	8.3	6.1	54.8
96	300 mRL S-125 / 300mRL S-122	07-Jan-25	642.542	-122.285	301.759	904.628	15.3	7.5	5.3	28.1
97	180 mRL S-125	07-Jan-25	527.902	-123.336	182.423	791.202	22.1	4.7	3.0	29.8
98	160 mRL S-150	07-Jan-25	476.838	-141.156	161.942	743.721	23.1	5.1	3.4	31.6
99	190 mRL S-150	07-Jan-25	533.567	-148.966	193.108	800.934	14.1	5.1	3.4	22.6
100	200 mRL S-175 / 200 mRL S-150	07-Jan-25	541.313	-165.188	201.949	811.555	29.5	5.1	3.2	37.8
101	180 mRL S-175 / 185mRL S-170	07-Jan-25	500.776	-170.155	184.522	772.861	32.3	4.5	3.4	40.2
102	250 mRL S-175	07-Jan-25	583.939	-173.782	252.394	855.038	36.4	6.1	4.3	46.8
103	380 mRL S-175	07-Jan-25	861.003	-176.438	380.356	1128.494	17.4	7.1	5.1	29.6
104	340 mRL S-210 / 340 mRL S-200	07-Jan-25	693.996	-211.397	341.847	970.433	49.0	7.6	5.3	61.9
105	190 mRL S-225	07-Jan-25	524.340	-228.410	192.514	809.828	17.0	5.0	3.6	25.6
106	160 mRL S-225	07-Jan-25	466.646	-231.993	161.769	755.544	12.3	4.6	3.4	20.3
107	290 mRL S-250 / 290mRL S-245	07-Jan-25	614.431	-245.458	289.384	901.190	11.5	5.9	4.5	21.9
108	340 mRL S-250 / 340 mRL S-248	07-Jan-25	693.677	-247.988	341.996	978.466	45.3	7.4	5.6	58.3
109	200 mRL S-250	07-Jan-25	530.574	-251.229	201.066	822.301	24.6	6.1	4.5	35.2
110	50 mRL S-250 / 50 mRL S - 256	07-Jan-25	363.712	-256.203	51.313	625.659	19.4	8.7	4.7	32.8
111	70 mRL S-250	07-Jan-25	380.438	-258.489	71.521	640.353	31.8	5.2	3.5	40.5
112	360 mRL S-275 / 360 mRL S-273	07-Jan-25	807.023	-273.176	361.702	1094.532	15.9	5.5	4.4	25.8
113	340 mRL S-275	07-Jan-25	769.812	-274.821	343.094	1058.886	28.8	5.3	4.1	38.2

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
114	260 mRL S-300	07-Jan-25	580.378	-292.874	262.157	882.565	24.5	6.3	4.6	35.4
115	190 mRL S-300 / 195mRL S-300	07-Jan-25	493.955	-300.477	196.302	804.011	15.5	4.2	3.3	23.0
116	340 mRL S-310	07-Jan-25	685.808	-310.732	341.408	988.255	21.9	-	9.3	31.2
117	200 mRL S-325	07-Jan-25	524.235	-317.002	202.398	838.243	19.1	4.3	3.0	26.4
118	50 mRL S-325	07-Jan-25	NV	NV	NV	NV	32.8	-	-	32.8
119	30 mRL S-325 / 30 mRL S - 324	07-Jan-25	332.092	-324.555	31.617	646.566	8.4	4.1	1.9	14.4
120	250 mRL S-350	07-Jan-25	563.252	-352.182	251.866	887.681	31.5	4.1	3.6	39.2
121	60 mRL S-375	07-Jan-25	NV	NV	NV	NV	27.2	-	-	27.2
122	50 mRL S-400 / 50 mRL S - 389	07-Jan-25	312.666	-389.603	51.632	680.629	32.7	3.1	2.1	37.9
123	270 mRL S-400	07-Jan-25	576.274	-400.587	273.421	919.327	8.9	3.2	2.3	14.4
124	360 mRL S-410 / 360 mRL S-407	07-Jan-25	742.104	-407.302	361.865	1074.063	13.5	3.0	2.7	19.2
125	360 mRL S-410 / 350 mRL S-400	07-Jan-25	679.775	-413.041	351.762	1018.750	11.7	2.7	2.5	16.9
126	220 mRL S-425 / 230 mRL S - 415	07-Jan-25	512.270	-416.079	222.675	869.078	20.1	2.7	2.3	25.1
127	210 mRL S-450	07-Jan-25	448.340	-449.528	212.149	830.519	17.0	2.6	2.7	22.3
128	60 mRL S-475	07-Jan-25	NV	NV	NV	NV	24.1	-	-	24.1
129	270 mRL S-475 / 270 mRL S-470	07-Jan-25	568.419	-469.435	271.319	943.947	2.3	2.5	1.9	6.7
130	260 mRL S-500 / 260 mRL S-490	07-Jan-25	510.903	-490.011	260.675	905.032	11.1	2.0	1.7	14.8
131	360 mRL S-510 / 360 mRL S-500	07-Jan-25	642.486	-510.272	363.243	1028.524	40.9	2.1	1.8	44.8
132	220 mRL S-550	07-Jan-25	401.369	-555.214	221.964	854.780	21.6	2.0	1.6	25.2
133	270 mRL S-575 / 270 mRL S-560	07-Jan-25	516.474	-561.998	273.716	949.893	40.7	1.2	1.9	43.8
134	230 mRL S-575 / 230 mRL S-570	07-Jan-25	439.179	-569.145	233.441	892.760	16.7	2.0	1.4	20.1
135	360 mRL S-590	07-Jan-25	601.123	-591.903	363.305	1036.384	3.6	1.7	1.5	6.8
136	220 mRL S-625	07-Jan-25	364.900	-615.658	222.673	868.249	13.7	1.9	1.3	16.9

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 07.01.25
137	360 mRL S-645 / 360 mRL S-650	07-Jan-25	570.340	-645.869	360.907	1043.232	36.9	1.3	1.4	39.6
138	230 mRL S-675 / 230mRL S-679	07-Jan-25	325.380	-679.545	231.584	887.820	6.4	1.4	0.9	8.7
139	260 mRL S-700 / 260 mRL S - 693	07-Jan-25	425.550	-694.003	263.660	966.504	8.7	0.9	0.9	10.5
140	360 mRL S-710 / 360 mRL S-700	07-Jan-25	527.977	-709.904	361.284	1051.701	36.1	0.7	1.1	37.9
141	360 mRL S-750	07-Jan-25	498.999	-750.150	361.485	1058.162	26.0	1.0	0.6	27.6
142	360 mRL S-795	07-Jan-25	463.474	-794.140	362.198	1065.217	0.7	0.8	0.7	2.2
143	340 mRL S-125	07-Jan-25	698.034	-129.825	332.095	960.628	-	Initial	4.9	4.9
144	130 mRL N-362	07-Jan-25	NV	NV	NV	NV	-	Initial	-	0.0
145	30 mRL N-160	07-Jan-25	NV	NV	NV	NV	-	Initial	-	0.0
146	30 mRL S-150	07-Jan-25	353.937	-167.013	32.047	567.129	-	Initial	5.3	5.3
147	70 mRL S-125	07-Jan-25	396.372	-124.175	71.165	584.274	-	Initial	4.5	4.5
148	370 mrl N-755	07-Jan-25	497.942	755.293	368.444	1071.634	-	-	-	Initial
149	380 mrl N-750	07-Jan-25	524.094	750.381	380.813	1086.731	-	-	-	Initial
150	352 mrl N-716	07-Jan-25	504.834	716.961	352.956	1049.673	-	-	-	Initial

Annexure-3 : Measurement of coordinates and calculation of horizontal displacement of monitoring stations installed in dump

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 08.01.25
1	Check point BS	8-Jan-25	-65.342	907.119	400.943	1368.361	10.9	0.0	0.0	10.9
2	WD 435 mRL N-1875	8-Jan-25	-1401.498	1881.774	432.605	374.688	-16.3	0.8	0.9	-14.6
3	WD 435 mRL N-2100	8-Jan-25	-1392.671	2112.331	435.611	399.207	-6.0	0.3	-0.5	-6.2
4	WD 435 mRL N-2335	8-Jan-25	-1427.465	2335.347	434.855	497.823	5.5	-0.3	0.8	6.0
5	WD 455 mRL N-2375	8-Jan-25	-1376.430	2375.300	454.799	561.908	-10.0	0.5	1.3	-8.2
6	WD 455 mRL N-2275	8-Jan-25	-1371.874	2274.899	455.237	498.015	-11.7	0.6	-0.6	-11.7
7	WD 455 mRL N-2050	8-Jan-25	-1343.432	2051.222	456.963	429.948	-7.9	0.4	0.8	-6.7
8	WD 455 mRL N-1875	8-Jan-25	-1347.123	1889.611	455.390	426.181	-24.3	1.3	0.9	-22.1
9	WD 455 mRL N-1780	8-Jan-25	-1353.183	1780.163	456.122	454.058	-3.7	0.2	-0.6	-4.1
10	WD 410 mRL W-540	8-Jan-25	539.330	935.911	413.193	1079.735	13.0	-0.6	0.8	13.2
11	WD 410 mRL W-590	8-Jan-25	593.219	944.206	415.446	1072.497	23.5	-1.2	1.3	23.6
12	WD 495 mRL W-715	8-Jan-25	712.902	1518.843	495.061	1618.563	26.5	-1.3	-0.6	24.6
13	WD 495 mRL W-630	8-Jan-25	629.305	1422.590	496.050	1533.631	17.6	-0.9	0.8	17.5
14	WD 495 mRL W-590	8-Jan-25	590.844	1390.725	494.698	1508.777	22.5	-1.1	0.9	22.3
15	WD 495 mRL W-525	8-Jan-25	526.420	1344.735	492.627	1477.252	12.0	-0.6	-0.6	10.8
16	WD 515 mRL E-130	8-Jan-25	129.875	1403.240	515.251	1668.256	25.4	-1.3	0.8	24.9
17	WD 515 mRL E-10	8-Jan-25	9.885	1417.864	515.751	1737.497	22.4	-1.2	1.3	22.5
18	WD 515 mRL W-50	8-Jan-25	-40.832	1413.547	516.514	1759.472	5.7	-0.2	-0.6	4.9
19	WD 540 mRL E-75	8-Jan-25	75.110	1565.154	538.647	1837.818	12.6	-0.6	0.8	12.8
20	WD 540 mRL E-80	8-Jan-25	78.845	1501.796	539.026	1779.216	9.5	-0.4	0.8	9.9

Sl. No.	Monitoring Station ID	Date of monitoring	Coordinates			Horizontal Distance (H) in m	Change in horizontal distance (i.e. ΔH in cm)			
			X	Y	Z		19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 08.01.25
21	WD 540 mRL E-25	8-Jan-25	22.491	1479.654	539.995	1785.469	6.3	-0.3	-0.5	5.5
22	WD 540 mRL W-45	8-Jan-25	-47.450	1477.059	540.232	1817.436	11.4	-0.6	0.8	11.6
23	WDN520 mRLw-380	8-Jan-25	-381.636	2564.194	519.032	388.892	-1.1	0.0	1.3	0.2
24	WDN535 mRLw-390	8-Jan-25	-389.580	2502.032	535.724	437.407	-5.8	0.3	-0.5	-6.0
25	WDN520 mRLw-500	8-Jan-25	-499.438	2512.047	519.717	385.694	-5.0	0.3	0.8	-3.9
26	WDN535 mRLw-515	8-Jan-25	-517.462	2462.949	534.865	429.167	5.3	-0.3	0.8	5.8
27	WDN535 mRLw-580	8-Jan-25	-577.466	2446.954	533.935	437.191	-9.1	0.4	0.9	-7.8
28	WDN535 mRLw-700	8-Jan-25	-696.085	2378.853	534.540	622.534	12.9	-0.7	-0.6	11.6
29	WDN534 mRLw-780	8-Jan-25	-778.151	2345.301	534.220	578.975	18.7	-1.0	0.8	18.5
30	WDN520 mRLw-895	8-Jan-25	-893.076	2365.256	518.819	484.341	13.5	-0.7	1.3	14.1
31	WDN520 mRLw-650	8-Jan-25	-650.609	2449.899	519.343	625.143	21.4	-1.1	-0.6	19.7
32	WDN520 mRLw-800	8-Jan-25	-797.148	2386.997	518.664	537.244	16.5	-0.8	-0.6	15.1

Annexure-4: Measurement of coordinates and calculation of vertical displacement (i.e. subsidence) of different monitoring stations installed on surface and in pit

Point ID	Monitoring Station ID	Date of monitoring	Coordinates of 19.06.2024			Change in vertical distance (i.e. ΔZ in mm)			
			X	Y	Z	19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 08.01.25
1	Check POINT	08-Jan-25	-238.280	-215.710	392.655	0	0	0	0
11	F/W In Pit.355mRL N-365	08-Jan-25	-214.608	364.252	355.317	-14	5	2	-7
12	F/W In Pit.330mRL N-175	08-Jan-25	-147.256	175.926	336.907	-22	5	-3	-20
15	F/W In Pit .220mRL S-421	08-Jan-25	-1.285	-421.593	222.082	11	29	7	47
16	F/W In Pit ,180mRL S-100	08-Jan-25	56.028	-98.185	181.293	-7	N.R.	0	-7
17	F/W In Pit ,160mRL N-55	08-Jan-25	65.179	54.711	161.560	0	13	-1	13
18	F/W In Pit ,130mRL N-445	08-Jan-25	144.578	444.902	130.870	-16	21	2	8
19	F/W In Pit ,110mRL N-255	08-Jan-25	167.021	252.349	111.629	4	41	-3	43
23	H/W In Pit ,200mRL S-350	08-Jan-25	511.345	-347.022	199.081	5	-35	7	-24
26	H/W In Pit ,340mRL S-335	08-Jan-25	720.255	-333.293	340.597	0	-1	2	1
28	H/W In Pit ,310mRL N-210	08-Jan-25	699.388	207.959	311.069	13	-48	-3	-38
29	H/W In Pit ,310mRL N-300	08-Jan-25	700.902	297.114	309.864	26	-65	N.R.	-39
30	H/W In Pit ,310mRL N-395	08-Jan-25	683.001	393.509	310.023	20	-37	N.R.	-17
31	H/W In Pit ,310mRL N-490	08-Jan-25	653.710	487.877	310.623	-25	-6	N.R.	-31
32	H/W In Pit ,310mRL N-560	08-Jan-25	613.451	560.905	310.598	-19	-3	N.R.	-22
33	H/W In Pit ,270mRL N-615	08-Jan-25	478.114	616.062	281.540	0	5	N.R.	6
34	H/W In Pit ,270mRL N-725	08-Jan-25	371.470	724.659	270.000	-18	-6	N.R.	-24
35	H/W In Pit ,270mRL N-780	08-Jan-25	313.912	778.942	270.104	-5	27	N.R.	22
36	H/W In Pit ,270 mRL N-820	08-Jan-25	243.917	820.376	270.798	20	22	N.R.	42
51	H/W SURFACE ,N-660	08-Jan-25	727.676	660.039	386.747	6	-2	N.R.	4
52	H/W SURFACE ,N-470	08-Jan-25	814.934	468.841	386.170	2	-5	7	4
53	H/W SURFACE ,N-115	08-Jan-25	875.148	114.443	384.531	16	-30	-1	-16

Point ID	Monitoring Station ID	Date of monitoring	Coordinates of 19.06.2024			Change in vertical distance (i.e. ΔZ in mm)			
			X	Y	Z	19.03.24 to 18.06.24	18.06.24 to 12.09.24	12.09.24 to 07.01.25	19.03.24 to 08.01.25
54	H/W SURFACE ,S-245	08-Jan-25	853.484	-245.721	381.831	11	-21	2	-8
56	H/W SURFACE ,S-635	08-Jan-25	658.794	-632.865	381.042	4	0	-3	0
57	H/W SURFACE ,S-165	08-Jan-25	1036.551	-166.216	384.765	9	-18	-1	-10
58	H/W SURFACE ,N-280	08-Jan-25	972.675	282.997	385.219	-1	8	2	9
60	F/W Surafce N-61	08-Jan-25	-350.458	61.232	393.908	-8	60	-3	49
62	F/W Surafce N-830	08-Jan-25	-333.938	829.739	398.512	-8	-7	2	-12
63	F/W Surafce N-905	08-Jan-25	-327.009	903.600	399.543	-14	-5	-3	-22
66	H/W In Pit ,220mRL S-505	08-Jan-25	445.269	-505.317	217.107	12	14	7	33
67	H/W In Pit ,180mRL S-175	08-Jan-25	515.579	-176.451	183.531	5	-4	-1	1
68	H/W In Pit ,320 mRL N-125	08-Jan-25	687.254	126.646	319.338	-5	-9	2	-12
69	H/W In Pit ,340 mRL S-225	08-Jan-25	740.050	-223.358	341.277	12	-12	-3	-3
69	H/W In Pit ,340 mRL S-225	08-Jan-25	740.050	-223.358	341.277	12	22	7	41
70	HW in pit 165 mRL S-8	08-Jan-25	327.232	943.801	395.135	-11	7	7	3
70	HW in pit 165 mRL S-8	08-Jan-25	327.218	943.719	395.124	0	-2	-1	-3
70	HW in pit 165 mRL S-8	08-Jan-25	327.232	943.801	395.135	-11	-5	2	-14
71	HW in pit 165 mRL S-8	08-Jan-25	520.228	-8.752	165.517	2	-6	2	-2
71	HW in pit 165 mRL S-8	08-Jan-25	520.219	-8.723	165.507	12	-30	-3	-21
71	HW in pit 165 mRL S-8	08-Jan-25	520.228	-8.752	165.517	2	N.R.	0	2
72	H/W SURFACE ,S-482	08-Jan-25	738.887	-482.140	382.377	0	22	-1	21
73	H/W SURFACE ,N-626	08-Jan-25	927.602	626.963	385.653	10	27	-3	34
73	H/W SURFACE ,N-626	08-Jan-25	927.620	626.955	385.644	19	-2	2	19

* N.R. – Not recorded

Annexure -XXII

Peak particle velocity monitoring data/Blast vibration data (Monitoring at UG) FTM of April'2025 to Sept'2025							
S.No	Date	Blast location (stope)	Monitoring location	Radial distance (m)	MCPD (kg)	PPV (mm/s)	Frequency (Hz)
1	20-Apr-25	-480L N172 B	-480L N 277 Vent	153.27	84	1.35	113.70
2	20-Apr-25	-480L S142	-480L N 277 Vent	448.71	63	3.44	123.80
3	25-Apr-25	-480L S142	-455L S ED	443.51	118	2.475	85.4
4	29-Apr-25	-430L S502	-455L S ED	217.3	71	5.53	96.9
5	6-May-25	-530L S307	-455L S ED	195	64	2.86	120
6	8-May-25	-480L S142	-480L N277 Vent	464	132	3.05	119
7	10-May-25	-505L N187 B	-480L N277 Vent	172	146	5.00	99.9
8	24-May-25	-530L S412	-455L S ED	218	73	4.20	120
9	5-Jun-25	-455L N292 A	-455L S ED	694	198	5.19	79.91
10	21-Jun-25	-430L N352 A	-455L S ED	749	187	3.23	99.63
11	24-Jun-25	-480L S127	-455L S ED	313	114	2.03	86.40
12	25-Jun-25	-280L S82	-480L N277 Vent	383	92	2.25	79.75
13	25-Jun-25	-455L S637	-455L S ED	311	74	3.38	110.30
14	1-Jul-25	-505L N127 B	-480L N 217 vent	129	79	4.51	80.00
15	9-Jul-25	-430L N352 A	-480L N 217 vent	156	242	2.74	132.90
16	10-Jul-25	-480L S577	-455L S ED	266	140	1.62	87.13
17	11-Jul-25	-505L S82	-480L N 217 vent	249	75	3.56	152.40
18	1-Aug-25	-405L N 82	-455L S ED	305.64	105	0.85	52.10
19	20-Aug-25	-355L N157	-455L S ED	825.21	103	0.31	52.50
20	23-Aug-25	-505L N8	-455L S ED	421.559	87	0.35	51.30
21	12-Sep-25	-530L N97	-455L S ED	521.6	71	0.76	51.70
22	14-Sep-25	-505L N247	-455L S ED	824.4	172	2.03	102.00
23	19-Sep-25	-505L S142	ND FAR 2 Tag Board	546.2	97	1.27	79.90

Peak particle velocity

Annexure -XXIV

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

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र)
NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

Project Name:	Hindustan Zinc Limited		
Project Address:	Hindustan Zinc Ltd., Rampura Agucha Mine, Village - Agucha, Tehsil - Hurda, Bhilwara		
Village:	Aguncha	Block:	Hurda
District:	Bhilwara	State:	Rajasthan
Pin Code:			
Communication Address:	Hindustan Zinc Ltd., Rampura Agucha Mine, Village - Agucha, Tehsil - Hurda, Bhilwara, Hurda, Bhilwara, Rajasthan - 311022		
Address of CGWB Regional Office :	Central Ground Water Board Western Region, 6-a, Jhalana Doongri, Jaipur, Rajasthan - 302004		

1.	NOC No.:	CGWA/NOC/MIN/REN/2/2022/7143			
2.	Application No.:	21-4/801/RJ/MIN/2008	3.	Category: (GWRE 2020)	Over Exploited
4.	Project Status:	Existing Ground Water	5.	NOC Type:	Renewal
6.	Valid from:	08/07/2022	7.	Valid up to:	07/07/2024

8. Ground Water Abstraction Permitted:

Fresh Water		Saline Water		Dewatering		Total	
m³/day	m³/year	m³/day	m³/year	m³/day	m³/year	m³/day	m³/year
		0.00	0.00	250.00	91250.00		

9. Details of ground water abstraction /Dewatering structures

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

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

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

11. Number of Piezometers(Observation wells) to be constructed/ monitored & Monitoring mechanism.	No. of Piezometers	Monitoring Mechanism		
		Manual	DWLR**	DWLR With Telemetry
**DWLR - Digital Water Level Recorder	1	0	1	0

(Compliance Conditions given overleaf)

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

15/11, भूजलभवन हाउज़, पार्लामेंट स्ट्रीट, नई दिल्ली - 110001 / 15/11, Jalvayu Bhawan, Parliament Street, New Delhi-110001
Phone: (011) 23552561 Fax: 23530070, 23506743
Website: cgwa-noc.gov.in

पानी बचाएं - जीवन बचाएं
SAVE WATER - SAVE LIFE

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

1.	General Information:	
	Water Quality:	Saline/ Brackish
	Purpose of Renewal Application:	Existing with Additional Ground Water Requirment
	Application Type Category/ Type of Application	Base Metal Ores
2.	Name of Mine/Project:	HINDUSTAN ZINC LIMITED
3.	Location Details of the Mining Unit- (Attach Site, Approved Mining Plan, Toposketch of Surrounding 10km Radius Outside) ($) :	
	Address Line 1 :	HINDUSTAN ZINC LTD.
	Address Line 2 :	RAMPURA AGUCHA MINE, VILLAGE - AGUCHA
	Address Line 3 :	TEHSIL - HURDA, BHILWARA
	State:	RAJASTHAN
	District:	BHILWARA
	Sub-District:	HURDA
	Village/Town:	Aguncha
	Latitude:	
	Logitude:	
	Area Type :	Non-Notified
	Area Type Category :	Over Exploited
	Whether industry is MSME:	No
4.	Communication Address	
	Address Line 1:	HINDUSTAN ZINC LIMITED
	Address Line 2:	RAMPURA AGUCHA MINE
	Address Line 3:	P.O. AGUCHA
	State:	RAJASTHAN
	District:	BHILWARA
	Sub-District:	HURDA
	Pincode:	311029
	Phone Number with Area Code:	
	Mobile Number:	91 8003097088
	Fax Number:	
	E-Mail:	dinesh.kumar.paliwal@vedanta.co.in
5.	Details of Existing NOC issued by CGWA (enclose copy)	
	NOC Letter No:	CGWA/NOC/MIN/REN/2/2022/7143
	Date of Issuance:	18/08/2022
	Vailidity (Start):	08/07/2022
	Validity (End):	07/07/2024

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

	Reason for not applying for renewal before expiry of NOC Validity (Attach Affidavit):	
6.	Change in Land Use Pattern after execution of Project and Surroundings (10 km Radius - Outside)	
	NIL	
7.	Land Use Detail of Project Area	

Land Use Details	Existing (sq meter)	Proposed (sq meter)	Grand Total (sq meter)
Green Belt Area	3372000.00	0.00	3372000.00
Open Land	5997900.00	0.00	5997900.00
Road/ Paved Area	105000.00	0.00	105000.00
Rooftop area of building/ sheds	741400.00	0.00	741400.00
Total	10216300.00	0.00	10216300.00

8.	Whether there is a change in Topography of the Area after the execution of the Project:	No
	a) Regional	
	b) Project Area	
9.	Whether there is change in Drainage pattern of the area after the execution of the Project:	No
	a) Regional	
	b) Project Area	
10.	Present Townships / Villages within 10 km radius of the Project:-	Agucha Village, Bherukhera-I and II, Rampura, Kheda Paloia, Hurda, Kothiya etc.

Government of India
Ministry of Jal Shakti
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Application Number : 21-4/801/RJ/MIN/2008

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11.	Whether the Groundwater Table will be Intersected by Activity :-				Yes	
	(a)	At What Depth (m bgl)			Pre-monsoon	Post-monsoon
		Minimum (m bgl)			10.03	6.30
		Maximum (m bgl)			21.36	17.60
	(b)	Maximum Depth Proposed to Dewater (m bgl)			25.00	
	(c)	Groundwater Flow Direction (Attach Map)($)			West to East	
	(d)	Any Other Information			No	

12. Total Water Requirment for various Purpose to be Mentioned	Existing (m3/day)	Additional (m3/day)	Existing (m3/year)	Additional (m3/year)
Ground Water Required through Abstract Structure	0.00	0.00	0.00	0.00
Ground Water Abstracted on account of Dewatering / Mining Seepage	250.00	2250.00	91250.00	821250.00
Total Ground Water Withdrawal	250.00	2250.00	91250.00	821250.00

13. Details of De-Watering Structure

(a) De-Watering Existing Structure

Number of Existing Structures: 1

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA /If so Details Thereof
1	Mine Pumps / 2022	800.00 / 1500	17.00	50.00	5 / 365	Submersible Pump	100.00	Yes	Yes / Yes / 21-4 (2)WR/CGWA/2005-1204

(b) De-Watering Requirment and Additional Structure Detail

Number of Proposed Structures: 2

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof
1	Mine Pumps / 2024	900.00 / 1500	17.60	75.00	15 / 365	Submersible Pump	125.00	Yes	No / -
2	Mine Pumps / 2024	900.00 / 1500	17.60	75.00	15 / 125	Submersible Pump	125.00	Yes	No / -

14. Details of Utilization of Pumped Water (Please Attach Details)(m3/year) ($)

(a)	Water Supply	No	

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

(b)	Agriculture	No		
(c)	Green Belt Development	No		
(d)	Suppression of Dust	No		
(e)	Recharge	No		
(f)	Any Other Item	2500 KLD for benefaction plant after suitable treatment.		

15. Monitoring of Ground Water Regime (Attach Map($))

(a)	Location Details of the Wells / Piezometers (Latitute, Longitude, Reduced Level)	Attached
(b)	Number of Wells / Piezometers	8
(c)	Attach Details of GW Level of Observation Wells / Piezometers(At Least for One Year)($)	Attached
(d)	General Quality of GW in the Area & Surroundings ($)	Attached
(e)	Any Other Item	No

16. Give the details of change in groundwater regime and quality after execution of the project (Attach detailed report with Map showing GW flow direction($))

Attached.

17. Proposed Pump / Pumping Groundwater Outside the Mine Pit for Domestic or Other Use (If so, give Details):

Number of Existing Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

Number of Additional Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

18. (a). Compliance to the Condition prescribed in the NOC

SNo.	Conditions given in NOC	Compliance Conditions Applicable	Status of Compliance
1	Area Specific Plantation	Not Applicable	As per CTO/EC/mine plan plantation has been ensured.
2	Domestic Water School Sanitation	Not Applicable	

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

	3	Groundwater quality monitoring - Pre monsoon and Post monsoon	Yes	The groundwater quality monitoring is conducted during both pre-monsoon and post-monsoon periods to analyze the changes in water quality parameters.
	4	Maintenance of recharge structures	Yes	Maintaining three anicuts/check dams recharging 0.18 MCM for sustainable water management and groundwater recharge.
	5	Number of Pizometers as per NOC and Water Level Record	Yes	There is one piezowell with DWLR with telemetry.
	6	Number of Tubewells Borewales as per NOC	Yes	There are one mine pump as GW abstraction structure as per NOC.
	7	Pizometer fitted with AWLRs with telemetrry as per NOC	Yes	There is one piezowell with DWLR with telemetry.
	8	Quantum of Groundwater as per NOC	Yes	Quantum of Groundwater as per NOC 250 KLD.
	9	Recharge through ponds	Yes	Three anicuts/check dams recharging 0.18 MCM for sustainable water management and groundwater recharge.
	10	Recycle and reuse of water	Yes	Tailing dam water is recycled back to the beneficiation plant and reused. Domestic waste water is treated in STPs and reused in plantation/horticulture.
	11	RWH and AR structures implemented	Yes	RWH and AR structures implemented and maintained.
	12	Submission of Compliance report to the Region	Yes	Self compliance and self inspection report submitted online.
	13	Water conservation measures	Yes	Water conservation measures are taken regular basis.
	14	Water Security Plan of villages	Not Applicable	
	15	Well monitored around the plant premises	Yes	Eight piezowells are monitored monthly basis.
	16	Wells fitted with water meter and its Record	Yes	Wells fitted with telemetry.

(b). Compliance to the Condition prescribed in the NOC - Other

S.No.	Conditions given in NOC	Status of Compliance
No Record Found		

19. Gainful utilaization of pump water:-

Utilization of pumped water described in CHR

20. Details of Rrainwater Harvesting and Artificial Recharge Measures for Groundwater Recharge in the Area:-

Attached

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

MINING USE- Self Declaration

I hereby certify that the data and information furnished above are true to the best of my knowledge and belief and I am aware that if any part of the data / information submitted is found to be false or misleading at any stage, the application will be rejected outright.

I hereby declare that all the mandatory documents prescribed in the application form have been uploaded and no blank /irrelevant documents have been uploaded. I am also aware that any false/ wrong submission /uploading of document will lead to rejection of my application without any notice.

It is to certify that no case related to ground water withdrawal/ contamination is pending against the industry/ project/ unit as on date. Any such case filed against the company/ project/ unit in respect of ground water withdrawal/ contamination during the pendency of this application shall be immediately brought to the notice of CGWA.

I hereby undertake that in case any environmental compensation/ penalty is imposed on the firm by any statutory authority, I shall comply with the decision of such authority.

1. Application Proforma is subject to modification from time to time.

2. Application is submitted online on website http://cgwa-noc.gov.in to following office.

Regional Director,Central Ground Water Board Western Region, 6-A, Jhalana Doongri, JAIPUR, RAJASTHAN, 302004

3. Incomplete application will be summarily rejected.

Scanned copy of last page of application with signature and seal should be attached at prescribed place before submission of application.

4. Reciept of Processing Fee of Rs. 5000.00/- (Rupees Five Thousand Only) submitted through NON TAX RECEIPT PORTAL (https://bharatkosh.gov.in) should be attached along with hard copy of application.

Processing Fee:-

Bharat Kosh Transaction Ref. No:-	2608240042018
Bharat Kosh Transaction Date:-	26/08/2024

Note:- The Processing Fee is Non-Refundable. Applicant should ensure and Check Eligibility of Submission of Application and Required Documents before Submitting Online Application.

5.	Hard copy of application required:		No	
6.	Ground Water Quality Approved	Not Define	Ground Water Charge Required:	Not Define
	Ground Water Charge Recieve:	No	Ground Water Charge Amount:	
			Ground Water Arear Amount:	

Attached Files:

1). **GroundWater flow Direction Map: (Refer:11-C)**

S.No	Attachment Name	File Name
1	GW_Flow_Direction_Map	GW_Flow_Direction_Map.docx

2). **GW Level of Observation Wells / Piezometer : (Refer:15-C)**

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

S.No	Attachment Name	File Name
1	GW_Level_Piezowells	GW_Level_Piezowells.docx

3). General Quality of Ground Water in the Area : (Refer:17-D)

S.No	Attachment Name	File Name
1	GW_Quality_RA_Mine	GW_Quality_RA_Mine.pdf

4). Changes in Topogpraphy : (Refer: 8)

S.No	Attachment Name	File Name
1	Change in Topography	Change in Topography.docx

5). Changes in Drainage Pattern : (Refer: 9)

S.No	Attachment Name	File Name
1	Change in Drainage	Change in Drainage.docx

6). Reason for Not Applying for Renewal before Expiring NOC : (Refer: 5)

No Attachment Found!

7). Existing NOC : (Refer: 5)

S.No	Attachment Name	File Name
1	CGWA NOC 250	CGWA NOC 250.pdf

8). Compliance to the Condition prescribed in the NOC : (Refer: 17-a)

SNo.	Conditions given in NOC	Attachments		
		S.No.	Attachment Name	File Name
1	Area Specific Plantation	No Attachment Found!		
2	Domestic Water School Sanitation	No Attachment Found!		
3	Groundwater quality monitoring - Pre monsoon and Post monsoon	No Attachment Found!		
4	Maintenance of recharge structures	No Attachment Found!		
5	Number of Pizometers as per NOC and Water Level Record	No Attachment Found!		
6	Number of Tubewells Borewales as per NOC	No Attachment Found!		
7	Pizometer fitted with AWLRs with telemetry as per NOC	No Attachment Found!		
8	Quantum of Groundwater as per NOC	No Attachment Found!		
9	Recharge through ponds	No Attachment Found!		
10	Recycle and reuse of water	No Attachment Found!		

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

11	RWH and AR structures implemented	No Attachment Found!
12	Submission of Compliance report to the Region	No Attachment Found!
13	Water conservation measures	No Attachment Found!
14	Water Security Plan of villages	No Attachment Found!
15	Well monitored around the plant premises	No Attachment Found!
16	Wells fitted with water meter and its Record	No Attachment Found!

9). Compliance to the Condition prescribed in the NOC - Other : (Refer: 17-b)

SNo.	Conditions given in NOC	Attachments		
		S.No.	Attachment Name	File Name

10). Extra Attachment :

S.No	Attachment Name	File Name
1	Non_Availability_Certificate_Panchayat	Non_Availability_Certificate_Panchayat.pdf
2	CTE_CTO_Merged	CTE_CTO_Merged.pdf
3	Self_Compliance_Inspection_merged	Self_Compliance_Inspection_merged.pdf
4	Saline_Water_Affidavit_RA_Mine_With_Result	Saline_Water_Affidavit_RA_Mine_With_Result.pdf

11). Bharat Kosh Reciept (Porcessing Fee):

S.No	Attachment Name	File Name
1	Renewal fees Mine Dewatering	Renewal fees Mine Dewatering.pdf

12). Application with Signature and Seal:

S.No	Attachment Name	File Name
1	Application_Seal_Signed_Authorization_Letter	Application_Seal_Signed_Authorization_Letter.pdf

13). MSME certificate in case of MSME:

No Attachment Found!

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/801/RJ/MIN/2008

Applied For Renewal : 3rd

Date :

Place :

Name & Signature of the applicant

(With official seal)

Associated User : HZLRA2021

Submitted By User : HZLRA2021

Submission Date : 04/07/2024

* In case signed by any authorized signatory, the details of the signatory with the authorization shall be enclosed.

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

(भूजल निकासी हेतु अनापत्ति प्रमाण पत्र
NO OBJECTION CERTIFICATE (NOC) FOR GROUND WATER ABSTRACTION

Project Name:	Hindustan Zinc Ltd.		
Project Address:	Hindustan Zinc Ltd., Rampura Agucha Mines, Village - Agucha		
Village:	Aguncha	Block:	Hurda
District:	Bhilwara	State:	Rajasthan
Pin Code:			
Communication Address:	Hindustan Zinc Ltd., Rampura Agucha Mine, Village - Agucha, Tehsil- Hurda, Bhilwara, Hurda, Bhilwara, Rajasthan - 311022		
Address of CGWB Regional Office :	Central Ground Water Board Western Region, 6-a, Jhalana Doongri, Jaipur, Rajasthan - 302004		

1. **NOC No.:** CGWA/NOC/MIN/REN/3/2023/7399
2. Application No.: 21-4/2/RJ/MIN/2004
3. Category: (GWRE 2020) Over Exploited
4. Project Status: Existing Ground Water
5. NOC Type: 3rd Renewal
6. **Valid from:** 08/07/2022
7. **Valid up to:** 07/07/2024
8. Ground Water Abstraction Permitted:

Fresh Water		Saline Water		Dewatering		Total	
m³/day	m³/year	m³/day	m³/year	m³/day	m³/year	m³/day	m³/year
11700.00	4270500.00						

9. Details of ground water abstraction /Dewatering structures

	Total Existing No.:6					Total Proposed No.:0				
	DW	DCB	BW	TW	MP	DW	DCB	BW	TW	MP
Abstraction Structure*	1	0	5	0	0	0	0	0	0	0

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

10. Ground Water Abstraction/Restoration Charges paid (Rs.): 41646150.00
11. Number of Piezometers(Observation wells) to be constructed/ monitored & Monitoring mechanism.

No. of Piezometers	Monitoring Mechanism		
	Manual	DWLR**	DWLR With Telemetry
2	0	1	1

**DWLR - Digital Water Level Recorder

(Compliance Conditions given overleaf)
This is an auto generated document & need not to be signed.

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

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

1.	General Information:	
	Water Quality:	Fresh Water
	Purpose of Renewal Application:	Existing Ground Water
	Application Type Category/ Type of Application	Base Metal Ores
2.	Name of Mine/Project:	HINDUSTAN ZINC LTD.
3.	Location Details of the Mining Unit- (Attach Site, Approved Mining Plan, Toposketch of Surrounding 10km Radius Outside) ($) :	
	Address Line 1 :	HINDUSTAN ZINC LTD.
	Address Line 2 :	RAMPURA AGUCHA MINES
	Address Line 3 :	VILLAGE - AGUCHA
	State:	RAJASTHAN
	District:	BHILWARA
	Sub-District:	HURDA
	Village/Town:	Aguncha
	Latitude:	
	Logitude:	
	Area Type :	Non-Notified
	Area Type Category :	Over Exploited
	Whether industry is MSME:	No
4.	Communication Address	
	Address Line 1:	HINDUSTAN ZINC LTD.
	Address Line 2:	RAMPURA AGUCHA MINES
	Address Line 3:	P.O. - AGUCHA
	State:	RAJASTHAN
	District:	BHILWARA
	Sub-District:	HURDA
	Pincode:	311029
	Phone Number with Area Code:	91 10 1000000000
	Mobile Number:	91 8003097088
	Fax Number:	
	E-Mail:	dibeshkumar.paival@vedanta.co.in

5.	Details of Existing NOC issued by CGWA (enclose copy)	
	NOC Letter No:	CGWA/NOC/MIN/REN/3/2023/7399
	Date of Issuance:	09/01/2023
	Vailidity (Start):	08/07/2022
	Validity (End):	07/07/2024

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

	Reason for not applying for renewal before expiry of NOC Validity (Attach Affidavit):	
6.	Change in Land Use Pattern after execution of Project and Surroundings (10 km Radius - Outside)	
	Nil	

7. Land Use Detail of Project Area

Land Use Details	Existing (sq meter)	Proposed (sq meter)	Grand Total (sq meter)
Green Belt Area	5700.00	0.00	5700.00
Open Land	2400.00	0.00	2400.00
Road/ Paved Area	1180.00	0.00	1180.00
Rooftop area of building/ sheds	2166.00	0.00	2166.00
Total	11446.00	0.00	11446.00

8.	Whether there is a change in Topography of the Area after the execution of the Project:	No
	a) Regional	
	b) Project Area	
9.	Whether there is change in Drainage pattern of the area after the execution of the Project:	No
	a) Regional	
	b) Project Area	
10.	Present Townships / Villages within 10 km radius of the Project:-	Asawari, Amarpura, Paroli, Golbadi, kanti, Kothaj, Dhanwara

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
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Applied For Renewal : 4th

11.	Whether the Groundwater Table will be Intersected by Activity :-			Yes	
	(a) At What Depth (m bgl)			Pre-monsoon	Post-monsoon
	Minimum (m bgl)			7.82	3.68
	Maximum (m bgl)			22.88	16.95
	(b) Maximum Depth Proposed to Dewater (m bgl)			25.00	
	(c) Groundwater Flow Direction (Attach Map)($)			West to East	
	(d) Any Other Information			Nil	
12.	Total Water Requirment for various Purpose to be Mentioned	Existing (m3/day)	Additional (m3/day)	Existing (m3/year)	Additional (m3/year)
	Ground Water Required through Abstract Structure	11700.00		4270500.00	
	Ground Water Abstracted on account of Dewatering / Mining Seepage	0.00		0.00	
	Total Ground Water Withdrawal	11700.00	0	4270500.00	0
13.	Details of De-Watering Structure				
	(a) De-Watering Existing Structure				
	Number of Existing Structures:	6			

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA /If so Details Thereof
1	Dugwell / 1991	20.00 / 5000	3.20	553.00	20 / 365	Submersible Pump	100.00	Yes	Yes / Yes / Ref: Letter No.21-4 (2)/WR/CGWA/2005-1205 dated 08/07/2013
2	Borewell / 1991	110.00 / 200	23.00	130.00	1 / 1	Submersible Pump	70.00	Yes	Yes / Yes / Ref: Letter No.21-4 (2)/WR/CGWA/2005-1205 dated 08/07/2013
3	Borewell / 1991	110.00 / 200	23.00	130.00	1 / 1	Submersible Pump	70.00	Yes	Yes / Yes / Ref: Letter No.21-4 (2)/WR/CGWA/2005-1205 dated 08/07/2013

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

4	Borewell / 1991	110.00 / 200	23.00	130.00	1 / 1	Submersible Pump	70.00	Yes	Yes / Yes / Ref: Letter No.21-4 (2)/WR/CGWA/2005-1205 dated 08/07/2013
5	Borewell / 1991	23.00 / 200	23.00	125.00	1 / 1	Submersible Pump	70.00	Yes	Yes / Yes / Ref: Letter No.21-4 (2)/WR/CGWA/2005-1205 dated 08/07/2013
6	Borewell / 1991	110.00 / 200	23.00	125.00	1 / 1	Submersible Pump	70.00	Yes	Yes / Yes / Ref: Letter No.21-4 (2)/WR/CGWA/2005-1205 dated 08/07/2013

(b) De-Watering Requirment and Additional Structure Detail

Number of Proposed Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours(Day) / Days(Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

14. Details of Utilization of Pumped Water (Please Attach Details)(m3/year) ($)

(a)	Water Supply	Yes	11700.00	Mining and Beneficiation operations as well as domestic and office drinking along with CSR supply.
(b)	Agriculture	No		
(c)	Green Belt Development	No		
(d)	Suppression of Dust	No		
(e)	Recharge	No		
(f)	Any Other Item	Water balance is incorporated in IAR.		

15. Monitoring of Ground Water Regime (Attach Map($))

(a)	Location Details of the Wells / Piezometers (Latitute, Longitude, Reduced Level)	Attached
(b)	Number of Wells / Piezometers	12
(c)	Attach Details of GW Level of Observation Wells / Piezometers(At Least for One Year)($)	Attached
(d)	General Quality of GW in the Area & Surroundings ($)	Attached

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
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Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

(e)	Any Other Item	Nil

16. Give the details of change in groundwater regime and quality after execution of the project (Attach detailed report with Map showing GW flow direction($))

Attached

17. Proposed Pump / Pumping Groundwater Outside the Mine Pit for Domestic or Other Use (If so, give Details):

Number of Existing Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

Number of Additional Structures: 0

SNo.	Type of Structure Name / Year of Construction	Depth (Meter) / Diameter (mm)	Depth to Water Level (Meters below Ground Level)	Discharge (m3/Hour)	Operational Hours (Day) / Days (Year)	Mode of Lift Name	Horse Power of Pump	Whether fitted with Water Meter	Whether Permission Registered with CGWA/If so Details Thereof

18. (a). Compliance to the Condition prescribed in the NOC

SNo.	Conditions given in NOC	Compliance Conditions Applicable	Status of Compliance
1	Area Specific Plantation	Not Applicable	As per CTO/EC/mine plan plantation has been ensured.
2	Domestic Water School Sanitation	Not Applicable	
3	Groundwater quality monitoring - Pre monsoon and Post monsoon	Yes	The groundwater (GW) quality monitoring was conducted during both pre-monsoon and post-monsoon periods to analyze the changes in water quality parameters.
4	Maintenance of recharge structures	Yes	Maintaining village ponds and recharge shafts in 84 villages for sustainable water management and groundwater recharge.
5	Number of Pizometers as per NOC and Water Level Record	Yes	There are two piezowells, One is with DWLR and other is with DWLR with telemetry.
6	Number of Tubewells Borewales as per NOC	Yes	There are 6 no. of tubewells (GW abstraction structure) as per NOC.
7	Pizometer fitted with AWLRs with telemetry as per NOC	Yes	One piezometer is filled with DWLR with telemetry.

Application for Renewal of NOC to Dewater Ground Water for Mining Industry (Application for Renewal of NOC)

Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

	8	Quantum of Groundwater as per NOC	Yes	Quantum of Groundwater as per NOC 11700 KLD.
	9	Recharge through ponds	Yes	recharged 8.72 MCM
	10	Recycle and reuse of water	Yes	Tailing dam water is recycled back to the beneficiation plant and reused. Domestic waste water is treated in STPs and reused in plantation/horticulture.
	11	RWH and AR structures implemented	Yes	RWH and AR structures implemented and maintained.
	12	Submission of Compliance report to the Region	Yes	Self compliance and self inspection report submitted online.
	13	Water conservation measures	Yes	Water conservation measures are taken regular basis.
	14	Water Security Plan of villages	Not Applicable	
	15	Well monitored around the plant premises	Yes	12 piezo/keywells are monitored monthly basis.
	16	Wells fitted with water meter and its Record	Yes	Wells fitted with telemetry.

(b). **Compliance to the Condition prescribed in the NOC - Other**

S.No.	Conditions given in NOC	Status of Compliance
No Record Found		

19. **Gainful utilaization of pump water:-**

Utilization of pumped water is discussed in CHR

20. **Details of Rrainwater Harvesting and Artificial Recharge Measures for Groundwater Recharge in the Area:-**

Report Attached

MINING USE- Self Declaration

I hereby certify that the data and information furnished above are true to the best of my knowledge and belief and I am aware that if any part of the data / information submitted is found to be false or misleading at any stage, the application will be rejected outright.

I hereby declare that all the mandatory documents prescribed in the application form have been uploaded and no blank /irrelevant documents have been uploaded. I am also aware that any false/ wrong submission /uploading of document will lead to rejection of my application without any notice.

It is to certify that no case related to ground water withdrawal/ contamination is pending against the industry/ project/ unit as on date. Any such case filed against the company/ project/ unit in respect of ground water withdrawal/ contamination during the pendency of this application shall be immediately brought to the notice of CGWA.

I hereby undertake that in case any environmental compensation/ penalty is imposed on the firm by any statutory authority, I shall comply with the decision of such authority.

1. Application Proforma is subject to modification from time to time.

2. Application is submitted online on website http://cgwa-noc.gov.in to following office.

Regional Director,Central Ground Water Board Western Region, 6-A, Jhalana Doongri, JAIPUR, RAJASTHAN, 302004

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
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Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

3. Incomplete application will be summarily rejected.

Scanned copy of last page of application with signature and seal should be attached at presribed place before submission of application.

4. Reciept of Processing Fee of Rs. 5000.00/- (Rupees Five Thousand Only) submitted through NON TAX RECEIPT PORTAL (https://bharatkosh.gov.in) should be attached along with hard copy of application.

Processing Fee:-

Bharat Kosh Transaction Ref. No:-	2608240039433
Bharat Kosh Transaction Date:-	26/06/2024

Note:- The Processing Fee is Non-Refundable. Applicant should ensure and Check Eligibility of Submission of Application and Required Documents before Submitting Online Application.

5.	Hard copy of application required:		No	
6.	Ground Water Quality Approved	Not Define	Ground Water Charge Required:	Not Define
	Ground Water Charge Recieve:	No	Ground Water Charge Amount:	
			Ground Water Arear Amount:	

Attached Files:

1). GroundWater flow Direction Map: (Refer:11-C)

S.No	Attachment Name	File Name
1	GW_Flow_Map	GW_Flow_Map.docx

2). GW Level of Observation Wells / Piezometer : (Refer:15-C)

S.No	Attachment Name	File Name
1	GW_Level_Piezowell	GW_Level_Piezowell.docx

3). General Quality of Ground Water in the Area : (Refer:17-D)

S.No	Attachment Name	File Name
1	GW_Quality	GW_Quality.pdf

4). Changes in Topogpraphy : (Refer: 8)

S.No	Attachment Name	File Name
1	Change in Topogtaphy	Change in Topogtaphy.docx

5). Changes in Drainage Pattern : (Refer: 9)

S.No	Attachment Name	File Name
1	Change in Drainage	Change in Drainage.docx

6). Reason for Not Applying for Renewal before Expiring NOC : (Refer: 5)

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
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Application for Issue of NOC to Abstract Ground Water (NOCAP)

Application for Renewal of NOC to Dewater Ground Water for Mining Industry
(Application for Renewal of NOC)

Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

No Attachment Found!

7). Existing NOC : (Refer: 5)

S.No	Attachment Name	File Name
1	11700 NOC	11700 NOC.pdf

8). Compliance to the Condition prescribed in the NOC : (Refer: 17-a)

SNo.	Conditions given in NOC	Attachments		
		S.No.	Attachment Name	File Name
1	Area Specific Plantation	No Attachment Found!		
2	Domestic Water School Sanitation	No Attachment Found!		
3	Groundwater quality monitoring - Pre monsoon and Post monsoon	No Attachment Found!		
4	Maintenance of recharge structures	No Attachment Found!		
5	Number of Pizometers as per NOC and Water Level Record	No Attachment Found!		
6	Number of Tubewells Borewales as per NOC	No Attachment Found!		
7	Pizometer fitted with AWLRs with telemetry as per NOC	No Attachment Found!		
8	Quantum of Groundwater as per NOC	No Attachment Found!		
9	Recharge through ponds	No Attachment Found!		
10	Recycle and reuse of water	No Attachment Found!		
11	RWH and AR structures implemented	No Attachment Found!		
12	Submission of Compliance report to the Region	No Attachment Found!		
13	Water conservation measures	No Attachment Found!		
14	Water Security Plan of villages	No Attachment Found!		
15	Well monitored around the plant premises	No Attachment Found!		
16	Wells fitted with water meter and its Record	No Attachment Found!		

9). Compliance to the Condition prescribed in the NOC - Other : (Refer: 17-b)

SNo.	Conditions given in NOC	Attachments		
		S.No.	Attachment Name	File Name

10). Extra Attachment :

Government of India
Ministry of Jal Shakti
Department of Water Resources, River Development and Ganga Rejuvenation
Central Ground Water Authority (CGWA)
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Application Number : 21-4/2/RJ/MIN/2004

Applied For Renewal : 4th

S.No	Attachment Name	File Name
1	Self_Compliance_Filed	Self_Compliance_Filed.pdf
2	Self_Inspection_Filed	Self_Inspection_Filed.pdf
3	Piezo Keywells	Piezo & Keywells.pdf
4	CTE_CTO_Merged	CTE_CTO_Merged.pdf
5	STP_Affidavit	STP_Affidavit.pdf

11). Bharat Kosh Reciept (Porcessing Fee):

S.No	Attachment Name	File Name
1	Renewal fees_Banas_26_06_2024	Renewal fees_Banas_26_06_2024.pdf

12). Application with Signature and Seal:

S.No	Attachment Name	File Name
1	Application_Seal_Signed_Authorisation_Letter	Application_Seal_Signed_Authorisation_Letter.pdf

13). MSME certificate in case of MSME:

No Attachment Found!

Date :

Place :

Name & Signature of the applicant
(With official seal)

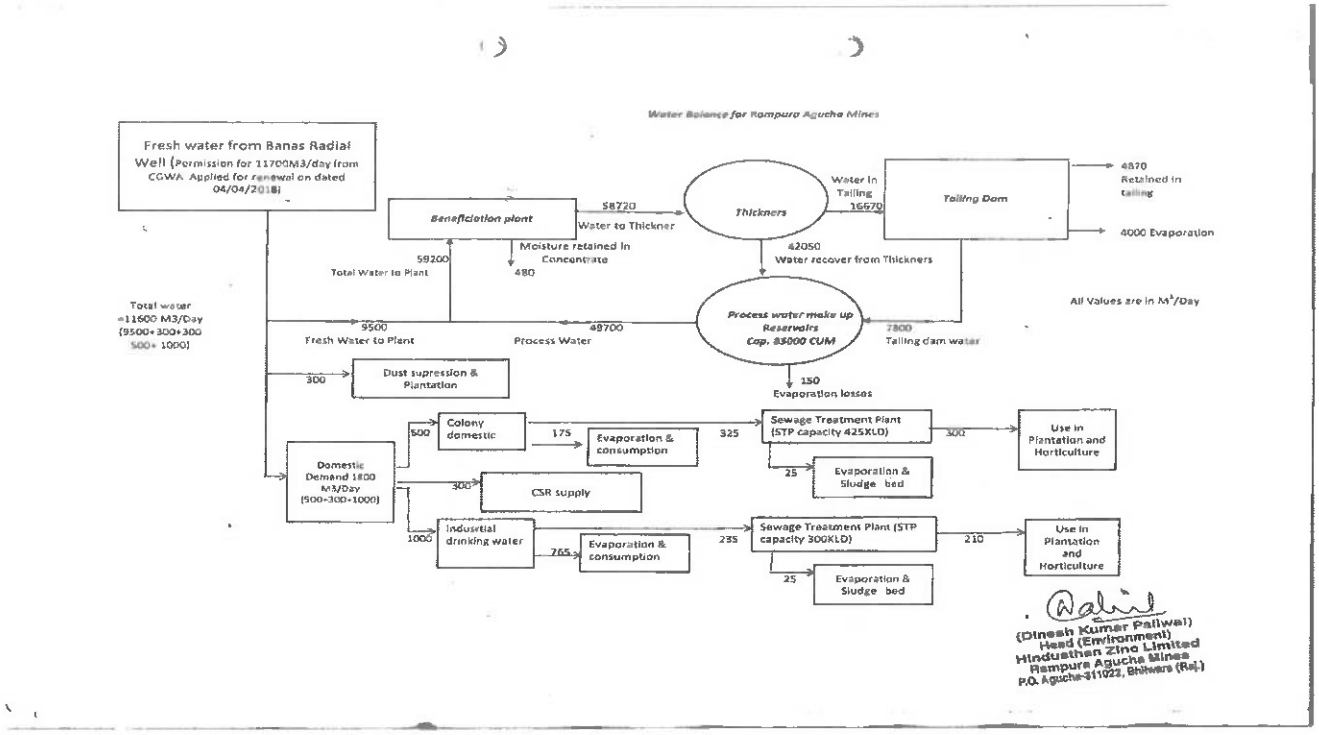
Associated User : HZLRA2021

Submitted By User : HZLRA2021

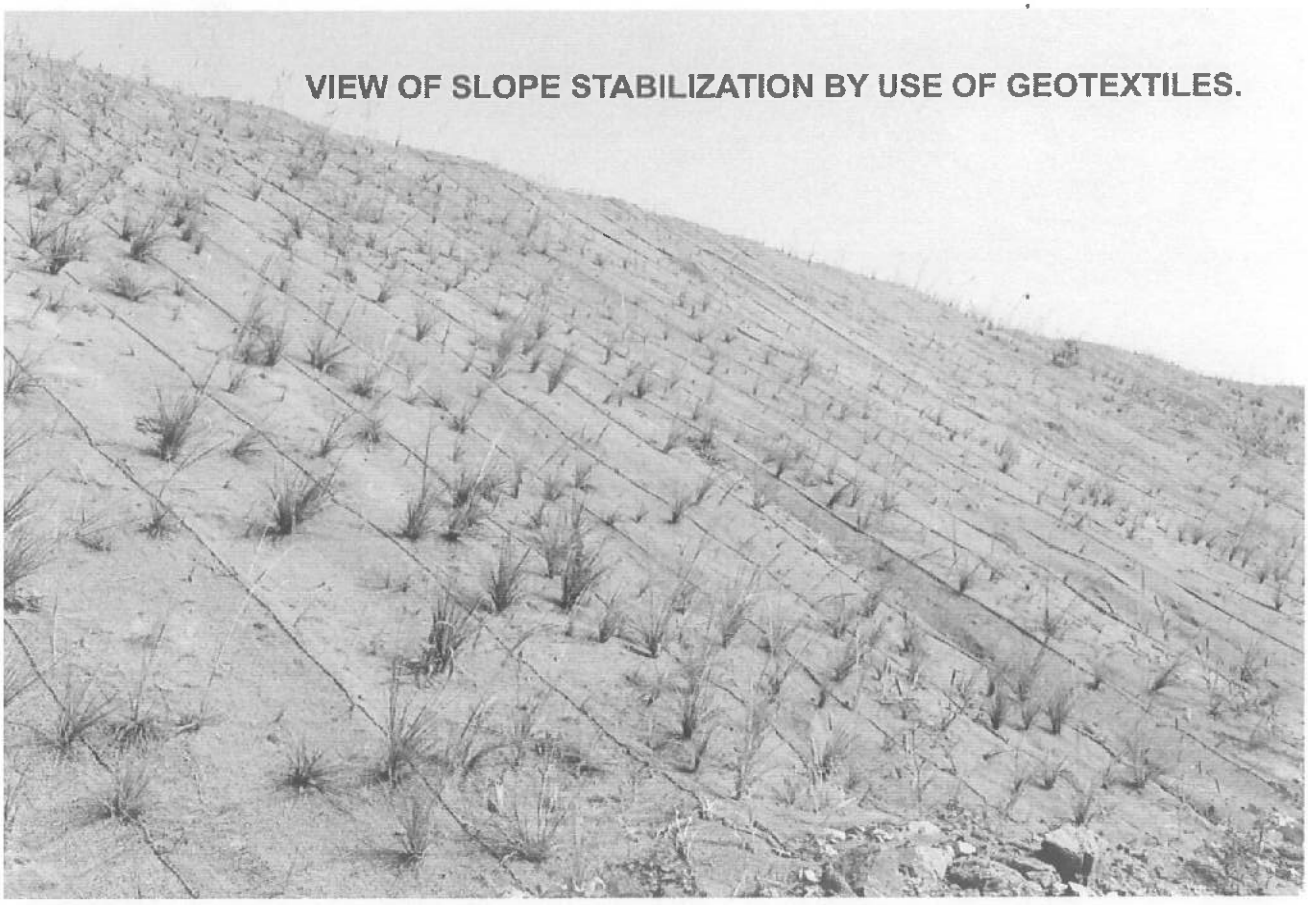
Submission Date : 04/07/2024

* In case signed by any authorized signatory, the details of the signatory with the authorization shall be enclosed.


GAZETTEER
SECTION



Water Balance



Geotextiles

vedanta

S/c

HINDUSTAN ZINC
Zinc & Silver of India

Mine code: 270020

RA Mine/VTC/F.18/2025/1399 Dated: 30/01/2025

To

1. The Director General of Mines Safety
Office of DGMS
Barwa Road
DHANEAD
JHARKHAND
PIN: 826001

2. The Dy. Director General of Mines Safety, NW Zone
Hiran Magri Sector-6, Jhamarkotra Main Road, Udaipur-313002 (Raj)

3. The Director of Mines Safety
Office of DGMS
Anasagar Link Road
AJMER Region-1, RAJASTHAN
Pin: 305001

Sub.: Submission of Annual Return in **Form "I"** for the year 2024

Sir,

Please find enclosed the Annual Return Form "I" for the year ending 31st December 2024, in respect of Rampura Agucha Lead and Zinc Underground Mine of Hindustan Zinc Limited.

Enclosed as above

Thanking you

Sincerely yours

Basant Kishore Mahanta
Mine Manager
Rampura Agucha Lead Zinc Underground Mine | Hindustan Zinc Limited

vedanta

HINDUSTAN ZINC

[FORM - T]

[See Rule 29P (i)]

Annual Return for the year ending on the 31st December - 2024

1. Name of Mines	Rampura Agucha Lead and Zinc Underground Mine.
2. Postal address of Mines	M/S Hindustan Z nc Limited, Rampura Agucha Mines P.O. Agucha Dist. Bhilwara (RAJ.) Pin: 311022
3. Date of opening of Mine	15.01.2010
4. Date of closing (if closed)	Not applicable
5. Situation of Mine (District/State)	Bhilwara/Rajasthan
6. Name of Owner, Postal address	Sh. Arun Misra CEO & Whole time Director. Hindustan Zinc Limited Yashad Bhawan, UDAIPUR - 313004

7. Number of person mecically examined:

Type of ME	Number of persons required to be Medicaly examined during 2024		Number of persons Medically examined during 2024	
	OWN	CONT	OWN	CONT
IME	As per requirement		60	693
PME	338	1242	338	1242

8. Number of persons declared Medically unfit: NIL

9. Categorization of the persons Declared unfit: NIL

Certified that the information has been given above, is correct to the best of my knowledge.

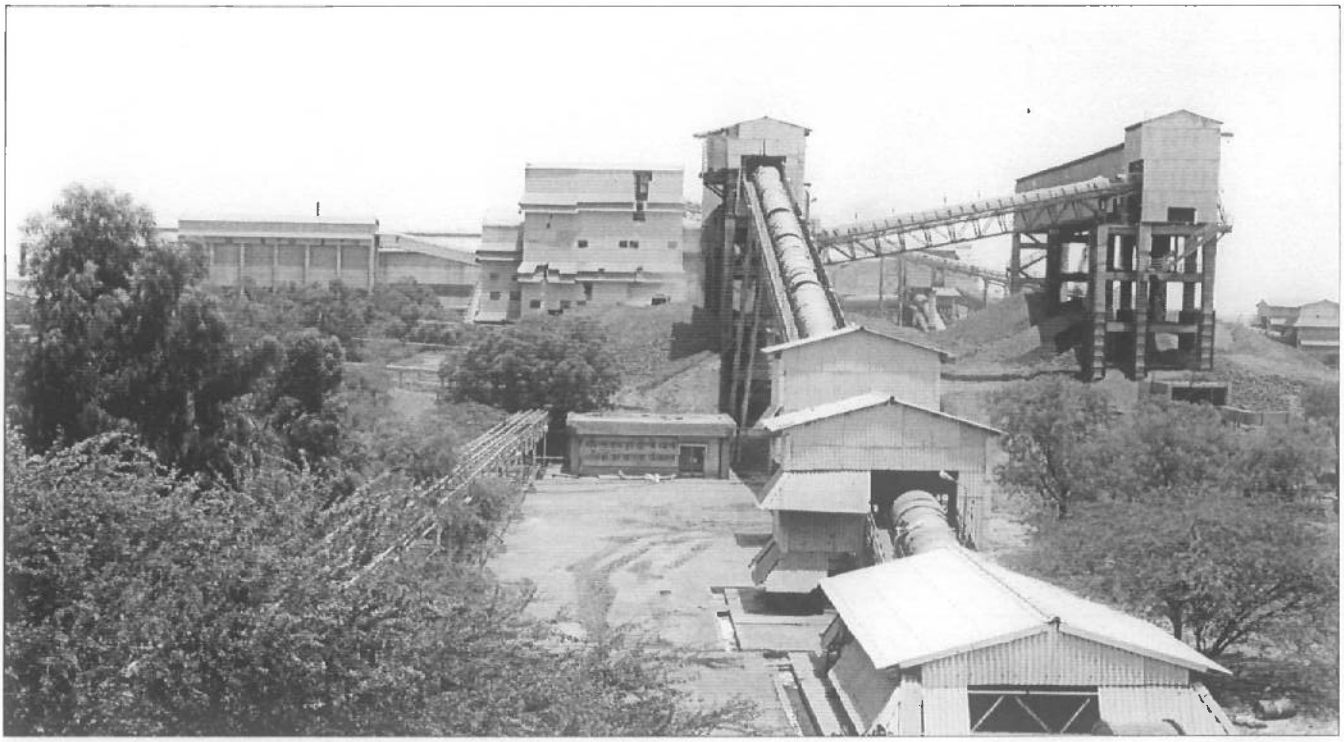
Date:

Signature: .....

Name : **Basant Kishore Mahanta**

Designation: **"Mine Manager"**

Annexure-XXX



Covered conveyer belt

vedanta
transforming elements

HZL/RAM/ENV/2020-21/789 Dated : 28.08.2020

To,
The Director,
Ministry of Environment, Forest and Climate Change,
Regional Office (Central Region),
Kendriya Bhawan,
5th Floor, Sector "H", Aliganj,
Lucknow – 226024

Subject: Submission of study report in in compliance of the EC amendment No: J-11015/267/2008-IA.II(M) dated 28.02.2020 of M/s Hindustan Zinc Limited in the mine lease area of 1200 Ha located in village Agucha, Tehsil Hurda, District Bhilwara, Rajasthan.

Sir,

Additional specific condition No. 3 in the above mentioned amendment letter is read as below:

"PP shall engage suitable agency for conducting subsidence study for increasing the depth of working from 1000mbgl to 1500mbgl. The report shall be submitted to Ministry within 6 months."

In compliance of this condition, study has been conducted by Central Institute for Mining & Fuel Research (CSIR-CIMFR). Copy of the study report "Numerical Modelling Studies for Subsidence Prediction at Rampura Agucha Mine, HZL" is attached herewith for perusal please.

Thanking You.

Yours faithfully,

(Sajal Shah)
SBU Director.

Director, Agucha SBU
Hindustan Zinc Limited
Rampura Agucha Mine
PO- Agucha
Distt. - Bhilwara (Raj.)

CC: **The Member Secretary,**
IA – Division (Non-Coal Mining)
Vayu Block, 3rd Floor, Indira Paryavaran Bhawan,
Ministry of Environment, Forest & Climate Change
Jorbagh Road, New Delhi-110003.

Hindustan Zinc Limited
Rampura Agucha Mines, P.O. Agucha, Dist. Bhilwara (Rajasthan) - 311 022
M +91-9001294956-57, F +91-1483 229012 www.hzlindia.com

Registered Office : Yashad Bhawan, Udaipur (Rajasthan) 313 004
CIN No. L27204RJ1966PLC001208

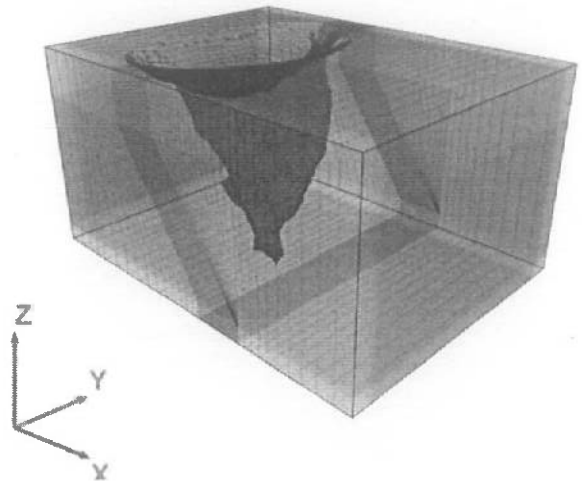
O/C- Env.

CENTRAL INSTITUTE OF MINING & FUEL RESEARCH
(Council of Scientific & Industrial Research)
Barwa Road, Dhanbad – 826 001, Jharkhand
Nagpur Research Center, Unit-1
17/C, Telenkhedi Area, Civil Line, Nagpur 440001, Maharashtra

Report on

Numerical Modelling Studies for Subsidence Prediction at Rampura Agucha Mine, HZL

PO No.: 2353084587 / 5100027984 Date:07.04.2020



Proj. No. SSP/N/493/2020-2021

July – 2020

Subsidence study report cover page

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695Fax: 0141-5159697
website: www.rpcb.nic.in
Registered

File No F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/ 4792
Order No 2009-2010/Mines/401 **Date:** 21/1/2010

M/s Hindustan Zinc Limited
(Rampura Agucha Mine), P.O.- Agucha, Bhilwara,
District :Bhilwara

Sub: Grant of Consent to Establish 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-**Agucha**, Tehsil-**Hurda**, District- **Bhilwara (M.L.No.-1/2000).**

Ref: (i) Your applications dated 22/11/2009
(ii) Received on 27/11/2009

Sir,

In view of the details submitted vide your above referred applications/ documents, the **Consent to Establish** 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,** a Mine of **Major Mineral** having **M.L.No.-1/2000** in an area measuring **1200** Hectares at/near Village-**Agucha** ,Tehsil-**Hurda**,District-**Bhilwara**.

2 That this consent is valid for a period from **18/01/2010** to **17/01/2013 , or commencement of production whichever is earlier.**

3 That this consent is valid for following mining activities :-

	Mineral	Permitted Mining Capacity
1	LEAD ZINC ORE MINING	6.150 MILLION TONNES PER ANNUM
2	BENEFICIATION PLANT FOR LEAD - ZINC ORE	6.500 MILLION TONNES PER ANNUM

4 That you shall achieve following standards in ambient air in mine area / mining activities.

Pollutant	Standards for Ambient Air	Standards for mining activity
SPM	500 µg/M³	SPM = 600 µg/M³ (To be measured between 3 to 10 meters from mining activity)
SO_2	120 µg/M³	
NO_x	120 µg/M³	
CO	5000 µg/M³	

CTE

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695Fax: 0141-5159697
website: www.rpcb.nic.in
Registered

File No **F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/**

Order No 2009-2010/Mines/401 **Date:**

5 That the Mining unit shall maintain zero discharge status of waste water from the premises. No trade effluent shall be discharged inside/outside mine premises.

6 That the occupier/operator of mine shall ensure that all the conditions imposed in the Environmental Clearance granted by the **Ministry of Environment & Forests, Goverment of India.** , vide letter No J-11015/267/2008-IA.II (M) dated 11/12/2009 shall be strictly complied with.

7 That the occupier/operator of mine shall ensure that all the conditions imposed in the permission of Central Ground Water Authority granted vide its letter No **21-4(2)/WR/CGWA/2008-632 & 21-4(2)/WR/CGWA/05-417** dated **06/08/2008 & 13/05/2008** shall be strictly complied.

8 That you shall not operate the mine without obtaining **Consent to Operate** from the Board.

9 That this **Consent to Establish** is for mining of product as mentioned above in **M.L.No.-1/2000** and a separate **Consent to Establish** is required to be taken for Mineral Separation Plant/process if any and for any addition/ modification/ alteration or change in process.

10 That the lessee shall develop plantation in atleast 33% of the total lease area to maintain ambient air quality around the mine and the Action Plan for plantation submitted by you, shall be implemented.

11 That you will implement all the pollution control measures as per EIA/EMP Report.

12 That the top soil shall be stored at earmarked site only shall be utilized for plantation on reclaimed OB dumps.

13 The ovrburden generated during mining shall be stacked at earmarked site as per Approved Mining Plan & as per recommendations of Central Institute of Mining & Fuel Research, Dhanbad. The over burden dump shall be reclaimed by plantation of suitable native plant species.

14 Catch drains/ Siltations ponds of appropriate size shall be constructed to arrest silt and sediments flows from mine pits & overburden dumps. Garland drains of adequate size, properly designed shall be constructed arround the mine pit & dump yard. Garland drain should be provided with siltation pond.

15 Regular monitoring of subsidence, vibration shall be carried out & if any subsidences is observed appropriate measures be undertaken to avoid any loss of life and material and be reported to Board.

16 That the HZL shall carryout conditioning of mined ore with water to mitigate fugitive dust emission.

17 That Ore Beneficiation plant effluent shall be treated upto prescribed standards & tailing slurry shall be transported in close pipe line to talling dam.

18 That all other general conditions (1 to 21) enclosed as **Annexure** shall be strictly complied with.

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695Fax: 0141-5159697
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Registered

File No **F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/**

Order No 2009-2010/Mines/401 **Date:**

19 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.

This bears approval of the competent authority.

Encl: As Above

Yours Sincerely

Group Incharge-Mines

Copy To:-

1 Director, Department of Mines & Geology, Government of Rajasthan,Udaipur..
2 Mining Engineer, Department of Mines & Geology, Government of Rajasthan, Bhilwara.
3 Regional Officer, Regional Office, Rajasthan State Pollution Control Board, Bhilwara- please ensure compliance of Consent Conditions.
4 Master File, Consent to Establish, Group Mine, Rajasthan State Pollution Control Board, Jaipur.

Group Incharge-Mines

Annexure

Consent to Establish under Air & Water Acts - Mining Units

General Conditions:-

1. That this consent shall be subject to the condition that you shall operate the mining activities in the area as per the mining right allowed by the Mining Department in the Mining Lease only.

2. That this consent shall be subject to the directions/orders passed in various Mining/Environment related Writ Petitions by Hon'ble High Court and the Hon'ble Supreme Court.

3. That you shall provide the necessary infrastructure facilities including equipment for the monitoring of ambient air in accordance with the directions given to you by the Pollution Control Board's officials from time to time.

4. That Mining Unit shall undertake the phased restoration, reclamation and rehabilitation of lands as per established practices & procedures (provisions of Mine Closure Plan in case of Major Minerals) affected by prospecting or mining operations and shall complete this work before the conclusion of such operations and the abandonment of prospects or mines.

5. That overburden shall be stored in a systematic manner that it does not obstruct the natural drainage pattern of the area. It may be used for back filling. The land shall be identified for disposal of overburden at environmentally compatible site.

6. That Mining unit shall strictly comply with the Mining Plan and Eco Friendly Mining Plan as submitted to & approved by the competent authority. (Eco Friendly Mining Plan for Minor Mineral & mining plan for Major minerals & marble, Granite Mines).

7. That the water spray and sprinkling system so installed should always be maintained in order to utilize the same for dust suppression.

8. That the domestic effluent if any, shall be treated and disposed of with properly designed septic tank followed by soak pit as per prescribed standard.

9. That Air Emissions shall conform to the standards prescribed under the Environment (Protection) Act, 1986.

10. That noise level shall be kept as detailed below and under no circumstances, it shall exceed the prescribed limit:-

    a. Day time (6.0 AM to 9.0 PM) - 75 dB A (leq)
    b. Night time (9.0 PM to 6.0 AM) - 65 dB A (leq)

11. That this consent should not be treated as NOC or approval for mining in forest area, if any, falling in the lease and relevant permission under provisions of the Forest (Conservation) Act, 1980 shall be obtained from the competent authority.

4, इन्स्टीट्यूशनल एरिया, झालाना डूंगरी, जयपुर
4, Institutional Area, Jhalana Doongri, Jaipur
Phone : 2709980, 2705731, 2707285 PBX 2711263, 2711329, 2711831, 2707938
Fax : 2710647, 2709980, 2704578

12. That for Diesel Generator Set, acoustic enclosure/acoustic treatment shall be provided to meet the prescribed norms w.r.t. noise as per the Gazette Notification of Ministry of Environment & Forests dated 02.01.99. Adequate stack height with D.G. Sets shall also be provided and maintained. Noise from the Diesel Generator Sets shall be controlled by providing an acoustic enclosure or by treating the room acoustically. The acoustic enclosure/acoustic treatment of room should be designed for minimum 25 dB (A) Insertion Loss or for meeting the ambient noise standards, whichever is on the higher. The measurement for Insertion Loss may be done at different points at 0.5 metre from the acoustic enclosure/room and then averaged. The Diesel Generator Sets should also be provided with proper exhausts muffler with Insertion Loss of minimum 25 dB (A). The stack height for the Diesel Generator Sets shall be as notified under the EP Act,1986.

13. That the Industry shall comply with provisions of the Manufacture, Storage and Import of Hazardous Chemicals Rules,1989 and the Hazardous Waste (Management & Handling)Rules,1989 and related amendments, as applicable.

14. That this consent is valid, subject to fulfillment of all the other statutory requirements in other Law/Acts/Rules as applicable.

15. That the industry shall submit quarterly compliance of all the above stated conditions to this office.

16. That the unit shall submit Water Cess returns in case the water consumption is more than 10 KLD under provisions of the Water (Prevention & Control of Pollution) Cess Act, 1977 and as amended from time to time.

17. That notwithstanding anything contained in this letter of consent, the State Board hereby reserves to it, the right and power under section 21(6) of the Air (Prevention & Control of Pollution) Act, 1981 & under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review anyone/or all the conditions imposed here-in-above and to make such variations as deemed fit for the purpose of Air Act & Water Act.

18. That this consent, under no circumstances, be construed as conferment of any property or any interest in the lease area. It is only confined for the purpose of regulation of provisions of the Air Act & Water Act

19. That any incorrect information submitted in the consent application form shall make the industry liable for legal action under section 38 of the Air Act & under section43of the Water Act.

20. That in case of failure to comply with any of the consent conditions stated as above, the consent issued to the industry shall automatically stand revoked without any notice.

21. That this Consent will not exempt you from any legal action for the past violations, if any, of the Act/Rules/Notifications/Circulars etc.

(Group Incharge-Mines)

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695Fax: 0141-5159697
website: www.rpcb.nic.in

Revised Consent

File No F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/3922-3926

Order No 2011-2012/Mines/1149 Date: 01/09/2011

M/s Hindustan Zinc Limited

(Rampura Agucha Mine), P.O.- Agucha, Bhilwara,

District :Bhilwara

Sub: Grant of Consent to Establish 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-**Agucha**, Tehsil-**Hurda**, District- **Bhilwara (M.L.No-1/2000)**.

Ref: (i) Your applications dated 22/11/2009
(ii) Received on 27/11/2009

Sir,

In view of the details submitted vide your above referred applications/ documents, the **Consent to Establish** 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**, a Mine of **Major Mineral** having **M.L.No.- 1/2000 in an area measuring 1200.0000 Hectares** at/near Village-**Agucha** ,Tehsil-**Hurda**,District-**Bhilwara**.

2 That this consent is valid for a period from **18/01/2010** to **17/01/2013** , or **commencement of production whichever is earlier.**

3 That this consent is valid for following mining activities :-

	Mineral	Permitted Mining Capacity
1	LEAD ZINC ORE MINING	6.1600 MILLION TONNES PER ANNUM
2	BENEFICIATION PLANT FOR LEAD - ZINC ORE	6.5000 MILLION TONNES PER ANNUM

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695Fax: 0141-5159697
website: www.rpcb.nic.in

Revised Consent

File No F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/3922-3926

Order No 2011-2012/Mines/1149 Date: 01/09/2011

4 That you shall achieve following standards in ambient air in mine area / mining activities.

Pollutant	Standards for Ambient Air	Standards for mining activity
SPM	500 µg/M³	SPM = 600 µg/M³ (To be measured between 3 to 10 meters from mining activity)
SO_2	120 µg/M³	
NO_x	120 µg/M³	
CO	5000 µg/M³	

5 That the Mining unit shall maintain zero discharge status of waste water from the premises. No trade effluent shall be discharged inside/outside mine premises.

6 That the occupier/operator of mine shall ensure that all the conditions imposed in the Environmental Clearance granted by the **Ministry of Environment & Forests, Goverment of India** , vide letter No J-11015/267/2008-IA.II (M) dated 11/12/2009 shall be strictly complied with.

7 That the occupier/operator of mine shall ensure that all the conditions imposed in the permission of Central Ground Water Authority granted vide its letter No **21-4(2)/WR/CGWA/2008-632 & 21-4(2)/WR/CGWA/05-417** dated **06/08/2008 & 13/05/2008** shall be strictly complied.

8 That you shall not operate the mine without obtaining **Consent to Operate** from the Board.

9 That this **Consent to Establish** is for mining / processing / beneficiation of product as mentioned above in **M.L.No.-1/2000** and a separate **Consent to Establish** 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.

10 **That you will implement all the pollution control measures as per EIA/EMP Report.**

11 **That the top soil shall be stored at earmarked site only shall be utilized for plantation on reclaimed OB dumps.**

12 **Catch drains/ Siltation ponds of appropriate size shall be constructed to arrest silt and sediments flows from mine pits & overburden dumps. Garland drains of adequate size, properly designed shall be constructed arround the mine pit & dump yard. Garland drain should be provided with siltation pond.**

13 **Regular monitoring of subsidence, vibration shall be carried out & if any subsidences is observed appropriate measures be undertaken to avoid any loss of life and material and be reported to Board.**

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695Fax: 0141-5159697
website: www.rpcb.nic.in

Revised Consent

File No F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/3922-3926

Order No 2011-2012/Mines/1149 Date: 01/09/2011

14 That Ore Beneficiation plant effluent shall be treated upto prescribed standards & tailing slurry shall be transported in close pipe line to tailing dam.

15 That the HZL shall carry out conditioning of mined ore with water to mitigate fugitive dust emission.

16 The ovrburden generated during mining shall be stacked at earmarked site as per Approved Mining Plan & as per recommendations of Central Institute of Mining & Fuel Research, Dhanbad. The overburden dump shall be reclaimed by plantation of suitable native plant species.

17 That the lessee shall develop plantation in atleast 33% of the total lease area to maintain ambient air quality around the mine and the Action Plan for plantation submitted by you, shall be implemented.

18 That this revised consent letter shall supercede the earlier consent letter no F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/4792-4796 dated 21/01/2010

19 That all other general conditions enclosed as **Annexure** shall be strictly complied with.

20 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.

21 That the grant of this **Consent to Establish** 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.

22 That the grant of this **Consent to Establish** 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.

This bears approval of the competent authority.

Encl: As Above

Yours Sincerely

Group Incharge-Mines

Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695Fax: 0141-5159697
website: www.rpcb.nic.in

Revised Consent

File No F(Mines)/Bhilwara(Hurda)/1(1)/2009-2010/3922-3926

Order No 2011-2012/Mines/1149 Date: 01/09/2011

Copy To :-

1. Director, Department of Mines & Geology, Government of Rajasthan, Shastri Circle, Udaipur
2. Mining Engineer, Department of Mines & Geology, Government of Rajasthan, Bhilwara.
3. Regional Officer, Regional Office, Rajasthan State Pollution Control Board, Bhilwara- please ensure compliance of Consent Conditions.
4. Master File, Consent to Establish, Group Mine, Rajasthan State Pollution Control Board, Jaipur

Group Incharge-Mines

Rajasthan State Pollution Control Board
4, Institutional Area , Jhalana Doongari, Jaipur-302004

Annexure

Consent to Establish under Air & Water Acts - Mining Units

General Conditions:-

1. That this consent shall be subject to the condition that you shall operate the mining activities in the area as per the mining right allowed by the Mining Department in the Mining Lease only.

2. That this consent shall be subject to the directions/orders passed in various Mining/Environment related Writ Petitions by Hon'ble High Court and the Hon'ble Supreme Court.

3. That you shall provide the necessary infrastructure facilities including equipment for the monitoring of ambient air in accordance with the directions given to you by the Pollution Control Board's officials from time to time.

4. That Mining Unit shall undertake the phased restoration, reclamation and rehabilitation of lands as per established practices & procedures (provisions of Mine Closure Plan in case of Major Minerals) affected by prospecting or mining operations and shall complete this work before the conclusion of such operations and the abandonment of prospects or mines.

5. That overburden shall be stored in a systematic manner that it does not obstruct the natural drainage pattern of the area. It may be used for back filling. The land shall be identified for disposal of overburden at environmentally compatible site.

6. That the project proponent will stack the top soil separately and will use it for plantation and reclamation of overburden dumps.

7. That Mining unit shall strictly comply with the Mining Plan and Eco Friendly Mining Plan as submitted to & approved by the competent authority. (Eco Friendly Mining Plan for Minor Mineral & mining plan for Major minerals & marble, Granite Mines).

8. That the water spray and sprinkling system so installed should always be maintained in order to utilize the same for dust suppression.

9. That the domestic effluent if any, shall be treated and disposed of with properly designed septic tank followed by soak pit as per prescribed standard.

10. That Air Emissions shall conform to the standards prescribed under the Environment (Protection) Act, 1986.

11. That noise level shall be kept as detailed below and under no circumstances, it shall exceed the prescribed limit:-

    a. Day time (6.0 AM to 9.0 PM) - 75 dB A (leq)
    b. Night time (9.0 PM to 6.0 AM) - 65 dB A (leq)

12. That this consent should not be treated as NOC or approval for mining in forest area, if any, falling in the lease and relevant permission under provisions of the Forest (Conservation) Act, 1980 shall be obtained from the competent authority.

13. That the Industry shall comply with provisions of the Manufacture, Storage and Import of Hazardous Chemicals Rules,1989 and the Hazardous Waste (Management & Handling)Rules,1989 and related amendments, as applicable.

14. That this consent is valid, subject to fulfillment of all the other statutory requirements in other Law/Acts/Rules as applicable.

P.T.O.

15. That for Diesel Generator Set, acoustic enclosure/acoustic treatment shall be provided to meet the prescribed norms w.r.t. noise as per the Gazette Notification of Ministry of Environment & Forests dated 02.01.99. Adequate stack height with D.G. Sets shall also be provided and maintained. Noise from the Diesel Generator Sets shall be controlled by providing an acoustic enclosure or by treating the room acoustically. The acoustic enclosure/acoustic treatment of room should be designed for minimum 25 dB (A) Insertion Loss or for meeting the ambient noise standards, whichever is on the higher. The measurement for Insertion Loss may be done at different points at 0.5 metre from the acoustic enclosure/room and then averaged. The Diesel Generator Sets should also be provided with proper exhausts muffler with Insertion Loss of minimum 25 dB (A). The stack height for the Diesel Generator Sets shall be as notified under the EP Act, 1986.

16. That the industry shall submit quarterly compliance of all the above stated conditions to this office.

17. That the unit shall submit Water Cess returns in case the water consumption is more than 10 KLD under provisions of the Water (Prevention & Control of Pollution) Cess Act, 1977 and as amended from time to time.

18. That notwithstanding anything contained in this letter of consent, the State Board hereby reserves to it, the right and power under section 21(6) of the Air (Prevention & Control of Pollution) Act, 1981 & under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review anyone/or all the conditions imposed here-in-above and to make such variations as deemed fit for the purpose of Air Act & Water Act.

19. That this consent, under no circumstances, be construed as conferment of any property or any interest in the lease area. It is only confined for the purpose of regulation of provisions of the Air Act & Water Act

20. That any incorrect information submitted in the consent application form shall make the industry liable for legal action under section 38 of the Air Act & under section 43 of the Water Act

21. That in case of failure to comply with any of the consent conditions stated as above, the consent issued to the industry shall automatically stand revoked without any notice.

22. That this Consent will not exempt you from any legal action for the past violations, if any, of the Act/Rules/Notifications/Circulars etc.

23. That the Drills shall be operated with water injection system i.e. wet drilling be carried out during mining or the drills shall be operated with dust extractors.

24. That Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mineral and overburden dumps to prevent run off of water and flow of sediments.

25. That the Project Proponent shall construct Retaining Wall and Siltation Pond of appropriate size around the overburden dumps.

26. That the controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented, and permission from the Director General Mine Safety and the Director Explosives

(Group Incharge-Mines)

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

Registered

File No F(CPM)/Bhilwara(Hurda)/2(1)/2019-2020/7113-7117

Order No 2022-2023/Mines/10762 Date: 28/02/2023

Unit Id : 11,060

M/s Hindustan Zinc Limited

(Rampura Agucha Mine), P.O.- Agucha, Bhilwara,

District :Bhilwara

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-Agucha, Tehsil-**Hurda**, District- **Bhilwara (M.L.No-8/1999).**

Ref: (I) Your applications dated 28/10/2022
(II) Received on 28/10/2022

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,** a Mine of **Major Mineral** having **M.L.No.- 8/1999 in an area measuring 1200.0000 Hectares** at/near Village-**Agucha** ,Tehsil-**Hurda**,District-**Bhilwara.**

2 That this consent is valid for a period from **01/03/2023** to **29/02/2028**

3 That this consent is valid for following mining activities :-

	Mineral	Permitted Mining Capacity
1	Lead &Zinc Ore Mining	6.1500 MILLION TONNES PER 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 [illegible] Chand Gupta
Date: 2023.03.[illegible] 11:09 IST
Reason: SelfAttested
Location:

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

Registered

File No F(CPM)/Bhilwara(Hurda)/2(1)/2019-2020/7113-7117

Order No 2022-2023/Mines/10762 Date: 28/02/2023

Unit Id : 11,060

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 seprate consent to establish and consent to operate for carrying out mining of other minerals(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.-8/1999** 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 the Ministry of Environment, Forest and Climate Change vide letters dated 11/12/2009,22/08/2014,22/12/2014,28/12/2015 and 28/02/2020 are strictly complied with.**

8 **That this consent is valid for production of Lead & Zinc Ore Mining @ 6.15 Million 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 lease holder shall get the CAAQMS stations configured with the RSPCB OCEMS latest by 30.04.2023, else, Environmental Compensation shall be levied as per norms of RSPCB.**

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 the lessee shall submit monitoring report of Ambient Air Quality within the lease area, once in 3 months.**

12 **That the entire water (dewatering in the mine) shall be reused after desilting, for mining operations (drilling etc). No water shall be discharged outside the mining lease area.**

13 **That haul roads should be regularly graded and compacted. Regular water sprinkling should be carried out on haul roads to minimize dust generations.**

14 **That adequate measure shall be taken for control of fugitive emissions from the areas prone to air pollution.**

Signature valid
Digitally signed by [illegible] Chand Gupta
Date: 2023.03.[illegible]11:09 IST
Reason: SelfAttested
Location:

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

Registered

File No F(CPM)/Bhilwara(Hurda)/2(1)/2019-2020/7113-7117

Order No 2022-2023/Mines/10762 Date: 28/02/2023

Unit Id : 11,060

15 **That you shall not operate any stone crusher/mineral grinding/mineral processing plant within said lease without obtaining prior consent of the State Board.**

16 **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.**

17 **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.**

18 **That the mine shall not allow making any obstacles to any natural water flow i.e., natural nallah/steam carrying rain water to any water body.**

19 **This 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 **This consent shall be subject to validity of mining lease.**

23 That all other general conditions enclosed as Annexure shall be strictly complied with.

24 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.

25 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.

Signature valid
Digitally signed by [illegible] Chand Gupta
Date: 2023.03.[illegible] 11:00 IST
Reason: [illegible]
Location:

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

Registered

File No F(CPM)/Bhilwara(Hurda)/2(1)/2019-2020/7113-7117

Order No 2022-2023/Mines/10762 Date: 28/02/2023

Unit Id : 11,060

26 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.

27 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 conditons 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.

Encl: 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, Bhilwara-please ensure compliance of the consent conditions and monitor time to time.
3 Mining Engineer, Department of Mines & Geology, Government of Rajasthan, Bhilwara-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 PCCF (WL) and Chief Wild Life Warden, Aranya Bhawan,Jhalana Institutional Area,Jaipur/DCF(WL),Bhilwara, To inform that this consent has been issued from the environmental angleonly,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 [illegible] Chand Gupta
Date: 2023.03.[illegible] 11:09 IST
Reason: SelfAttested
Location:

Head Office (HDF)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631
Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

M/s Hindustan Zinc Limited
(Rampura Agucha Mine), P.O.- Agucha, Bhilwara, ,
District:Bhilwara

Sub: **Consent to Operate** under Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under Section 21(4) of Air (Prevention & Control of Pollution) Act, 1981.

Ref: Your application for Consent to Operate dated 28/10/2022 and subsequent correspondence.

Sir,

Consent to Operate under the provisions of Section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 (hereinafter to be referred as the Water Act) and under Section 21 of the Air (Prevention & Control of Pollution) Act, 1981, (hereinafter to be referred as the Air Act) as amended to date and rules & the orders issued thereunder is **hereby granted** for your **Hindustan Zinc Limited Rampura Agucha Mines Beneficiation Plant plant** situated at **PO - Agucha Agucha Tehsil:Hurda District:Bhilwara** , Rajasthan, subject to the following conditions:-

1 That this Consent to Operate is valid for a period from **01/03/2023** to **29/02/2028** .

2 That this Consent is granted for manufacturing / producing following products / by products or carrying out the following activities or operation/processes or providing following services with capacities given below:

Particular	Type	Quantity with Unit
Lead Zinc Ore Beneficiation	Activity	6.50 MILLION TONNES PER ANNUM

3 That this Consent to Operate is for existing plant, process & capacity and separate Consent to Establish/Operate is required to be taken for any addition / modification / alteration in process or change in capacity or change in fuel.

4 That the quantity of effluent generation along with mode of disposal for the treated effluent shall be as under:

Signature valid
Digitally signed by Sanjeev Mahnot
Date: 2023.06.14 15:33:22 IST
Reason: Sanctioned
Location:

Head Office (HDF)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631
Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

Type of effluent	Max. effluent generation (KLD)	Recycled Qty of Effluent (KLD)	Disposed Qty of effluent (KLD)and mode of disposal
Domestic Sewage	235.000	NIL	210.000 To be treated in STP and to be utilized in plantation and horticulture within the factory premises
Trade Effluent	16670.000	7,800.000	NIL

5 That the sources of air emissions along with pollution control measures and the emission standards for the prescribed parameters shall be as under:

Sources of Air Emissions	Pollution Control Measures	Prescribed	
		Parameter	Standard
Primary Crusher New(750TPH)	ADEQUATE STACK HEIGHT , Bag Filter , WATER SPRAYERS , WET SCRUBBER , WITH ADEQUATE STACK HEIGHT	Particulate Matter	150 mg/Nm3
Primary Crusher Old(700TON/HR)	ADEQUATE STACK HEIGHT , Bag Filter , WATER SPRAYERS , WET SCRUBBER , WITH ADEQUATE STACK HEIGHT	Particulate Matter	150 mg/Nm3

Signature valid
Digitally signed by [illegible]
Date: 2023.06.14 15:33:22 IST
Reason: Sanctioned
Location:

Head Office (HDF)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631
Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

Secondary Crusher(500TON/HR)	ADEQUATE STACK HEIGHT , Bag Filter , WATER SPRAYERS , WET SCRUBBER , WITH ADEQUATE STACK HEIGHT	Particulate Matter	150 mg/Nm3
Two DG Sets (5MW each)(10MW)	ACOUSTIC ENCLOSURE , ADEQUATE STACK HEIGHT	CO Particulate Matter NOx NMHC	150 mg/Nm3 75 mg/Nm3 710 ppm 100 mg/Nm3

6 That the **Hindustan Zinc Limited Rampura Agucha Mines Beneficiation Plant plant** will comply with the standards as prescribed vide MoEF notification No. GSR 826(E) dated 16th November, 2009 with respect to National Ambient Air Quality Standards.

7 That the Trade Effluent shall be treated before disposal so as to conform to the standards prescribed under the Environment (Protection) Act-1986for disposal **into Inland Surface Water.** The main parameters for regular monitoring shall be as under:

Signature valid
Digitally signed by Sanjeev Mehnot
Date: 2023.06.14 15:33:22 IST
Reason: Self Attested
Location:

Head Office (HDF)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631
Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

Parameters	Standards
Total Suspended Solids	Not to exceed 100 mg/l
pH Value	Between 5.5 to 9.0
Oil and Grease	Not to exceed 10 mg/l
Ammonical Nitrogen (as N)	Not to exceed 50 mg/l
Biochemical Oxygen Demand (3 days at 27°C)	Not to exceed 30 mg/l
Chemical Oxygen Demand	Not to exceed 250 mg/l
Nitrate (as NO3)	Not to exceed 50 mg/l

8 That the Trade Effluent shall be treated before disposal so as to conform to the standards prescribed under the Environment (Protection) Act-1986 for disposal into Inland Surface Water . The main parameters for regular monitoring shall be as under

Signature valid
Digitally signed by Sanjeev Mehnot
Date: 2023.06.14 15:33:22 IST
Reason: Self Attested
Location:

Head Office (HDF)

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631

Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

Parameters	Standards
Total Suspended Solids	Not to exceed 100 mg/l
pH Value	Between 5.5 to 9.0
Oil and Grease	Not to exceed 10 mg/l
Biochemical Oxygen Demand (3 days at 27°C)	Not to exceed 30 mg/l
Lead (as Pb)	Not to exceed 0.1 mg/l
Cadmium (as Cd)	Not to exceed 2.0 mg/l
Copper (as Cu)	Not to exceed 3.0 mg/l
Zinc (as Zn)	Not to exceed 5.0 mg/l
Nickel (as Ni)	Not to exceed 3.0 mg/l
Cyanide (as CN)	Not to exceed 0.2 mg/l
Fluoride (as F)	Not to exceed 2.0 mg/l
Sulphide (as S)	Not to exceed 2.0 mg/l
Iron (as Fe)	Not to exceed 3.0 mg/l
Chlorides	Not to exceed 1000 mg/l
Chemical Oxygen Demand	Not to exceed 250 mg/l

9 That this consent to operate is valid for operation of Lead Zinc Ore Beneficiation plant of 6.5 Million Ton Per Annum capacity. The industry has to seek fresh consent to establish for any change in product/by product/process/service/activity and modification/alteration.

10 That total capital investment as on 30.09.2022 as per the C.A. certificate submitted by you is Rs. 103564 (Lakh) which includes the cost of Land, Building, Plant & Machinery and miscellaneous assets.

11 That the industry shall comply with all the conditions of Environmental Clearance (E.C.) issued by the Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India, vide letters no. J-11015/267/2008-IA.II(M) dated 11.12.2009

Signature valid

Digitally signed by [illegible]

Date: 2023.06.14 15:33:22 IST

Reason: [illegible]

Location:

Head Office (HDF)

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631

Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

12 That Hazardous Waste as defined under schedule IV of Hazardous & others Waste (Management, and Transboundary Movement) Rules, 2016 shall not be used as raw material without obtaining prior registration & authorization from the State Board.

13 That total water consumption/requirement for lead Zinc Ore Benification Plant shall not exceed to 9500 KLD which will be met from Banas Radial Wells.

14 That industry shall comply with all the conditions of CGWA permission/NoC issued by Central Ground Water Authority, Ministry of Water resource Govt of India vide letter no. 21-4/2/RJ/MIN/2004 dated 08.04.2022.

15 That water flow meters shall be provided and maintained at all suitable points to measure quantity of water received form Banas radial wells and water consumption for different purposes. Record of the same shall be maintained on daily basis.

16 That unit shall treat 235 KLD domestic sewage at sewage treatment plant of 300 KLD capacity (for mines and beatification plant) that entire treated sewage shall be reused for plantation ant horticulture purpose and unit shall maintain zero liquid discharge outside the premises.

17 That the total quantity of trade effluent shall not exceed from 16670 KLD. Out of 16670 KLD , 7800 KLD will be recycled/reclaimed from tailing dam and remaing 4870 KLD retained in the tailing dam.

18 That waste water generated from tailing dam will be reused/recycled completely in mill/process.

19 That the industry shall take utmost precaution to cater seepage from tailing dam and ensure complete recycle of seepage water in process only.

20 That the industry shall explore & carry out some scientific and technical study with reputed experienced organization in the field for catering of seepage from tailing dam.

21 That the industry shall re-circulate the decanted water from the tailing dam and shall maintain Zero Discharge Status from tailing dam.

22 That the effluent from the ore beneficatiom plant shall be treated to confirm to the prescribed standards and the tailing slurry shall be transported through a closed pipeline to the tailing dam.

23 That the industry shall maintain the stability and safety of the tailing dam as assessed by CWPRS and NIRM

24 That no waste water (domestic & trade effluent) will be discharged inside or outside the factory premises in to a stream or well or sewer or on land in any case and complete zero discharge status shall be maintained.

Signature valid

Digitally signed by Sanjeev Mahnot

Date: 2023.06.14 15:33:22 IST

Reason: Self Attested

Location:

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631
Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

25 That separate energy meter & hour meter shall be provided and maintained at all the air pollution control measures and record of daily running hours of pollution control measures and daily energy consumption shall be maintained in log book.
26 That for the control of fugitive emission guidelines / code of practice as issued by CPCB will be followed.
27 That the industry shall maintain stack of adequate height at crusher and air pollution control measures shall be operated regularly and efficiently to achieve the prescribed emission standards as per condition no.4.
28 That adequate infrastructure facility for stack emission monitoring shall be maintained at the stack of crushers.
29 That stack of adequate height as per norms and acoustic enclosure shall be maintained with two DG Sets of 5 MW KVA each.
30 That unit shall provide permanent safe infrastructure facility for stack monitoring with stack attached with two D.G set (5 MW each) within a month.The unit shall deposit bank guarantee for the same immediately.
31 That no additional source of air emission shall be installed without prior consent from the State Board.
32 That all the raw materials and products shall be stored in closed sheds.
33 That cemented roads shall be provided and maintained properly inside the premises to minimize fugitive emissions due to vehicular movement.
34 That water sprinkling and cleaning of haul roads by vacuum cleaner shall be done regularly to control the fugitive emissions generated due to vehicular movement.
35 That dust suppression system shall be maintained to minimize fugitive dust emission in Lead Zinc Ore handling area & at various transfer points and closed conveyor belts shall be used for the transfer of material to reduce the fugitive emissions.
36 That unit shall provide flexible curtains vertically attached with crusher house shed(material feeding hopper points) so as to minimize escape of fines in addition to water spray nozzles at feeding hopper.
37 That the industry shall maintain dust collection and extraction system to control fugitive dust emissions at all the transfer points & loading/unloading areas.
38 That regular monitoring of ground water particularly in respect to heavy metals shall be carried out by establishing adequate numbers of peizeometric well around tailing dam.
39 That adequate arrangements shall be made to avoid flow of pollutants along with rain water.

Signature valid
Digitally signed by Sanjeev Mahnot
Date: 2023.06.14 15:33:22 IST
Reason: Certified
Location:

Head Office (HDF)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631
Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

40 That the industry shall carryout effluent sampling/stack monitoring/ambient air quality monitoring and submit quarterly analysis report from the State Board laboratory/laboratory recognized by Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India

41 That industry shall comply with the provisions of Hazardous Waste (Management, Handling and Transboundary Movement) Rules, 2016 & Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (as notified under Environment (Protection) Act, 1986 and record of daily hazardous waste generation and its disposal shall be maintained.

42 That the precautions/measures shall be taken for minimization of exposure to the workers involved in handling/processing of the lead and lead bearing material.

43 That the unit shall periodically examine their workers at least once in year for lead level in blood as well as urine. Persons with higher lead levels (greater than 40 µg/dl) should be shifted immediately to non-lead activity areas and given special medical treatment till the lead levels come back to acceptable level.

44 That the industry shall install and maintain adequately designed rain water harvesting structure for recharge of ground water in and around the area.

45 That the plantation of local species in the 33% of total area of the project shall be arried out & maintained.

46 That the industry shall get policy renewed from time to time under Public Liability Insurance Act (PLIA) and submit its copy to the Board

47 That the industry shall obtain Environmental Clearance from competent authority under EIA Notification dated 14.09.2006 before establishing any such activity which attracts Environmental clearance under EIA Notification dated 14.09.2006.

48 That unit shall submit time bound proposal along with Bank guarantee(10 % of total cost of dry tailing facility) within one month, for installation of dry tailing facility instead of simple charge of waste water and tailings into tailing dam.

49 That unit shall ensure check and restore ambient air quality monitoring machines as per CAAQMS protocol and if required may be purchase proper CAAQMS machinery setup and ensure online connectivity with RSPCB Server and submit evidence based compliance to the State Board within a period of one month. That unit shall deposit Bank Guarantee for the same immediately.

50 That the industry shall submit the quarterly compliance report of all the above conditions to the State Board.

Signature valid
Digitally signed by [illegible] Mahnot
Date: 2023.06.14 15:33:22 IST
Reason: Sanctioned
Location:

Head Office (HDF)
Rajasthan State Pollution Control Board
4, Institutional Area, Jhalana Doongari, Jaipur-302 004
Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631
Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

51 **That unit shall install PTZ camera and Online flow meter with the Tailing dam inlet and tailing dam reuse line, within one month, so as to ensure complete reuse of waste water in accordance with water balance submitted That unit shall deposit Bank Guarantee (10% of total cost of PTZ camera and online flow meter) immediately.**

52 **That PTZ cameras should be installed at the locations to cover entire area of tailing dam.**

53 **That unit shall complete the work related to replacement of monkey ladder to safe monitoring infrastructure monitoring facility for the stack attached with Primary Crusher-New (750 TPH) within one month and submit the evidence based report to the State Board. That unit shall deposit Bank Guarantee for the same immediately.**

54 **That unit shall comply with all the provisions of MSHIC Rules, 1989 and amended so and also with PLI Act, 1991.**

55 That unit shall expedite completion of Hydro geological survey and isotopic analysis study.

56 That, notwithstanding anything provided hereinabove, the State Board shall have the power and reserves its right, as contained **under Section 27(2) of the Water Act and under Section 21(6) of the Air Act** to review anyone or all of the conditions imposed here in above and to make such variation as it deems fit for the purpose of **Air Act & Water Act.**

57 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.

58 That the grant of this **Consent to Operate** shall not, in any way, adversely affect or jeopardize the legal proceeding, if any, instituted in the past or that could be instituted against you by the State Board for violation of the provisions of the Water Act and Air Act or the Rules made thereunder.

59 That the Project Proponent shall comply with provisions of the E-waste (Management) Rules, 2016 and ensure that e-waste generated by them is channelized through collection centre or dealer of authorized producer or dismantler or recycler or through designated take back service provider of the producer to authorized dismantler or recycler.

60 That the Project Proponent shall maintain record of e-waste generated by them in Form-2 and make such records available for scrutiny by the Board.

Signature valid
Digitally signed by Pradeep Mahnot
Date: 2023.06.14 15:33:32 IST
Reason: Self Attested
Location:

Head Office (HDF)

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631

Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

61 That the Project Proponent shall file annual returns in Form-3, to the Board on or before the 30th day of June following the financial year to which that return relates.

62 That the transportation of e-waste shall be carried out as per the manifest system whereby the transporter shall be required to carry a document (three copies) prepared by the sender, giving the details as per Form-6.

63 That the Project Proponent shall comply with provisions of the Batteries (Management and Handling) Rules, 2001 (as amended) and submit half yearly returns (as bulk consumer, importer, auctioneer, recycler as the case may be) to the State Board as provided under Rule 10 (2) (ii) of the Battery (Management and Handling) Rules, 2001 (as amended). In case the Project Proponent is not a bulk consumer even then the used batteries shall be returned to the authorised dealers or recyclers only.

64 That the record of batteries purchased and sold/ returned to registered dealers and/ or authorized recyclers shall be maintained and made available to the officers of the Board during inspections.

This **Consent to Operate** shall also be subject, besides the aforesaid specific conditions, to the general conditions given in the enclosed Annexure. The Project Proponent will comply with the provisions of the **Water Act and Air Act** and to such other conditions as may, from time to time , be specified, by the State Board under the provisions of the aforesaid Act(s). Please note that, non compliance of any of the above stated conditions would tantamount to revocation of **Consent to Operate** and Project Proponent / occupier shall be liable for legal action under the relevant provisions of the said Act(s).

This bears approval of the competent authority.

Yours sincerely,

Group Incharge[HDF]

(A): Copy to:-

1 Regional Officer, Regional Office, Rajasthan State Pollution Control Board, Bhilwara ensure the compliance of conditions of the Consent to Operate.

2 Master File.

Signature valid

Digitally signed by Sanjeev Mahnot

Date: 2023.06.14 15:33:22 IST

Reason: Sanctioned

Location:

Head Office (HDF)

Rajasthan State Pollution Control Board

4, Institutional Area, Jhalana Doongari, Jaipur-302 004

Phone: 0141-5159600,5159695

Registered

File No : F(HDF)/Bhilwara(Hurda)/1(1)/2023-2024/1629-1631

Order No : 2023-2024/HDF/9370 Date: Jun 14 2023 3:32PM

Unit Id : 11060

Group Incharge(HDF)

Signature valid

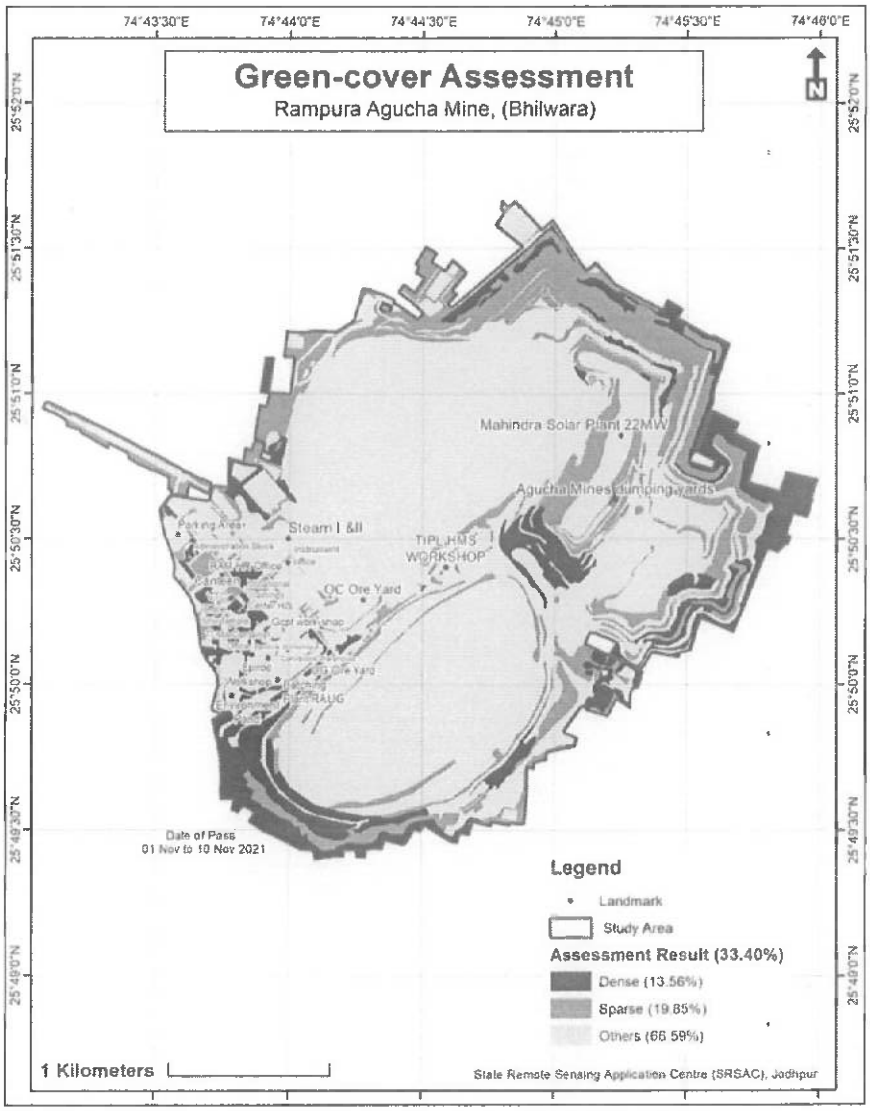
Digitally signed by Sanjeev Mehtot
Date: 2023.06.14 15:33:22 IST
Reason: Self Attested
Location:

Annexure-XXXIV

Tailing close pipeline

Green Cover Assessment

For Rampura Mine, Agucha of Hindustan Zinc Limited located in Rajasthan



By

State Remote Sensing Application Centre (SRSAC)

Department of Science & Technology (DST), Government of Rajasthan

Subhash Nagar, Pal Road, Jodhpur – 342008 (Raj.)

January 2023

This report is the outcome of the study conducted at SRSAC, Jodhpur, Rajasthan.

Contributors:

Overall Guidance

Mr. Rajeev Jain
Project Director cum Deputy Secretary,
SRSAC, DST, GoR, Jodhpur

Project In-charge

Mr. Laxman Singh
ARO,
SRSAC, DST, GoR, Jodhpur

Mr. Mahendra Prakash Mathur
Programmer,
SRSAC, DST, GoR, Jodhpur

Technical Team

Mr. Praveen Vishwakarma

Ms. Ayushi Parashar

Mr. Piyush Swami

Technical Team (Agucha)

Mr. Dineshkumar Paliwal

Environment Head-Agucha Mines.

Mr. Gaurav Kumar

Environment Engineer-RAM

Preface

State Remote Sensing Application Centre (SRSAC) of the Department of Science & Technology, Government of Rajasthan, endeavours to make the best possible use of remote sensing and Geographic Information System (GIS) technologies towards fostering sustainable development in Rajasthan.

In Rajasthan, the remote sensing activities started with the establishment of Aerial Photo Interpretation Laboratory (APIL) in 1979 as a part of the centrally sponsored Desert Development programme, to assist soil and water conservation planning in the State, under State Agriculture Department. Later on, in 1985 looking to the multi-disciplinary utilities of Remote Sensing technology, the laboratory was transferred to the State Department of Science and Technology and renamed as State Remote Sensing Application Centre (SRSAC).

SRSAC functions to fulfil the following objectives:

- To regularly generate a databank consisting of temporal and spatial databases.
- To generate information systems for natural resources.
- To interact with various user agencies for the formulation and implementation of developmental planning, using remote sensing technique.
- To undertake short term and long term experimental and operational remote sensing studies for various natural resources, infrastructure, and urban planning.
- To collaborate/interact with national-level remote sensing institutes like National Remote Sensing Centre (NRSC), Hyderabad, Space Application Centre (SAC), Ahmedabad, Regional Remote Sensing Centres (RRSC's) to carry out joint projects.
- To popularize remote sensing and GIS by organizing training-courses/workshops/seminars for different state user departments, technocrats, students, etc.

The Centre has been catering to the natural resource survey, monitoring and planning needs of the State since past more than three decades. Assistance is regularly provided to the user departments in the State for planning the development activities using Remote Sensing and GIS techniques. The Centre has long been collaborating with Indian Space Research Organisation (ISRO), Department of Space, Govt. of India for executing state level projects using space-based information support.

Four major categories of projects being carried out at SRSAC are:

1. ***Generating*** **numerous geospatial layers for information support**

   Building natural resources information system, Land-use & land-cover (LULC) mapping, crop acreage estimation, surficial waterbodies mapping, groundwater quality mapping, wasteland mapping, land-degradation mapping, wetland mapping, forest blocks mapping, geomorphological & lineaments mapping, infrastructural mapping, cadastral mapping, administrative boundaries demarcation

2. ***Planning*** **various natural resources management and development planning activities**

   Supporting decentralized rural development planning, forecasting agricultural outputs, Panchayat Samiti wise master-plan of water-harvesting-structure sites, silt prevention studies in Pushkar Lake, conservation planning of Jodhpur lift canal

3. ***Monitoring*** **the landscape through change detection activities**

   Watersheds monitoring, waterbodies monitoring, river-flow change analysis, monitoring the crop-residue-burning, eco-sensitive zone monitoring, LULC change detection around mining areas, wasteland change analysis, forest cover change analysis, encroachment studies, industrial green cover assessment

4. ***Capacity building*** **of the user departments / students / common man**

   Organizing trainings/courses/workshops/seminars, preparing atlases such as Resource Atlas of Rajasthan, Ground Water Atlas of Rajasthan, Watershed Atlas of Rajasthan, Ayurvedic Medicinal Plants Atlas of Rajasthan, Soil Resource Atlas or Rajasthan, exclusive workshops for spatial empowerment of Panchayati Raj Institutions

The Centre aims to move forward from information support towards decision support for sustainable development and management of natural resources along with infrastructure development and urban planning through the application of remote sensing and GIS technology.

This report is an outcome of the study that was conducted by the Centre to assess the green cover area within the boundaries of Rampura Agucha Mine, of Hindustan Zinc Limited, Rajasthan, using remote sensing and GIS technologies.

Table of contents

List of figures

List of tables

List of abbreviation

DST	Department of Science & Technology
ESA	European Space Agency
GIS	Geographic Information System
GoI	Government of India
GoR	Government of Rajasthan
HRSI	High-Resolution Satellite Imagery
IRS	Indian Remote Sensing Satellite
ISRO	Indian Space Research Organization
NDVI	Normalized Difference Vegetation Index
NIR	Near-Infrared
NRSC	National Remote Sensing Centre
SRSAC	State Remote Sensing Application Centre

1. Introduction

Hindustan Zinc, a Vedanta Group Company, is one of the world's largest and India's only integrated producer of Zinc-Lead and Silver. The Company has its headquarters at Udaipur in the State of Rajasthan where it has its Zinc-Lead mines and smelting complexes. Hindustan Zinc is self-sufficient in power with captive thermal power plants and has ventured into green energy by setting upwind power plants. The Company is ranked 1st in Asia-Pacific and globally 5th in Dow Jones Sustainability Index in 2021 amongst Mining & Metal companies. Hindustan Zinc is a certified Water Positive Company and is the only Indian company to be recognized at the S&P Global Platts Metal Award 2022.

The company has embarked on an ambitious sustainability journey, led by its Sustainability Goals 2025, driven by its vision of 'ZERO HARM, ZERO DISCHARGE, ZERO WASTE.' These Sustainability Goals were developed by the company as an action agenda for accomplishing its overarching long-term goal of creating positive impacts across the value chain.

Green cover is the area with tree plantation and is intended to reduce pollution from the surrounding air. Both gaseous and particulate pollutants can get absorbed if an appropriate green cover is maintained. As per the Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, green belt is to be developed and maintained to minimize the impact due to air pollution and noise pollution in the environment. A minimum of 33% of the area is to be kept for green belt development.

2. Objective

The objective of the study presented here was to perform geospatial mapping of the study area for demarcation of the area under green (vegetation) cover, along with the approximation of tree count.

3. Study Area

The study area for the report presented here is Rampura Mine, Agucha located in Bhilwara District of Rajasthan.

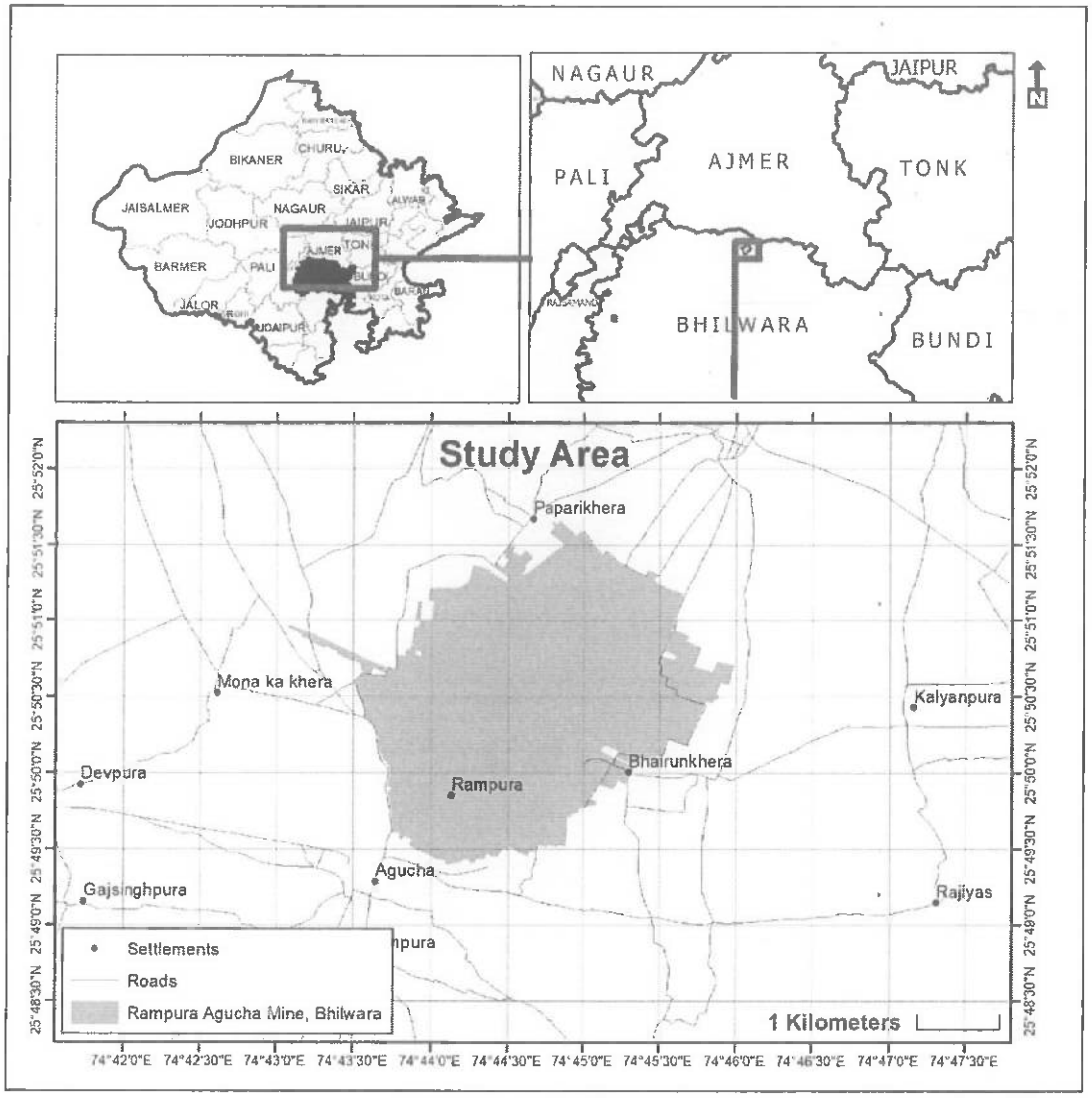


Figure 1: Study area

4. Datasets used

4.1 Satellite data

The green cover analysis was performed on Copernicus Sentinel-2 surface reflectance (Level-2a) data of date ranging from 1st November 2021 to 10th November 2021 (Figure 2). During the analysis, six bands were utilized, namely, Blue, Green, Red, Near-infrared, Shortwave Infrared-1 and Shortwave Infrared-2 (band numbers 2, 3, 4, 8, 11 and 12). The spatial resolution of the bands 2, 3, 4 and 8 was of the order 10 m, while for bands 11 and 12, it was 20 m. Additionally, IRS-Cartosat-2E satellite image dataset of spatial resolution 0.65 m panchromatic / 2 m multispectral was used as the reference.

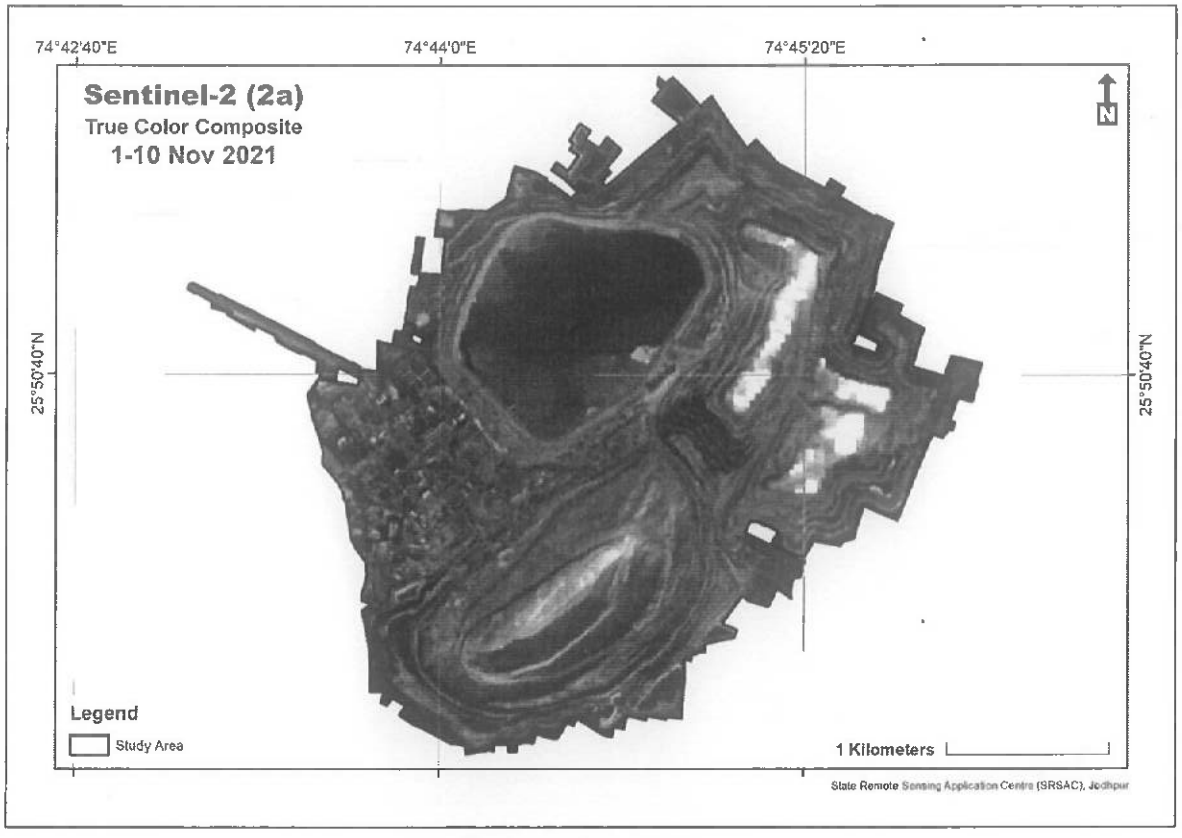


Figure 2: True color composite of Sentinel-2(2a) satellite data (between 1 to 10 Nov 2021) that was used for green-cover assessment

4.2 Field data

Field visit was conducted in the month of 20th April 2023, wherein, geo-tagged field photographs were acquired in order to support the ground truth requirements during the analysis. A few of the ground truth photographs are shown in Annexure 1.

5. Methodology

The study consisted of the following steps in the methodology (Figure 3):

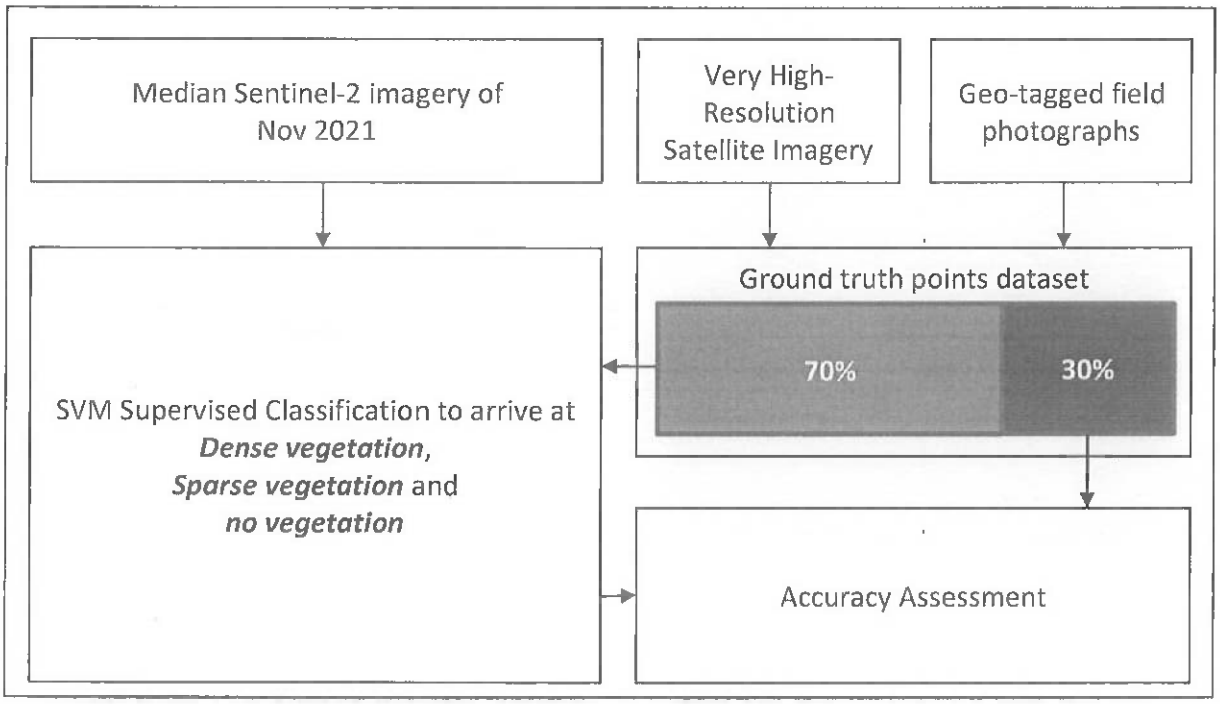


Figure 3: Overall methodology

1. **Designing the classification scheme:** A three-class classification schema was designed that consisted of (i) dense green-cover, (ii) sparse green-cover / new plantation and (iii) other classes.

2. **Procurement/processing of primary satellite images:** As mentioned in Section 4.1, the Copernicus Sentinel-2 satellite image composite was prepared for the purpose of

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green cover analysis. This composite was prepared using the images from the month of November 2021 due to the following reasons.

- For the month of November, the agricultural cropped regions show a low/nil value of NDVI as during this period, Kharif crops are mostly harvested and Rabi crops are not grown to the stage where vegetation is significant.
- Vegetation detected in this month imagery is inclusive of both – permanent and seasonal vegetation.

- **Preparing a ground truth points dataset:** A set of ground truth points was the prime requisite for validating the results of the study. The ground truth information was carefully compiled from various data sources, such as field photographs, drone-based images and very high-resolution satellite imagery. Field visit was conducted for collecting geotagged field photographs. Very high-resolution satellite data from Cartosat-2 series of satellites was procured from NRSC Data Centre of Indian Space Research organization (ISRO). This highly detailed satellite data was referred while preparing a geospatial points layer that was called as the ground truth points dataset (Figure 4). One part (about 70%) of the total ground truth points was used for training the classifier model, while the other part (about 30%) of the total ground truth points was utilized while performing the accuracy assessment. The training dataset was used to sample the input Sentinel-2 satellite imagery.

Figure 4: Ground truth dataset comprising a total of 169 points distributed across the study area

- **Classification using the Support Vector Machine (SVM) classifier:** The SVM classifier was used for the green cover analysis. The details of this classifier can be found in Pal and Mather (2005). SVM classifier was trained using the above sampled training dataset. Using the trained SVM classifier model, the unknown pixels from the Sentinel-2 satellite imagery were classified. The output classified image was tested for the accuracy of classification using the testing ground truth dataset. Kappa accuracy of assessment was determined. Class-wise area statistics were determined.

6. Results and Discussion

The resultant classified image is as shown in Figure 5. The result was tested for the accuracy using an independent set of testing ground truth dataset as mentioned in the previous section.

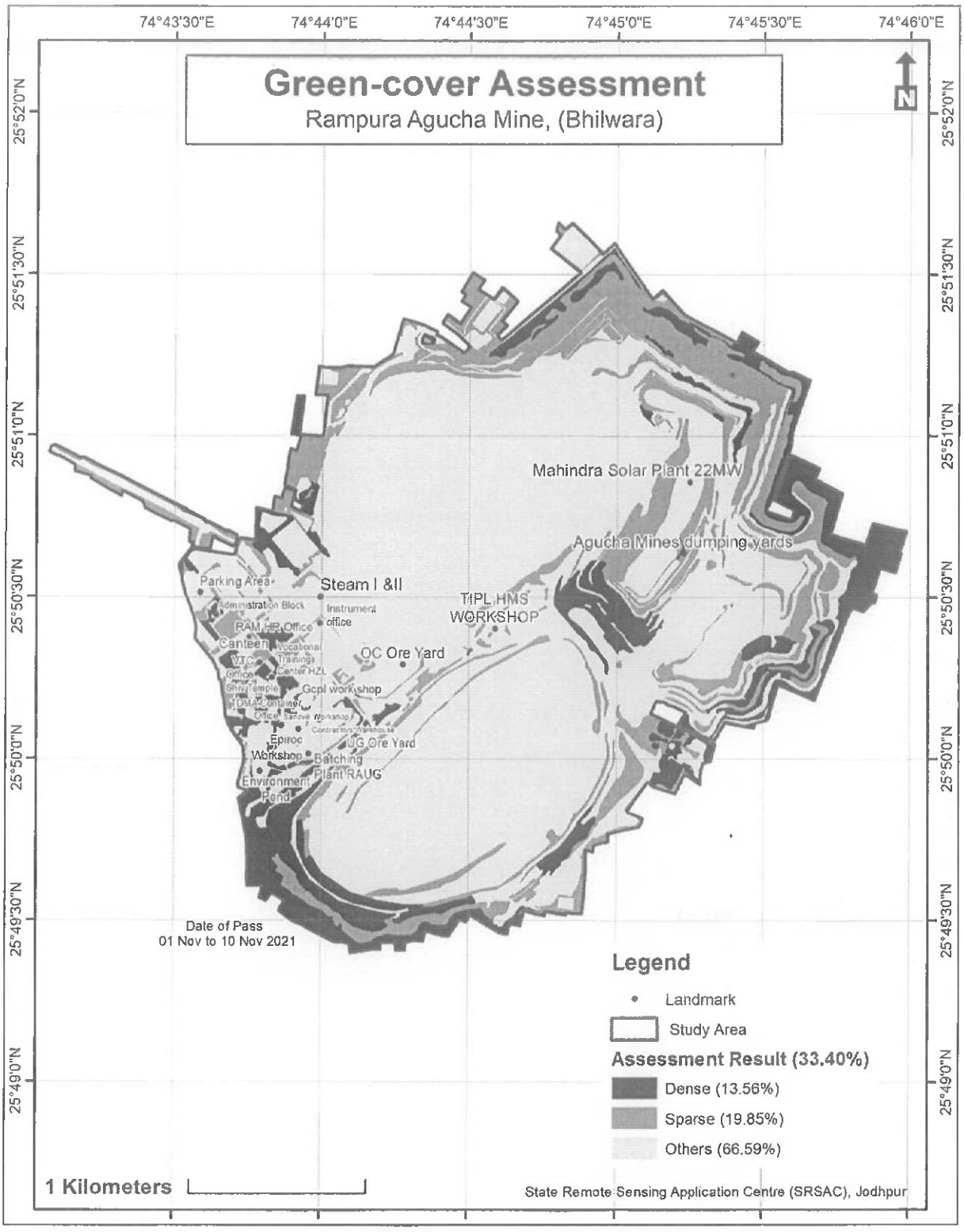

Figure 5: Assessment results

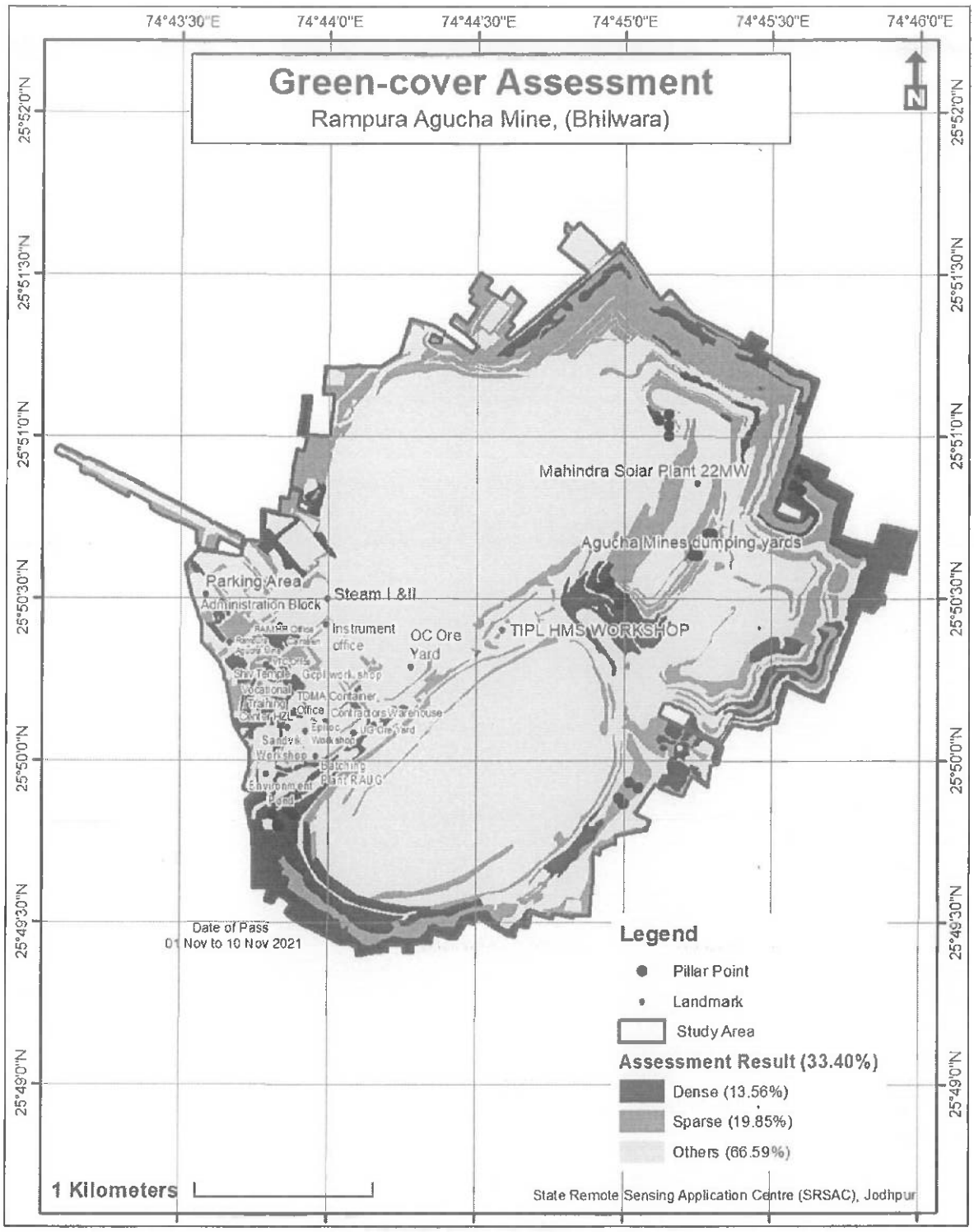

Figure 6: Tree Count Pillar Points

Table 2: Results

S. No.	Category	Area		Total Green Area (Ha.)		Total Green Cover %
		Hectares	*Percentage*			
1.	Dense	138.06	13.56	340.16 Ha.		33.40 %
2.	Sparse	202.10	19.85			
3.	Others	678.00	66.59			
Total Area		**1018.16**				

Table 2: Tree Count Dense

Site	Area Type	Tree (.50 Ha)	Average (1+2+3/3)	Tree in 1 Ha.
1	Dense	1980	5053/3 = 1684.33	1684.33X 2 = 3368.67
2	Dense	1703		
3	Dense	1370		
Total Count		**5053**	Total Count in 1 Ha.	3369 (Rounding off)

Table 3: Tree Count Sparse

Site	Area Type	Tree (.50 Ha)	Average (1+2+3/3)	Tree in 1 Ha.
1	Sparse	734	1699/3 = 566.33	566.33X 2 = 1132.67
2	Sparse	530		
3	Sparse	435		
Total Count		**1699**	Total Count in 1 Ha.	1133 (Rounding off)

Table 4: Tree Count Study Area

S. No.	Category	Area			Total Trees (Approx.)
		Hectares	*Tree Count*	*Total Trees*	
1.	Dense	1	3369	138.06X2047 = 4,65,124	*6,94,103*
2.	Sparse	1	1133	202.10X1133 =2,28,979	

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7. Conclusion

Green cover area estimation was carried out using Sentinel-2 image of date range from 1st to 10th of November 2021 with Cartosat-2E satellite imagery of Feb 2022 as reference. The analysis was also supported by the field-based ground truth information. Supervised learning-based image classification approach was adopted for classifying the input Sentinel-2 satellite imagery into three class-categories named dense, sparse and no green cover. The resultant classified image was tested for accuracy with respect to the ground truth dataset. As per the results, as on 10th November 2021, the total green cover area within the boundaries of Rampura Mine, Agucha was calculated to be 33.40 % of the total area.

8. References

Drisya, J., & Roshni, T. (2018). Spatiotemporal variability of soil moisture and drought estimation using a distributed hydrological model. In *Integrating disaster science and management* (pp. 451-460). Elsevier.

Pal, M., & Mather, P. M. (2005). Support vector machines for classification in remote sensing. *International journal of remote sensing*, 26(5), 1007-1011.

Figure 7: Layout Plan Agucha Zinc Colony

9. Annexure-1: Field Photographs

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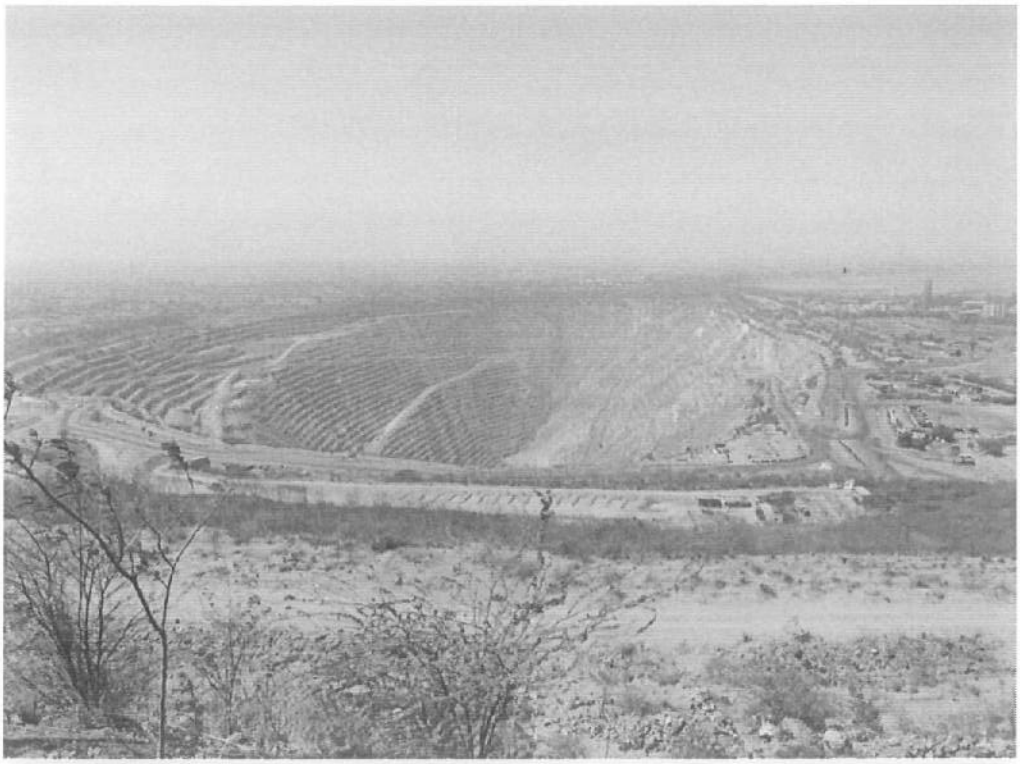

10. Flora of Rampura Mine

Figure 8: Flora Of Rampura Mine

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11. Annexure-2: Details of Plantations

Azadirachta Indica

Saraca Indica

Plumeria Pudica

Hyophorbe Lagenicaulis

Hibiscus Rosa-Sinensis

Cascabela Thevetia

Dalbergia Sissoo

Ficus Benjamina

Millettia Pinnata

Cycas Revoluta

Delonix Regia

Phoenix Dactylifera

Alstonia Scholaris

Araucaria Columnaris

Acacia Nilotica

Nerium Indicum

Psidium Guajava

Terminalia Arjsuna