स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED
राउरकेला इस्पात कारखाना
ROURKELA STEEL PLANT
बरसुआ लौह खादान - टेलडिही लौह खादान
BARSUA IRON MINES - TALDHI IRON MINES
P.O. TENSA - 770042
E-mail : gmofficebim@gmail.com

60TH YEAR OF PRODUCTION
सेल SAIL SINCE 1959

Ref. No. BIM/E&L/2025-26/040 Date: 28.05.2025

To,
The Director, IA Division,
Ministry of Environment, Forests and Climate Change,
Indira Paryavaran Bhawan, Jor Bagh Road, Aliganj,
New Delhi – 110003

Sub: Six monthly status of compliance of conditions stipulated in Environmental Clearance (Grant Order of MoEF&CC F. No. J-11015/351/2006-IA.II(M), dated 28th April, 2023) for the period ending 31st March, 2025.

Sir,

Please find updated six-monthly compliance report with respect to the conditions stipulated in Environmental Clearance of Barsua-Taldih-Kalta Iron Mines of M/s. SAIL for production of 16.0 MTPA ROM and handling of 2.0 MTPA Sub-grade dumps / tailings (Total Excavation: 22.0 MTPA) vide MoEF&CC F. No. J-11015/351/2006-IA.II(M), dated 28th April, 2023 for the period ending 31st March, 2025. The report also contains the updated status of environmental monitoring of air, water and noise pertaining to the period ending 31st March, 2025.

Thanking you,

Yours faithfully,
For SAIL/Barsua-Taldih-Kalta Iron Mines

28/5/25

(Himanshu Mishra)
Chief General Manager (Mines) BIM, TIM & KIM

Encl : As Above

Copy to:

1. The Dy. Director General of Forest (C), MoEF&CC,
   Govt. of India, Regional Office (EZ), A/3 Chandrasekharpur,
   Bhubaneswar-751023 (Odisha)
2. The Regional Director, Central Pollution Control Board,
   G97V+H5Q, Kasba New Market, Sector E,
   East Kolkata Twp, Kolkata, West Bengal – 700 107
3. The Member Secretary, Odisha State Pollution Control Board,
   Paribesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII,
   Bhubaneswar-751012 (Odisha)

Half Yearly Compliance Report
2025
01 Jun(01 Oct - 31 Mar)

Acknowledgement

Proposal Name	Expansion in production from 8.05 MTPA to 16.0 MTPA (ROM) and handling of 2.0 MTPA Sub-grade dumps, tailings and installation of new dry processing plant of 7.0 MTPA for Taldih and 4.0 MTPA for Kalta and augmentation of existing 3.5 MTPA Barsua Beneficiation plant along with adequate loading, siding and associated infrastructure in the amalgamated mine lease area of 2558.581 ha.
Name of Entity / Corporate Office	Barsua-Taldih-Kalta Iron Mines
Village(s)	BAHAMBA
District	SUNDARGARH

Proposal No.	IA-OR-MIN-291173-2021
Plot / Survey / Khasra No.	
State	ODISHA
MoEF File No.	J-11015-351-2006-IA.II(M)

Category	Non-Coal Mining
Sub-District	Lahunipara
Entity's PAN	*****7062F
Entity name as per PAN	STEEL AUTHORITY OF INDIA LTD

Compliance Reporting Details

Reporting Year 2025

Remarks (if any)

Reporting Period 01 Jun(01 Oct - 31 Mar)

Details of Production and Project Area

Name of Entity / Corporate Office Barsua-Taldih-Kalta Iron Mines

	Project Area as per EC Granted	Actual Project Area in Possession
Private	24.014	24.014
Revenue Land	114.696	114.696
Forest	2419.87	2419.87
Others	0	0
Total	2558.58	2558.58

Production Capacity

Sr. no	Product Name	units	Valid Upto	Capacity	Production last year	Capacity as per CTO
1	Iron Ore	Million Tons per Annum (MTPA)	31/03/2025	16	7.34	10
2	Sub-grade/tailings	Million Tons per Annum (MTPA)	31/03/2025	2	0.45	2

Conditions

Specific Conditions

Sr.No.	Condition Type	Condition Details
1	Statutory compliance	This EC will be subject to the outcome of the Writ Petition (C) No-24282-2017 in the Hon'ble High Court of Odisha, Cuttack.
PPs Submission: Agreed to Comply Agreed		Date: 29/05/2025
2	Statutory compliance	The Environmental Clearance (EC) is accorded for the reduced area of 2558.581 Ha (FC available 2419.871 ha plus non-forest land 138.710 ha) out of 2564.323 ha.
PPs Submission: Complied The 5.742 ha of forest land has been surrendered to the Govt. of Odisha vide proceeding no. 10426/S-M, Bhubaneswar, dated 16.10.2023 and amended lease deed for reduced area of 2558.581 ha has been executed on 14.11.2024. Also, amendment in EC for reduced area has been obtained vide Order No. J-11015/351/2006- IA.II (M), dated 08.05.2025		Date: 29/05/2025
3	Statutory compliance	No mining activity shall be carried out over an area of 5.742 ha (Schedule Tribe and Other Traditional Forest Dwellers).
PPs Submission: Complied Agreed. Amended lease deed for reduced area of 2558.581 ha has been executed on 14.11.2024. Also, amendment in EC for reduced area has been obtained vide Order No. J-11015/351/2006- IA.II (M), dated 08.05.2025.		Date: 29/05/2025
4	Noise Monitoring & Prevention	The Project Proponent shall install the noiseless conveyor. Installation of the conveyor should be completed within two years after obtaining forest clearance of the proposed conveyor route.
PPs Submission: Being Complied Installation of conveyor belt for transportation of ore from Taldih Mine to Barsua Railway Siding in under progress. In this regard, Mine Service Agreement has been signed with M/s Adani Enterprises Limited on 20.11.2024 for development and operation of Mines at Taldih including installation of conveyor belt. Regarding installation of conveyor belt for transportation of ore from Kalta Mine to Roxy Railway Siding, preparation of DPR is under process at CET, Ranchi. Further, EC has been amended vide letter dated 08.05.2025 for amendment of the condition as, 'the Project Proponent shall commence the operation of the conveyor belt from Taldih mine to Barsua Railway siding by 26.04.2027 and from Kalta mine to Roxy Railway siding by 26.04.2028'		Date: 29/05/2025
5	AIR QUALITY MONITORING AND PRESERVATION	The Project Proponent shall undertake the stringent air pollution measures to control the air pollution in the vicinity of the mine lease area and the efforts made and the outcome shall be submitted to the

		Ministry's Integrated Regional Office. The Project Proponent shall ensure that the concentration of the air pollutants does not exceed the prescribed National Ambient Air Quality Standards (NAAQS).
PPs Submission: Being Complied Stringent air pollution measures are being implemented to control the air pollution in the vicinity of the mine lease area and to ensure that the concentration of the air pollutants are well within the prescribed National Ambient Air Quality Standards (NAAQS). The effort made towards control of air pollution in the vicinity of the mine lease area are as follows: Drilling and Blasting: Drilling Machines are equipped with dust extractors and wet drilling system. Controlled blasting using Nonel and Delay techniques. Haul Roads of Barsua Mine: Fixed water sprinklers along the permanent haul roads and 2 X 28KL mobile water tankers. Haul Roads of Barsua Railway Siding: Concrete approach road and fixed water sprinklers along the approach road and 1 X 12 KL and 1 X 10 KL mobile water tankers. Haul Roads of Taldih Mine: 1 X 12 KL and 2 X 20 KL mobile water tankers. Haul Roads of Kalta Mine: Fixed water sprinklers along the permanent haul roads and 5 X 16 KL and 1 X 10 KL mobile water tankers. Ore Transportation from Barsua Mine to Barsua Railway Siding: Closed conveyors Ore Transportation from Taldih Mine to Barsua Railway Siding: By Road from Taldih Mine to Barsua Railway Siding. Concrete approach road and Mechanized wheel washing facility at the exit point of the mine. The trucks are covered with tarpaulin and transport roads are cleaned regularly with mechanical road sweeping machine. Ore Transportation from Kalta Mine to Roxy Railway Siding: By Road from Kalta Mine to Roxy Railway Siding. Concrete approach road and Mechanized wheel washing facility at the exit point of the mine. The trucks are covered with tarpaulin. Crushing and Screening Plant at Barsua Mine: Dry Fog Dust Suppression Systems (DFDS). Mobile Crushing and Screening Plant at Taldih and Kalta Mine: Mist Cannons and water injection system. Fines Handling Areas: Mist Cannon and Water Spraying. The Air Quality for the period October, 2024 to March, 2025 is enclosed as Annexure - I. As per the monitoring result, the air quality is well within National Ambient Air Quality Standards (NAAQS).		Date: 29/05/2025
6	WATER QUALITY MONITORING AND PRESERVATION	The surface water quality from upstream and downstream are to be regularly monitored.
PPs Submission: Being Complied Regular monitoring of water quality of upstream and downstream of the nearby water body i.e. Kuradih Nallah as well as Samaj Nallah are being carried out and record of monitored data is being maintained and submitted to the MoEFCC and its Regional Office located at Bhubaneswar on six monthly basis. The monitoring is being done through an accredited laboratory M/s Superintendence Co. of India (P) Ltd. The surface water quality for the period from October, 2024 to March, 2025 is enclosed as Annexure - II		Date: 29/05/2025
7	WATER QUALITY MONITORING AND PRESERVATION	The Project Proponent needs to maintain zero discharge and garland drains, settling ponds needs to be properly designed. Stone pitching shall be made at suitable places to regulate water flow.
PPs Submission: Being Complied The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for collection of runoff and settlement of suspended solids. Also, wastewater generated from wet beneficiation plant beneficiation plant is being treated in thickener and about 60 percent of clear water from the thickener is being recycled back to the system. The underflow from thickener is discharged into Tailing Dam for further solid - liquid separation. The overflow from the tailings pond is further collected in the Zero Discharge System and recycled back to the system for further use. Check dams / Retaining wall / Toe walls have been provided at appropriate places to regulate water flow		Date: 29/05/2025
8	MISCELLANEOUS	The Project Proponent needs to facilitate the online education system in the schools by providing Wi-Fi connectivity, smart classrooms and desktops, tablets.
PPs Submission: Being Complied Facilities for online education system are being provided in the peripheral school as per requirement.		Date: 29/05/2025

Internet facility with desktop for smart classroom has been provided in Tinko High School, Swamba High School and Phuljhar High School		
9	WATER QUALITY MONITORING AND PRESERVATION	The Project Proponent shall take adequate measures to protect the perennial nallas.
PPs Submission: Being Complied Due precautions are being taken and ensured that no natural watercourse / drainage channels obstructed due to any mining operation at the mines. Check dams / Retaining walls / Toe walls have been provided at strategic locations in Barsua-Taldih-Kalta Iron Mines to prevent flow of washout to nearby water bodies. Also, the surface run-off generated from the mine is channelized through a series of garland drains to the lowest level of the pits for collection of runoff and settlement of suspended solids. The details of Retaining walls, Garland drains and settling pits provided in Barsua-Taldih-Kalta Iron Mines for management of surface run-off are enclosed. Further, construction of 750 m retaining wall with Garland Drain and settling pit at Barsua block is under progress		Date: 29/05/2025
10	AIR QUALITY MONITORING AND PRESERVATION	The Project Proponent needs to install the permanent water sprinklers along the haul road and the approach road. Further, 10 nos. of fog canon or mist sprayer of atleast 40 m throw shall be installed at various locations in the mine area.
PPs Submission: Being Complied Fixed water sprinklers have been provided in the permanent haul roads. Further, regular water sprinkling is being done with mobile water tankers. The deployment of Fog/Mist Canon at the mining and allied activities of Barsua-Taldih-Kalta Iron Mines is enclosed		Date: 29/05/2025
11	PUBLIC HEARING	The budget of Rs. 21.88 Cr to address the concerns raised by the public including in the public hearing to be completed within 3 years from the date of start of mining operations. PP shall comply with all action plans made for public hearing concerns and make regular maintenance and record the progressive activity outcomes.
PPs Submission: Being Complied The commencement of the expansion project has been started from 20.11.2024 and installation of various facilities are under progress. The action plans made to address the concerns raised by the public in the public hearing will be completed within 3 years from the date of start of mining operations. To address the concerns raised by the public in the public hearing, an amount of Rs. 11.72 Cr has been incurred up to March, 2025. The details of achievement made against action plan is enclosed as Annexure - XVII		Date: 29/05/2025
12	Corporate Environmental Responsibility	The Project Proponent should adopt the proper mitigation measures as proposed under EMP with budgetary provision of Rs.111.88 Crores. The adoption of mitigation measures and monitoring of the same as proposed in the EMP shall be done under the supervision of the qualified environmental personnel. The implementation status of the same shall be submitted to the Ministry's Integrated Regional Office.
PPs Submission: Agreed to Comply The commencement of the expansion project has been started from 20.11.2024 and installation of various facilities are under progress. The implementation of mitigation measures as proposed under EMP with budgetary provision of Rs.111.88 Crores is under progress and will be completed before expansion of mines. An amount of Rs. 95.29 lakhs have been incurred till date on air pollution control, solid waste management, green belt development and rain water harvesting.		Date: 29/05/2025
13	MISCELLANEOUS	The Project Proponent should establish in house (at project site) environment laboratory for measurement of environment parameter with respect to air quality and water (surface and ground). A dedicated team to oversee environment management shall be setup at

		site which should comprise of Environment Engineers, Laboratory chemist and staff for monitoring of air, water quality parameters on routine basis instead of engaging environment monitoring laboratories or consultants. Any non-compliance or infringement should be reported to the concerned authority.
PPs Submission: Agreed to Comply The commencement of the expansion project has been started from 20.11.2024 and installation of various facilities are under progress. Setting up of in-house Environmental Laboratory at Barsua Mine covering air, water and noise monitoring is under consideration as part of the capacity expansion of the Mines to 16 MTPA and expected to be provided by December, 2026. Presently monitoring is being done through an accredited laboratory M/s Superintendence Co. of India (P) Ltd.		Date: 29/05/2025
14	GREENBELT	The Project Proponent shall ensure the survival rate of 95 Percent for planting the gap plantation and new plantation. The Project Proponent shall make the actual count on the saplings planted and its survival rate and in case of failure of achievement of 95 percent survival rate, action plan for achieving the target survival rate shall be submitted to the Ministry's Integrated Regional Office. Project proponent shall use saplings of 10 ft height for plantation.
PPs Submission: Being Complied Post plantation maintenance has been made compulsory to ensure the survival rate of 95 percent for planting the gap plantation and new plantation. 18 months old saplings from State Forest Department are being used for plantation. The details of plantation along with survival rate is enclosed at Annexure - X		Date: 29/05/2025
15	Human Health Environment	The Project Proponent should periodically monitor and maintain the health records of the mine workers digitally prior to mining operations, at the time of operation of mine and post mining operations. Regular surveillance shall be carried through regular occupational health check-up every year for mine workers. PP shall also organize medical camp for the benefit of the local people and also the monitor the health impacts due to mining activity.
PPs Submission: Being Complied A full-fledged Occupational Health Centre (OHC) is run by the mines for regular health surveillance. Initial medical examination (IME) and Periodical Medical Examination (PME) of all workmen working in the mines is being done as per DGMS guideline. During October, 2024 to March, 2025, IME for 128 nos. of contractual employees and PME for 137 nos. of contractual employees and 33 nos. of regular employees have been done and records are being maintained. Medical Health Camp and free Ambulance services in the nearby villages namely Taldih, Tantra, Bahamba, Sasyakala, Kalta, Roxy, Gundichanali etc. are being provided on regular basis. Also, Health Workers in peripheral PHCs are being provided as per requirement.		Date: 29/05/2025
16	LAND RECLAMATION	The mining lease holders shall, after ceasing mining operations, undertake regrassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. The implementation report of the above said condition shall be submitted to the Ministry's Integrated Regional Office.
PPs Submission: Agreed to Comply Addendum to the existing lease deed has been executed on 04.06.2020 incorporating the condition that "the mining lease holder (s) shall after ceasing mining operation, undertake re-grassing the mining area and any other area which may have disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc." in pursuant to judgment of Hon'ble Supreme Court in WP(C) No.114 of 2014.		Date: 29/05/2025
17	MISCELLANEOUS	The Project Proponent should follow-up the status of implementation on Site Specific Wildlife Conservation Plan from the

		Forest Officials and the same shall be submitted to the Ministry's Integrated Regional Office in the six-monthly compliance reports.
PPs Submission: Being Complied Two Site Specific Wildlife Conservation Plans (SSWCP) have been approved by Chief Wildlife Warden, Odisha vide letters dated 25.02.2013 for 2486.313 ha under ML-130 and vide letter dated 13.01.2016 for 77.94 ha under ML-162. An amount of Rs.17.82 Crores and Rs. 9.84 Crores respectively were deposited in CAMPA for implementation of approved SSWCPs in project impact area of Barsua-Taldih-Kalta Iron Mines. The implementation of the plan under ML-130 was started from 2016-17 and plan under ML-162 was started from 2023-24 by the State Forest Department. The Site Specific Wildlife Conservation Plans will be revised after completion of implementation.		Date: 29/05/2025
18	MINING PLAN	The Project Proponent shall effectively utilize the low grade Iron ore.
PPs Submission: Being Complied The low-grade iron ore i.e. mineral rejects are being suitably blended from time to time, wherever possible with high-grade ore and / or feed to the beneficiation plant. In addition to the above, as allowed by Ministry of Mines, Govt. of India in its order dated 16.09.2019 with amendments on 04.01.2020 and 03.12.2020, the low-grade ores and tailings lying at mine pit heads of SAIL Mines are being sold in the open market. During the period October, 2024 to March, 2025, 393467.34 Tonnes of tailings and 56705.05 Tonnes of sub-grade fines has been sold in open market.		Date: 29/05/2025
19	WASTE MANAGEMENT	The Project Proponent needs to utilize the mine waste water having high concentration of Fe content for different commercial applications in industries such as cosmetics, pharmaceutical, paint industry.
PPs Submission: Being Complied The mine waste water generated from Barsua-Taldih-Kalta Iron Mines is not discharged outside the mining premises. The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Effluents generated from the ore beneficiation plant of Barsua Iron Mine is being treated in Thickeners and about 60 percent of clear water from the thickener is being recycled back to the system. The underflow from thickener is discharged into Tailing Dam for further solid - liquid separation. The overflow from the tailings pond is further collected in the Zero Discharge System and recycled back to the system for further use. Further, Oil and Grease trap has been provided for the workshop at Barsua Iron Mines. The treated water is used for floor washing and gardening.		Date: 29/05/2025
20	AIR QUALITY MONITORING AND PRESERVATION	The Project Proponent needs to complete the work of the concrete road from Kalta mine to NH-520 by September, 2023. No village road shall be used for transportation of minerals.
PPs Submission: Complied No village roads are being used for transportation of minerals. The concrete permanent approach road from Kalta Mine to NH-520 has been completed.		Date: 29/05/2025
21	AIR QUALITY MONITORING AND PRESERVATION	The Project Proponent shall pay to farmers of agricultural land if there is any loss due to pollution found by concerned District Commissioner as per extent rules or norms.
PPs Submission: Being Complied Compensation is being paid to the farmers of Kalta and Jhirpani as per the rate fixed by District Administration		Date: 29/05/2025
22	AIR QUALITY MONITORING AND PRESERVATION	The Project Proponent shall take adequate measures to prevent the pilferage of mineral.

PPs Submission: Being Complied The vehicles carrying ore from Taldih and Kalta Iron Mine are being covered with tarpaulins to prevent the pilferage of mineral during transportation. Also, Drivers and truck operators are being imparted training on the adverse effects of dust pollution, water pollution due to ore spillage on roads		Date: 29/05/2025
23	AIR QUALITY MONITORING AND PRESERVATION	The Project Proponent shall carry out the vacuum cleaning all along the mineral transportation route.
PPs Submission: Being Complied Vacuum cleaning is being done all along the mineral transportation route to prevent accumulations dust and to minimize generation of fugitive dust emissions during plying of heavy vehicles		Date: 29/05/2025
24	Corporate Environmental Responsibility	The Project Proponent shall explore the possibility of using atleast 20 percentage of electric vehicles or LNG or CNG instead of diesel operation within three years from the start of mining operations.
PPs Submission: Agreed to Comply The commencement of the expansion project has been started from 20.11.2024 and installation of various facilities are under progress. The possibility of using electric vehicles instead of diesel operation vehicles will be explored within three years from the start of mining operations		Date: 29/05/2025
25	AIR QUALITY MONITORING AND PRESERVATION	The Project Proponent shall commence the operation of the conveyor belt within 2 years from the date of issue of this EC, till the conveyor belt is implemented, SPCB shall grant CTO upto 12 MTPA Only (consisting of 4 MTPA from Barsua, 2 MTPA from Taldih and 4 MTPA from Kalta and 2 MTPA subgrade or tailings). After the operational of conveyor belt, SPCB may grant CTO upto 16 MTPA ((4 MTPA from Barsua, 8 MTPA from Taldih and 4 MTPA from Kalta) and 2 MTPA subgrade or tailings) based on site inspection of compliance of this conditions.
PPs Submission: Being Complied Installation of conveyor belt for transportation of ore from Taldih Mine to Barsua Railway Siding in under progress. In this regard, Mine Service Agreement has been signed with M/s Adani Enterprises Limited on 20.11.2024 for development and operation of Mines at Taldih including installation of conveyor belt. Regarding installation of conveyor belt for transportation of ore from Kalta Mine to Roxy Railway Siding, preparation of DPR is under process at CET, Ranchi. Further, EC has been amended vide letter dated 08.05.2025 for amendment of the condition as, "the Project Proponent shall commence the operation of the conveyor belt from Taldih mine to Barsua Railway siding by 26.04.2027 and from Kalta mine to Roxy Railway siding by 26.04.2028". Further, in compliance to the condition, CTO granted by SPCB for 12 MTPA only on 31.03.2025 with validity up to 31.03.2026		Date: 29/05/2025
26	AIR QUALITY MONITORING AND PRESERVATION	PP shall obtain NOC from Department of Steel and Mines, Odisha for extension of timeline to implement condition conveyor belt for transportation of minerals beyond the stipulated timeline as per guidelines, recommendation of NEERI.
PPs Submission: Being Complied NOC was obtained from the Department of Steel and Mines, Odisha vide letter dated 06.05.2023 for continuation of existing road transportation of iron ore from Taldih Mine for 2 years and Kalta Mine for 3 years w.e.f. 01.04.2023. Again, request letter has been submitted to DDM, Koira on 07.12.2024 for extension of NOC, for further period of two years from Taldih and Kalta Mines which has been recommended by DDM, Koira and forwarded to Director of Mines and Geology on 11.03.2024 which has been subsequently forwarded to Govt. of Odisha		Date: 29/05/2025
27	MISCELLANEOUS	The Project Proponent shall submit a progress report of implementation of the conveyor belt in compliance report of EC vide

		six monthly reports to the Integrated Regional Office (IRO), Ministry.
PPs Submission: Being Complied Installation of conveyor belt for transportation of ore from Taldih Mine to Barsua Railway Siding in under progress. In this regard, Mine Service Agreement has been signed with M/s Adani Enterprises Limited on 20.11.2024 for development and operation of Mines at Taldih including installation of conveyor belt and accordingly installation of various facilities are under progress. Regarding installation of conveyor belt for transportation of ore from Kalta Mine to Roxy Railway Siding, preparation of DPR is under process at CET, Ranchi		Date: 29/05/2025
28	MISCELLANEOUS	The Project Proponent shall also organize employment-based apprenticeship or internship training program every year with appropriate stipend for the youth and other programs to enhance the skill of the local people. The data should be maintained for the training imparted to the persons and the outcome of the training, for the assessment of the training program should be analyzed periodically and improved accordingly.
PPs Submission: Being Complied Apprenticeship training program are being provided to enhance the skill with appropriate stipend as per Rules. During 2023-24, 14 nos. apprenticeship trainees has been appointed to enhance the skill.		Date: 29/05/2025

General Conditions

Sr.No.	Condition Type	Condition Details
1	Statutory compliance	Project Proponent and Department of Steel and Mines, Govt. of Odisha shall ensure the implementation of recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and, or manganese in the State of Odisha.
PPs Submission: Being Complied The implementation of recommendations of carrying capacity study report conducted by CSIR-NEERI are under progress and will be ensured during mining operation		Date: 29/05/2025
2	Statutory compliance	Department of Steel and Mines, Govt. of Odisha should prepare 5 years regional plan for annual iron ore requirement from the state, which in turn shall be met from different mines or zones (e.g. Joda, Koira.) in the state. Accordingly, sustainable annual production (SAP) for each zone or mine may be followed adopting necessary environmental protection measures.
PPs Submission: Being Complied Review of Mining Plan of Amalgamated Barsua-Taldih-Kalta Iron Mines for the period 2025-26 to 2029-30 with annual iron ore requirement and necessary environmental protection measures has been prepared and duly approved by IBM, Bhubaneswar. Further, Barsua-Taldih-Kalta Iron Mines will abide the Sustainable Annual Production limit mentioned in Regional Plan prepared by the Department of Steel and Mines, Govt. of Odisha		Date: 29/05/2025
3	Statutory compliance	Project Proponent shall construct the cement concrete road from mine entrance and exit to the main road with proper drainage system and green belt development along the roads and also construction of road with minimum 300 m inside the mine. This should be done within one year for existing mines and new mine should have since beginning. The Department of Steel and Mines, Govt. of Odisha should ensure the compliance and should not issue the Mining Permits, if mine lease holder has not constructed proper cement concrete road as suggested. This Environmental Clearance for the

		expansion project shall be operated only after the compliance of the above mentioned specific condition.
PPs Submission: Complied 300 m Concrete approach road from mine entrance and exit to the main road have been provided at Taldih Iron Mine, Barsua Railway Siding, Kalta Iron Mine and Roxy Railway Siding with proper drainage system		Date: 29/05/2025
4	AIR QUALITY MONITORING AND PRESERVATION	The Committee observed that as per the recommendations of NEERI report the PP needs to do regular vacuum cleaning of all mineral carrying roads aiming at "zero dust re-suspension" within 3 months. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.
PPs Submission: Being Complied Same as stated in specific condition no. 26.		Date: 30/05/2025
5	AIR QUALITY MONITORING AND PRESERVATION	Project Proponent shall monitor the environmental quality parameters as per EC and CTE, CTO conditions, and implementation of suggested measures for control of road dust and air pollution. Odisha State Pollution Control Board has to ensure the compliance of CTE, CTO. Regional office of the MoEF and CC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional office of the Indian Bureau of Mines (IBM) shall monitor the compliance of mining plan and progressive mine closure plan. Any violation by mine lease holder may invite actions per the provisions of applicable Acts.
PPs Submission: Being Complied Mine is ensuring the strict compliance to monitoring of environmental quality parameters and implementation of air pollution control measures as per EC and CTE/CTO conditions. Amalgamated Barsua-Taldih-Kalta iron mines of SAIL is regularly submitting the half-yearly EC and CTO compliance reports to respective authorities. Amalgamated Barsua-Taldih-Kalta iron mines will continue to furnish the required information and extend all support during the site visits by statutory agencies		Date: 29/05/2025
6	AIR QUALITY MONITORING AND PRESERVATION	Project Proponent shall ensure the compliance of Suggested Ore Transport Mode (SOTM) with association of the State Government of Odisha. All existing mines should ensure adoption of SOTM within next 5 years. New mines or mines seeking expansion should incorporate provision of SOTM in the beginning itself, and should have system in place within next 5 years.
PPs Submission: Being Complied Amalgamated Barsua-Taldih-Kalta Iron Mines has an existing EC capacity of 16.0 MTPA ROM and handling of 2.0 MTPA of tailings/subgrade, and consisting of three blocks namely Barsua, Taldih and Kalta having individual EC capacity of 4.0 MTPA, 8.0 MTPA and 4.0 MTPA respectively. Presently the Iron Ore is being transported through closed conveyors from Barsua Iron Mines to Barsua Railway siding and through road from Taldih and Kalta Iron Mines to Barsua and Roxy Railway siding respectively. SAIL is in the process of installation of Conveyor belts to the respective railway sidings in compliance to suggested SOTM. Further, as per the amendment in EC dated 08.05.2025, the commencement of operation of the conveyer belt from Taldih mine to Barusa Railway siding shall be completed by 26.04.2027 and from Kalta mines to Roxy Railway siding shall be completed by 26.04.2028. However, during the construction phase, Taldih Iron Mine shall continue to transport 2.0 MTPA of iron ore through existing transport road to Barsua Railway Siding and Kalta Iron Mines shall continue to transport 4.0 MTPA iron ore through existing transport road to Roxy Siding for which necessary NOC has been obtained from Govt. of Odisha. Final product is dispatched from the SAIL's private railway siding through rail.		Date: 29/05/2025

7	Corporate Environmental Responsibility	The Project Proponent shall submit the time-bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the activities committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEFCC Office Memorandum No.22-65-2017-IA.III dated 30 September 2020. The action plan shall be implemented within three years of commencement of the project.
PPs Submission: Being Complied Same as stated in specific condition no. 12		Date: 30/05/2025
8	AIR QUALITY MONITORING AND PRESERVATION	The State Govt. of Odisha shall ensure dust free roads in mining areas wherever the road transportation of mineral is involved. The road shoulders shall be paved with fence besides compliance with IRC guidelines. All the roads should have proper drainage system and apart from paving of entire carriage width the remaining right of way should have native plantation (dust capturing species). Further, regular maintenance should also be ensured by the Govt. of Odisha. Progress on development of dust free roads, implementation of SOTM, increased use of existing rail network, development of additional railway network or conveyor belt or pipelines etc. shall be submitted periodically to Regional office of the MoEF and CC.
PPs Submission: Being Complied Concrete approach roads are provided at Taldih Mine, Barsua Railway Siding, Kalta Mine and Roxy Railway Siding with proper drainage system. Further, water sprinklers are provided in the internal roads to ensure dust free roads in mining areas. Natural plantation exists along the transportation roads. Six monthly compliances are being submitted regularly along with the updated status of conditions.		Date: 29/05/2025
9	Statutory compliance	Project Proponent shall develop the parking plazas for trucks with proper basic amenities or facilities inside the mine. This should be done within one year for existing mines and new mines should have since beginning. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above-mentioned specific condition.
PPs Submission: Complied Parking plazas have already been developed at Taldih and Kalta Iron Mines with proper basic amenities		Date: 29/05/2025
10	Statutory compliance	Department of Steel and Mines shall ensure the construction of NH 215 as minimum 4 lane road with proper drainage system and plantation and subsequent regular maintenance of the road as per IRC guidelines. Construction of other mineral carrying roads with proper width and drainage system along with road side plantation to be carried out. This shall be completed within 2 Years.
PPs Submission: Complied Construction of NH - 520 (old NH - 215) with 4 lane road has been completed and is in use. Evacuation of iron ore from Kalta Mine to Roxy railway Siding is being done through the NH - 520. Natural plantation exists on both side of the roads		Date: 29/05/2025
11	AIR QUALITY MONITORING AND PRESERVATION	Regular vacuum cleaning of all mineral carrying roads aiming at "Zero Dust Re- suspension" shall be adopted by PWD or NHAI or Mine Lease Holders within a time Period of 3 months for existing roads. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above-mentioned specific condition.

PPs Submission: Being Complied Same as stated in specific condition no. 26		Date: 29/05/2025
12	Statutory compliance	In case the total requirement of iron ore exceeds the suggested limit for that year, permission for annual production by an individual mine may be decided depending on approved EC capacity (for total actual dispatch) and actual production rate of individual mine during last year or any other criteria set by the State Govt., i.e. Dept. of Steel and Mines. Department of Steel and Mines in consultation with Indian Bureau of Mines-RO should prepare in advance mine-wise annual production scenario so that demand for iron ore can be anticipated, and actual production-dispatch does not exceed the suggested annual production.
PPs Submission: Agreed to Comply Amalgamated Barsua - Taldih - Kalta Iron Mines will abide by the guidelines issued by the Department of Steel and Mines, Govt. of Odisha in this regard		Date: 29/05/2025
13	AIR QUALITY MONITORING AND PRESERVATION	Air Environment Related: Project Proponent shall implement the following mitigation measures: (i) Fugitive dust emissions from all the sources should be controlled regularly on daily basis. Water spraying arrangement on haul roads, loading and unloading and at other transfer points should be provided and properly maintained. Further, it will be desirable to use water fogging system to minimize water consumption. It should be ensured that the ambient air quality parameters conform to the norms prescribed by the CPCB in this regard. (ii) The core zone of mining activity should be monitored on daily basis. Minimum four ambient air quality monitoring stations should be established in the core zone for SPM, PM10. PM2.5, SO2. NOx and CO monitoring. Location of air quality monitoring stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board (based on Emission Load Assessment Study). The number of monitoring locations may be more for larger capacity mines and working in larger area. Out of four stations, one should be online monitoring station in the mines having more than 3 MTPA EC Capacity. (iii) Monitoring in buffer zone should be carried out by SPCB or through NABET accredited agency. In addition, air quality parameters (SPM, PM10. PM2.5, SO2, NOx and CO) shall be regularly monitored at locations of nearest human habitation including schools and other public amenities located nearest to source of the dust generation as applicable. (iv) Emissions from vehicles as well as heavy machinery should be kept under control and regularly monitored. Measures should be taken for regular maintenance of vehicles used in mining operations and in transportation of mineral. (v) The vehicles shall be covered with a tarpaulin and should not be overloaded. Further, possibility of closed container trucks should be explored for direct to destination movement of iron ore. Air quality monitoring at one location should also be carried out along the transport route within the mine (periodically, near truck entry and exit gate), Responsibility: Individual Mine Lease Holders and SPCB.
PPs Submission: Being Complied i) Same as stated in specific condition no. 6. ii) The core zone of mining activity is being monitored in 12 locations on daily basis through NABET accredited agency. The fugitive emission monitoring for the period October, 2024 to March, 2025 is enclosed as Annexure - I. Further, three manual ambient air quality monitoring stations have been established in core zone for monitoring of PM10, PM2.5, SO2, NOx and CO twice in a week and one Continuous Ambient Air Quality monitoring		Date: 29/05/2025

	system (CAAQMS) have been installed in consultation with the State Pollution Control Board. The details of air quality monitoring locations are enclosed as Annexure - XIII. iii) Monitoring in buffer zone is being carried out in 5 locations through NABET accredited agency twice in a week for PM10, PM2.5, SO2, NOx and CO nearest to human habitation. iv) Vehicular emission of all the vehicles used in mining activities is being done at regular intervals. The vehicular emission results are enclosed in Annexure - IX. Maintenance of all the machineries/ equipment/ transport vehicles are being carried out as per manufacturer's instructions/ recommended time schedule. For outsiders transport vehicle, it is mandatory for any vehicle entering the mine premises to have a PUC and valid fitness certificate. v) All the vehicles exiting the mine gate are checked for use of tarpaulin cover and overload. There is no direct to destination movement of iron ore from Batsua-Taldih-Kalta Iron Mines. The iron ore is being transported up to the railway siding and then through rail. Further, air quality monitoring at one location is being carried out along the transport route within the mine.	
14	Noise Monitoring & Prevention	Noise and Vibration Related: Project Proponent shall implement the following mitigation measures: (i) Blasting operation should be carried out only during daytime. Controlled blasting such as Nonel, should be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs or muffs (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone. Further, date, time and distance of measurement should also be indicated with the noise levels in the report. The data should be used to map the noise generation from different activities and efforts should be made to maintain the noise levels with the acceptable limits of CPCB (CPCB, 2000) (iv) Similarly, vibration at various sensitive locations should be monitored at least once in month, and mapped for any significant changes due to successive mining operations. Responsibility: Individual Mine Lease Holders.
	PPs Submission: Being Complied i) Blasting operations are carried out in day time only and controlled blasting practices are being carried out by using Nonel and Delay techniques so as to ensure minimal ground vibration. ii) Adequate measures such as acoustic cabins with air conditioners for all HEMMs, silencers for exhaust manifold, scheduled maintenance of HEMM and Plant Machinery, control blasting, acoustic enclosure of DG sets are being taken for control of work noise levels below 85 dBA in the work environment. Noisy Operations have been identified and persons engaged in such operations are provided with earplugs/muffs. iii) Noise levels are being monitored at 14 locations on weekly basis at the major sources of noise generation within core zone. The measured noise levels are enclosed as Annexure -VIII. The noise levels are within the acceptable limits of CPCB (CPCB, 2000). iv) Blast induced ground vibrations are being monitored regularly. The result of the ground vibration is enclosed as Annexure - XIV. The results indicate that, ground vibrations are well within the limit of DGMS guideline.	Date: 29/05/2025
15	WATER QUALITY MONITORING AND PRESERVATION	Water or Wastewater Related: Project Proponent shall implement the following mitigation measures: (i) In general, the mining operations should be restricted to above ground water table and it should not intersect groundwater table. However, if enough resources are estimated below the ground water table, the same may be explored after conducting detailed geological studies by GSI and hydro- geological studies by CGWB or NIH or institute of national repute, and ensuring that no damage to the land stability or water aquifer system shall happen. The details or outcome of such study may be reflected or incorporated in the EIA-EMP report of the mine appropriately. (ii) Natural watercourse and-or water resources should not be obstructed due to any mining operations. Regular monitoring of the flow rate of the springs and perennial nallas should be carried out and records should be maintained. Further, regular monitoring of water quality of nallas and river passing thorough the mine lease area

		(upstream and downstream locations) should be carried out on monthly basis. (iii) Regular monitoring of ground water level and its quality should be carried out within the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out on monthly basis. (iv) In order to optimize water requirement, suitable conservation measures to augment ground water resources in the area should be undertaken in consultation with Central Ground Water Board (CGWB). (v) Suitable rainwater harvesting measures on long term basis should be planned and implemented in consultation with CGWB, to recharge the ground water source. Further, CGWB can prepare a comprehensive plan for the whole region. (vi) Appropriate mitigation measures (viz. ETP, STP, garland drains. retaining walls, collection of runoff etc.) should be taken to prevent pollution of nearby river or other water bodies. Water quality monitoring study should be conducted by State Pollution Control Board to ensure quality of surface and ground water sources on regular basis. The study can be conducted through NABL or NABET approved water testing laboratory However, the report should be vetted by SPCB. (vii) Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated in ETP so as to conform to the discharge standards applicable. (viii) Oil and grease trap should be installed before discharge of workshop effluents. Further, sewage treatment plant should be installed for the employees or colony, wherever applicable. (ix) Mine lease holder should ensure that no silt originating due to mining activity is transported in the surface water course or any other water body. Appropriate measures for prevention and control of soil erosion and management of silt should be undertaken. Quantity of silt-soil generated should be measured on regular basis for its better utilization. (x) Erosion from dumps site should be protected by providing geo-textile matting or other suitable material, and thick plantation of native trees and shrubs should be carried out at the dump slopes. Further, dumps should be protected by retaining walls. (xi) Trenches - garland drain should be constructed at the foot of dumps to arrest silt from being carried to water bodies. Adequate number of check dams should be constructed across seasonal or perennial nallas (if any) flowing through the mine lease areas and silt be arrested. De-silting at regular intervals should be carried out and quantity should be recorded for its better utilization, after proper soil quality analysis. (xii) The water so collected in the reservoir within the mine should be utilized for the sprinkling on hauls roads, green belt development etc. (xiii) There should be zero waste water discharge from the mine. Based on actual water withdrawal and consumption or utilization in different activities, water balance diagram should be prepared on monthly basis, and efforts should be made to optimize consumption of water per ton of ore production in successive years. Responsibility. Individual Mine Lease Holders, SPCB and CGWB.
PPs Submission: Being Complied (i) Based on nearby wells and water bodies, the minimum and maximum depths of the water table are 404 mRL and 593 mRL, respectively. As per the Conceptual Plan, the ultimate pit depth will be 617 mRL; hence, mining will not intersect or disturb the groundwater table during operations. (ii) No natural watercourse is obstructed by mining activities. The flow rates of Kuradih Nalla (Barsua) and Samaj Nalla (Taldih and Kalta) are monitored monthly with records maintained. Surface water quality of these Nallas at upstream and downstream locations is also monitored monthly. Flow rate and surface water quality data from Oct 2024 to Mar 2025 are attached as Annexure-II and III. (iii) Groundwater level and quality are monitored monthly through selected open and tube wells around Barsua Valley, Tensa, and Kalta. Results are enclosed in Annexure-IV and V. (iv) During monsoon, mine pit water is retained and allowed to percolate, aiding groundwater recharge. (v) A hydro-geological and rainwater harvesting feasibility study was done by M/s Tirupati Balajee Maharaj		Date: 29/05/2025

Consultant (P) Ltd. Based on the recommendations, two check dams have been built-one near the pump house in Kuradih Nalla and another at Tantra Village near Taldih. Additionally, a water body has been created in the lease area for groundwater recharge. (vi) Mitigation measures like garland drains, retaining walls, and runoff collection structures are in place to prevent contamination of nearby water bodies. Water quality is monitored monthly through NABL-accredited labs, and consolidated reports are submitted to the Odisha State Pollution Control Board (OSPCB) every six months. OSPCB also conducts periodic water quality assessments. (vii) Wastewater from workshops and mining areas is not discharged outside. Surface runoff from mines is guided through garland drains to pit bottoms for suspended solids settlement and groundwater recharge. Effluents from Barsua Iron Mine's beneficiation plant are treated using thickeners-60 percent of clear water is recycled. The thickener underflow is sent to a tailing dam for further separation, and the overflow is routed through a Zero Discharge System and reused. (viii) Oil and grease traps are installed at the Barsua-Taldih-Kalta workshop. Treated water is reused for gardening and floor cleaning. The township is spread over undulating terrain in clusters. Sewage from these clusters is managed through a network leading to septic tanks with soak pits, designed as per BIS standards. Domestic effluents are discharged to soak pits via septic tanks. (ix) A surface runoff management study by NIT Rourkela has been implemented. Runoff is directed through garland drains to pit bottoms for settling solids. Retention walls, settling pits, and check dams at strategic points prevent silt from reaching nearby water bodies. (x) Soil erosion is controlled via grass plantation and coir matting on dump slopes. Native species are planted on older dumps, which are also secured with retaining walls. (xi) Retaining walls with garland drains at dump bases arrest silt. Check dams are used to settle suspended solids and release clear water, preventing pollution of external water bodies. These dams are de-silted regularly to maintain functionality. (xii) Mine pit water is retained for seepage to aid groundwater recharge. (xiii) Wastewater from mines is not released externally. Surface runoff is channeled to the lowest pit level for suspended solids settlement and recharge. Effluents from the ore beneficiation plant are treated in thickeners, with 60 percent clear water recycled. Underflow is sent to tailing dams, and overflow is recycled through a Zero Discharge System. Continuous efforts are made to reduce specific water consumption. Water balance and per-ton water consumption data are provided in Annexure-XV.	
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16	LAND RECLAMATION	Land-Soil-Overburden Related: Project Proponent shall implement the following mitigation measures: (i) The top soil should temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long (not more than 3 years or as per provisions mentioned in the mine plan or scheme). The topsoil should be used for land reclamation and plantation appropriately. (ii) Fodder plots should be developed in the non-mineralized area in lieu of use of grazing land, if any. (iii) Over burden or low grade ore should be

		stacked at earmarked dump site (s) only and should not be kept active for long period. The dump height should be decided on case to case basis, depending on the size of mine and quantity of waste material generated. However, slope stability study should be conducted for larger heights, as per IBM approved mine plan and DGMS guidelines. The OB dump should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles should be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Proper records should be maintained regarding species, their growth, area coverage etc. (iv) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine operation, soil, OB and mineral dumps. The water so collected can be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted, particularly after monsoon and should be maintained properly. Appropriate documents should be maintained. Garland drain of appropriate size, gradient and length should be constructed for mine pit, soil. OB and mineral dumps and sump capacity should be designed with appropriate safety margin based on long term rainfall data. Sump capacity should be provided for adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de-silted at regular intervals. (v) Backfilling should be done as per approved mining plan or scheme. There should be no OB dumps outside the mine lease area. The backfilled area should be afforested, aiming to restore the normal ground level. Monitoring and management of rehabilitated areas should continue till the vegetation is established and becomes self-generating (vi) Hazardous waste such as, waste oil, lubricants, resin, and coal tar etc. should be disposed of as per provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual Mine Lease Holders.
PPs Submission: Being Complied (i) At present, marginal quantity of top soil is encountered during mining operation in the existing quarries, which are being stacked separately and used as and when required during plantation. During the year 2024-25, 425.0 cbm topsoil has been utilised out of total 1290.64 cbm topsoil stored at earmarked site for plantation purpose. The top soil will be utilized for land reclamation and plantation purpose only. (ii) There are no fodder plots in the Amalgamated Barsua-Taldih-Kalta Iron Mines. However, the mining has been planned in such a way that the entire forest land will not be disturbed at a time which will support feeding of the livestock. (iii) The over burden (OB) / sub-grade ore generated during the mining operations is being stored at earmarked sites only as per the approved Scheme of Mining. Phase wise stabilization with installation of coir mats and broadcasting of grass seeds are carried out as per approved schemes. For effective stabilization, terracing has been done in the OB dumps. Also, Geo-textile coir matting of 28000 Sq. m has been done in Barsua Block. Further, dump stability study of Barsua-Taldih-Kalta Iron Mines has been done through NIT, Rourkela and stabilisation is under progress as per recommendations. Plantation has also been carried out over all the old dump slopes for stabilization and prevention of washout. The plantation is monitored and maintained till it becomes self-sustaining. The record of plantation is being maintained. (iv) The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Further, retaining wall, garland drain, settling pits and check dams are provided at strategic locations to prevent transportation of silts to nearby water bodies. The garland drains and settling pits are periodically de-silted to keep them efficient. Surface runoff management study of Barsua-Taldih-Kalta Mining Lease has been conducted through NIT, Rourkela and implementation are under progress as per the recommendations. (v) At present, backfilling of mined out benches in the eastern side of Quarry-3, Barsua Block is under progress and mine is in operation as per the approved Review of Mining Plan. There is no OB dump outside the mine lease area. The backfilled area will be afforested after restoring to the normal ground level. (vi) Hazardous wastes management is being done as per the provisions of Hazardous Waste management and handling Rules, 2016 and	Date: 29/05/2025

amendments thereto		
17	LAND RECLAMATION	Ecology-Biodiversity (Flora-Fauna) Related: Project Proponent shall implement the following mitigation measures: (i) All precautionary measures should be taken during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. Action plan for conservation of flora and fauna should be prepared and implemented in consultation with the State Forest and Wildlife Department within the mine lease area, whereas outside the mine lease area, the same should be maintained by State Forest Department. (ii) Afforestation is to be done by using local and mixed species saplings within and outside the mining lease area. The reclamation and afforestation is to be done in such a manner like exploring the growth of fruit bearing trees which will attract the fauna and thus maintaining the biodiversity of the area. As afforestation done so far is very less, forest department needs to identify adequate land and do afforestation by involving local people in a time bound manner. (iii) Green belt development carried out by mines should be monitored regularly in every season and parameters like area under vegetation or plantation, type of plantation, type of tree species or grass species or scrubs etc., distance between the plants and survival rate should be recorded. (iv) Greenbelt is an important sink of air pollutants including noise. Development of green cover in mining area will not only help reducing air and noise pollution but also will improve the ecological conditions and prevent soil erosion to a greater extent. Further, selection of tree species for green belt should constitute dust removal or dust capturing plants since plants can act as efficient biological filters removing significant amounts of particulate pollution. Thus, the identified native trees in the mine area may be encouraged for plantation. Tree species having small leaf area, dense hair on leaf surface (rough surface), deep channels on leaves should be included for plantation. (v) Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value. (vi) Details of compensatory afforestation done should be recorded and documented by respective forest divisions and State Forest Department should present mine-wise annual status, along with expenditure details. Responsibility: Individual Mine Lease Holders and State Forest and Wildlife Department.
PPs Submission: Being Complied (i) Two Site Specific wildlife conservation plans (SSWCP) were approved by Chief Wildlife Warden, Odisha vide letter dated 25.02.2013 for 2486.313 ha and vide letter dated 13.01.2016 for 77.94 ha. An amount of Rs.17.82 Crores and Rs. 9.84 Crores were deposited for implementation of approved SSWCPs in Buffer Zone of Barsua-Taldih-Kalta Iron Mines. Also, implementations of various measures are under progress as per provision of SSWCP in consultation with the State Forest Department within the mine lease area. (ii) Plantation is being done by using local and mixed species saplings within and outside the mining lease area to enhance the biodiversity of the region. Plantation of 96,900 saplings have been done covering an area of 49 ha inside the mining lease area and plantation of 1,00,800 saplings covering an area of 47.5 ha has been done outside the mining lease area. During the year 2024-25, gap plantation of 5100 saplings within the mining lease area has been completed. The detail of plantation is enclosed at Annexure - X (iii) Green belt development done is monitored till it becomes self-sustaining and casualty replacement is being done in every season. (iv) Green belt development is being done by using native species in consultation with State Forest Department. (v) Coir matting with bamboo plantation has been done over the OB dumps in order to stabilize the dumps. (vi) The details of payment made in Ad-hoc CAMPA account towards Compensatory Afforestation (CA) is enclosed at Annexure - XVI		Date: 29/05/2025
18	Human Health Environment	Occupational Health Related: Project Proponent shall implement the following mitigation measures: (i) 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 periodically. (ii) Occupational health surveillance program for all the employees or workers (including casual workers) should be undertaken periodically (on annual basis) to observe any changes due to exposure to dust, and corrective measures should be taken immediately, if needed. (iii) Occupational health and safety measures related awareness programs including identification of work related health hazard, training on malaria eradication, HIV and health effects on exposure to mineral dust etc., should be carried out for all the workers on regular basis. A full time qualified doctor should be engaged for the purpose. Periodic monitoring (on 6 monthly basis) for exposure to respirable minerals dust on the workers should be conducted, and record should be maintained including health record of all the workers. Review of impact of various health measures undertaken (at an interval of 3 years or less) should be conducted followed by follow-up of actions, wherever required. Occupational health centre should be established near mine site itself. Responsibility: Individual Mine Lease Holders and District Administration (District Medical Officer).

PPs Submission: Being Complied (i) Personal Protective Equipment for working in dusty areas are provided to all personnel. Periodic training on safety and health aspects is carried out at the vocational training Centre. (ii) Same as stated in specific condition no. 28 (iii) Awareness programs on Occupational Health and Safety are being done regularly by BIM hospital, Tensa and IGH, Rourkela. Similar programs are arranged at site level to include all the contract workers as well. A full-time Occupational Health Centre has been established for periodic health check-up of employees and contract workers. All the health records are maintained.	Date: 29/05/2025

PPs Submission: Being Complied (i) Personal Protective Equipment for working in dusty areas are provided to all personnel. Periodic training on safety and health aspects is carried out at the vocational training Centre. (ii) Same as stated in specific condition no. 28 (iii) Awareness programs on Occupational Health and Safety are being done regularly by BIM hospital, Tensa and IGH, Rourkela. Similar programs are arranged at site level to include all the contract workers as well. A full-time Occupational Health Centre has been established for periodic health check-up of employees and contract workers. All the health records are maintained.	Date: 29/05/2025

19	Statutory compliance	This Environmental Clearance (EC) is subject to orders or 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.

PPs Submission: Agreed to Comply Agreed	Date: 29/05/2025

20	Statutory compliance	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 and Ors before commencing the mining operations.

PPs Submission: Agreed to Comply Agreed.	Date: 29/05/2025

21	Statutory compliance	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 and 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 and Ors.

PPs Submission: Agreed to Comply Subsequent to the judgment of Apex Court dated 02.08.2017, the Govt. of Odisha has issued demand notices to Barsua-Kalta Mines for payment of compensation towards excess production on or before 31st December, 2017 against EC / CTO capacity. Dy. Director of Mines (DDM), Koira vide letter dated 02.09.2017 issued a demand notice for payment of Rs. 66,89,42,779.50/- in respect of Barsua/ Kalta Iron Mines to recover price of mineral produced without / beyond EC alone under Section 21 (5) of MMDR Act, 1957. The said amount was deposited on 29.12.2017 under protest. Further, letter No.5962/Mines dtd 24.10.2017 of DDM, Koira has directed to pay compensation of Rs.90,19,71,684.40/- for mining in excess of the permissible limit under the Consent to Operate. Against the above stated demands, SAIL had filed a Writ Petition bearing WP (C) No- 24282/2017 in High Court of Odisha, Cuttack. The matter was heard and Hon'ble High Court had passed the stay order on 04.04.2018 and matter is sub-judice.	Date: 29/05/2025

22	Statutory compliance	The Project Proponent shall follow the mitigation measures provided in MoEFCC'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".

PPs Submission: Being Complied The mitigation measures suggested in MoEFCC'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" is being followed during mining operation.	Date: 29/05/2025

23	Statutory compliance	A copy of EC letter will be marked to concerned Panchayat or local NGO etc. if any, from whom suggestion or representation has been received while processing the proposal.

PPs Submission: Complied Copy of the EC letter dated 28.04.2023 has been sent to the Sarpanch office of Tensa, Sasyakala, Kalta, Chordhara villages vide letter dated 29.04.2023	Date: 29/05/2025

24	Statutory compliance	State Pollution Control Board or 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.

PPs Submission: Complied Copy of this EC letter has been sent to the Tehsildar's Office, Koira, State Pollution Control Board Regional office, Rourkela, District Industries Centre, Rourkela and Collector's office, Sundargarh vide letter dated 29.04.2023.	Date: 29/05/2025

25	Statutory compliance	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 or 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.

PPs Submission: Complied	Date:

Grant of this EC has been widely advertised in three local newspapers i.e. The New Indian Express (English), The Prameya (Odia) and The Samaja (Odia) on dated 03.05.2023. Also, copy of the same forwarded to the MoEFandCC IRO office at Bhubaneswar vide letter no. BIM/EandL/2023-24/028, dated 03.05.2023.		29/05/2025
26	Statutory compliance	The Project Proponent shall inform the MoEF and CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred. PP needs to apply for transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.
PPs Submission: Agreed to Comply Agreed.		Date: 29/05/2025
27	AIR QUALITY MONITORING AND PRESERVATION	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 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, NO2, CO and SO2 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.
PPs Submission: Being Complied 3 (three) Nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) at Barsua and Kalta has been commissioned and the monitored data is being transmitted to SPCB server. Apart from this, 6 (six) nos. of ambient air quality monitoring stations at Barsua-Taldih-Kalta Iron Mines have been established at prominent places to monitor the critical parameters viz. PM10, PM2.5, NO2, CO and SO2. The monitored data are digitally displayed at the main gate of the mine.		Date: 29/05/2025
28	MISCELLANEOUS	The Project Proponent shall prepare digital map (land use and 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.
PPs Submission: Being Complied Digital processing of the entire lease area using remote sensing technique has been studied through satellite imagery i.e. Linear Imaging Self-Scanner during March, 2021 by IIT ISM, Dhanbad. Copy of the report is enclosed as Annexure - XVIII		Date: 30/05/2025
29	AIR QUALITY MONITORING AND PRESERVATION	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 PM10 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 equipments or 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.

PPs Submission: Being Complied Same as stated in Specific Condition no. 6		Date: 30/05/2025
30	WATER QUALITY MONITORING AND PRESERVATION	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.
PPs Submission: Agreed to Comply Based on observations from nearby wells and water bodies, the minimum depth of water table is 404 mRL and maximum depth of water table is 593 mRL. Based on the Conceptual Plan, the ultimate pit depth will be 617mRL hence, throughout the course of mining operations, the ground water table will remain undisturbed and the mining operation will not intersect ground water table.		Date: 30/05/2025
31	WATER QUALITY MONITORING AND PRESERVATION	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 or 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 or State Pollution Control Board.
PPs Submission: Being Complied Monitoring of ground water level and quality is being carried out on monthly basis. Three numbers of open wells as well as tube wells have been selected all around the mines viz, Barsua Valley, Tensa and Kalta for regular monitoring of water levels and quality. The monitoring results of ground water level and quality are enclosed as Annexure - IV and Annexure - V respectively		Date: 30/05/2025
32	WATER QUALITY MONITORING AND PRESERVATION	The Project Proponent shall undertake regular monitoring of natural water course or water resources or springs and perennial nallahs existing or flowing in and around the mine lease including upstream and downstream. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. 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 or bodies existing in lease area shall be carried out four times in a 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.
PPs Submission: Being Complied No natural water course will be obstructed due to mining operations. The monitoring of flow rate of the spring and perennial nallahs i.e. Kuradih Nalla at Barsua part and Samaj Nalla at Taldih and Kalta part are being done on monthly basis and records are being maintained. Further, water quality of Kuradih Nalla and Samaj Nalla at upstream and downstream locations with respect to Barsua, Taldih and Kalta Mines are being carried out on monthly basis. The surface water quality and flow rate of perennial nalla for the period from October, 2024 to March, 2025 is enclosed as Annexure - II		Date: 30/05/2025

and Annexure - III respectively.		
33	WATER QUALITY MONITORING AND PRESERVATION	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.
PPs Submission: Being Complied The quality of polluted water generated from wet beneficiation plant and tailing pond discharge is being monitored for metal contamination along with COD, TDS, DO, pH and TSS. The monitored data is being uploaded on the website of the company along with six monthly compliance report as well as digitally displayed at the main gate of the mine. The effluent quality for the period from October, 2024 to March, 2025 is enclosed as Annexure - VI		Date: 30/05/2025
34	WATER QUALITY MONITORING AND PRESERVATION	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 or State Ground Water Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.
PPs Submission: Being Complied A Technical Feasibility Study for hydro-geological, rain water harvesting and augmentation of ground water resources has been conducted through M/s Tirupati Balajee Maharaj Consultant (P) Ltd. Two (02) nos. of Check dams have been constructed, one in Kuradih nala near pump house and other at Tantra Village near Taldih Block as per recommendation. Also, one water body has been developed in the lease area for ground water recharge.		Date: 30/05/2025
35	WATER QUALITY MONITORING AND PRESERVATION	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.
PPs Submission: Being Complied The waste water generated from workshop and mining areas are not discharged outside the mining premises. The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Effluents generated from the ore beneficiation plant of Barsua Iron Mine is being treated in Thickeners and about 60 percent of clear water from the thickener is being recycled back to the system. The underflow from thickener is discharged into Tailing Dam for further solid - liquid separation. The overflow from the tailings pond is further collected in the Zero Discharge System and recycled back to the system for further use		Date: 30/05/2025
36	WATER QUALITY MONITORING AND PRESERVATION	The water balance or 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 MoEFCC and State Pollution Control Board or Committee.
PPs Submission: Agreed to Comply A study on Water Management is under progress to find out the measures for reducing the consumption of water		Date: 30/05/2025

37	Noise Monitoring & Prevention	The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.
PPs Submission: Being Complied Blast induced ground vibrations are being monitored regularly. The result of the ground vibration is enclosed as Annexure - XIV. The results indicate that, ground vibrations are well within the limit of DGMS guideline		Date: 30/05/2025
38	Noise Monitoring & Prevention	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 or masks away from the villagers and keeping the noise levels well within the prescribed limits for day-night hours.
PPs Submission: Being Complied The Crushing and Screening Plant of Barsua Iron Mines of M/s SAIL is operating since 1960 and is well housed with enclosures to reduce the impact of noise level on surroundings. The noise level in the nearby habitation areas are being monitored (both day and night time) on monthly basis through NABL accredited laboratory and found well within the limits. Copy of the monitoring result for the period from October, 2024 to March, 2025 is enclosed as Annexure - VII. There is no illumination directed towards villages or forest area outside the lease. All the illumination provided in the mines and other infrastructures are as per DGMS guideline		Date: 30/05/2025
39	Noise Monitoring & Prevention	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 or 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.
PPs Submission: Being Complied Adequate measures such as acoustic cabins with air conditioners for all HEMMs, silencers for exhaust manifold, scheduled maintenance of HEMM and Plant Machineries, control blasting, acoustic enclosure of DG sets are being taken for control of work noise levels below 85 dBA in the work environment. Noisy Operations have been identified and persons engaged in such operations are provided with earplugs/muffs. Further, Personal Protective Equipment for working in dusty areas are provided to all personnel. Periodic training on safety and health aspects is carried out at the vocational training Centre.		Date: 30/05/2025
40	MINING PLAN	The Project Proponent shall adhere to approved mining plan, inter alia, including. total excavation (quantum of mineral, waste, over burden, inter burden and top soil etc.); mining technology; lease area; scope of working (method of mining, overburden and dump management, O.B and dump mining, mineral transportation mode, ultimate depth of mining. concurrent reclamation and reclamation at mine closure; land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life; etc.).
PPs Submission: Being Complied Mining is being done in accordance with approved Mining Plan/ Scheme of Mining. There is no change in the calendar plan including total excavation, mining technology, lease area and scope of working.		Date: 30/05/2025
41	MISCELLANEOUS	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.
PPs Submission: Being Complied The Environmental Clearance approval accorded on 28.04.2023. Subsequently, commencement of the expansion project has been started from 20.11.2024 and installation of various facilities are under progress		Date: 30/05/2025
42	MINING PLAN	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.
PPs Submission: Being Complied Currently, reclamation over an area of 3.8 ha in the fully exhausted mined out area forming dump No.-8 and backfilling over an area of 8.0 ha of mined out benches in the eastern side of Quarry-3 is under progress. The Mine is in operation as per the approved Mining Plan/scheme and Progressive Mine Closure Plan.		Date: 30/05/2025
43	LAND RECLAMATION	The Overburden (O.B.), waste and topsoil 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 or waste dumps or topsoil dump like height, width and angle of slope shall be governed as per the approved Mining Plan and the guidelines or circulars issued by D.G.M.S. The topsoil shall be used for land reclamation and plantation.
PPs Submission: Being Complied The over burden (OB) / sub-grade ore generated during the mining operations is being stored at earmarked sites only, as per the approved Modification of Mining Plan. Phase wise stabilization with installation of coir mats and broadcasting of grass seeds are carried out as per approved plan. For effective stabilization, terracing of the OB dumps with overall slope of the dump is being maintained to below 27 degree. Though the generation of top soil is very less, it is being stacked separately at earmarked site and used for rehabilitation of dumps and other areas through plantation.		Date: 30/05/2025
44	LAND RECLAMATION	The slope of dumps shall be vegetated in 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 or compactors thereby ensuring proper filling or leveling of dump mass. In critical areas, use of geo textiles or geo-membranes or clay liners or Bentonite etc. shall be undertaken for stabilization of the dump.
PPs Submission: Being Complied Geo-textile coir matting of 28000 Sq. m has been done in Barsua Block. Plantation of species like bamboo and Sal have been carried out over the dump and slopes for stabilization and prevention of washout. Masonry steps have been constructed on the slopes to allow runoff to flow down smoothly		Date: 30/05/2025
45	LAND RECLAMATION	Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil or OB or Waste dumps to prevent run off of water and flow of

		sediments directly into the water bodies (Nallah or River) Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains or sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.
PPs Submission: Being Complied The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Further, retaining wall, garland drain, settling pits and check dams are provided at strategic locations to prevent transportation of silts to nearby water bodies. The garland drains and settling pits are periodically de-silted to keep them efficient. Surface runoff management study of Barsua-Taldih-Kalta Mining Lease has been conducted through NIT, Rourkela and implementation are under progress as per the recommendations		Date: 30/05/2025
46	LAND RECLAMATION	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 percent 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 or silt material. The sedimentation pits sumps shall be constructed at the corners of the garland drains.
PPs Submission: Being Complied The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Further, retaining wall, garland drain, settling pits and check dams are provided at strategic locations to prevent transportation of silts to nearby water bodies. The garland drains and settling pits are periodically de-silted to keep them efficient. Surface runoff management study of Barsua-Taldih-Kalta Mining Lease has been conducted through NIT, Rourkela and implementation are under progress as per the recommendations.		Date: 30/05/2025
47	AIR QUALITY MONITORING AND PRESERVATION	No Transportation of the minerals shall be allowed in case of roads passing through villages or 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 or 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. (If applicable in case of road transport).
PPs Submission: Being Complied No village roads are being used for transportation of minerals. Pollution Under Control (PUC) certificate is made compulsory for deployment of vehicles in Mines. Scheduled / Preventive maintenance of HEMM and light vehicles are undertaken regularly to keep the vehicular emissions under control. The vehicles used for transportation of ore are covered with tarpaulins and ensured that there is no overloading with the help of weighbridge. The vehicular emission results are enclosed in Annexure - IX		Date: 30/05/2025

48	AIR QUALITY MONITORING AND PRESERVATION	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.

PPs Submission: Being Complied Same as stated in specific condition no. 6	Date: 30/05/2025

49	GREENBELT	The Project Proponent shall develop greenbelt 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.

PPs Submission: Being Complied Safety Zone plantation over 93.679 ha safety zone area of Barsua-Taldih-Kalta Iron Mines has been completed through State Forest Department	Date: 30/05/2025

50	GREENBELT	The Project Proponent shall carryout plantation or 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 or Agriculture Department or Rural development department or Tribal Welfare Department or 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.

PPs Submission: Being Complied Plantation is being done by using local and mixed species saplings within and outside the mining lease area to enhance the biodiversity of the region. Plantation of 96,900 saplings have been done covering an area of 49 ha inside the mining lease area and plantation of 1,00,800 saplings covering an area of 47.5 ha has been done outside the mining lease area. During the year 2024-25, gap plantation of 5100 saplings within the mining lease area has been completed. The detail of plantation is enclosed at Annexure - X.	Date: 30/05/2025

51	GREENBELT	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 or protected against felling and plantation of such trees should be promoted.

PPs Submission: Agreed to Comply There are no fodder plots in the Amalgamated Barsua-Taldih-Kalta Iron Mines. However, the mining has been planned in such a way that the entire forest land will not be disturbed at a time which will support feeding of the livestock.		Date: 30/05/2025
52	MISCELLANEOUS	The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEFCC and its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.
PPs Submission: Being Complied Six monthly compliance reports on the status of implementation of environmental safeguards are being submitted to MoEFandCC, New Delhi, Regional Office, MoEFandCC, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board. Copy of the compliance report including environmental quality data is being uploaded to the SAIL web site i.e. www.sail.co.in		Date: 30/05/2025
53	MISCELLANEOUS	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, MOEFCC.
PPs Submission: Being Complied A full-fledged Environment and Lease Department has been established at Barsua-Taldih-Kalta Iron Mines to look after environmental aspects of mines under control of Head of Mines. The details of Environment and Lease Department are as follows:		Date: 30/05/2025
54	MISCELLANEOUS	The concerned Regional Office of the MoEFCC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MOEFCC officer(s) by furnishing the requisite data or information or monitoring reports.
PPs Submission: Agreed to Comply Full co-operation is extended to the officer(s) of the regional office of MoEFandCC by furnishing the requisition data information, monitoring reports etc.		Date: 30/05/2025
55	MISCELLANEOUS	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 regrassing 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.
PPs Submission: Agreed to Comply Same as stated in specific condition no. 19		Date: 30/05/2025
56	MISCELLANEOUS	The Ministry or any other competent authority may alter or modify the above conditions or stipulate any further condition in the interest of environment protection.
PPs Submission: Agreed to Comply Agreed.		Date: 30/05/2025
57	MISCELLANEOUS	Concealing factual data failure to comply with any or submission of false or fabricated data and of the conditions mentioned above may result in withdrawal of this clearance and attract action under the

		provisions of Environment (Protection) Act, 1986.
PPs Submission: Agreed to Comply Agreed.		Date: 30/05/2025
58	Statutory compliance	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.
PPs Submission: Complied Out of 2558.581 ha lease area, 2419.871 ha is Forest Land. Stage-II forest clearance for diversion of forest land over 2341.931 ha was granted by MoEFCC vide F. No. 8-90/1996-FC (pt.), dated 06.03.2013 and 77.94 ha was granted vide order no. F.No.8-18/2014-FC dated 23.10.2017.		Date: 30/05/2025
59	Statutory compliance	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.
PPs Submission: Complied No notified National Park / Wildlife Sanctuary / Biosphere Reserve / Tiger Reserve are located within 10 kms from the Mining Lease boundary. Hence it is not applicable to this project.		Date: 30/05/2025
60	Statutory compliance	The project proponent shall prepare a Site-Specific Conservation Plan and Wildlife Management Plan and approved by the Chief Wildlife Warden. The recommendations of the approved Site-Specific Conservation Plan or Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case of the presence of Schedule-I species in the study area).
PPs Submission: Being Complied Two Site Specific Wildlife Conservation Plans (SSWCP) were approved by Chief Wildlife Warden, Odisha vide letter dated 25.02.2013 for 2486.383 ha and 13.01.2016 for 77.94 ha. Amounts of Rs.17.82 Crores and Rs. 9.84 Crores were deposited for implementation of approved SSWCPs in Buffer Zone of Barsua-Taldih-Kalta Iron Mines. The details of cost incurred towards implementation of approved interventions of the Site Specific Wildlife Conservation Plans from the fund realised by SAIL are as follows:		Date: 30/05/2025
61	Statutory compliance	The project proponent shall obtain Consent to Establish or Operate under the provisions of Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 197 4 from the concerned State Pollution Control Board or Committee.
PPs Submission: Being Complied Consent to Establish was obtained from SPCB, Odisha for a capacity of 16.0 MTPA ROM and excavation and dispatch of 2.0 MTPA sub-grade / tailings for Amalgamated Barsua-Taldih-Kalta Iron Mines Vide No. 9222/IND-II-CTE-6910, dated 07.06.2023. Consent to Operate has been obtained from SPCB, Odisha vide Order no. 6964/IND-I-CON-1(A), dated 31.03.2025 for a quantity of 10.0 MTPA ROM and excavation and dispatch of 2.0 MTPA sub-grade / tailings with validity up to 31.03.2026.		Date: 30/05/2025
62	Statutory compliance	The project proponent shall obtain the necessary permission from the Central Ground Water Authority, in case of drawl of ground water or from the competent authority concerned in case of drawl of surface water required for the project.
PPs Submission: Being Complied Department of Water Resources, Govt. of Odisha has allocated 3.406 cusec of Surface Water from Kuradih Nalla in favour of Barsua Iron Mines vide letter No. 4897/WR, dated 15.02.2021 and 0.328		Date: 30/05/2025

cusec of Surface Water from Nazkura Nalla in favour of Kalta Iron Mines vide letter No. 22486/WR, dated 14.08.2024.		
63	Statutory compliance	The project proponent shall obtain authorization under the Hazardous and other Waste Management Rules, 2016 as amended from time to time.
PPs Submission: Being Complied The Hazardous Waste Authorization has been obtained from SPCB, Odisha vide letter No. IND-IV-HW-423/6818 dated 31.03.2025 which is valid till 31.03.2026.		Date: 30/05/2025
64	AIR QUALITY MONITORING AND PRESERVATION	The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories. Monitor fugitive emissions in the plant premises.
PPs Submission: Being Complied Three nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been established at Barsua-Taldih-Kalta Iron Mines with real time monitoring with a facility for data transmission to SPCB server. Work order for Comprehensive Maintenance Contract (CMC) for CAAQMS equipments installed at Barsua-Taldih-Kalta Iron Mines has been issued to M/s Future Instruments vides Ref. No. RSP/MINES/CC/WO/05 of 2024-25, dated: 08/06/2024 for a period of two years for maintenance and calibration of the equipment on regular basis. Fugitive Dust Emission Monitoring is being done in 12 locations at Barsua-Taldih-Kalta Iron Mines through a NABL accredited laboratory on daily basis and report is being submitted once in six months to the State Pollution Control Board.		Date: 30/05/2025
65	AIR QUALITY MONITORING AND PRESERVATION	The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognised under Environment (Protection) Act, 1986.
PPs Submission: Being Complied Fugitive Dust Emission Monitoring is being done in 12 locations at Barsua-Taldih-Kalta Iron Mines through a NABL accredited laboratory on daily basis.		Date: 30/05/2025
66	AIR QUALITY MONITORING AND PRESERVATION	The project proponent shall install system to carryout Continuous Ambient Air Quality monitoring for common or criterion parameters relevant to the main pollutants released (e.g. PM10 and PM2.5 in reference to PM emission, and SO2 and NOx in reference to S02 and NOx emissions) within and outside the plant area at least at four locations (one within and three outside the plant area at an angle of 120 degree each) covering upwind and downwind directions.
PPs Submission: Being Complied 3 (three) Nos. of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) at Barsua and Kalta has been commissioned and the monitored data is being transmitted to SPCB server. Apart from this, 6 (six) nos. of ambient air quality monitoring stations at Barsua-Taldih-Kalta Iron Mines have been established at prominent places to monitor the critical parameters viz. PM10, PM2.5, NO2, CO and SO2. The monitored data are digitally displayed at the main gate of the mine.		Date: 30/05/2025
67	AIR QUALITY MONITORING AND PRESERVATION	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed stack emission and fugitive emission standards.

PPs Submission: Being Complied Same as stated in specific condition no. 6		Date: 30/05/2025
68	AIR QUALITY MONITORING AND PRESERVATION	The project proponent use leak proof trucks or dumpers carrying ore and other raw materials and cover them with tarpaulin.
PPs Submission: Being Complied Same as stated in specific condition no. 25		Date: 30/05/2025
69	AIR QUALITY MONITORING AND PRESERVATION	Wind shelter fence and chemical spraying shall be provided on the raw material stock piles.
PPs Submission: Being Complied Wind shelter fence and water mist fog canons have been provided on the temporary iron ore stock piles		Date: 30/05/2025
70	AIR QUALITY MONITORING AND PRESERVATION	Design the ventilation system for adequate air changes as per ACGIH document for all tunnels, motor houses, Oil Cellars.
PPs Submission: Being Complied Proper ventilation system has been provided in the oil and lubricant storage room and battery storage room for adequate air changes		Date: 30/05/2025
71	WATER QUALITY MONITORING AND PRESERVATION	The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.
PPs Submission: Being Complied The mine waste water generated from Barsua-Taldih-Kalta Iron Mines is not discharged outside the mining premises. The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Effluents generated from the ore beneficiation plant of Barsua Iron Mine is being treated in Thickeners and about 60 percent of clear water from the thickener is being recycled back to the system. The underflow from thickener is discharged into Tailing Dam for further solid - liquid separation. The overflow from the tailings pond is further collected in the Zero Discharge System and recycled back to the system for further use. Further, Oil and Grease trap has been provided for the workshop at Barsua Iron Mines. The treated water is used for floor washing and gardening		Date: 30/05/2025
72	WATER QUALITY MONITORING AND PRESERVATION	The project proponent shall monitor regularly ground water quality at least twice a year (pre and post monsoon) at sufficient numbers of piezometers or sampling wells in the plant and adjacent areas through labs recognised under Environment (Protection) Act. 1986 and NABL accredited laboratories.
PPs Submission: Being Complied Monitoring of ground water level and quality is being carried out on monthly basis. Three numbers of open wells as well as tube wells have been selected all around the mines viz, Barsua Valley, Tensa and Kalta for regular monitoring of water levels and quality. The monitoring results of ground water level and quality are enclosed as Annexure - IV and Annexure - V respectively.		Date: 30/05/2025
73	WATER QUALITY MONITORING AND	The project proponent shall submit monthly summary report of continuous effluent monitoring and results of manual effluent testing

	PRESERVATION	and manual monitoring of ground water quality to Regional Office of MoEFCC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.

PPs Submission: Being Complied The monthly summary report of effluent monitoring and ground water quality monitoring is being submitted to Regional Office of MoEFandCC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.	Date: 30/05/2025

74	WATER QUALITY MONITORING AND PRESERVATION	The project proponent shall provide the slime disposal facility with impervious lining and collection wells for seepage. The water collected from the slime pond shall treated and recycled.

PPs Submission: Being Complied The Tailings dam of Barsua Iron Mine has been constructed over stable and impervious bed rocks and in operation since 1969. The site for the tailing pond at Barsua was selected taking into account of topography, geology and catchment area. The ground water in the downstream of tailing pond is being monitored on monthly basis for any contamination due to tailing pond. To improve stability of the dams and to achieve zero liquid discharge, system for recovery and recycling of clear water from tailings ponds have also been implemented. The seepage water from tailings dam body is being collected and used for water sprinkling in the Railway Siding.	Date: 30/05/2025

75	WATER QUALITY MONITORING AND PRESERVATION	Adhere to "Zero Liquid Discharge"

PPs Submission: Being Complied The waste water generated from the mines are not discharged outside the mining premises. The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Effluents generated from the ore beneficiation plant of Barsua Iron Mine is being treated in Thickeners and about 60 percent of clear water from the thickener is being recycled back to the system. The underflow from thickener is discharged into Tailing Dam for further solid - liquid separation. The overflow from the tailings pond is further collected in the Zero Discharge System and recycled back to the system for further use. Efforts are being made to reduce the specific water consumption in successive years. The water balance diagram and consumption of water per ton of ore production is enclosed as Annexure - XV.	Date: 30/05/2025

76	WATER QUALITY MONITORING AND PRESERVATION	Sewage Treatment Plant shall be provided for treatment of domestic wastewater to meet the prescribed standards.

PPs Submission: Partially Complied The township of Barsua-Taldih-Kalta Iron Mines is located in a highly undulating surface and scattered in clusters. Hence, the sewage generated from cluster of dwelling units are collected through system of sewage network and treated septic tanks with soak pits. All these soaking pits and septic tanks are designed as per the BIS specification. The domestic effluents are discharged to soak pit via septic tank.	Date: 30/05/2025

77	WATER QUALITY MONITORING AND PRESERVATION	Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off.

PPs Submission: Being Complied The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for collection of runoff and settlement of suspended solids and to prevent flow of sediments to nearby water bodies. The garland drains are periodically de-silted to keep them efficient.	Date: 30/05/2025

78	WATER QUALITY	The project proponent shall practice rainwater harvesting to

	MONITORING AND PRESERVATION	maximum possible extent.
PPs Submission: Being Complied A Technical Feasibility Study for hydro-geological, rain water harvesting and augmentation of ground water resources has been conducted through M/s Tirupati Balajee Maharaj Consultant (P) Ltd. Two (02) nos. of Check dams have been constructed, one in Kuradih nala near pump house and other at Tantra Village near Taldih Block as per recommendation. Also, one water body has been developed in the lease area for ground water recharge		Date: 30/05/2025
79	WATER QUALITY MONITORING AND PRESERVATION	The project proponent shall make efforts to minimise water consumption in the steel plant complex by segregation of used water, practicing cascade use and by recycling treated water.
PPs Submission: Being Complied All efforts are being made for reduction of water consumption in the Mining areas by use of dry fog dust suppression system. Fog canons, etc. System for recovery and recycling of water from the tailing pond has been provided at Barsua Iron Mine under Zero Discharge Project.		Date: 30/05/2025
80	Noise Monitoring & Prevention	Noise level survey shall be carried as per the prescribed guidelines and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report.
PPs Submission: Being Complied Noise levels are being monitored at 14 locations on weekly basis at the major sources of noise generation within core zone. The measured noise levels are enclosed as Annexure - VIII. The noise levels are within the acceptable limits of CPCB (CPCB, 2000).		Date: 30/05/2025
81	Noise Monitoring & Prevention	The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.
PPs Submission: Being Complied The noise level in the nearby habitation areas are being monitored (both day and night time) on monthly basis through NABL accredited laboratory and found well within the limits.		Date: 30/05/2025
82	ENERGY PRESERVATION MEASURES	Provide solar power generation on roof tops of buildings, for solar light system for all common areas, street lights, parking around project area and maintain the same regularly.
PPs Submission: Being Complied Solar power of 15 KW installed at Tensa Hospital and 5 KW installed at Taldih Mine and the same are being maintained regularly.		Date: 30/05/2025
83	ENERGY PRESERVATION MEASURES	Provide LED lights in their offices and residential areas.
PPs Submission: Being Complied All conventional lights have been replaced with LED lights in the office and residential colony.		Date: 30/05/2025
84	WASTE MANAGEMENT	The waste oil, grease and other hazardous waste shall be disposed of as per the Hazardous and Other waste (Management and Transboundary Movement) Rules, 2016.
PPs Submission: Being Complied Hazardous waste such as, waste oil, lubricants, resin, and coal tar etc. should be disposed of as per provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual Mine Lease Holders		Date: 30/05/2025

85	WASTE MANAGEMENT	Kitchen waste shall be composted or converted to biogas for further use (to be decided on case to case basis depending on type and size of plant).
PPs Submission: Being Complied Municipal Solid waste disposal yard has been constructed for disposal of municipal waste collected through a dedicated door to door collection system.		Date: 30/05/2025
86	GREENBELT	Green belt shall be developed in an area equal to 33 percent of the plant area with a native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant.
PPs Submission: Being Complied Mining has been planned in such a way that at least 33 percent of the lease area shall be under forest cover all the time. Apart from this, Safety Zone plantation over 93.679 ha safety zone area of Barsua-Taldih-Kalta Iron Mines has been completed through State Forest Department. Further, so far 1,97,781 saplings have been planted covering an area of 96.50 ha since 20211-12 in and around the mining lease area. During the period, gap plantation of 5100 saplings within the mining lease area has been completed.		Date: 30/05/2025
87	GREENBELT	The project proponent shall prepare GHG emissions inventory for the plant and submit the programme for reduction of the same including carbon sequestration including plantation.
PPs Submission: Being Complied Though CO2 emissions from the mining operations is very insignificant. Inventorisation of GHG emissions using the default emissions factors applicable for mining industry has been calculated. The CO2 emissions from the Barsua Iron Mine for the year 2024-25 is enclosed as Annexure -XIX. The detail of plantation is enclosed as Annexure - X.		Date: 30/05/2025
88	Human Health Environment	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.
PPs Submission: Being Complied Same as stated in Specific condition no. 19		Date: 30/05/2025
89	Corporate Environmental Responsibility	The Project Proponent shall submit the time-bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the activities committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEFCC Office Memorandum No 22-65-2017-IA III dated 30 September 2020. The action plan shall be implemented within three years of commencement of the project.
PPs Submission: Being Complied Same as stated in Specific condition no. 12		Date: 30/05/2025
90	Corporate Environmental Responsibility	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements or deviation or violation of the environmental forest wildlife norms or conditions. The company shall have defined system of reporting infringements or deviation or violation of the environmental or forest I wildlife norms or conditions and-or shareholders or stake holders. The copy of the board resolution in this regard shall be submitted to the MoEFCC as a part of six-monthly report.

	PPs Submission: Being Complied SAIL has imbibed its commitment to preserve and protect environment in its workings through their Corporate Environmental Policy (CEP) and SAIL-Barsua-Taldih-Kalta mine's Integrated Environment Policy, approved by the Board of the company as well as the plant-level top management of Barsua-Taldih-Kalta Iron Mines. Barsua-Taldih-Kalta Iron Mines unit-level Integrated Policy has been derived from guiding principles of SAIL's Corporate Environment policy, which is more specific to the unit and addresses compliance to environmental, forest and other statutory conditions. In pursuit to adhere to the environmental policy for environmental-friendly mining process, the Standard operating procedures (SOPs) have been formulated, implemented and well established which takes care of the guiding principle. In line with SAIL's commitment for environmental protection, the above objective has been intended to be achieved through the following: 1. Conduct mining and processing operation in compliance with the relevant environment legislations. 2. Conserve energy and other natural resources in minimising waste generation. 3. Protect the environment by minimising pollution and its impact. 4. Increase greenery in and around the Mine. 5. Encourage environmental awareness among all level of the employees. 6. Periodical review of the system for continual improvement. The Environmental Policy of SAIL as well as Barsua-Taldih-Kalta Iron Mines is enclosed as Annexure - XXI.	Date: 30/05/2025
91	Corporate Environmental Responsibility	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.
	PPs Submission: Being Complied A full-fledged Environment and Lease Department has been established at Barsua-Taldih-Kalta Iron Mines to look after environmental aspects of mines under control of Head of Mines. The details of Environment and Lease Department are as follows:	Date: 30/05/2025
92	Corporate Environmental Responsibility	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry or Regional Office along with the Six Monthly Compliance Report.
	PPs Submission: Being Complied Funds earmarked for environmental protection measures at the mines are booked separately and not being diverted for other purpose. Year wise expenditure for last 3 years on Environmental protection measures is furnished below. The details of expenditure are enclosed as Annexure-XXII.	Date: 30/05/2025
93	Corporate Environmental Responsibility	Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.
	PPs Submission: Being Complied Barsua-Taldih-Kalta Iron Mines is certified with ISO 14001:2015 and as a part of compliance surveillance audit is being conducted annually and re-certification audit is being conducted once in every three years through third party.	Date: 30/05/2025
94	Corporate Environmental Responsibility	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Mineral Beneficiation plants shall be implemented.
	PPs Submission: Being Complied Agreed.	Date: 30/05/2025
95	MISCELLANEOUS	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it

		at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.
PPs Submission: Complied Grant of this EC has been widely advertised in three local newspapers i.e. The New Indian Express (English), The Prameya (Odia) and The Samaja (Odia) on dated 03.05.2023. Also, copy of the same forwarded to the MoEF and CC IRO office at Bhubaneswar vide letter no. BIM/E and L/2023-24/028, dated 03.05.2023.		Date: 30/05/2025
96	MISCELLANEOUS	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.
PPs Submission: Complied Copy of the EC letter dated 28.04.2023 has been sent to the Sarpanch office of Tensa, Sasyakala, Kalta, Chordhara villages vide letter dated 29.04.2023		Date: 30/05/2025
97	MISCELLANEOUS	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.
PPs Submission: Being Complied The status of compliance of the stipulated environment clearance conditions, including results of monitored data is being uploaded to the company website www.sail.co.in on half-yearly basis.		Date: 30/05/2025
98	MISCELLANEOUS	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOX (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.
PPs Submission: Being Complied Critical parameters i.e. PM10, PM2.5, Nox, SO2 and CO in ambient air and relevant parameters in the effluents are being monitored regularly. The monitored data is being displayed at the main gate of the mines. Also, the same is being uploaded to the company website www.sail.co.in along with six monthly compliance report.		Date: 30/05/2025
99	MISCELLANEOUS	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.
PPs Submission: Being Complied Six monthly compliance reports on the status of implementation of environmental safeguards are being submitted to MoEF and CC, New Delhi, Regional Office, MoEF and CC, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board. Copy of the compliance report including environmental quality data is being uploaded to the SAIL web site i.e. www.sail.co.in.		Date: 30/05/2025
100	MISCELLANEOUS	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.

PPs Submission: Being Complied The environmental statement report in prescribed format-V for the financial year 2023-24 has been submitted vide letter no. BIM /EandL/2024-25/056, dated 17.07.2024 to the State Pollution Control Board and also the same has been uploaded to the company website www.sail.co.in.		Date: 30/05/2025
101	MISCELLANEOUS	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities. Commencing the land development work and start of production operation by the project.
PPs Submission: Being Complied The Environmental Clearance approval accorded on 28.04.2023. Subsequently, commencement of the expansion project has been started from 20.11.2024 and installation of various facilities are under progress		Date: 30/05/2025
102	MISCELLANEOUS	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.
PPs Submission: Agreed to Comply Agreed.		Date: 30/05/2025
103	MISCELLANEOUS	The project proponent shall abide by all the commitments and recommendations made in the EIA-EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.
PPs Submission: Being Complied Agreed.		Date: 30/05/2025
104	MISCELLANEOUS	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MOEFCC).
PPs Submission: Agreed to Comply Agreed.		Date: 30/05/2025
105	WASTE MANAGEMENT	R and D studies towards utilization of low-grade iron ore should be conducted through research-academic institutes like IMMT, Bhubaneswar, NML Jamshedpur, and concerned metallurgical departments in IITS, NITS etc., targeting full utilization of low-grade iron ore (Fe content upto 45 percent by 2020 and upto 40 percent by 2025). In fact, life cycle assessment of whole process including environmental considerations should be done for techno-economic and environmental viability. R and D studies on utilization of mine wastewater having high concentration of Fe content for different commercial applications in industries such cosmetics, as pharmaceutical, paint industry should also be explored. Responsibility: IBM, Dept. of Steel and Mines, Individual Mine Lease Holders.
PPs Submission: Being Complied RandD study for utilisation of low-grade Iron Ore Fines / Tailings of Barusa Iron Mines has been conducted through CSIR - IMMT, Bhubaneswar. As per the findings of the study, dispatch of tailings for pelletisation has already been started. Further, the mine waste water generated from Barsua-Taldih-Kalta Iron Mines is not discharged outside the mining premises. The surface run-off generated from the mines is channelized through a series of garland drain to the lowest level of the pit for settlement of suspended solids and ground water recharge. Effluents generated from the ore beneficiation plant of Barsua Iron Mine is being treated in Thickeners and about 60 percent of clear		Date: 30/05/2025

water from the thickener is being recycled back to the system. The underflow from thickener is discharged into Tailing Dam for further solid - liquid separation. The overflow from the tailings pond is further collected in the Zero Discharge System and recycled back to the system for further use. Further, Oil and Grease trap has been provided for the workshop at Barsua Iron Mines. The treated water is used for floor washing and gardening.		
106	MISCELLANEOUS	The mining activity in Joda-Koira sector is expected to continue for another 100 years, therefore, it will be desirable to develop proper rail network in the region. Rail transport shall not only be pollution free mode but also will be much economical option for iron ore transport. The rail network and-or conveyor belt system upto public railway siding needs to be created. The total length of the conveyor belt system or rail network to be developed from mines to nearest railway sidings by 11 mines in Joda region is estimated to be about 64 km. Similarly, in Koira region, total length of rail network or conveyor system for 8 mines (under SOTM 1 and 2) is estimated to be around 95 km. Further, it is suggested to develop a rail network connecting Banspani (Joda region) and Roxy railway sidings in Koira region. Responsibility: Dept. of Steel and Mines, Govt. of Odisha and Concerned Mines along with Indian Railways. Time Period: Maximum 7 years (by 2025). The Department of Steel and Mines, Govt. of Odisha should follow-up with the concerned Departments and railways so that proposed proper rail network is in place by 2025.
PPs Submission: Agreed to Comply Iron Ore is being transported through closed conveyors from Barsua Iron Mines to Barsua Railway siding and through road from Taldih and Kalta Iron Mines to Barsua and Roxy Railway siding respectively. SAIL is in the process of installation of Conveyor belts to the respective railway sidings in compliance to suggested SOTM. The final product is dispatched from Barsua and Roxy Railway siding through rail. SAIL will abide by the directions of Department of Steel and Mines, Govt. of Odisha in this regard.		Date: 30/05/2025
107	MISCELLANEOUS	State Govt. of Odisha shall make all efforts to ensure exhausting all the iron and manganese ore resources in the existing working mines and from disturbed mining leases and zones in Joda and Koira region. The criteria suggested shall be applicable while suggesting appropriate lease area and sustainable mining rate. Responsibility: Dept. of Steel and Mines, Govt. of Odisha.
PPs Submission: Agreed to Comply Mining is being done as per the IBM approved mining plan. Amalgamated Barsua-Taldih-Kalta Iron Mines will work according to the instructions given by the Department of Steel and Mines, Govt. of Odisha in this regard.		Date: 30/05/2025
108	MINING PLAN	Mining Operations or Process Related: Project Proponent shall implement the following mitigation measures: (i) Appropriate mining process and machinery (viz. right capacity, fuel efficient) should be selected to carry out various mining operations that generate minimal dust - air pollution, noise, wastewater and solid waste, e.g. drills should either be operated with dust extractors or equipped with water injection system. (ii) After commencement of mining operation, a study should be conducted to assess and quantify emission load generation (in terms of air pollution, noise, waste water and solid waste) from each of the mining activity (including transportation) on annual basis. Efforts should be made to further eliminate - minimize generation of air pollution - dust, noise, wastewater, solid waste generation in successive years through use of better technology. This shall be ensured by the respective mine lease holders. (iii) Various machineries - equipment selected (viz. dumpers, excavators, crushers, screen plants etc.) and transport means should have optimum fuel - power consumption, and their fuel - power consumption should be

		recorded on monthly basis. Further, inspection and maintenance of all the machineries - equipment - transport vehicles should be followed as per manufacturer's instructions - recommended time schedule and record should be maintained by the respective mine lease holders. (iv) Digital processing of the entire lease area using remote sensing technique should be carried out regularly once in 3 years for monitoring land use pattern and mining activity taken place. Further, the extent of pit area excavated should also be demarcated based on remote sensing analysis. This should be done by ORSAC (Odisha Space Applications Centre, Bhubaneswar) or an agency of national repute or if done by a private agency, the report shall be vetted or authenticated by ORSAC Bhubaneswar. Expenses towards the same shall be borne by the respective mine lease holders. Responsibility: Individual Mine Lease Holders.
PPs Submission: Being Complied (i) Excavators of 7.5cum, 5.9cum and 4.5 cum are in use along with 100T, 60T and 50T dumpers for effective shovel-dumper combination. Regular water sprinkling is being done in the excavation areas, haul road, dump areas, loading and unloading areas. All the haulage roads are being maintained properly with grader for smooth movement of vehicles so as to minimize dust/air pollution. All the drills are operated with dust extractors and some of drills are equipped with water injection system. (ii) All efforts are being made to minimize generation of air pollution/dust, noise, waste water, solid waste generation in the mines through use of better technology. The quantification of emission load in respect of air, water and noise pollution is being done annually. The details of emission load are enclosed at Annexure - XI. (iii) Inspection and maintenance of all the machineries/ equipment/ transport vehicles are being carried out as per manufacturer's instructions/ recommended time schedule and records are being maintained. Fuel consumption of machineries/equipment are also recorded on monthly basis. (iv) Digital processing of the entire lease area using drone survey technique are being done every year for monitoring the land use pattern and the mining activity. The details of drone survey for the FY: 2023-24 is enclosed at Annexure - XII.		Date: 30/05/2025
109	Corporate Environmental Responsibility	Socio-Economic Related: Project Proponent shall implement the following mitigation measures: (i) Public interaction should be done on regular basis and social welfare activities should be done to meet the requirements of the local communities. Further, basic amenities and infrastructure facilities like education, medical, roads, safe drinking water, sanitation, employment, skill development, training institute etc. should be developed to alleviate the quality of life of the people of the region. (ii) Land outees and land losers or affected people, if any, should be compensated and rehabilitated as per the national or state policy on Resettlement and Rehabilitation. (iii) The socio-economic development in the region should be focused and aligned with the guidelines or initiatives of Govt. of India or NITI Aayog around prosperity, equality, justice, cleanliness, transparency, employment, respect to women, hope etc. This can be achieved by providing adequate and quality facilities for education, medical and developing skills in the people of the region. District administration in association with mine lease holders should plan for "Samagra Vikas" of these blocks well as other blocks of the district. While planning for different schemes in the region, the activities should be prioritized as per Pradhan Mantri Khanij Kshetra Kalyan Yojna (PMKKKY), notified by Ministry of Mines, Govt. of India, vide letter no. 16.07.2017- MVI (Part), dated September 16, 2015. Responsibility: District Administration and Individual Mine Lease Holders.
PPs Submission: Being Complied (i) Social welfare activities to meet the requirements of the local communities are done through CSR department for the people residing near the Project. They interact regularly with the local communities to identify their needs and requirement and accordingly plan the yearly activities. Further, SAIL has well developed township at Tensa and Kalta with infrastructure facilities like		Date: 30/05/2025

		school, hospital, RO plant for drinking water, training institute, etc. (ii) There is no case of displacement of people due to the project. (iii) SAIL is already supporting the State Government in facilitating the development of schools, conducting health camps, construction of medical facilities, provision of training and skill development programs, etc. and will continue to extend support in future too.
110	AIR QUALITY MONITORING AND PRESERVATION	Road Transport Related: Project Proponent shall implement the following mitigation measures: (i) All the mine lease holders should follow the suggested ore transport mode (SOTM), based on its EC capacity within next 5 years. (ii) The mine lease holders should ensure construction of cement road of appropriate width from and to the entry and exit gate of the mine. Further, maintenance of all the roads should be carried out as per the requirement to ensure dust free road transport. (iii) Transportation of ore should be done by covering the trucks with tarpaulin or other suitable mechanism so that no spillage of ore or dust takes place. Further, air quality in terms of dust, PM10 should be monitored near the roads towards entry and exit gate on regular basis, and be maintained within the acceptable limits. Responsibility: Individual Mine Lease Holders and Dept. of Steel and Mines.
		PPs Submission: Being Complied (i) Amalgamated Barsua-Taldih-Kalta Iron Mines has an existing EC capacity of 16.0 MTPA ROM and handling of 2.0 MTPA of tailings/subgrade, and consisting of three blocks namely Barsua, Taldih and Kalta having individual EC capacity of 4.0 MTPA, 8.0 MTPA and 4.0 MTPA respectively. Presently the Iron Ore is being transported through closed conveyors from Barsua Iron Mines to Barsua Railway siding and through road from Taldih and Kalta Iron Mines to Barsua and Roxy Railway siding respectively. SAIL is in the process of installation of Conveyor belts to the respective railway sidings in compliance to suggested SOTM. Further, as per the amendment in EC dated 08.05.2025, the commencement of operation of the conveyer belt from Taldih mine to Barusa Railway siding shall be completed by 26.04.2027 and from Kalta mines to Roxy Railway siding shall be completed by 26.04.2028. However, during the construction phase, Taldih Iron Mine shall continue to transport 2.0 MTPA of iron ore through existing transport road to Barsua Railway Siding and Kalta Iron Mines shall continue to transport 4.0 MTPA iron ore through existing transport road to Roxy Siding for which necessary NOC has been obtained from Govt. of Odisha. Final product is dispatched from the SAIL's private railway siding through rail (ii) 300 m Concrete approach road from mine entrance and exit to the main road have been provided at Taldih Iron Mine, Barsua Railway Siding, Kalta Iron Mine and Roxy Railway Siding with proper drainage system (iii) It is being ensured that all the vehicles exiting the mine gate are checked for use of tarpaulin cover and are not overloaded to avoid spillage of material during transportation. Also, wheel washing system has been provided at the exit points of the mines in order to control dust emission.	Date: 30/05/2025
111	Human Health Environment	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.
		PPs Submission: Being Complied SAIL has well-developed townships at Tensa, Barsuan and Kalta with residential accommodation for employees and workers with all necessary infrastructure such as LPG gas connection through co-operative society for cooking, electricity, welfare amenities like toilets, drinking water and medical facilities etc. Whenever required, the construction labours are hired from the local villagers and only few are being hired from outside, for which housing facilities along with necessary infrastructure are being provided at the existing colony of the mines.	Date: 30/05/2025
112	Human Health Environment	Emergency preparedness plan based on the Hazard identification

		and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.
PPs Submission: Being Complied Barsua-Taldih-Kalta Iron Mines is certified with ISO 14001:2015, ISO 9001: 2015 and ISO 45001:2018 and as a part of compliance Hazard identification and Risk Assessment (HIRA) of all the departments has been done and are being implemented. The emergency preparedness plan is enclosed as Annexure - XX.		Date: 30/05/2025
113	Human Health Environment	The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms of Factory Act.
PPs Submission: Agreed to Comply Not Applicable. There is no high temperature work zone at Barsua-Taldih-Kalta Iron Mines.		Date: 30/05/2025
114	Human Health Environment	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, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
PPs Submission: Being Complied SAIL has well-developed townships at Tensa, Barsuan and Kalta with residential accommodation for employees and workers with all necessary infrastructure such as LPG gas connection through co-operative society for cooking, electricity, welfare amenities like toilets, drinking water and medical facilities etc. Whenever required, the construction labours are hired from the local villagers and only few are being hired from outside, for which housing facilities along with necessary infrastructure are being provided at the existing colony of the mines.		Date: 30/05/2025
115	AIR QUALITY MONITORING AND PRESERVATION	The project proponent shall submit monthly summary report of continuous stack emission and air quality monitoring and results of manual stack monitoring and manual monitoring of air quality fugitive emissions to Regional Office of MoEFCC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.
PPs Submission: Being Complied The monthly summary report of Continuous Ambient Air Quality Monitoring (CAAQMS) and results of manual monitoring of air quality / fugitive emissions is enclosed as Annexure - I.		Date: 30/05/2025

Visit Remarks

Last Site Visit Report Date:	24/01/2025
Additional Remarks:	

Note: This acknowledgement is as per the details submitted by project proponent. In no way is this document to be considered as conclusion on any action on the compliance of the project. This is strictly for the project proponent's reference purpose.

BARSUA-TALDIH-KALTA IRON MINES

Annexure - I

DETAIL ANALYSIS OF AIR QUALITY MONITORING

Location	OCTOBER 2024					'NOVEMBER 2024					'DECEMBER 2024					'JANUARY 2025					'FEBRUARY 2025					'MARCH 2025				
	RSPM (PM_{10})	$PM_{2.5}$	SO_2	NO_x	CO	RSPM (PM_{10})	$PM_{2.5}$	SO_2	NO_x	CO	RSPM (PM_{10})	$PM_{2.5}$	SO_2	NO_x	CO	RSPM (PM_{10})	$PM_{2.5}$	SO_2	NO_x	CO	RSPM (PM_{10})	$PM_{2.5}$	SO_2	NO_x	CO	RSPM (PM_{10})	$PM_{2.5}$	SO_2	NO_x	CO
Unit	**µg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**mg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**mg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**mg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**mg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**mg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**µg/m3**	**mg/m3**
A) Ambient Air Quality in Residential, rural & other areas.																														
Norm as per NAAQS	**100**	**60**	**80**	**80**	**4**	**100**	**60**	**80**	**80**	**4**	**100**	**60**	**80**	**80**	**4**	**100**	**60**	**80**	**80**	**4**	**100**	**60**	**80**	**80**	**4**	**100**	**60**	**80**	**80**	**4**
A 1	46.80	25.34	8.33	17.38	0.67	46.68	26.16	8.93	16.96	0.60	51.01	26.47	11.56	19.21	0.58	43.88	31.20	9.51	15.20	0.43	42.88	28.99	9.96	15.68	0.43	53.39	27.40	10.56	17.39	0.54
A 2	77.33	42.94	13.13	26.50	0.96	89.49	49.15	14.60	25.61	1.11	88.07	50.28	17.16	27.22	1.06	48.08	69.09	14.59	23.00	0.77	71.03	47.73	14.69	22.19	0.77	90.16	50.26	16.98	27.83	1.00
A 3	44.36	24.52	9.01	18.96	0.71	49.92	28.17	10.12	19.60	0.69	54.13	29.91	11.88	19.39	0.64	55.13	37.38	11.04	19.76	0.54	60.09	32.84	12.43	19.24	0.64	56.98	31.95	11.40	19.19	0.53
A 4	55.20	31.13	9.96	21.51	0.78	71.16	39.50	11.00	19.92	0.77	71.33	39.74	13.26	21.21	0.73	62.52	34.40	11.47	19.99	0.61	74.40	43.22	16.00	23.88	1.12	75.76	42.64	13.46	21.52	0.75
A5	75.30	37.03	13.58	27.01	1.00	85.14	48.76	15.30	25.10	1.01	88.13	49.49	16.73	25.69	1.03	84.41	46.09	16.09	26.51	0.86	81.84	48.35	18.08	27.29	1.28	90.98	50.88	17.01	28.86	1.00
A6	59.67	32.82	10.60	22.09	0.85	77.00	43.87	12.92	22.94	0.85	78.06	44.28	14.49	23.93	0.80	85.51	45.83	16.02	25.41	0.91	69.93	40.13	13.77	20.33	0.89	77.92	45.73	15.66	24.49	0.81

*** unit in µg/m^3**

Note : Ambient Air Quality Monitoring was conducted as per MoEF Notification No. GSR 826(E), dtd.16.11.2009.

B) Results of Fusitive Emission / Work Zone Quality.

	OCTOBER 2024		'NOVEMBER 2024		'DECEMBER 2024		'JANUARY 2025		'FEBRUARY 2025		'MARCH 2025	
Norm as per IBM	1200 µg/m3		1200 µg/m3		1200 µg/m3		1200 µg/m3		1200 µg/m3		1200 µg/m3	
Actual(PM)	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
F 1	138.5	711.8	543	715.3	582.4	721.5	513.2	739.4	517.6	823.4	549.2	708.4
F 2	176.5	708.2	583	744.3	515.4	712.6	580.5	735.6	585.2	824.2	643.1	745.9
F 3	139.8	624.5	468	672.6	508.4	682.5	513.4	699.2	414.2	611.4	543.1	656.8
F 4	134.5	986.7	586	746.5	588.6	742.3	582.3	750.5	566.3	813.5	562.4	726.3
F 5	147.5	710.3	514	713.2	538.1	715.2	549.6	718.8	543.9	803.3	548.2	772.2
F 6	124.6	667.2	525	674.5	511.4	681.9	511.4	650.8	675.5	827.6	528.5	646.2
F 7	294.6	843.1	685	875.3	698.1	854.3	697.8	850.9	427.6	618.7	744.5	873.8
F 8	149.3	753.6	574	753.7	628.7	773.6	618.3	749.5	747.4	966.4	617.8	794.5
F 9	152.3	715.5	295	124.6	586.4	734.5	570.8	725.5	586.5	796.6	546.2	724.9
F 10	127.9	627.1	440	643.2	513.7	646.5	510.8	718.5	461.7	625.8	542.6	682
F 11	282.3	872.6	706	886.2	684.6	831.7	540.9	834.5	660.5	913.7	743.6	843.7
F 12	146.9	702.8	582	731.5	569.8	743.8	560.5	762.3	587.1	813.5	609.8	748.3

*** unit in µg/m^3**

Note : Fusitive emission standards as per MoEF Notification No. GSR 809(E), dtd.4.10.2010 on iron ore mining and processing. Particulate matter (PM)-1200 µg/m^3 at a distance of 25±2m. In the pre dominant downward direction from the source of generation .

NB :

Locations :

A 1 : Tensa Hospital, Tensa
A 2 : Barsua Railway Siding
A 3 : Tantara Village
A 4 : Mine Site Office (KIM)
A 5 : Roxy Railway Siding
A 6 : Near ML-139/Kalta C Block
F1 : Ore Handling plant(BIM)
F2: Excavation & loading (BIM)
F3 : Haul Road(BIM)
F4 : Dump Area(BIM)
F5 : Stock pile & Loading(B/V, BIM)
F6 : Haul Road (TIM)
F7 : Mobile Screening Area (TIM)
F8 : Excavation Area(TIM)
F9: Drilling Area (KIM)
F10: Excavation (KIM)
F11: Haul Road Area (KIM)
F12: Mobile Crushing & Screening Area (KIM)

Real Time Data Acquisition And Monitoring

Site Name: Barsuan-Taldih-Kalta Iron Ore Mine Of M/s. SAIL

Report: Custom Report

From Date: 2024/10/01 00:00:00 To Date : 2025/03/31 23:59:32

Description	Near Canteen Barsua-PM10_U	Near Canteen Barsua-PM2.5_U
Prescribed Standards	-	-
Maximum Data	108.36	34.65
Minimum Data	20.28	13.7
Geometric Mean	51.52	24.73
Median	42.07	27.18
Standard Deviation	34.34	8.35
Maximum Value At Time	2025-02-01	2025-03-01
Minimum Value At Time	2024-10-01	2024-10-01
Valid Data Points	6	6
Total Data Points	6	6
Data Availability %	100.0%	100.0%

Sl No.	Time	Near Canteen Barsua-PM10_U	Near Canteen Barsua-PM2.5_U
1	2024-10-01	20.28	13.70
2	2024-11-01	23.79	15.76
3	2024-12-01	29.81	25.03
4	2025-01-01	54.33	29.32
5	2025-02-01	108.36	29.91
6	2025-03-01	72.54	34.65

Report Details: BarsuaTaldih | 2025-05-28 18:12:45 | Custom Report

Real Time Data Acquisition And Monitoring

Site Name: Barsuan-Taldih-Kalta Iron Ore Mine Of M/s. SAIL

Report: Custom Report

From Date: 2024/10/01 00:00:00 To Date : 2025/03/31 23:59:32

Description	Near Canteen Kalta-PM10_U	Near Canteen Kalta-PM2.5_U
Prescribed Standards	-	-
Maximum Data	65.23	39.56
Minimum Data	30.22	9.58
Geometric Mean	48.22	23.3
Median	50.29	22.44
Standard Deviation	13.1	12.7
Maximum Value At Time	2025-03-01	2025-02-01
Minimum Value At Time	2024-11-01	2024-10-01
Valid Data Points	6	6
Total Data Points	6	6
Data Availability %	100.0%	100.0%

	Time	Near Canteen Kalta-PM10_U	Near Canteen Kalta-PM2.5_U
Sl No.			
1	2024-10-01	36.23	9.58
2	2024-11-01	30.22	10.48
3	2024-12-01	47.63	17.72
4	2025-01-01	52.95	27.15
5	2025-02-01	57.06	39.56
6	2025-03-01	65.23	35.30

Report Details: BarsuaTaldih | 2025-05-28 18:14:08 | Custom Report

Real Time Data Acquisition And Monitoring

Site Name: Barsuan-Taldih-Kalta Iron Ore Mine Of M/s. SAIL

Report: Custom Report

From Date: 2024/10/01 00:00:00 To Date : 2025/03/31 23:59:32

Description	Near Mining Site Office Barsua-PM10_U	Near Mining Site Office Barsua-PM2.5_U	Near Mining Site Office Barsua-SO2_U	Near Mining Site Office Barsua-NOx_U
Prescribed Standards	-	-	-	-
Maximum Data	72.02	110.61	13.08	34.02
Minimum Data	20.76	29.14	8.6	32.94
Geometric Mean	45.43	62.33	10.52	33.47
Median	43.03	56.84	10.1	33.44
Standard Deviation	23.78	29.96	2.0	0.44
Maximum Value At Time	2025-02-01	2024-11-01	2025-03-01	2024-12-01
Minimum Value At Time	2024-10-01	2024-10-01	2024-10-01	2025-01-01
Valid Data Points	6	6	6	6
Total Data Points	6	6	6	6
Data Availability %	100.0%	100.0%	100.0%	100.0%

Sl No.	Time	Near Mining Site Office Barsua-PM10_U	Near Mining Site Office Barsua-PM2.5_U	Near Mining Site Office Barsua-SO2_U	Near Mining Site Office Barsua-NOx_U
1	2024-10-01	20.76	29.14	8.60	33.73
2	2024-11-01	23.08	110.61	8.76	33.82
3	2024-12-01	29.54	82.48	8.95	34.02
4	2025-01-01	56.52	38.07	11.25	32.94
5	2025-02-01	72.02	55.92	12.46	33.16
6	2025-03-01	70.68	57.76	13.08	33.15

Mobile water sprinklers

Use of wet drilling

Wheel Washing Facility at Taldih Mine

Dry fog Dust Suppression in Crusher, Barsua

Mobile Screening Plant

Closed Conveyor System at Barsua Block

BARSUA-TALDIH-KALTA IRON MINE

WATER QUALITY OF STREAM SAMPLES/SURFACE WATER

Sl.No.	Parameters	'OCTOBER 2024						'NOVEMBER 2024						DECEMBER 2024					
		SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6
1	pH	7.24	7.17	6.33	6.59	6.95	6.78	7.61	7.48	7.07	7.15	7.39	7.23	7	7	7	7	7	7
2	Temperature	24ºc	25ºc	23ºc	24ºc	24ºc	22ºc	18ºc	19ºc	17ºc	19ºc	17ºc	18ºc	20ºc	20ºc	20ºc	20ºc	20ºc	20ºc
3	Turbidity(NTU)	4.47	1.37	1.09	0.93	1.98	<1.0	2	2.4	1.1	1.2	1.2	<1.0	1.1	1.5	1.1	1.2	2.5	2.8
4	Residual Free Chlorine mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Alkalinity as CaCo3 mg/l	8	24	24	20	48	32	20	20	20	24	20	48	24	24	20	32	24	44
6	Chloride as Cl mg/l	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	8	8
7	Total Hardness as CaCo3 mg/l	28	24	24	32	44	16	11	10	12	12	10	47	40	48	44	60	40	60
8	Calcium as Ca mg/l	9.6	4.8	6.4	11.2	9.6	6.4	2.8	3.6	4	4.8	4	9.6	3.2	9.6	9.6	6.4	8	11.2
9	Magnesium as Mg mg/l	0.972	2.92	1.94	0.972	4.86	<0.243	0.972	2.243	0.486	<0.243	<0.243	5.6	7.77	5.83	4.86	1.069	4.86	7.77
10	Sulphate as So4 mg/l	7	2	2	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3	4	2.8	5	2	4
11	Nitrate as No3 mg/l	4.5	0.654	4.5	2.6	2	3.688	0.597	0.613	3.97	2.655	0.749	1.144	2.4	2.3	1.6	2.2	<1.0	<1.0
12	Fluoride as F mg/l	<0.1	<0.1	<1.0	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Total dissolve Solids mg/l	81	25	33	38	8	10	20	22	30	34	22	55	20	25	39	35	25	62
14	Total Suspended Solids mg/l	7	8	3	5	3	5	3	3	4	4	3	1	1	2	1	3	3.2	5.8
15	D.O.	8.9	5.9	5.8	6.8	6.1	5.9	5.8	4.7	6.4	3.6	5.1	6.7	5.6	5.5	3.8	3.7	5.6	6.3
16	BOD, 5days at 20 C	2	2	<1	3	3	2	2	3	2	2	3	3	1	2			2	2
17	COD	32	24	32	12	32	24	24	16	30	48	32	24	24	22	18	16	32	38
18	Oil and Grease mg/l	<0.1	<0.1	<0.1	<0.1	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
19	Iron as Fe mg/l	0.206	0.314	0.16	0.18	0.18	0.19	0.07	0.113	0.11	0.09	0.165	0.116	0.026	0.034	0.04	0.09	0.3	0.18
20	Copper as Cu mg/l	<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
21	Zinc as Zn mg/l	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Aluminium as Al mg/l	10.87	0.1	0.08	0.11	0.17	<0.05	0.05	0.08	0.05	0.08	0.07	0.09	<0.05	<0.05	<0.05	<0.05	0.07	<0.05
23	Boron as B mg/l	<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
24	Manganese as Mn mg/l	0.09	<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
25	Lead as Pb mg/l	<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
26	Cadmium as Cd mg/l	<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	<0.001	<0.001
27	Arsenic as As mg/l	<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
28	Mercury as Hg mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
29	Nickel as Ni mg/l	<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
30	Chromium as Cr +6mg/l	<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
31	Phenolic compound mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Cyanide as CN mg/l	<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
33	Sulphide as S mg/l	<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
34	Free Ammonia as N mg/l	<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
35	Kjeldahl Nitrogen as N mg/l	6	8	5	7	4	6	2	3	3	4	2	4	4	5	3	4	6	6
36	Ammonia as N mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	2.357	1.26	1.46	3.98	1.86	2.39	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
37	Total Coliform, MPN/100 ml	360	350	450	320	410	380	400	420	320	450	480	340	280	360	260	380	260	420

NB :
SW 1: Kuradih Nala US : BIM
SW 2: Kuradih Nala DS : BIM
SW 3: Samaj Nallah US : Near Tantra
SW 4: Samaj Nallah DS : Near Phuljhar
SW 5: Samaj Nallah US : KIM
SW 6 : Samaj Nallah DS: KIM
N.T: Not Tracble

BARSUA-TALDIH-KALTA IRON MINE

WATER QUALITY OF STREAM SAMPLES/SURFACE WATER

Sl.No.	Parameters	'JANUARY 2025						'FEBRUARY 2025						'MARCH 2025					
		SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6	SW 1	SW 2	SW 3	SW 4	SW 5	SW 6
1	pH	6.99	7.16	6.18	6.87	6.18	6.87	7.27	7.32	6.7	6.82	7.43	7.45	7.24	7.3	6.53	6.18	7.35	7.4
2	Temperature	25ºc	25ºc	25ºc	25ºc	25ºc	25ºc	25ºc	25ºc	25ºc	25ºc	25ºc	25ºc	20ºc	21ºc	22ºc	21ºc	22ºc	21ºc
3	Turbidity(NTU)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4	Residual Free Chlorine mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Alkalinity as CaCo3 mg/l	28	28	40	36	28	68	36	8	16	28	46	44	24	28	40	72	40	52
6	Chloride as Cl mg/l	8	8	16	12	12	12	4	4	8	4	4	4	4	4	4	4	4	4
7	Total Hardness as CaCo3 mg/l	68	56	40	72	40	76	32	36	32	40	52	48	32	24	28	36	44	44
8	Calcium as Ca mg/l	9.6	9.6	12.8	9.6	12.8	16	6.4	9.6	6.4	9.6	9.6	11	6.4	8	8	13	11.2	14.4
9	Magnesium as Mg mg/l	10.7	7.8	1.9	11.7	1.9	8.7	3.8	2.9	3.8	3.8	6.4	5	3.8	0.972	1.9	0.97	3.9	1.9
10	Sulphate as So4 mg/l	24.4	66.5	<1.0	3.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1	1.2	8	4	<1.0	<1.0	2	4
11	Nitrate as No3 mg/l	<1.0	<1.0	3.2	3.6	<1.0	<1.0	<1.0	<1.0	1.56	2.49	1.24	<1.0	2.4	2.8	<1.0	<1.0	0.3	0.58
12	Fluoride as F mg/l	0.494	0.511	0.039	0.033	0.475	0.957	<1.0	<1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<1.0	<0.1	<0.1	0.247	0.221
13	Total dissolve Solids mg/l	23	25	48	44	26	60	23	25	47	42	46	55	27	27	40	40	52	57
14	Total Suspended Solids mg/l	2	4	3	4	2	5	7	6	5	8	6	9	2	3	2	3	2	3
15	D.O.	7.8	6.7	6.1	5.9	5.8	6.7	3.8	3.7	3.8	3.9	3.8	3.8	3.7	3.6	3.9	3.6	3.6	3.6
16	BOD, 5days at 20 C	2	3	2	1	4	3	<2	2	2	1	<3	<3	1	2	2	<2	<3.0	<3.0
17	COD	24	40	16	24	32	48	24	<0.1	56	<0.1	32	<0.1	16	8	97	73	89	105
18	Oil and Grease mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
19	Iron as Fe mg/l	<0.05	<0.05	<0.05	0.127	0.118	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.105	0.06	0.116	0.08	0.224	<0.05
20	Copper as Cu mg/l	<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
21	Zinc as Zn mg/l	<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
22	Aluminium as Al mg/l	<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
23	Boron as B mg/l	<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
24	Manganese as Mn mg/l	<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
25	Lead as Pb mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cadmium as Cd mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Arsenic as As mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
28	Mercury as Hg mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
29	Nickel as Ni mg/l	<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
30	Chromium as Cr +6mg/l	<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
31	Phenolic compound mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005
32	Cyanide as CN mg/l	<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
33	Sulphide as S mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	<1.0	<1.0	NT	NT
34	Free Ammonia as N mg/l	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
35	Kjeldahl Nitrogen as N mg/l	4.5	4.2	5.5	4.5	5	5.6	2	2.2	2.5	2.8	1.1	2.2	1.2	1.8	<1.0	<1.0	<1.0	<1.0
36	Ammonia as N mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.02	<0.02	0.208	0.0279
37	Total Coliform, MPN/100 ml	270	350	480	340	260	320	240	345	278	345	278	221	221	278	171	221	278	221

NB :

SW 1: Kuradih Nala US : BIM

SW 2: Kuradih Nala DS : BIM

SW 3: Samaj Nallah US : Near Tantra

SW 4: Samaj Nallah DS : Near Phuljhar

SW 5: Samaj Nallah US : KIM

SW 6 : Samaj Nallah DS: KIM

N.T: Not Tracble

Annexure-III

BARSUA-TALDIH-KALTA IRON MINE

FLOW RATE OF PERENNIAL NALLAH			
Month	Locations		
	Kuradih Nallah (in m^3/Sec)	Samaj Nallah, Taldih (in m^3/Sec)	Samaj Nallah, Kalta (in m^3/Sec)
OCTOBER' 2024	10.961	1.488	1.745
NOVEMBER' 2024	6.660	1.037	1.206
DECEMBER' 2024	4.662	0.775	0.813
JANUARY' 2025	4.264	0.660	0.782
FEBRUARY' 2025	2.529	0.495	0.570
MARCH' 2025	2.292	0.390	0.435

Annexure – IV

BARSUA-TALDIH-KALTA IRON MINE

GROUND WATER LEVEL MEASUREMENTS			
Month	Water level below the Ground Surface (in meters)		
	Locations		
	Barsua Valley	Zero Pount, Tensa	Kalta Basti, Kalta
OCTOBER' 2024	0.47	1.51	1.59
NOVEMBER' 2024	0.50	1.58	1.66
DECEMBER' 2024	0.53	1.63	1.71
JANUARY' 2025	0.59	1.69	1.76
FEBRUARY' 2025	0.65	1.76	1.81
MARCH' 2025	0.67	1.80	1.88

BARSUA-TALDIH-KALTA IRON MINE

WATER QUALITY OF GROUND WATER

Sl.No.	Parameters	'OCTOBER 2024			NOVEMBER 2024			'DECEMBER 2024			'JANUARY 2025			'FEBRUARY 2025			'MARCH 2025		
		GW1	GW 2	GW3	GW1	GW2	GW3	GW1	GW2	GW3	GW1	GW2	GW3	GW1	GW2	GW3	GW1	GW2	GW3
1	pH	5.83	6.56	6.04	6.6	7.33	7.25	7	7	7	5.61	6.66	7.39	6.17	6.64	6.06	5.97	6.82	6.38
2	Colour(Hazen unit)	<1.0	<1.0	<1.0	<1.0	8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	Turbidity (NTU)	<1.0	<1.0	1.05	<1.0	4.8	<1.0	<1.0	12.8	1.7	<1.0	<1.0	<1.0	<1.0	6.8	<1.0	<1.0	<1.0	<1.0
4	Temperature ^{0}C	23°c	24°c	24°c	17°c	18°c	18°c	17°c	18°c	17°c	25°c	25°c	25°c	20°c	21°c	25°c	20°c	21°c	22°c
5	Total Hardness as $CaCO_3$,mg/l	84	96	44	10	112	28	36	172	56	48	176	136	32	156	72	32	152	52
6	Alkalinity as $CaCO_3$,mg/l	56	108	24	12	160	32	24	160	110	40	184	48	48	136	36	32	140	40
7	Chlorides as Cl , mg/l	92	16	4	4	4	8	4	4	8	12	8	8	4	12	4	4	4	4
8	Calcium as Ca, mg/l	33.6	36.8	9.6	32	42	28	8	42	11	16	51	12.8	6.4	42	14.4	8	45	11
9	Magnesium as Mg, mg/l	<0.243	0.972	4.9	0.486	1.944	0.972	4	17	7	1.9	12	12	3.6	12.6	8.7	3	10	6
10	Residual Free Chlorine, mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11	Sulphate as SO_4,mg/l	3.6	113	8.2	<1.0	<1.0	<1.0	1	5	2	<1.0	<1.0	3.2	<1.0	18.2	1.2	<1.0	2	2
12	Nitrate as NO_3, mg/l	40.8	10.4	15.6	<1.0	<1.0	<1.0	<1.0	<1.0	10.2	<1.0	<1.0	<1.0	0.44	3.5	11.1	<1.0	4.26	11.8
13	Iron as Fe,mg/l	<0.05	<0.05	<0.05	<1.0	0.44	<0.01	<1.01	0.303	0.028	<0.05	0.227	0.02	<0.05	<0.05	<0.05	0.243	0.116	0.09
14	Copper as Cu,mg/l	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Manganese as Mn,mg/l	<0.05	0.71	<0.05	<0.01	0.252	<0.01	<0.05	0.2244	<0.05	<0.05	0.429	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Phenolic Compounds C_6H_5OH, mg/l	<0.05	<0.05	<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
17	Zinc as Zn, mg/l	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Cadmium as Cd, mg/l	<0.003	<0.003	<0.003	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.003	<0.003	<0.003	<0.05	<0.05	<0.003	<0.003	<0.003	<0.003
19	Arsenic as As, mg/l	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Cyanide as CN, mg/l	<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
21	Lead as 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	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01
22	Total Chromium as Cr^{+6}, mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
23	Mineral oil ,mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.001	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
24	Fluoride as F, mg/l	<0.120	0.282	<0.05	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	0.494	0.502	<0.1	<0.1	<0.1	<0.1	0.45	0.34	0.12
25	Selenium as Se, mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<1.0	<0.01	<0.01	<0.01
26	Total Dissolved solids (mg/l)	290	165	68	26	147	66	28	109	71	28	175	72	33	190	73	31	188	74
27	Aluminium as Al mg/l	<0.2	<0.2	<0.05	0.012	<0.01	0.047	<0.2	<0.2	0.104	<0.05	<0.05	<0.01	0.117	0.116	0.077	<0.05	<0.05	<0.05
28	Boron as B mg/l	<1.0	<1.0	<1.0	<0.01	<0.01	<0.01	<1.0	<1.0	<0.01	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.05	<0.05	<0.05
29	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
30	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
31	Mercury as Hg, mg/l	<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	<0.001	<0.001
32	Anionic detergent	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

NB :

GW 1 : Hand pump at Zero point : (BIM)

GW 2 : Hand pump at Banka Bazar B/Valley

GW 3 : Hand Pump at Kalta Village (KIM)

Annexure-VI

BARSUA-TALDIH-KALTA IRON MINES

WATER QUALITY OF EFFLUENT WATER

Sl.No.	Parameters	OCTOBER 2024		'NOVEMBER 2024		DECEMBER 2024		JANUARY 2025		'FEBRUARY 2025		'MARCH 2025	
		EW 1	EW 2	EW 1	EW 2	EW 1	EW 2	EW 1	EW 2	EW 1	EW 2	EW 1	EW 2
1	pH	5.71	7.33	6.9	6.87.33	6.5	6.5	5.21	7.16	6.99	7.52	5.23	7.37
2	Temperature	22°c	23°c	22°c	23°c	21°c	21°c	25°c	25°c	25°c	25°c	22°c	21°c
3	Selenium as Se, mg/l	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<1.0	<1.0	<0.01	<0.01
4	Total Residual Chloride mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5	Alkalinity as CaCo3 mg/l	24	3.2	28	26	20	28	12	8	12	52	8	60
6	Chloride as Cl mg/l	4	4	4	4	4	8	16	8	8	4	4	4
7	Total Hardness as CaCo3 mg/l	16	16	12	10	72	40	68	56	40	56	12	52
8	Calcium as Ca mg/l	3.2	6.4	4	4.8	6.4	8	14.4	9.6	6.4	18	4.8	16
9	Magnesium as Mg mg/l	1.9	<0.243	<0.243	<0.243	3.6	4.9	7.744	7.776	5.8	3	0.243	2.9
10	Sulphide as S mg/l	N.T	N.T	N.T	N.T	N.T	N.T	NT	NT	NT	NT	NT	NT
11	Nitrate as No3 mg/l	2.5	2.2	4.8	4.6	0.202	2.03	16.9	7.6	1.4	0.89	2.4	3
12	Fluoride as F mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.149	0.251
13	Total dissolve Solids mg/l	82	28	27	37	30	39	27	47	20	61	24	63
14	Suspended Solids mg/l	84	53	280	120	10	8	208	45	3	2	118	10
15	B.O.D (3 days at 27 ^{O}C) mg/l	4	6	14.9	6	48	29	28.9	22	<3.0	<3.0	80	28
16	C.O.D	32	30	64	24	20.6	168	192	104	352	212	226	194
17	Oil and Grease mg/l	4	2	2	1	3	2	0.926	1.5	<0.1	<0.1	<1.0	2
18	Total Chromium as Cr mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Copper as Cu mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Zinc as Zn mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.04	<0.05	<0.05	<0.05	<0.05
21	Boron as B mg/l	<1.0	<1.0	150	80	<0.05	<0.05	<0.05	<0.05	<1.0	<1.0	<0.05	<0.05
22	Odour	Unpleasant	Unpleasant	Unpleasant	Unpleasant	Unpleasant	Unpleasant	Obnoxious	Obnoxious	Obnoxious	Obnoxious	Obnoxious	Obnoxious
23	Colour	<1.0	<1.0	150	90	46	24	150	200	150	200	12	15
24	Lead as Pb mg/l	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05
25	Cadmium as Cd mg/l	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05
26	Arsenic as As mg/l	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05
27	Mercury as Hg mg/l	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Nickel as Ni mg/l	<0.05	<0.05	<0.01	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
29	Hexavalent Chromium as Cr^{+6} mg/l	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
30	Phenolic compound As C_6H_5OH mg/l	<1.0	<1.0	<1.0	<1.0	<0.01	<0.01	<0.05	<0.05	<0.01	<0.01	<0.05	<0.05
31	Cyanide as CN mg/l	<0.2	<0.2	<0.05	<0.05	<0.01	<0.01	0.07	0.07	<0.05	<0.05	<0.05	<0.05
32	Dissolved Phosphate as P mg/l	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05
33	Ammonical Nitrogen as N mg/l	<0.02	<0.02	<0.2	<0.2	<0.02	<0.02	<0.02	<0.02	8.99	<0.05	NT	NT
34	Total Kjeldahl Nitrogen as N mg/l	14.02	7.8	5	3	8	4	2.4	6.7	2.24	6.72	1.79	2.24
35	Free Ammonia as NH_3 mg/l	N.T	N.T	N.T	N.T	N.T	N.T	NT	NT	NT	NT	NT	NT
36	Iron as Fe mg/l	0.35	1.24	0.563	0.352	1.03	0.176	1.329	0.453	0.425	0.356	0.662	0.432
37	DO mg/l	NA	NA	NA	NA	NA	NA	4.2	4.8	4.1	4.7	3.9	3.6

NB :

EW 1: Tailing Dam (Before) Discharge

EW 2: Tailing Dam (After) Discharge

N.T: Not Tracble

Annexure-VII

BARSUA-TALDIH-KALTA IRON MINE

DETAIL MONITORING OF NOISE QUALITY

Sl. No.	LOCATION	OCTOBER 2024		NOVEMBER 2024		DECEMBER 2024		JANUARY 2025		FEBRUARY 2025		MARCH 2025	
		Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)
1	Tensa Hospital	35.2	26.3	33.5	24	33.4	26.2	38.4	32.2	36.2	30.3	32.0	27.4
2	VTC Tensa	55.1	37.6	52.3	35.2	54.5	37.3	51.3	41.5	50.4	40.2	51.6	42.3
3	Barsua Valley Township	50.4	39	53.1	37.4	50.2	35.1	45.6	36.1	47.1	33.3	49.4	35.5
4	Tantra Village (TIM)	35.4	32.1	33.1	28.4	35.6	27.2	42.3	31.1	44.1	30.4	41.3	29.4
5	Mine Site Office Kalta	71.3	60.1	69.4	58.2	67.2	56	68.7	60.4	66.2	61	62.4	58.1
6	Roxy Railway Siding	67	54.4	65.6	52.1	63.3	50.5	70.3	58.1	69.6	57.3	65.8	55.4
7	Near ML-139/Kalta C Block	42	33.1	40.3	32.5	42.7	30.2	65.2	57.5	62.6	55.2	60.2	53.7

BARSUA-TALDIH-KALTA IRON MINE

Annexure-VIII

DETAIL MONITORING OF NOISE QUALITY

Sl. No.	LOCATION	OCTOBER 2024		NOVEMBER 2024		DECEMBER 2024		JANUARY 2025		FEBRUARY 2025		MARCH 2025	
		Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)	Day time Leq. dB (A)	Night time Leq. dB (A)
1	Excavation Area, BIM	67.4-68.2	56.2-58.2	69.2-70.0	53.1-58.1	66.1-68.3	53.3-57.2	65.2-68.2	55.2-58.2	65.4-67.6	54.2-56.4	63.0-65.4	52.4-54.2
2	Haul Road, BIM	64.4-67.2	52.2-56.1	64.3-67.4	54.4-56.5	67.0-68.4	55.4-58.4	66.3-69.6	56.3-58.2	65.2-68.1	52.3-55.5	65.5-68.5	51.2-54.3
3	Primary Crusher, BIM	67.3-70.4	57.0-60.3	67.4-70.3	56.2-61.0	66.2-67.2	52.2-54.6	66.1-70.6	56.4-60.5	62.5-68.3	54.4-57.4	63.2-65.2	52.3-54.2
4	Secondary Crusher (BIM)	70.2-72.6	56.2-61.4	70.4-71.5	59.2-61.5	69.3-70.4	55.3-61.5	70.3-72.4	59.8-61.6	70.1-71.4	57.3-60.3	69.9-71.2	50.0-58.6
5	Dump Area, BIM	60.2-62.3	49.1-52.3	60.7-65.5	48.5-57.3	57.5-60.2	46.2-51.1	57.4-60.1	50.3-56.3	54.3-62.2	48.2-54.6	53.2-61.5	45.4-52.3
6	Stock Pile & Loading, Barsua Valley	61.6-65.6	50.7-56.2	60.1-64.4	50.3-52.5	58.5-62.5	50.5-53.3	65-67.1	59.1-60.3	63.1-66.7	55.3-57	59.5-66.7	51.1-55.3
7	Excavation Area (TIM)	66.2-69.2	56.1-59.4	65.4-68.4	54.2-58.1	66.4-68.5	55.2-57.5	67.2-70.6	58.1-60.3	64.1-67.3	55.3-59.3	64.3-65.2	53.2-55.4
8	Haul Road, TIM	69.0-70.20	56.1-59.7	67.2-70.6	55.4-57.5	66.5-69.6	55.4-57.2	65.7-69.2	55.3-60.3	62.5-68.5	52.1-55.6	64.6-67.1	53.2-54.3
9	Mobile Crushing & Screening, TIM	70.1-71.2	58.6-61.4	69.6-70.5	59.3-60.4	67.0-70.5	58.4-60.4	68.2-72.1	57.1-61.4	70.2-71.3	57.7-60.2	70.4-72.5	55.3-61.1
10	Ore Storage & Loading, TIM	65.2-67.3	54.2-58.4	65.3-67.5	54.7-58.2	62.3-66.2	56.1-57.3	66.3-70.4	54.1-59.2	64.3-67.2	52.5-57.6	62.2-66.2	50.3-54.3
11	Excavation Area, KIM	62.1-69.1	54.2-58.3	63.1-66.2	56.1-58.2	63.1-66.2	56.1-60.0	68.2-71.1	57.1-60.3	65.2-66.7	55.5-58.3	64.2-66.4	52.3-55.1
12	Haul Road, KIM	66.1-68.5	55.1-58.2	65.6-67.4	50.2-58.3	66.4-67.4	50.2-57.6	67.5-71.2	56.2-60.4	64.2-67.5	55-57.6	65.4-67.6	52.5-55.5
13	Mobile Crushing & Screening, KIM	70.4-71.0	59.2-61.3	68.3-70.3	57.4-61.2	68.3-71.2	56.3-61.4	68-72.6	57.5-61.5	63.2-69.2	53.1-58.4	66.2-70.5	54.8-57.4
14	Ore Storage & Loading, KIM	64.1-66.3	53.3-56.2	62.4-65.2	51.5-57.2	62.4-65.5	51.5-58.3	58.4-68.3	56.0-60.5	60.4-67.6	53.1-57	62.3-65	52.5-54.4

Annexure - IX

BARSUA-TALDIH-KALTA IRON MINES

RESULTS OF VEHICULAR EMMISSION				
SL. NO	Vehicle Registration No. / I.D. No.	Model No.	RESULTS Smoke Density (Light Absorption coefficient unit 1/meter) 3rd Qtr. 2024-25	Permissible Emission Limit As per National Register of Motor Vehicles
1	OR 14S 3752	HPD-103	0.53	1.62
2	OD 14E 8392	WS-100	0.53	2.45
3	OD 14M 4886	HPD-101	0.53	1.62
4	OD 14M 4885	HPD-102	0.54	1.62
5	OR 14T 4191	HPD-90	0.53	2.45
6	OR 14W 9579	HPD-98	0.54	2.45
7	OR 14Y 3496	Maintenance Van	0.54	2.45
8	OR 14X 3345	HL 770 7A	0.61	2.45
9	OD 14Y 8824	F-150	0.53	2.45
10	OR 14W 9578	HPD-97	1.06	2.45
11	Dumper (50 T)	HPD-104	1.04	2.45
12	Dumper (50 T)	HPD-105	1.05	2.45
13	Motor Grader (BG-825-25135)	MG-07	1.07	2.45
14	Tyre Holder (BEML)	BL-14TH	1.08	2.45
15	Shovel (BE-1000)	EX-22	1.05	2.45
16	OD 09L 2849	DPV-150	0.54	1.62
17	OD 09X 3388	DPV-434	0.53	0.7
18	OD 09L 0639	DPV-139	0.53	1.62
19	OD 33AD 8194	DPV-335	0.55	0.7
20	OD 33G 2854	DPV-84	0.54	2.45
21	OD 33AD 8049	DPV -334	0.54	0.7
22	OD 33T 3029	DPV - 172	0.55	1.62
23	OD 09AB 1133	WT-70	0.55	0.7
24	OD 09X 5060	WT - 153	0.55	0.7
25	OD 02CE 4517	S-Van -19	0.54	0.7
26	OD 33AA 3509	HL-04	0.56	2.45
27	OD 33AF 5947	TAK-07	0.53	2.45
28	OD 33F 4969	DPV - 63	0.55	2.45
29	OD 33F 4939	DPV -64	0.54	2.45
30	OD 33G 4309	DPV-97	0.57	2.45
31	OD 33G 4269	DPV-98	0.53	2.45
32	OD 33H 0459	DPV-101	0.55	2.45
33	OD 09N 8559	DPV-215	0.54	1.62
34	OD 09N 8509	DPV-217	0.52	1.62
35	OD 09N 8579	DPV-219	0.53	1.62
36	OD 33H 0459	DPV-101	0.55	2.45
37	OD 33G 6289	DPV-96	0.54	2.45
38	OD 33G 4279	DPV-95	0.53	2.45
39	OD 33H 0449	DPV-102	0.57	2.45
40	OD 33H 0369	DPV-103	0.54	2.45

Annexure - IX

BARSUA-TALDIH-KALTA IRON MINES

RESULTS OF VEHICULAR EMMISSION				
SL. NO	Vehicle Registration No. / I.D. No.	Model No.	RESULTS Smoke Density (Light Absorption coefficient unit 1/meter) 4th Qtr. 2024-25	Permissible Emission Limit As per National Register of Motor Vehicles
1	OR 14S 3752	HPD-103	0.27	1.62
2	OD 14E 8392	WS-100	0.26	2.45
3	OD 14M 4886	HPD-101	0.29	1.62
4	OD 14M 4885	HPD-102	0.28	1.62
5	OR 14T 4191	HPD-90	0.29	2.45
6	OR 14W 9579	HPD-98	0.29	2.45
7	OR 14Y 3496	Maintenance Van	0.29	2.45
8	OR 14X 3345	HL 770 7A	0.27	2.45
9	OD 14Y 8824	F-150 ACE	0.27	2.45
10	OR 14W 9578	HPD-97	0.27	2.45
11	Dumper (50T)	HPD-104	1.28	2.45
12	Dumper (50T)	HPD-105	1.27	2.45
13	Motor Grader BG-825-25135	MG-07	1.28	2.45
14	Tyre Holder (BEML)	BL-14TH	1.27	2.45
15	SHOVEL (BE-1000)	EX-22	1.29	2.45
16	OD 33AD 8194	DPV-335	0.54	1.62
17	OD 09L 2769	DPV-153	0.54	2.45
18	OD 09X 3328	DPV-433	0.53	2.45
19	OD 09H 3419	DPV - 128	0.53	1.62
20	OD09X 3385	DPV - 436	0.55	0.7
21	OD09X 3384	DPV - 432	0.54	0.7
22	OD 09L 0639	DPV - 139	0.55	2.45
23	OD 09L 2849	DPV - 150	0.54	1.62
24	OD 33AD 8175	DPV - 336	0.55	1.62
25	ODO9X 3326	DPV -435	0.55	0.7
26	OD 09N 8529	DPV-218	0.57	1.62
27	OD 09N 8549	DPV - 222	0.55	1.62
28	OD 14X2447 (Dumper)	DPV-329	0.59	0.7
29	OD 09N 8479	DPV - 223	0.57	1.62
30	OD 09N 8499	DPV - 220	0.56	1.62
31	OD 14X2705 (Dumper)	DPV - 328	0.59	0.7
32	OD 33F 5039 (Dumper)	DPV-68	0.56	2.45
33	OD 09N 8579	DPV - 219	0.61	1.62
34	OD 14X2425 (Dumper)	DPV- 326	0.59	0.7
35	OD 09N 8519	DPV - 221	0.58	1.62
36	OD 14X2404 (Dumper)	DPV- 330	0.59	0.7
37	OD 33AC 4146 (Dumper)	DPV- 323	0.58	0.7
38	OD 14X 2440	DPV- 327	0.59	1.62
39	OD 33F5029 (Dumper)	DPV- 66	0.56	2.45
40	OD 33AC 4092	WT-38	0.58	1.62

Annexure - X

BARSUA-TALDIH-KALTA IRON MINE

DETAILS OF PLANTATION

YEAR	INSIDE MINING LEASE				OUTSIDE MINING LEASE			
	No. of trees	Area in Ha.	Nos. of Trees Survived	Rate of survival in %	No. of trees	Area in Ha.	Nos. of Trees Survived	Rate of survival in %
2011-12	19000	8.00	13310.00	70.00	6000	2.50	3900.00	65.00
2012-13	50000	20.00	42505.00	85.00	0	0.00	0.00	
2013-14	0	0.00	0.00		0	0.00	0.00	
2014-15	0	0.00	0.00		0	0.00	0.00	
2015-16	3300	11.00	1650.00	50.00	16800	10.00	10080.00	60.00
2016-17	8000	5.00	6800.00	85.00	10000	4.00	6000.00	60.00
2017-18	0	0.00	0.00		18000	9.00	8100.00	45.00
2018-19	0	0.00	0.00		10000	4.00	6000.00	60.00
2019-20	0	0.00	0.00		20000	10.00	12000.00	60.00
2020-21	0	0.00	0.00		13000	5.20	7800.00	60.00
2021-22	0	0.00	0.00		7000	2.80	5390.00	77.00
2022-23	1500	1.00	1500.00	100.00	0	0.00	0.00	
2023-24	10000	4.00	9500.00	95.00	0	0.00	0.00	
2024-25	5100	Gap Plantation	4850.00	95.00	0	0.00	0.00	
TOTAL	**96900**	**49.00**	**80115.00**	**82.66**	**100800**	**47.500**	**59270.00**	**58.80**

Apart from above, the following plantation has been done through State Forest Department

1. Safety Zone Plantation of 32073 saplings over an area of 93.679 Ha
2. 1.5 times safety zone plantation of 28104 saplings over an area of 140.519 Ha
3. Compensatory Afforestation of 1237179 saplings over an area of 6122.269 Ha

सेल SAIL

Annexure - XI

WASTE WATER EMISSION LOAD FROM BARSUA BENEFICIATION PLANT (Kg/day)

Parameters/ Month	S.S.		B.O.D		Oil & Grease		Iron as Fe	
	Mg/l	Kg/day	Mg/l	Kg/day	Mg/l	Kg/day	Mg/l	Kg/day
OCTOBER' 2024	53.00	190.80	6.00	21.60	2.00	7.20	1.24	4.46
NOVEMBER' 2024	120.00	432.00	6.00	21.60	1.00	3.60	0.35	1.27
DECEMBER' 2024	8.00	28.80	29.00	104.40	2.00	7.20	0.18	0.63
JANUARY' 2025	45.00	162.00	22.00	79.20	1.50	5.40	0.45	1.63
FEBRUARY' 2025	2.00	7.20	3.00	10.80	0.10	0.36	0.36	1.28
MARCH' 2025	10.00	36.00	28.00	100.80	2.00	7.20	0.43	1.56
Average*	**39.67**	**142.80**	**15.67**	**56.40**	**1.43**	**5.16**	**0.50**	**1.81**

* This is the load of waste waste if allowed to discharge outside. However the water is being recycled through Zero Discharge System.

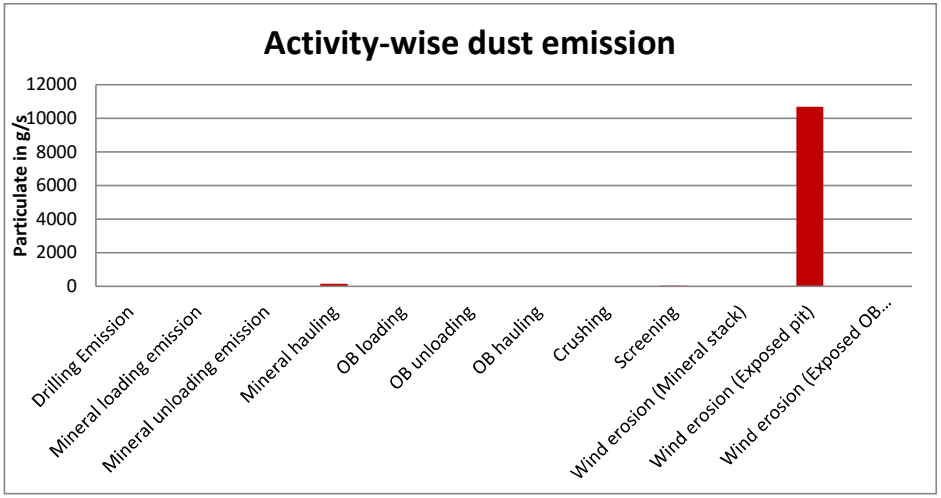
सेल SAIL

DETAILS OF NOISE LOAD (dBA)

Noise level	Day Time		Night Time	
Month	**Maximum in Work Zone**	**Maximum at Lease Boundary**	**Maximum in Work Zone**	**Maximum at Lease Boundary**
OCTOBER' 2024	72.60	71.30	61.40	60.10
NOVEMBER' 2024	71.50	69.40	61.20	58.20
DECEMBER' 2024	71.20	67.20	61.50	56.00
JANUARY' 2025	72.60	70.30	61.60	60.40
FEBRUARY' 2025	71.40	69.60	60.30	61.00
MARCH' 2025	72.50	65.80	61.10	58.10
Average*	**71.97**	**68.93**	**61.18**	**58.97**

RESULTS OF DUST LOAD CALCULATIONS

	Particulate matter in (g/s)	Particulate matter in (kg/d)	Particulate matter (kg per ton of ore)
Drilling Emission	0.07185321	4.39741646	0.00018196
Mineral loading emission	0.02659381	1.627541339	6.73456E-05
Mineral unloading emission	0.18615546	11.39271428	0.000471416
Mineral hauling	159.556413	9764.852468	0.404057288
OB loading	0.21796635	13.33954069	0.000551973
OB unloading	0.43766911	26.78534969	0.001108344
OB hauling	23.2162727	1420.835889	0.058792398
Crushing	9.24836601	566	0.023420367
Screening	34.6568627	2121	0.087764307
Wind erosion (Mineral stack)	0.00025202	0.021774682	9.01009E-07
Wind erosion (Exposed pit)	10674.7642	922299.6293	38.1635962
Wind erosion (Exposed OB dump)	4.90198912	423.5318596	0.017525215
Total	**10907.28**	**936653.41**	**38.757538**



Major Activity	Dust load (kg/day)
Loading/Unloading	53.145146
Hauling	11185.6884
Crushing / Screening	2687
Wind erosion	922723.183

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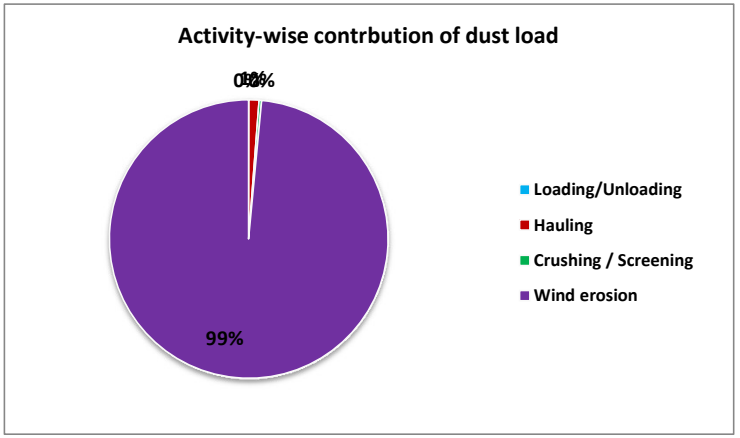
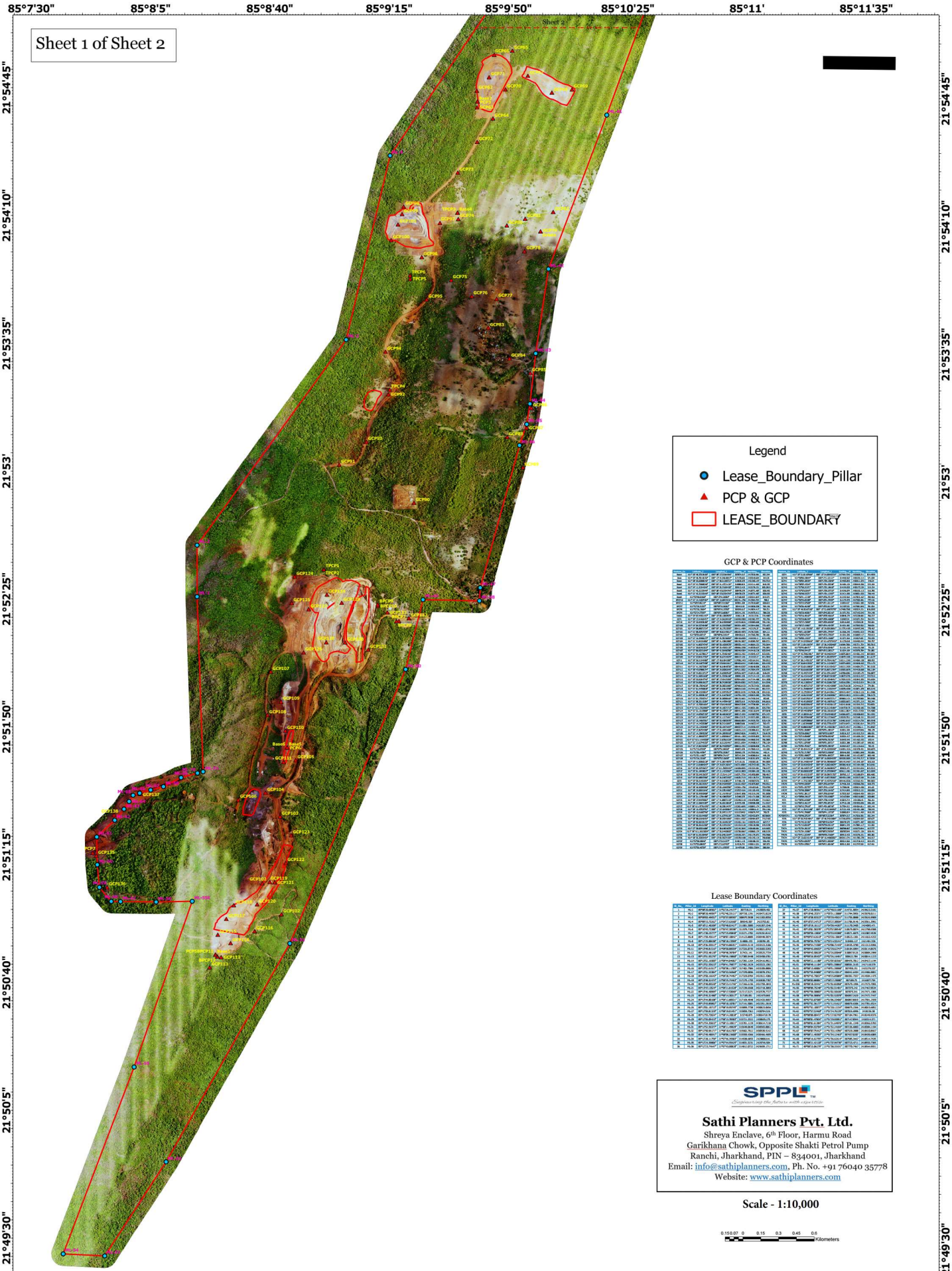


Output Data Submission for Drone Survey For F.Y : 2023-24 for Barsua-Taldih-Kalta Iron Ore Mine, Steel Authority of India Limited (Odisha Group of Mines)

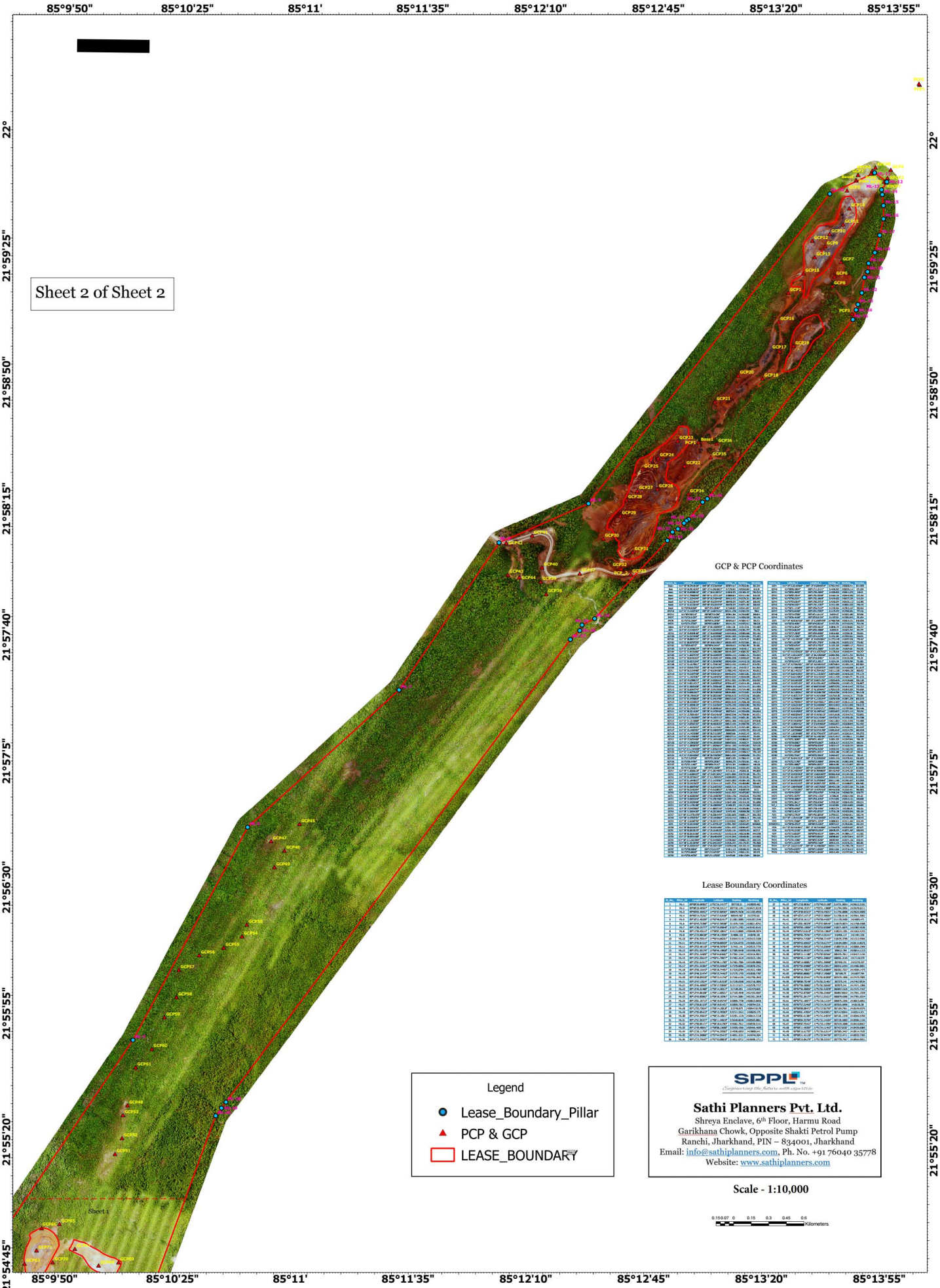
Sl. No.	Particulars	Details
1.	Name of the Mine	Barsua-Taldih-Kalta Iron Mine
2.	Name of the lessee, Address, Phone and email	Steel Authority of India Limited, IspatBhawan, Lodhi Road, New Delhi Email-Id: gmofficebim@gmail.com cgmbim.rsp@sail.in
3.	Location of the mine (Village/taluka/District/State)	Tantra&Bahamba, and Toda Village/KoiraTaluka/SundargarhDist/Odisha State
4.	Total Lease Area (Ha)	2564.323Ha
5.	Mine code	Barsua Iron Mine: 30 ORI 13001 Taldih Iron Mine: 30 ORI 13053 Kalta Iron Mine: 30 ORI 13006
6.	IBM Registration Number under rule 45 of MCDR, 2017	IBM/5662/2011
7.	Mineral	Iron Ore (Hematite)
8.	Method of mining (Opencast/Underground)	Opencast
9.	Name of the Drone Agency	M/s Saathi Planners Pvt. Ltd. Ranchi
10.	Remote Pilot license No.	03226741R31AB
11.	Unique Identification Number (UIN No.) of Drone	QSC61545
12.	Category of Remotely Piloted Aircraft (Nano/ Micro/ Small/ Medium/ Large)	Small
13.	Type of Drone (fixed wing/multi rotor) with specification	Multi Rotor
14.	Survey Start Date and End Date and time (DD/MM/YYYY) complete log sheet to be provided	14-05-24 9:00 AM to 24-05-24 12:00 PM
15.	Name of the pilot and observation during the survey (if any)	Asim Bag
16.	Type of Sensor/camera used along with specification	Sony 24 Megapixel CMOS Photogrammetry Payload
17.	Height of the flight (above ground level) and altitude (meter) of ground where Drone flied	Height of the flight- 120m Altitude (meter) of ground- 816.917m
18.	Total Number of GCP's	174
19.	Device used for the collection of GCP	Trimble DGPS
20.	Total RMSE (Root Mean Square Error)	0.025 m
21	Name of the Agency who have processed the output data	M/s Saathi Planners Pvt. Ltd. Ranchi
22.	Software used for processing the data	Agisoft Metashape & Survey Office
23.	Proposed excavation during the preceding year as per Mining Plan (in cu.m) (mineral and waste)	Commodity / Barsua / Taldih / Kalta Mineral / 1347708 / 1020320 / 1344078 Waste / 270405 / 123060 / 238800
24.	Actual excavation during the preceding year in cu.m (mineral and waste) as per Annual Return submitted to IBM	Commodity / Barsua / Taldih / Kalta Mineral / 878689 / 451814 / 1053728 Waste / 702802 / 516355 / 219507
25.	Data folder name and size	
26	UTM Zone considered in Projected Coordinate System	**45N**

18/6/2024
Harihara Sahu
AGM (Geology & Quality Control)
Barsua Iron Mine, SAIL, RSP

Map Showing Orthomosaic Imagery of Barsua-Taldih-Kalta (Mine Code - 30ORI13001Y2023, 30ORI13006Y2023 & 30ORI13053Y2023) upto 100m outside Lease Boundary, Captured Through Drone Photogrammetry Survey In The Year of 2024 As Per Rule 34A of MCDR 2017 and IBM SOP 2023



Map Showing Orthomosaic Imagery of Barsua-Taldih-Kalta (Mine Code - 30ORI13001Y2023, 30ORI13006Y2023 & 30ORI13053Y2023) upto 100m outside Lease Boundary, Captured Through Drone Photogrammetry Survey In The Year of 2024 As Per Rule 34A of MCDR 2017 and IBM SOP 2023



Sathi Planners Pvt. Ltd.
Shreya Enclave, 6th Floor, Harmu Road
Garikhana Chowk, Opposite Shakti Petrol Pump
Ranchi, Jharkhand, PIN – 834001, Jharkhand
Email: info@sathiplanners.com, Ph. No. +91 76040 35778
Website: www.sathiplanners.com

Annexure- XIII

Ambient Air Quality Monitoring Stations				
S.N.	**Location**	**Parameters Monitored**	**Zone**	**Remarks**
1	Tantra Village	PM10, PM2.5, SO2, NO2, CO	Core Zone	AAQMS (Manual)
2	Mine Site Office, Kalta	PM10, PM2.5, SO2, NO2, CO	Core Zone (along transportation route)	AAQMS (Manual)
3	Near ML-139/ Kalta C Block	PM10, PM2.5, SO2, NO2, CO	Core Zone	AAQMS (Manual)
4	Mining Site Office, Barsua	PM10, PM2.5, SO2, NOx	Core Zone	CAAQMS (Online)
5	Hospital, Tensa	PM10, PM2.5, SO2, NO2, CO	Buffer Zone	AAQMS (Manual)
6	Barsua Railway Siding	PM10, PM2.5, SO2, NO2, CO	Buffer Zone (along transportation route)	AAQMS (Manual)
7	Roxy Railway Siding	PM10, PM2.5, SO2, NO2, CO	Buffer Zone (along transportation route)	AAQMS (Manual)
8	Canteen, Barsua	PM10, PM2.5	Buffer Zone	CAAQMS (Online)
9	Hospital, Kalta	PM10, PM2.5	Buffer Zone	CAAQMS (Online)

IOCL/BIM/BIGVT/2024-25/R/02
27.02.2025

IndianOil

Report of study conducted on Blast Induced Ground Vibration at Barsua Iron Mines, RSP, SAIL.

Objective of the study:

To assess the impact of blast induced ground vibrations on the structures nearest to the blast sites.

Particulars of the study:

Location of study: AREA 5, Barsua Iron Mines

Date of the study: 25.02.2025

Study conducted for: Barsua Iron Mines, SAIL-RSP

Study conducted by: Indian Oil Corporation Limited (BDG: Explosives)

IOCL Representatives: Shri Manish Kumar, Asst. Manager Marketing

SAIL, BIM Representative: Shri Santosh Kumar, AGM (Mining)

Findings of the study:

Following were the findings of the study conducted:

Date of blast	Location of blast	Location of impact assessment	Max PPV (mm/s) in any orthogonal direction	Max corresponding PPV (mm/s) permissible as per DGMS	Remarks
25.02.2025	BIM	AREA 5	1.955 mm/s	15 mm/s	Well within range

The results are well within the ceilings of maximum permissible PPV laid down by DGMS as per the circular ref: DGMS (Tech)/(S&T) Circular No.7 of 1997 dated 29.08.1997.

Blast report and Vibration report are attached herewith.

For, Indian Oil Corporation Ltd.

Manish Kumar
Asst. Manager, MKTG
Indian Oil Corporation Limited
Bulk Expl. Support Plant, Bolani-758037
Dist-Keonjhar (Odisha)

28/02/2025.

For, BIM, SAIL-RSP

SANTOSH KUMAR
Dy. General Manager (Min.)
Barsua Iron Mine, R&P, SAIL

VIBRATION-CUM-BLAST REPORT

SN	PARTICULARS	REMARKS
1	Date of Blast	25.02.2025
2	Location /Bench	AREA 5, Barsua Iron Mines
3	Hole Dia (mm)	150 mm
4	No. of Holes	25
5	Bench height (m)	9
	Drilling Parameters	
6	Avg. Depth of the hole (m)	9
7	Spacing (m)	3.5
8	Burden (m)	4.5
9	Block Volume (m3)	3543.75
11	Type of Initiators	NONEL
12	Total Primer Used (Kg)	2000.00
13	Total Bulk Explosives (Kg)	0.00
14	Total Explosive Used	2000.00
15	Average Explosive Charge per hole (Kg)	80.00
16	Maximum Explosives Charge per Delay (Kg)	80.00
	VIBRATION MEASUREMENT:	
17	Distance of Vibration M/c from Blast Site	Approx 158.2 m from Blast face
18	Maxi. PPV at Orthogonal Directions (mm/sec.)	**T: 1.955, V: 0.654, L: 1.687**
19	Corresponding Frequency (Hz)	**3.2, 2.1, 5.1**
20	**Peak Vector Sum**	**2.077 mm/sec at 0.346 sec**
	POST BLAST OBSERVATION	
21	Fragmentation	Good
22	Fly Rock	Nil
23	Muck Profile	As required

For, Indian Oil Corporation Limited

Manish Kumar
Asst. Manager, MKTG
Indian Oil Corporation Limited
Bulk Expl. Support Plant, Bolani-758037
Dist-Keonjhar (Odisha)

28/2/2025

Blasting I/C
BIM, RSP, SAIL
SANTOSH KUMAR
Dy. General Manager (Min.)
Barsua Iron Mine, RSP, SAIL

Instantel

Event Report

Date/Time	Tran at 13:51:26 February 25, 2025
Trigger Source	Geo: 0.150 mm/s, Mic: 2.000 pa.(L)
Range	Geo: 254.0 mm/s
Record Time	5.0 sec at 2048 sps
Operator/Setup:	Operator/IOCL GVR.MMB

Distance: 158.2 m

Notes
Location: A 5
Client: STEEL AUTHORITY OF INDIA LIMITED
User Name: INDIAN OIL CORPRATION LIMITED
General: BARSUA IRON MINE

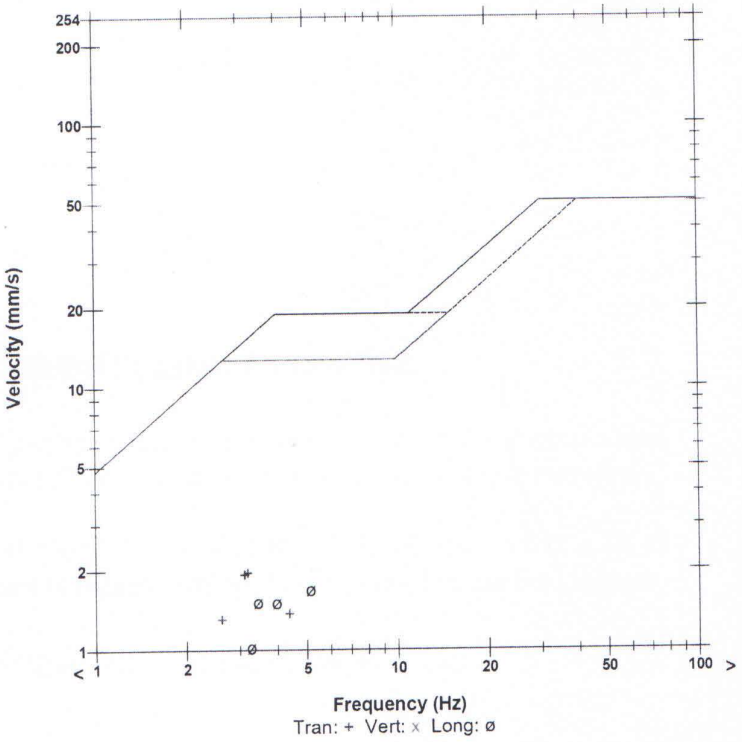
Microphone	Linear Weighting
PSPL	1.986 pa.(L) at 0.133 sec
ZC Freq	N/A
Channel Test	Passed (Freq = 19.7 Hz Amp = 1186 mv)

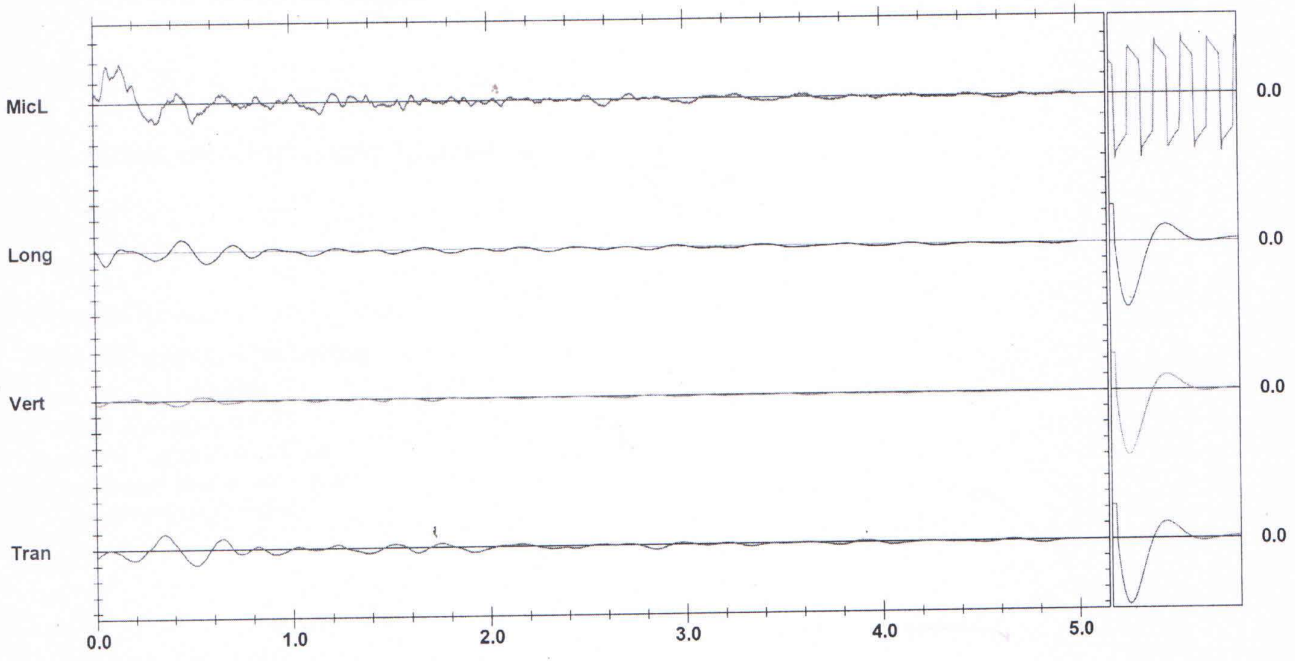
	Tran	Vert	Long	
PPV	1.955	0.654	1.687	mm/s
ZC Freq	3.2	2.1	5.1	Hz
Time (Rel. to Trig)	0.510	0.417	0.057	sec
Peak Acceleration	0.012	0.012	0.012	g
Peak Displacement	0.096	0.039	0.069	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.3	7.3	Hz
Overswing Ratio	4.0	4.5	4.0	

Peak Vector Sum 2.077 mm/s at 0.346 sec
N/A: Not Applicable

Serial Number	UM16986 V 10-89 Micromate ISEE
Battery Level	3.7 Volts
Unit Calibration	December 30, 2024 by UES New Delhi
File Name	__TEMP.EVT

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 1.000 pa.(L)/div

IOCL/TIM/BIGVT/2024-25/R/03
27.02.2025

IndianOil

Report of study conducted on Blast Induced Ground Vibration at Taldih Iron Mines, RSP, SAIL.

Objective of the study:

To assess the impact of blast induced ground vibrations on the structures nearest to the blast sites.

Particulars of the study:

Location of study: A-Block, South Top Face

Date of the study: 25.02.2025

Study conducted for: Taldih Iron Mines, SAIL-RSP

Study conducted by: Indian Oil Corporation Limited (IOC: Explosives)

IOCL Representatives: Shri Manish Kumar, Asst. Manager Marketing

SAIL, TIM Representative: Shri Ghanashyam Palei, Dep. Manager-Mining

Findings of the study:

Following were the findings of the study conducted:

Date of blast	Location of blast	Location of impact assessment	Max PPV (mm/s) in any orthogonal direction	Max corresponding PPV (mm/s) permissible as per DGMS	Remarks
25.02.2025	TIM	A-Block, South Top Face	8.103 mm/s	15 mm/s	Well within range

The results are well within the ceilings of maximum permissible PPV laid down by DGMS as per the circular ref: DGMS (Tech)/(S&T) Circular No.7 of 1997 dated 29.08.1997.

Blast report and Vibration report are attached herewith.

For, Indian Oil Corporation Ltd.

Manish Kumar
Asst. Manager, MKTG
Indian Oil Corporation Limited
Bulk Expl. Support Plant, Bolani-758037
Dist-Keonjhar (Odisha)

28/2/25

For, **TIM, SAIL-RSP**

GHANASHYAM PALEI
Deputy Manager (Min.)
Barsua Iron Mine, RSP, SAIL

VIBRATION-CUM-BLAST REPORT

SN	PARTICULARS	REMARKS
1	Date of Blast	25.02.2025
2	Location /Bench	A-Block, South Top Face,TIM
3	Hole Dia (mm)	100 mm
4	No. of Holes	80
5	Bench height (m)	7
	Drilling Parameters	
6	Avg. Depth of the hole (m)	7
7	Spacing (m)	3.0
8	Burden (m)	2.5
9	Block Volume (m3)	4200
11	Type of Initiators	NONEL
12	Total Primer used (Kg)	2500.00
13	Total Bulk Explosives (Kg)	0.00
14	Total Explosive used (Kg)	2500.00
15	Average Explosive Charge per hole (Kg)	31.25
16	Maximum Explosives Charge per Delay (Kg)	31.25
	VIBRATION MEASUREMENT:	
17	Distance of Vibration M/c from Blast Site	Approx 195.4 m from Blast face
18	Maxi. PPV at Orthogonal Directions (mm/sec.)	**T: 7.464, V: 6.219, L: 8.103**
19	Corresponding Frequency (Hz)	**12.6, 7.5, 4.4**
20	**Peak Vector Sum**	**8.509 mm/s at 3.917 sec**
	POST BLAST OBSERVATION	
21	Fragmentation	Good
22	Fly Rock	Nil
23	Muck Profile	As required

For, **Indian Oil Corporation Limited**
Manish Kumar
Asst. Manager, MKTG
Indian Oil Corporation Limited
Bulk Expl. Support Plant, Bolani-758037
Dist-Keonjhar (Odisha)

28/2/25
Blasting I/C
TIM, RSP, SAIL
GHANASHYAM PALEI
Deputy Manager

Instantel

Event Report

Date/Time	Vert at 14:21:51 February 25, 2025
Trigger Source	Geo: 0.150 mm/s, Mic: 2.000 pa.(L)
Range	Geo: 254.0 mm/s
Record Time	5.0 sec at 2048 sps
Operator/Setup:	Operator/IOCL GVR.MMB

Distance: 195.4 m

Notes
Location: A BLOCK
Client: STEEL AUTHORITY OF INDIA LIMITED
User Name: INDIAN OIL CORPRATION LIMITED
General: TALDIH IRON MINE

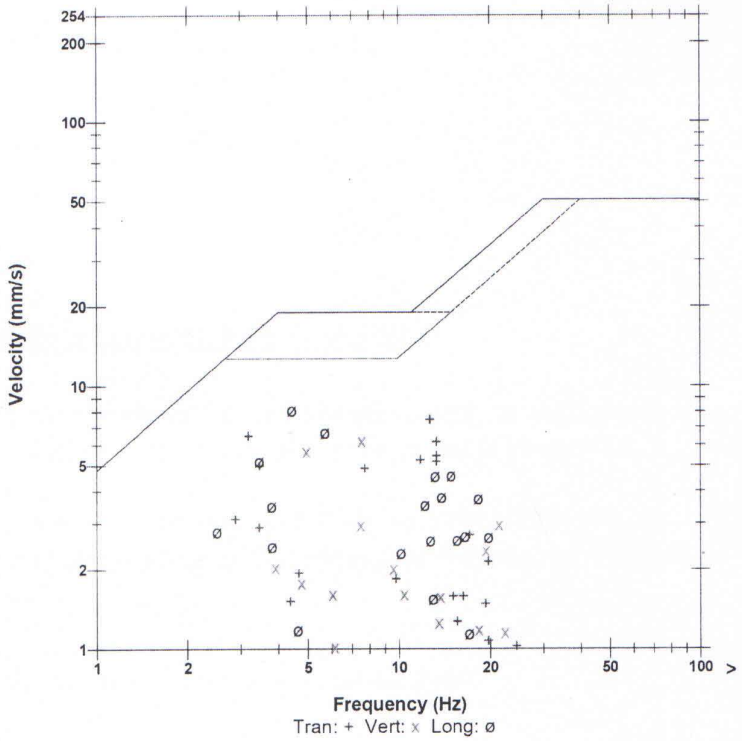
Microphone	Linear Weighting
PSPL	16.79 pa.(L) at 4.023 sec
ZC Freq	3.0 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 1186 mv)

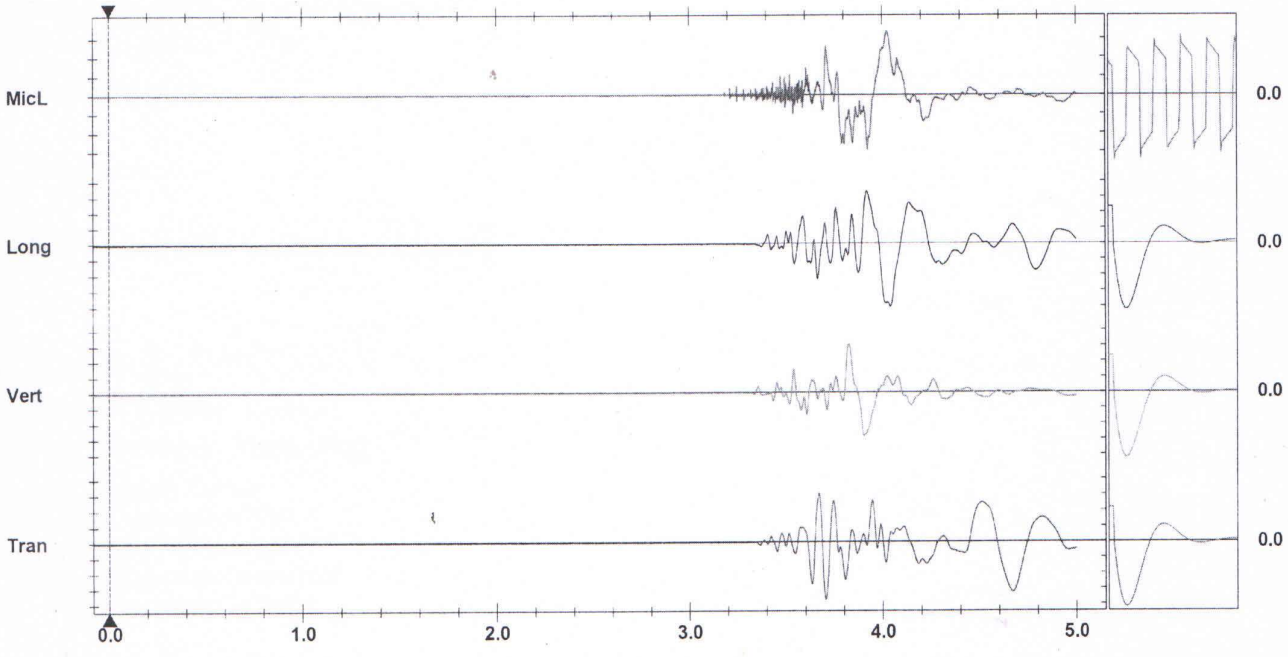
	Tran	Vert	Long	
PPV	7.464	6.219	8.103	mm/s
ZC Freq	12.6	7.5	4.4	Hz
Time (Rel. to Trig)	3.704	3.825	4.042	sec
Peak Acceleration	0.071	0.049	0.053	g
Peak Displacement	0.303	0.185	0.286	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.3	7.3	Hz
Overswing Ratio	4.0	4.5	4.0	

Peak Vector Sum 8.509 mm/s at 3.917 sec

Serial Number	UM16986 V 10-89 Micromate ISEE
Battery Level	3.7 Volts
Unit Calibration	December 30, 2024 by UES New Delhi
File Name	__TEMP.EVT

USBM RI8507 And OSMRE





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div

Sensor Check

Trigger = ▶----------◀

इंडियन ऑयल कॉर्पोरेशन लिमिटेड
बी. डी.जी (ई) / एस.एम.एस. एक्सप्लोसिव्स संयंत्र, बोलानी
पोष्ट: बोलानी, जिला: केउंनझर (ओडिसा) - 758037
Indian Oil Corporation Limited
BDG (E): SMS Explosives Support Plant, Bolani
P.O. Bolani, Dist.-Keonjhar (Odisha) - 758037

बी.डी.जी (एक्सप्लोसिव्स)
BDG (Explosives)

IndianOil
A Maharatna
Company

IOCL/KIM/BIGVT/2024-25/01
27.02.2025

To,
General Manager (Mining)
Kalta Iron Mines, SAIL RSP
Sundargarh, Odisha

Subject: Submission of Report of Blast Induced Ground Vibration Test.

In response to your request for conducting Blast induced ground vibration study at your mines site for statutory purpose, we have conducted Blast induced ground vibration test at your mines.

In line with your requirement, we had arranged to conduct the study at your mines site on 25.02.2025. Study was carried out by our end in presence of Sr. Manager (Mining) at Kalta Iron Mines.

We are attaching the Report of the study of Blast Induced Ground vibration test.

Hope this will serve your purpose.

Thanking you,

Yours sincerely

For, **Indian Oil Corporation Limited**

Manish Kumar
Asst. Manager, Marketing

Manish Kumar
Asst. Manager, MKTG
Indian Oil Corporation Limited
Bulk Expl. Support Plant, Bolani-758037
Dist-Keonjhar (Odisha)

Findings of the study:

Following were the findings of the study conducted:

Date of blast	Location of blast	Location of impact assessment	Max PPV (mm/s) in any orthogonal direction	Max corresponding PPV (mm/s) permissible as per DGMS	Remarks
25.02.2025	KIM	9th Gate West	9.308 mm/s	15 mm/s	Well within range

The results are well within the ceilings of maximum permissible PPV laid down by DGMS as per the circular ref: DGMS (Tech)/(S&T) Circular No.7 of 1997 dated 29.08.1997.

Blast report and Vibration report are attached herewith.

For, Indian Oil Corporation Ltd.

Manish Kumar
Asst. Manager, MKTG
Indian Oil Corporation Limited
Bulk Expl. Support Plant, Bolani-758037
Dist-Keonjhar (Odisha)

27/02/2025

For, KIM, SAIL-RSP

Karunakar Garanayak
Sr. Manager(Mining)
Kalta Iron Mine, RSP-SAIL

VIBRATION-CUM-BLAST REPORT

SN	PARTICULARS	REMARKS
1	Date of Blast	25.02.2025
2	Location /Bench	9th Gate West, KIM
3	Hole Dia (mm)	100 mm
4	No. of Holes	75
5	Bench height (m)	3.5
	Drilling Parameters	
6	Avg. Depth of the hole (m)	3.5
7	Spacing (m)	1.8
8	Burden (m)	2.2
9	Block Volume (m3)	1040
11	Type of Initiators	NONEL
12	Total Primer used (Kg)	700.00
13	Total Bulk Explosives (Kg)	0.00
14	Total Explosive used (Kg)	700.00
15	Average Explosive Charge per hole (Kg)	9.3
16	Maximum Explosives Charge per Delay (Kg)	9.3
	VIBRATION MEASUREMENT:	
17	Distance of Vibration M/c from Blast Site	Approx 167.3 m from Blast face
18	Maxi. PPV at Orthogonal Directions (mm/sec.)	T: **4.635** V: **8.103** L: **9.308**
19	Corresponding Frequency (Hz)	T: **9.1** V: **15.5** L: **3.3**
20	**Peak Vector Sum**	**11.69 mm/s at 0.350 sec**
	POST BLAST OBSERVATION	
21	Fragmentation	Good
22	Fly Rock	Nil
23	Muck Profile	As required

For, **Indian Oil Corporation Limited**
Manish Kumar
Asst. Manager, MKTG
Indian Oil Corporation Limited
Bulk Expl. Support Plant, Bolani-758037
Dist-Keonjhar (Odisha)

27/02/2025
Blasting I/C
KIM, RSP, SAIL

Karunakar Garanayak
Sr. Manager(Mining)
Kalta Iron Mine, RSP-SAIL

Instantel

Event Report

Date/Time	Vert at 16:32:25 february 25, 2024
Trigger Source	Geo: 0.150 mm/s, Mic: 2.000 pa.(L)
Range	Geo: 254.0 mm/s
Record Time	5.0 sec at 2048 sps
Operator/Setup:	Operator/IOCL GVR.MMB

Distance: 167.3 m

Serial Number	UM16986 V 10-89 Micromate ISEE
Battery Level	3.7 Volts
Unit Calibration	December 30, 2024 by UES New Delhi
File Name	__TEMP.EVT

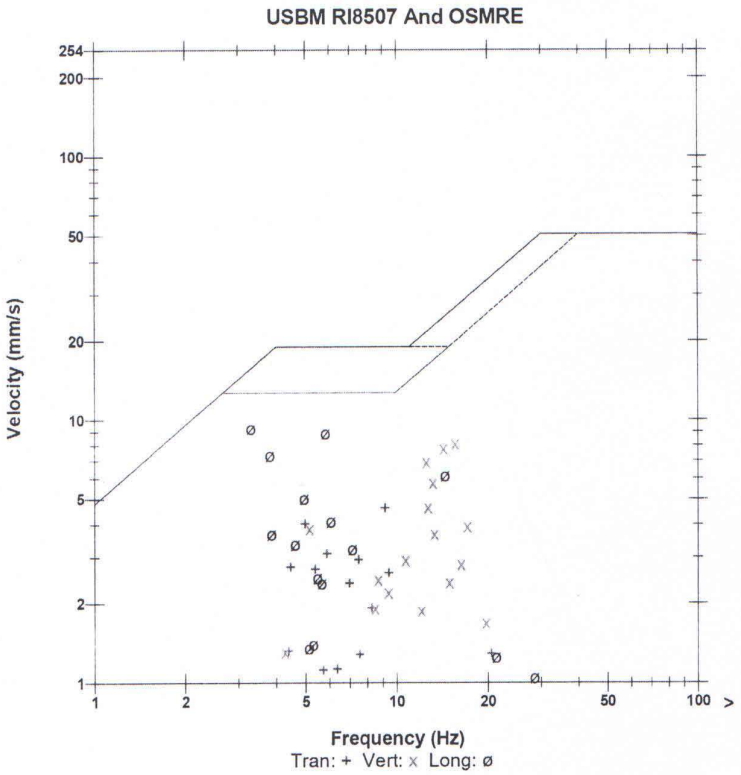
Notes

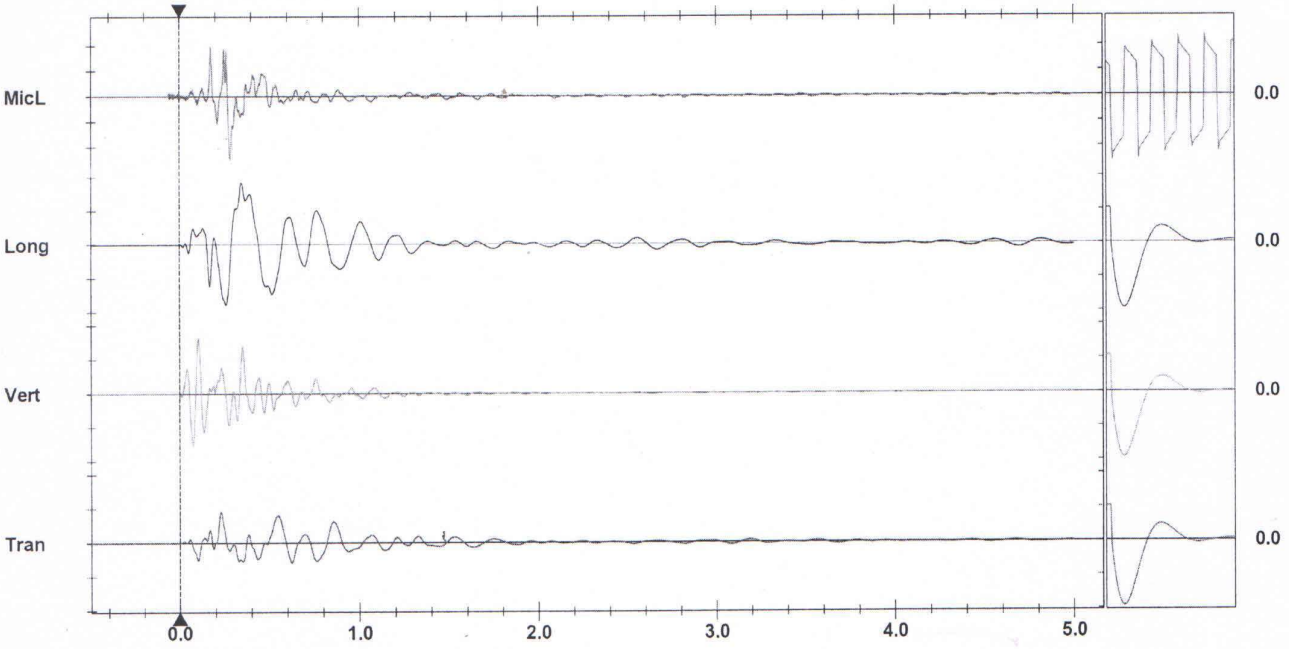
Location: 9TH WEST
Client: STEEL AUTHORITY OF INDIA LIMITED
User Name: INDIAN OIL CORPRATION LIMITED
General: KALTA IRON MINE

Microphone	Linear Weighting
PSPL	24.98 pa.(L) at 0.285 sec
ZC Freq	10.6 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 1231 mv)

	Tran	Vert	Long	
PPV	4.635	8.103	9.308	mm/s
ZC Freq	9.1	15.5	3.3	Hz
Time (Rel. to Trig)	0.229	0.104	0.346	sec
Peak Acceleration	0.038	0.145	0.095	g
Peak Displacement	0.115	0.087	0.424	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.5	7.3	7.3	Hz
Overswing Ratio	4.0	4.5	4.0	

Peak Vector Sum 11.69 mm/s at 0.350 sec





Time Scale: 0.20 sec/div **Amplitude Scale:** Geo: 2.000 mm/s/div Mic: 5.000 pa.(L)/div

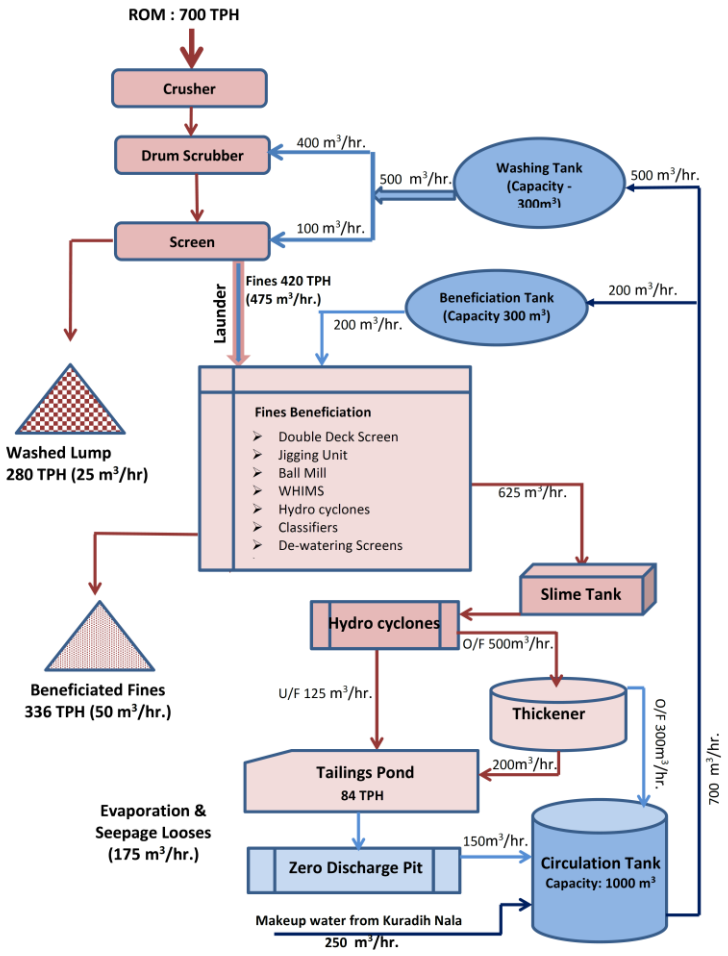
Trigger = ▶----------◀

Sensor Check

Annexure - XV

DETAILS OF CONSUMPTION OF WATER

The total water requirement for the Beneficiation Plant will be to the tune of 700 m^3/hr i.e. 1 Ton of ROM: 1 m^3 of water. Total water input to the Beneficiation Plant will be 700 m^3/hr, out of which 450 m^3/hr will be recovered through Thickener and Zero Discharge System and make-up water requirement will be 250 m^3/hr only. The flow chart of water balance by considering the makeup water is shown below:



Details of Consumption of water for per ton of ore production for the period April, 2024 to March, 2025 is as follows:

Sl. No.	Month	Water Consumption (Cbm)			Production (Ton)	Water Consumption per ton of Ore Production (cbm/t)
		Domestic	Industrial	Total		
1	Apr-24	150058.89	3480.00	153538.89	646877.00	0.24
2	May-24	160111.38	4110.00	164221.38	662785.00	0.25
3	Jun-24	155876.75	0.00	155876.75	561625.00	0.28
4	Jul-24	157243.64	14560.00	171803.64	521267.00	0.33
5	Aug-24	150015.04	12740.00	162755.04	570416.00	0.29
6	Sep-24	137673.21	0.00	137673.21	590503.00	0.23
7	Oct-24	148898.05	0.00	148898.05	613371.00	0.24
8	Nov-24	138411.99	0.00	138411.99	559273.00	0.25
9	Dec-24	47559.00	0.00	47559.00	578346.00	0.08
10	Jan-25	52302.28	18786.00	71088.28	676044.00	0.11
11	Feb-25	102441.38	57692.00	160133.38	697160.00	0.23
12	Mar-25	127716.78	75544.00	203260.78	664504.00	0.31

Annexure-XVI

Details of Compensatory Afforestation

The details of payment made in Ad-hoc CAMPA account towards Compensatory Afforestation (CA) are as follows:

Sl. No.	CA Area	Amount Paid	Date of Payment
1	3716.71 Ha	Rs. 53,84,22,500.00	11.08.2011
		Rs. 27,87,64,000.00	04.02.2013
2	2341.931 Ha	Rs. 18,45,25,000.00	04.02.2013
3	63.628 ha	Rs. 75,94,000.00	30.04.2015
		Rs. 23,81,550.00	14.03.2016
		Rs. 59,450.00	20.05.2016
Total		**Rs. 101,17,46,500.00**	

Action Plan and Achievement to Address the Issues Raised during Public Hearing of Barsua-Taldih-Kalta Iron Mines

Sl. No	Action Plan for addressing the Issues	Action Plan for addressing the Issues 2024-25				
	Proposal	**Location**	**Budget Provision**	**Achievement**	**Location**	**Cost Incurred**
1 Environment:						
1.1	Retaining Wall: 500 m Garland Drain: 520 m Settling pits : 2 Nos.	Along mine quarry at Barsua	30.00	Retaining Wall: 750 m Garland Drain: 750 m Settling pits : 4 Nos.	Along mine quarry at Barsua	47.57
	Check dam : 40 m	Kalta	15.00	Check weirs : 475 m	Along Haul Road, Taldih	19.78
1.2	Additional Mobile Water Sprinkler (Nos) : 1 x 28 KL	Taldih	320.00			
	Addl. Fixed water sprinklers	Kalta				
	Vehicle Mounted Mist Cannons: 1 No.	Barsua Railway siding	40.00	Vehicle Mounted Mist Cannons: 1 No.	Barsua Railway siding	41.75
1.3	Plantation: 5000 saplings	Tantra village & Dump - 8, Barsua	20.00	Plantation: 5100 saplings	Taldih Mines	10.84
1.4	De-siltation of check dams and sedimentation pits.		5.00			
1.5	Financial Assistance for improvement in productivity of agricultural land in Kalta & Jhirpani.	Kalta & Jhirpani	15.00			
2.0 Employment:						
2.1	Employment to be given through MDO as per the skill and qualification. Local public will be given priority for employment.		613 Nos.			
3.0 Peripheral Development:						
3.1	**Education & Training**					
3.1.1	Infrastructure & Material assistance shall be provided as per the requirement to Anganwadi.	Peripheral Anganwadi	1.00			
3.1.2	Uniform fee structure shall be implemented in the SAIL Managed schools for regular and SAIL's Contractors employees.	SAIL Managed schools	70.00	Uniform fee structure Implemented	SAIL Managed schools	70.00
3.1.3	Under periphery development activity Bus facility for the students to be increased.	Peripheral Villages	30.00	Bus facility for school students	Sasyakela, Toda, Jhirpani	35.73
3.1.4	Para teachers for the peripheral schools and shall be increased as per requirement.	Existing Para Teachers: 38 Aditional Para Teachers: 2	36.50	Para Teachers Engaged : 43	Peripheral schools	45.51
3.1.5	English medium school and Running of ITI, Barsuan	Running of existing ITI	16.00	Running of existing ITI	Recurring Expenditure ITI at BIM.	32.00
3.1.6	Engagement of stitching teachers and training on Mushroom cultivation		1.50			
3.1.7	Empowerment of SHGs in nearby region.	Providing Stitching Machine, Spice making machine, Financial assistance for Mushroom cultivation	2.00	Support to SHG groups	Peripheral villages	1.00
3.1.8	Sports promotion	One Football & one Hockey team will be adopted from peripheral villages and provided training for their development. Organising Sports meets and providing sports material.	10.00	Adoption of one Football & one Hockey team, supply of sports materials and organising sports meet.	Peripheral villages and schools	18.72
3.3	Health and Medical Facility	Providing free medical facility in the SAIL Hospital at Tensa & Kalta for nearby villagers. Providing Health Camp and free Ambulance services in the nearby villages. Engagement of Health Workers in peripheral PHC as per requirement.	15.00	Providing free medical and ambulance facility at Tensa & Kalta Hospotal and organising health camp in peripheral villages.	Taldih, Tantra, Bahamba, Sasyakela, Kalta, Roxy and Gundichanali.	77.71
3.4	Drinking water facility	Additional drinking water facility: 2 Maintenance of existing drinking water facility: 30	15.00	Additional drinking water facility: 10 Maintenance of existing drinking water facility: 30	Chordharda, Tensa, Sasyakala, Jhirpani, Toda, Kalta	37.33
3.6	Elephant menace control and improving lighting	Engagement of Protection Watchers	40.00	Engagement of Protection Watchers: 20 nos.	Core Zone and Buffer Zone	26.86
3.7	Construction of urinal and sanitary toilets: 5	Tantra	8.00	Construction of urinal and sanitary toilets: 10	Roxy, Tantra, Kalta	9.57
3.8	Group insurance of contractual workers.		4.00	Implemented		4.00
3.9	Construction of community centre: 01 no	Taldih	50.00			
3.11	Development of fruit orchards		3.00	Maintenance of existing fruit orchards at Taldih and Tantra	Taldih and Tantra	4.92
Total			**747.00**			**483.29**

Action Plan and Achievement to Address the Issues Raised during Public Hearing of Barsua-Taldih-Kalta Iron Mines

Sl. No	Action Plan for addressing the Issues					
		2022-23 & 2023-24				
	Proposal	**Location**	**Budget Provision (in Lakh)**	**Achievement**	**Location**	**Cost Incurred (in Lakh)**
1 Environment:						
1.1	Retaining Wall: 1235 m Garland Drain: 1250 m Settling pits : 5 Nos.	Fines dump at Taldih & along mine quarry at Barsua	70.00	Retaining Wall: 485 m Garland Drain: 500 m Settling pits : 2 Nos.	Fines dump at Taldih	23.02
	Check dam : 20 m	Tantra	5.00	Check dam : 33 m	Tantra	9.14
1.2	Additional Mobile Water Sprinkler (Nos) : 1 x 20 KL	Kalta	40.00	Additional Mobile Water Sprinkler (Nos) : 1 x 20 KL	Kalta	40.00
1.3	Plantation: 3000 saplings	Dump - 8, Barsua	12.00	Plantation: 10000 saplings	Dump - 8 & Taldih	12.23
1.4	De-siltation of check dams and sedimentation pits.		5.00	De-siltation of check dams and sedimentation pits.	Phuljhar	7.25
1.5	Financial Assistance for improvement in productivity of agricultural land in Kalta & Jhirpani.	Kalta & Jhirpani	15.00	Financial Assistance	Kalta & Jhirpani	14.31
2.0 Employment:						
2.1	Employment shall be given through MDO as per the skill and qualification. Local public will be given priority for employment.	Employment to be given through MDO	---	---	---	---
3.0 Peripheral Development:						
3.1	**Education & Training**					
3.1.1	Infrastructure & Material assistance shall be provided as per the requirement to Anganwadi.	Peripheral Anganwadi	1.00			0.00

3.1.2	Uniform fee structure shall be implemented in the SAIL Managed schools for regular and SAIL's Contractors employees.	SAIL Managed schools	70.00	Uniform fee structure Implemented	SAIL Managed schools	70.00
3.1.3	Under periphery development activity Bus facility for the students to be increased.	Peripheral Villages	30.00	Bus facility for school students	Sasyakela	14.65
3.1.4	Para teachers for the peripheral schools and shall be increased as per requirement.	Existing Para Teachers: 38 Aditional Para Teachers: 4	35.00	Para Teachers Engaged : 37	Peripheral schools	59.04
3.1.5	English medium school and Running of ITI, Barsuan	Running of existing ITI	45.00	Running of existing ITI	Recurring Expenditure ITI at BIM.	98.83
3.1.6	Engagement of stitching teachers and training on Mushroom cultivation		1.00	Training and support for mushroom cultivation and stitching	Peripheral villages	1.05
3.1.7	Empowerment of SHGs in nearby region.	Providing Stitching Machine, Spice making machine, Financial assistance for Mushroom cultivation	2.00	Supply of stitching machine, livestock.	Peripheral villages	5.47
3.1.8	Sports promotion	One Football & one Hockey team will be adopted from peripheral villages and provided training for their development. Organising Sports meets and providing sports material.	10.00	Adoption of one Football & one Hockey team, supply of sports materials and organising sports meet.	Peripheral villages and schools	12.92
3.3	Health and Medical Facility	Providing free medical facility in the SAIL Hospital at Tensa & Kalta for nearby villagers. Providing Health Camp and free Ambulance services in the nearby villages. Engagement of Health Workers in peripheral PHC as per requirement.	15.00	Providing free medical and ambulance facility at Tensa Hospotal and organising health camp in peripheral villages.	Taldih, Tantra, Bahamba, Sasyakela, Kalta, Roxy and Gundichanali.	17.98

3.4	Drinking water facility	Additional drinking water facility: 4 Maintenance of existing drinking water facility: 30	30.00	Additional drinking water facility: 4 Maintenance of existing drinking water facility: 30 Providing solar pump with pump operator: 2	Jhirpani, Toda, Tantra, Phuljhar	50.24
3.6	Elephant menace control and improving lighting	Engagement of Protection Watchers	40.00	Engagement of Protection Watchers: 40 nos.	Core Zone and Buffer Zone	82.20
3.7	Construction of urinal and sanitary toilets: 10	Roxy	16.00	Construction of urinal and sanitary toilets: 20	Roxy, Tantra, Kalta	32.50
3.8	Group insurance of contractual workers.		4.00	Implemented		4.00
3.9	Construction of community centre: 01 no	Roxy	30.00	Construction of community centre: 03 nos.	Toda, jhirpani, Taldhi	121.93
3.11	Development of fruit orchards		7.00	Development of new fruit orchards at Taldih and maintenance of existing orchard at Tantra	Taldih and Tantra	11.72
Total			**483.00**			**688.48**

LAND USE AND LAND COVER MAP OF BARSUA-TALDIH-KALTA (ML-130) & ML-139 MINING LEASES AREA OF BARSUA & KALTA IRON MINES, ODISHA

Sponsored by

Steel Authority of India Limited

Raw Materials Division

Consultant-in-Charge

Dr. Vasanta Govind Kumar Villuri

Assistant Professor

Department of Mining Engineering

Indian Institute of Technology (Indian School of Mines), Dhanbad

July 2021

Introduction

Land Use Land Cover Land studies are carried out to reveal how much of a region is covered by forests, wetlands, impervious surfaces, agriculture, and other land and water types. The water types include wetlands or open water. The Land Use information describes how people use the landscape. Such uses include developmental use, conservation related use, or mixed uses.

Land use and land cover map of Barsua Iron Mines, Odisha have been developed from Linear Imaging Self scanning Sensor (LISS) data obtained from Indian Remote Sensing satellite- Resource sat-2, LISS-IV (2021) sensor and Cartosat (2021) sensor. The satellite images so obtained were processed applying supervised classification method have using the Erdas Imagine software. The Land Use Land Cover has been classified into six classes, which are built-up land, open forest, dense forest, agricultural land, wasted land and water body. The areas under each of these classes were estimated on the basis of the pixel grid cell process in Erdas Imagine software following the rules of NRSC/ISRO Land Use and Cover Monitoring. The theme of Barsua Iron Mines, Odisha LULC is given in the following **Table 1**.

Table-1. Descriptions of land use and land cover classes (Source- NRSC/ISRO)

Sl.	Description-1	Description-2	Remark
1.	Built-up Land	Urban	Residential, Mixed built up, Public / Semi Public, Communication, Public utilities /facility, Commercial, Transportation, Reclaimed land, Vegetated Area, Recreational, Industrial, Industrial / Mine dump, Ash/ Cooling pond.
		Rural	Rural.
		Mining	Mine / Quarry, Abandoned Mine Pit, Land fill area.
2.	Agriculture Land	Crop land	Kharif, Rabi, Zaid, Two cropped, More than two cropped.
		Plantation	Plantation-Agricultural, Horticultural, Agro Horticultural.

		Fallow	Current and Long Fallow.
		Current Shifting cultivation	Current Shifting cultivation.
3.	Forest Land	Evergreen/Semi evergreen	Dense / Closed and Open category of Evergreen / Semi evergreen.
		Deciduous	Dense / Closed and Open category of Deciduous and Tree Clad Area.
		Forest Plantation	Forest Plantation.
		Scrub Forest	Scrub Forest, Forest Blank, Current &Abandoned Shifting Cultivation.
		Swamp/ Mangroves	Dense / Closed & Open Mangrove.
4.	Barren/ uncultivable/ Wastelands	Salt Affected Land	Slight, Moderate & Strong Salt Affected Land.
		Gullied/ Ravinous Land	Gullied, Shallow ravine & Deep ravine area.
		Scrub land	Dense / Closed and Open category of scrub land.
		Sandy area	Desertic, Coastal, Riverine sandy area.
		Barren rocky	Barren rocky.
		Rann	Rann.
5.	Wetlands/Water Bodies	Inland Wetland	Inland Natural and Inland Manmade wetland
		Coastal Wetland	Coastal Natural and Coastal Manmade wetland
		River / Stream / canals	Perennial & Dry River/stream and line & unlined canal/drain
		Water bodies	Perennial, Dry, Kharif, Rabi &Zaid extent of lake/pond and reservoir and tanks

Built-up land: It is an area of human habitation developed due to non-agricultural use and that has a cover of buildings, transport and communication, utilities in association with water, vegetation and vacant land. LULC map consists of 3 classes under built-up viz., urban, rural and mining. In this region, ore mining town have emerged Barsua Iron Mines.

Forest: The term forest is used to refer to land with a tree canopy cover of more than 10 percent and area of more than 0.5 ha. Forests are determined by both the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 m. The two categories i.e. open forest and dense forest is predominant in Barsua Iron Mines.

Wasted land or Wet land: Wasted lands are those areas where the water table is at, near, or above the land surface for a significant part of most years. The hydrologic regime is such that aquatic or hydrophyte vegetation usually is established, although alluvial and tidal flats may be no vegetated. Wastelands frequently are associated and topographic lows, even in mountainous regions.

Water body: This category comprises areas with surface water in the form of ponds, river, lakes, tanks and reservoirs. Rivers/streams are natural course of water flowing on the land surface along a definite channel/slope regularly or intermittently towards a sea in most cases or in to a lake or an inland basin in desert areas or a marsh or another river. Canals are artificial watercourse constructed for irrigation, navigation or to drain out excess water from agricultural lands.

Agricultural land: These are the lands primarily used for farming and for production of food, fiber, and other commercial and horticultural crops. Agricultural Land may be defined broadly as land used primarily for production of food and fiber. These are the areas with standing crop as on the date of Satellite overpass. Cropped areas appear in bright red to red in color with varying shape and size in a contiguous to noncontiguous pattern. They are widely distributed indifferent terrains; prominently appear in the irrigated are as irrespective of the source of irrigation. It includes Kharif, Rabi and Zaid croplands along with areas under double or triple crops.

1. Barsua- Taldih- Kalta area land use and land cover (ML-130):

The Barsua- Taldih- Kalta mining area (2472.561 ha) was classified for land use and land cover by using supervised classification technique. Seven classes are identified over the study area namely dense forest (1493.722 ha), open forest (272.976 ha), water bodies (2.704 ha), agricultural land and plantation (10.350 ha), barren land/waste land (272.976 ha), mining land (303.441 ha) and built-up (50.684 ha) shown in Figure-1.

Figure: 1. Land use Land cover map of Barsua-Taldih- Kalta Mine Lease (ML-130)

Accuracy assessment was carried out using 100 points, from field data, existing maps and land cover map of (Bhuvan ISRO). Then location of the 100 points was chosen using random stratified method to represent different land cover classes of the area. The land cover mapping of the images, ancillary data and the result of visual interpretation was integrated with the classification result using GIS in order to improve the classification accuracy of the classified image.

The summary of the land use land cover classifications is shown in the Table 2. The classification distributions are shown in the Figure 2.

Table 2: Land use land cover classifications of ML-130 Lease

LU/LC classes	ML-130 Mining Lease (ha)
Built-up Land	50.684
Agriculture Land	10.350
Dense forest	1493.722
Open Forest	338.684
Water body	2.704
Waste land	272.976
Mining	303.441
Total Area (ha)	2472.561

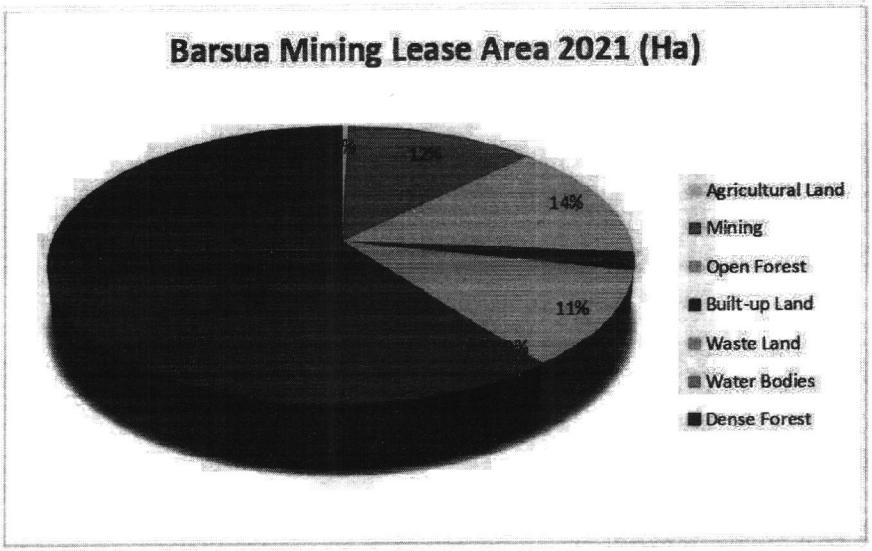


Figure 2: Land use distribution of Barsua-Taldih-Kalta (ML-130) Iron Mines

Annexure- XIX

BARSUA-TALDIH-KALTA IRON MINE

GHG Emission in respect of Barsua Iron Mines for the year 2024-25						
Sl. No.	**Material**	**UoM**	**Consumptions During the year 2024-25**	**Emission Factor**		**Total CO2 Emission (t)**
				Scope - 1	**Scope - 2**	
1	Diesel Fuel	KL	1972.7105	2.705838	-	5337.835034
2	Lubricant Oil	KL	56.48	2.530762	-	142.9374378
3	Used Oil	KL	18.15	2.705838		49.1109597
4	Explosives	t	276.740	0.203891	-	56.42479534
5	Power Consumed	MWh	18091.763	-	0.823	14889.52095
Total						**20475.82918**

Revision Details

Sl. No.	Status	Date	Pages Affected	Revision Summary	Reason for Revision
01	First Issue	10/05/2019	--	--	--
02	Revision 01	12/06/2021	2	Addition in distribution list	• TIM was to be covered • Documents were to distributed separately to training and safety as the heads are separate • Head of PRS and auto-garage was included
03	Revision 02	05/07/2022		Classification of emergencies	• To assess the magnitude of response required

Distribution of Copies

Copy No.	Custody	Location	Remarks
1	Chief General Manager (Mines)	Office of the Chief General Manager (Mines)	Soft Copy
2	Head of Mining Department	Office of head of Mining Operations	Soft Copy
3	Head of Ore Handling Plant	Office of head of Ore Handling Plant	Soft Copy
4	Head of Barsua Valley	Office of head of Barsua Valley	Soft Copy
5	Head of Field Machinery Maintenance	Office of head of Field Machinery Maintenance	Soft Copy
6	Head of Electrical Department	Office of head of Electrical Department	Soft Copy

Copy No.	Custody	Location	Remarks
7	Head of Geology & Quality Control	Office of head of Geology & Quality Control	Soft Copy
8	Head of Materials Management	Office of head of Materials Management	Soft Copy
9	Head of Environment & Lease	Office of head of Environment & Lease	Soft Copy
10	Head of Training	Office of head of Training	Soft Copy
11	Head of Safety	Office of head of Safety	Soft Copy
12	Head of BIM Hospital	Office of head of BIM Hospital	Soft Copy
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14	Head of Civil Department	Office of head of Civil Department	Soft Copy
15	Head of Contract Cell	Office of head of Contract Cell	Soft Copy
16	Head of PRS & Auto-garage	Head of PRS & Auto garage	Soft Copy
17	Mines Manager, TIM	Office of the Mines Manager, TIM	Soft Copy
18	Head of Survey	Office of head of Survey	Soft Copy
19	MC/PC	Office of MC/PC	Master Copy

Retention

1.0 Objective

- To provide guidelines for responding to and managing a variety of emergency situations.
- Reduce loss of assets and business.

- Protect the employees, community, and the public.
- Ensure employees have the skills and abilities to act efficiently and effectively during emergency situations.
- Mobilization of appropriate resources to manage the emergency.
- Coordinate effectively with the Emergency Service.

2.0 Scope

This Plan is intended for use by Barsua & Taldih Iron Mine emergency response teams and employees at the mine site. It will address the following emergency response elements:

- Identification of potential emergency scenarios;
- Emergency incident classification;
- Emergency response organisation and responsibilities;
- Emergency alarms and communication systems;
- Emergency response procedures;
- Evacuation procedures;
- Emergency response equipment;
- Post emergency recovery;
- Post emergency mitigation;
- Emergency preparedness inspections, training, and drills;

- Maintenance and control of this Plan.

3.0 Responsibility & Authority

Concerned HODs.

4.0 Terms & Definitions

Term	Definition
Emergency	An emergency situation is similar to a disaster, which may cause severe environmental degradation, damages to properties, loss of life, serious bodily injuries etc. Such a situation is to be dealt with a proper preparedness so that the damages and injuries shall be minimum. Emergencies are characterized by an urgent need for rapid decisions accompanied by necessary trained personnel, materials, and time to carry them out effectively.
First Responder	Any departmental employee of BIM/TIM (SAIL) or contractor employee that observes or is advised (from non-SAIL sources) that a potential emergency exists is considered a "first responder". The primary responsibility of the first responders is to immediately summon help by informing the Shift In-charge/SH/HOD as the case may be.
Emergency Assembly Points (EAPs)	Emergency Assembly Points (EAPs) are designated areas in the department, which are to be used in the case of emergency situations where evacuation from the workplace is necessary. They

Term	Definition
	are intended to provide a safer area for individuals to stand, while waiting for emergency personnel to respond.

5.0 Abbreviation

Abbreviation	Narration
IMS	Integrated Management System
PC	Programme Coordinator
MC	Management Coordinator
HOM	Head of Mines
BIM	Barsua Iron Mine
TIM	Taldih Iron Mine
HOD	Head of Department
P & A	Personnel & Administration
SH	Sectional Head
EAP	Emergency Assembly Point
OHP	Ore Handling Plant

6.0 Classification of Emergencies

Emergency Level	Criteria
Level - 1	• Potential hazards to life, safety, property, and the environment are limited, and do not exceed the emergency zone or the boundaries of the public site or facility. • The personnel of the enterprise or the site possess adequate training, capacity, personal protection equipment and necessary tools to

Emergency Level	Criteria
	manage and control the situation, and there is no need for external assistance. • Alarm bells are not required to warn those outside the site or facility • The situation does not require evacuation of the emergency zone.
Level - 2	• There is a serious risk to life, safety, property, and the environment and may exceed the limits of the emergency zone, but do not exceed the limits of the public site or facility. • There is a need to use the assistance of external parties to manage the emergency, or at least the presence of stand-by team in the presence of a potential escalation of the situation, but the situation does not extend its influence outside the facility or site. • Members of the facility or site do not have sufficient capacity or resources to deal with the incident. • Requires evacuation and / or warnings to warn those outside the emergency zone.
Level - 3	• There is a serious risk to life, safety, property, and the environment and may exceed the limits of the emergency zone and the possibility of exceeding the limits of the public site or facility.

Emergency Level	Criteria
	• There is a need to use the help of external parties to fight fire, rescue, dealing with hazardous materials, a large number of injuries and deaths. • Measures must be taken to protect units, nearby areas and / or communities and the environment beyond the boundaries of the public site or facility. • There is a potential risk that the reputation of the company, its business or its revenues will be affected

7.0 Procedure

7.1 Identification of Emergency Situations

7.1.1 Various emergency situations have been identified in consultation with all HODs.

Emergency may also arise from the following during various Mining and allied activities at Taldih Iron Mine:

i. Surface fire

- Fire caused by electrical equipment or cables
- Fires started in stores for fuel and lubricants
- Fires caused by chemicals (explosives) used on the site

- Fires on Heavy Earth Moving Machinery (HEMM) and transport vehicles
- Fire on diesel refilling tank
- Fires caused by burning vegetation

ii. Accidental Explosion (in explosive magazine, diesel tanks, electrical switchyard, canteen, hospital, Guesthouse, Mobile Crushing and Screening Plant, Offices, Equipment's, Store, Gas cylinders used for welding etc.)

iii. HEMM Accident (Overrun, collision)

iv. Mobile Crusher and Screen accident

v. Accidents in OHP

vi. Accidents in Loading & Despatch

vii. Failure of Slope in the Pit and External OB Dump causing land slide.

viii. Earthquake

ix. Heavy Rain

x. Lightning

xi. Chemical spill / vapour release

xii. Extreme heat

xiii. Demonstrations, civil disturbance

xiv. Naxalite attack

xv. Lost person – search and rescue /Kidnapping

xvi. Tailing dam failure

xvii. Epidemic

8.0 Measures to Prevent Emergency Situation

8.1 Steps for Preventing Surface Fire / Accidental Explosion:

i. Lightning arrestors will be fixed in the explosive magazine.

ii. No naked fires shall be permitted in the explosive magazine and diesel storage tank premises, which may cause fire hazard.

iii. Explosive magazine shall be guarded round the clock. All the earthing systems of magazine shall be tested twice a year.

iv. The construction of underground diesel storage tanks shall be as per the approved design.

v. The exhaust silencer of the diesel tanker and explosive vans has flame proof arrestor.

vi. Sufficient number of portable fire-extinguishers shall be provided in magazine, diesel tanks, electrical switchyard, canteen, hospital, Guesthouse, Administrative Buildings in General Office area, Ore Dressing Plant, at all strategic locations near the fuel store, fuel filling area and DG sets to take care of any eventuality. The distribution and selection of extinguishers shall be done in accordance with the requirements of Bureau of Indian Standards (BIS): 2190-92.

vii. Necessary training shall be imparted to all the staffs of above locations regarding operation of Fire extinguishers.

viii. The In-charge of the above areas shall ensure mock drill of the staffs at an interval of six (6) months.

ix. Records of regular inspection by the HOD of Safety shall be maintained in the Safety Department.

8.2 Steps for Preventing Failure of Slope in the Pit and External OB Dump Causing Land Slide:

i. Regular slope monitoring shall be done as per the conditions stipulated by DGMS (once in a month) departmentally.

ii. The factor of safety shall be monitored on quarterly basis against overall slope failure as well as against individual bench slope for any possible failure.

iii. The drainage system over the dump area and excavated area shall be made prior to ensure that storm water does not accumulate.

iv. The slopes of external dumps shall be planned at an overall angle of less than 28° with individual lifts at less than 37°. As the dumps attain final position, the slopes will be terraced after which proper vegetation will be laid which will cause binding of the soil preventing any slope failure.

v. Retaining walls will be built all-around the external dumps which will have weep holes for passage of storm water to join garland drains.

vi. As far as practicable, catch water drains shall be provided around the quarries so as to divert the rainwater.

vii. The overburden dumps shall be maintained at proper slope as per the guidance of the approved by-laws.

viii. Whenever any local bench failure occurs, the area around it shall be visually inspected to ascertain the nature of failure & to take timely preventive action, if necessary.

ix. Records of regular inspection by the I/c of Mining will be maintained at the office of Mines Managers for discussion in review meeting.

8.3 Steps for Preventing Failure of Tailing Dam:

i. The Head of OHP, Head of E & L and Head of Survey Department shall inspect the tailing dam at least once in a month and the findings shall be recorded in a register.

ii. During the inspection, the officer concerned shall check for possible erosion of the tailing dam walls, seepage / leakage of water, free board (to be maintained not less than 2 m above the water level), encroachment in reserve forest area. If any problem is noticed by the team, it shall be brought to the notice of Mines Manager and HOM. The Head of OHP shall take immediate steps to rectify the problem.

8.4 Steps to prevent Chemical spill / Vapour Release:

i. The chances of vapour release & chemical spillage are at the Chemical Laboratory near Administrative Office.

ii. The exhaust system should be checked regularly by Sectional Head of Chemical Lab and will inform to I/c of Electrical Services for maintenance.

iii. The Sectional Head (Lab) will ensure that all the concerned persons handling the chemicals must use apron & acid proof hand gloves while handling the chemicals & the floor should be aid proof.

iv. Material Safety Data Sheet (MSDS) shall be displayed in the laboratory.

8.5 Steps to minimize dangers from heavy rainfall

8.5.1 The local nalas will not be obstructed/diverted along the boundary of lease area.

8.5.2 A careful assessment of the danger of inundation from surface water shall be made before onset of monsoon season every year and adequate precautions against such dangers shall be implemented.

8.5.3 Effectiveness of precautions, obstruction in normal drainage system etc. shall be checked regularly.

8.5.4 Maintenance of drainages inside the mine.

8.5.5 All water shall be diverted to bottom bench of Area 3E.

8.5.6 In the event of heavy rain, the excavation in-charge shall assess the situation and shall determine whether mining operation shall shutdown.

8.5.7 After heavy rainfall, a mine-wide inspection should be conducted to identify and mitigate any damage to embankments, roads, and water diversion channels.

8.6 Response in case of earthquake

8.6.1 Inside building:

8.6.2 Move away from windows and doors. Drop to the floor, take cover under a sturdy table or desk against an inside wall.

8.6.3 Stay inside until the shaking stops. DO NOT run outside.

8.6.4 Outside:

8.6.4.1 If possible, move into a clearing, away from power lines, trees and buildings.

8.6.4.2 Drop to the ground and wait for the shaking to stop.

8.6.4.3 If you are near slopes or highwalls, be alert for falling rocks and the possibility of landslides.

8.6.5 Driving:

8.6.5.1 Pull to the side of the road away from traffic, road signs and power lines.

8.6.5.2 Stay in your seat with your seatbelt fastened until the shaking stops.

9.0 Emergency Preparedness and Response Plan (EPRP)

9.1 EPRP for Surface Fire / Accidental Explosion

i. In case of emergency situation, concerned employee has to call the Main Gate CISF, HOD, VTC and PPC.

ii. CISF will blow the Siren/Hooter three times to aware the employees regarding the emergency situation and will send the rescue team to the affected place.

iii. The HOD - VTC deploys the safety team with appropriate equipment's to control the emergency and call for outside support services (e.g. police, ambulance) if the emergency is uncontrolled by on-site staff.

iv. In case of any accident-causing injury to any person (s) the injured shall be rendered first aid in the site by the first-aiders wherever necessary. Then the injured will be shifted to BOM Hospital by ambulance or any other suitable vehicles or by stretcher. Depending upon the seriousness of the injuries, the HOD (Hospital) shall arrange to transfer the victim to other hospital. In case of any fatal accident, the dead body shall be sent for post mortem as per the advice of the Officer-In-Charge of the local police station. Subsequently for serious/fatal accidents, information shall be sent

to Director of Mines Safety, Chaibasa Region, Director General of Mines Safety, Dhanbad and other authorities requires to be informed under MMR-1961.

v. In case of damage to any machinery, it shall not be removed until the investigation in to the cause of the accident is completed. When further damage to the machine or any further accident / injury is apprehended, the machine may be removed after getting clearance from Mines Manager.

vi. The reason for the explosion shall be found out after thorough investigation. The source of explosion shall be taken out and repaired. Sufficient care shall be taken to ensure that the preventive mechanism is incorporated to avoid any such explosion in future.

vii. Emergency preparedness and response plan may be prepared by concerned HOD in consultation with PC and documented under Emergency preparedness plan of the department. This covers the communication chart, address and telephone number of internal and external agencies to be called during emergency.

9.2 EPRP for Failure of Slope in the Pit and External OB Dump

i. The landslide starts with local bench failure. The Mining Engineer of concerned area / Mines Foreman will inspect the mine daily and observe the extent of bench and slope failure, if any. He will further inspect the area for any development of crack. If it is felt that any more slide is likely to

occur he shall immediately inform the Mines Manager & the Safety Officer for ascertaining the same.

ii. In case of possibilities of land slide the man & machinery from the area shall be removed and the land shall be allowed to slide naturally. The area shall be fenced off to prevent the inadvertent entry of person(s) and all the working in the area shall be kept suspended until the area is declared safe. . The Mines Manager and I/c of Ore Handling Plant will inform the Director of Mines Safety and Regional Office of Pollution Control Board for further guidance.

iii. Monitoring of pit and dump slope will be done once in three months. If the movement of strata is found to be more than 5mm/meter, the movement is treated as excess. In such eventualities, repeated measurements shall be taken. On getting repeatedly similar excess readings, the area is to be declared unsafe and the men & machinery shall be removed from that area till the readings stabilize.

9.3 EPRP for Failure of Tailing Pipeline and Tailing Dam:

i. Washing will be stopped immediately and the discharge of the underflow from thickener into the dam through pipeline shall be stopped forthwith. Immediate actions shall be taken for withdrawing the men and machine from the downstream areas to a safe place.

ii. Simultaneously, the bridging of the breach shall be done to arrest the flow of the slime.

iii. The affected area shall be fenced off to prevent the inadvertent entry of any person. Precautions shall be taken by erecting necessary check dams and settling pits on emergency basis to prevent the flow of slime in to the nearby river, land etc.

iv. The Mines Manager, I/c of Civil Department and I/c of Ore Processing Plant will keep constant watch over the situation.

v. The management will inform the Director of Mines Safety and Regional Office of Pollution Control Board for further guidance

9.4 EPRP for Natural Calamities (Earthquake and Cyclone etc.)

i. Cyclone & earthquake being the natural calamity, we don't have any control over them to prevent its happening. However, the following preventive measure shall be taken to prevent the impact of the same on the natural life of the mine and camp residents after their forecast.

ii. The I/c of Electrical-Services will cut off electric supply before strong wind action starts. And after the cyclone is over with due precaution & repair recharge the power supply by the electrical department.

iii. The people working at the mine will be advised by the concerned I/c of the Shift and Mines Manager to take shelter under the strong roof building for safety precaution from high-speed wind action.

iv. The additional rainwater entering in to the quarry, if any will be pumped.

v. Constant vigilance & monitoring will be kept on slime dam condition. In case of heavy rain, the pumping arrangements shall be arranged by the I/c of Ore Processing Plant and I/c of Electrical-Services, for slime dam to prevent its breaching & to maintain free board as per required.

vi. The mining equipment shall be shifted to safe places.

vii. Even the happening of cyclone can be forecasted beforehand but in case of earthquake it is not possible. The emergency preparedness will be assessed immediately after its happening.

viii. Electrical department should immediately disconnect the power supply during earthquake.

ix. Immediate rescue of the people of camp residents shall be arranged after tremor hits. Rescue teams will be formed by the management to keep constant watch over the situation. All the people should vacate the house & go to the open field immediately after feeling tremors.

9.5 EPRP for Chemical Spill / Vapour Release:

i. The chances of vapour release & chemical spillage is at the Analytical Laboratory.

ii. The Sectional Head (Lab) will ensure that all the concerned persons handling the chemicals must use apron & acid proof hand gloves while handling the chemicals & the floor should be aid proof.

iii. In case of any spillage on hand or foot the concerned person must wash it thoroughly & then rush to hospital for treatment after informing the Sectional Head (Lab).

9.6 HEMM Accident/Mobile Crusher & Screen Accident/Accident in OHP/Accident in Loading & Despatch

Response:

i. Prevent access to the site by posting guards at each end of the road leading to the site.

ii. Allow only key personnel to the site of the incident.

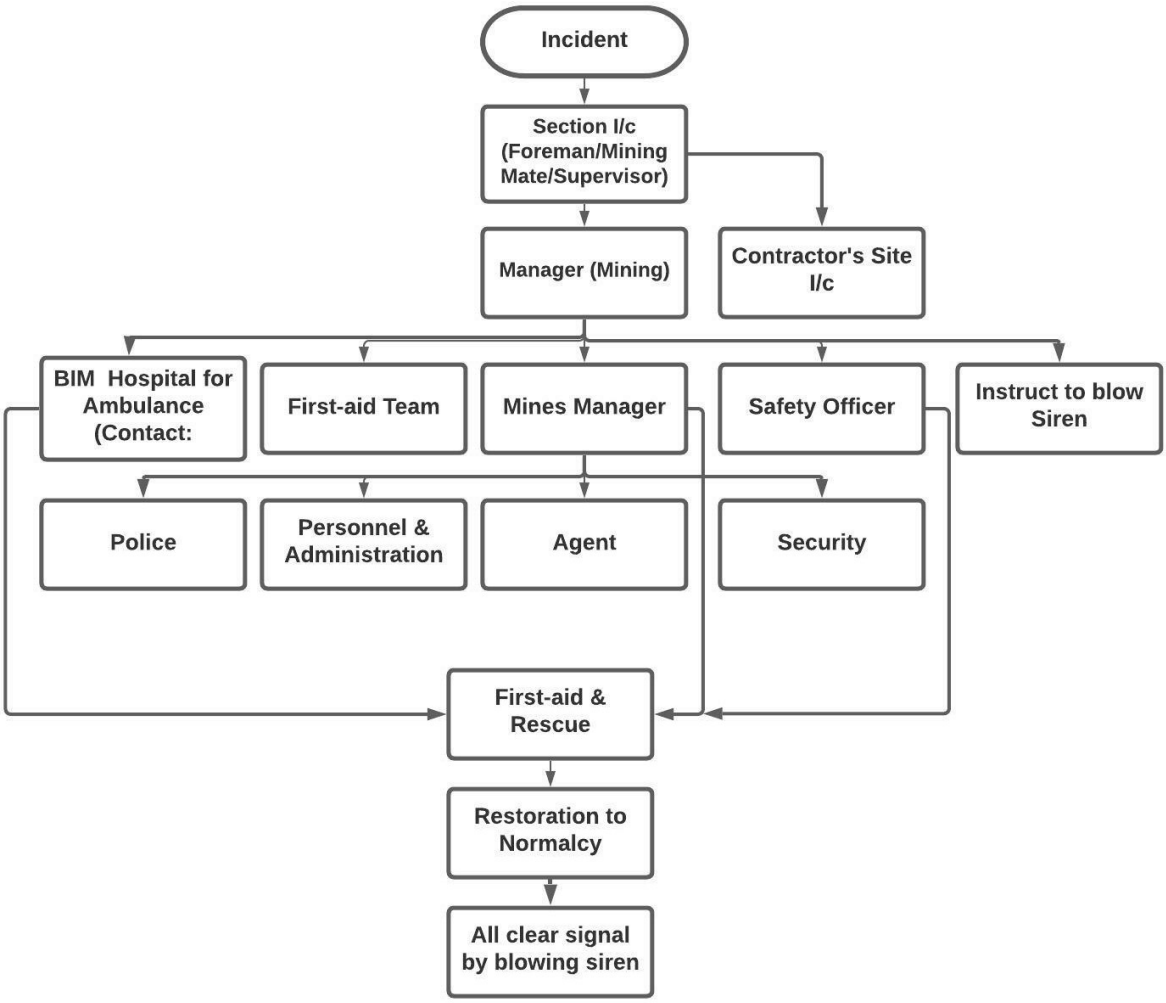
iii. Arrange for safe removal of employees, contractors and/or the public from any dangerous situation;

iv. If required call external emergency services organizations and escort to the area.

10.0 Mitigating Effects on Emergency Situation

10.1 In the event of an emergency the area In-charge / supervisor communicates the emergency situation as per EPRP. The area In-charge / manager employs the mitigative and / or corrective action after taking due precautions to safety and health of personnel.

10.2 The HOD, VTC deploys the safety team with appropriate equipment's to control the emergency and call for outside support services (e.g., police, ambulance) if the emergency is uncontrolled by on-site staff.


Incident
Section I/c (Foreman/Mining Mate/Supervisor)
Manager (Mining)
Contractor's Site I/c
BIM Hospital for Ambulance (Contact:
First-aid Team
Mines Manager
Safety Officer
Instruct to blow Siren
Police
Personnel & Administration
Agent
Security
First-aid & Rescue
Restoration to Normalcy
All clear signal by blowing siren

10.3 After dealing with an emergency situation, the concerned HOD in consultation with the PC identifies the root causes of an emergency and formulates corrective action. This is recorded and discussed in MR meetings.

11.0 Duties and Responsibilities of Key Persons

11.1 Mine Manager

11.1.1 He shall be responsible for overall control of the emergency situation that has arisen.

11.1.2 On receiving the information, he shall immediately proceed to the affected site. Security personnel (CISF/Private security in TIM) may be taken along with him.

11.1.3 He shall assess the magnitude and decide if employees need to be evacuated.

11.1.4 He shall exercise direct operational control over the area other than the affected area.

11.1.5 He shall maintain continuous review of possible developments and assess, in consultation with sectional in charge and other key personnel, as to whether shutting-down of the plant / operations and evacuation of the personnel is required.

11.1.6 He shall give instruction to Head of P&A to liaison with official of security department, medical department. He shall provide advice on possible effects on area outside the Mine premises.

11.1.7 He shall control rehabilitation of affected areas.

11.1.8 He shall issue authorized statements to the workmen present at site and ensure that evidence is preserved for statutory inquiries to be conducted by statutory authorities, if required.

11.2 Sectional In-charge of the Affected Area

11.2.1 He shall rush to the site of occurrence.

11.2.2 He will have overall charge and shall report to Mine Manager, who will assess the scale of emergency and inform to Head of P&A.

11.2.3 He shall direct all operation within the affected area.

11.2.4 He will decide priority for safety of personnel & minimization of damage.

11.2.5 Pending arrival of the Mine Manager, he will assume the duty of Mine Manager and direct shutting down and evacuation and ensure all key persons and outside help (if required) is called in.

11.2.6 Ensure evacuation of personnel to appropriate assembling points.

11.2.7 Set-up communication points in case of communication failure.

11.2.8 Report to Head of (P&A) on significant development.

11.2.9 Preserve evidence to facilitate enquiry.

11.2.10 If required, he will arrange a roll call.

11.3 Safety Officer

11.3.1 He will assist and act according to the instruction of Mine Manager.

11.3.2 He will do the investigation of emergency.

11.4 Medical Officer

11.4.1 To render medical aid.

11.4.2 He will reach the site with the ambulance and other medical equipment & staff and provide first aid to all those injured and escort serious cases to hospital, preparing preliminary injury report.

11.5 In-charge Auto-garage

11.5.1 He will provide vehicles as per requirement.

12.0 Communication System

12.1 The siren installed in the department shall be blown to communicate those inside the mine that emergency has arisen.

12.2 The sounding system shall be as follows:

One long hooter	- Be alert
Two long hooter	- Evacuate immediately and assemble at Emergency Assembly Point
Three long hooter	- All clear after rescue and recovery

13.0 Emergency Assembly Points

13.1 Emergency assembly points shall be designated in the departments as per requirement.

13.2 On hearing the evaluation hooter, the employees of the department/work area shall gather at emergency assembly point and stand in queue.

13.3 On reaching the emergency assembly point, they will count themselves by speaking the numbers serially aloud.

13.4 If it is suspected that, people are still there at the work place, Emergency Response Team/Sectional I/c/Mines Manager shall be informed.

14.0 Contact Numbers of Key Personnel

14.1 Barsua Iron Mine

Sl. No.	Name & Function	Contact Number
1	Himanshu Mishra, Agent	9477702024
2	P.C. Barua, Mine Manager	8895502359
3	N. C. Panda, GM (Personnel)	8895501357
4	Dr. Sunil Kumar, I/c BIM Hospital	8895502432
5	Deepak Dubey, Safety Officer	9470194941
6	AC CISF	8895502381

14.2 Taldih Iron Mine

Sl. No.	Name & Function	Contact Number
1	Himanshu Mishra, Agent	9477702024
2	A.K. Tiwary, Mines manager	8986881191
3	N. C. Panda, GM (Personnel)	8895501357
4	Dr. Sunil Kumar, I/c BIM Hospital	8895502432

Sl. No.	Name & Function	Contact Number
5	Deepak Dubey, Safety Officer	9470194941
6	Devi Prasad Mishra, Manager (Mining)	9438844701
7	Ghana Shyam Palei, Deputy Manager (Mining)	8895503602
8	Project I/C, AEL	8986881510
9	Head, Security	9668365644

15.0 Mock Drills and Training

15.1 Mock drill of emergency response methods conducted at least once in a quarter in the concerned areas. Safety Officer shall be responsible for organising mock drill. Records of the same shall be maintained in departments in **BIM-TIM/IMS/FORM - 01**.

15.2 Annual mock drill plan shall be maintained in the form **BIM-TIM/IMS/FORM – 1A**

15.3 All the concerned employees shall be given training on dealing with emergency situation. The Training Officer and shall be responsible for imparting training on EPRP.

16.0 Records

Sl. No.	Record Id	Name/ Description	Location	Retention Period	Mode of Disposition
1	BIM-TIM/IMS/FORM - 1	Record of Mock Drill	Office of HOD	3 years	Tearing
2	BIM-TIM/IMS/FORM – 1A	Annual Mock Drill Plan	Office of HOD	3 years	Tearing/ Deletion

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED

Corporate Environmental Policy

Steel Authority of India Limited, one of the leading steel producers of India, in its endeavour to strengthen environment management and maintain clean and sustainable environment in and around its plants, mines & other units is committed to:

i. Protect the environment by integrating sound environmental practices for control and prevention of pollution from all its activities.

ii. Comply with legal and other requirements pertaining to the environment, forests and wildlife and to go beyond.

iii. Systematic approach of environment management by accreditation with Environment Management System.

iv. Contribute towards mitigation of climate change through adoption of measures to reduce emission of greenhouse gases, enhancing green coverage, adopting energy efficient technologies, enhancing use of green energy.

v. Promoting innovative environment-friendly processes and products.

vi. Ecological restoration of degraded mined out landscapes.

vii. Integrate principle of "reduce, recover, recycle and reuse" in its operations for conservation of natural resources, including water, to ensure sustainable future.

viii. Continual improvement of environmental performance by setting challenging targets, transparent reporting system and robust review mechanism.

ix. Continuously monitor emissions, discharges and ambient air quality and uplink with SPCB and CPCB portals for self-regulation of environmental deviations, if any.

x. Communicate environmental performance to all stakeholders through annual report, Board report, Corporate Sustainability Report and all such means from time-to-time.

xi. Engaging employee for commitment and responsibility towards environment protection through capacity building.

xii. Promoting environmentally responsible behaviour amongst all stakeholders.

बरसुआ एवं तालडीह लौह अयस्क खान समूह

सेल SAIL

नीति

एकीकृत प्रबंधन प्रणाली

(ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018)

हम, स्टील अथॉरिटी ऑफ़ इंडिया लिमिटेड (SAIL) के राउरकेला स्टील प्लांट अधीनस्थ बरसुआ और तालडीह लौह अयस्क खान में हमारे हिताधिकारियों को गुणवत्ता वाला उत्पाद और सेवाएं तथा सुरक्षित एवं स्वस्थ वातावरण प्रदान करने के लिए प्रतिबद्ध हैं।

एकीकृत प्रबंधन प्रणाली के तहत हम निम्नलिखित विषयों के लिए प्रयासरत तथा प्रतिबद्ध रहेंगे :

- विश्वसनीय और भरोसेमंद उत्पाद और सेवाएं प्रदान करते हुए अंदरूनी और बाहरी ग्राहक संतुष्टि वृद्धि करना।
- पर्यावरण प्रदूषण को न्यूनतम करने लिए हमारे कार्यों को पर्यावरण की दृष्टि से जिम्मेदार तरीके से संचालन करते हुए हमारे गतिविधियों में बेहतर पर्यावरण प्रथाओं को एकीकृत करना।
- शक्ति एवं अन्य प्राकृतिक संपदाओं का संरक्षण, अपशिष्ट उत्पादन को कम करना, पर्यावरण के अनुकूल अपशिष्ट निपटान प्रबंधन तथा पुनः प्राप्ति, पुनः निर्माण एवं पुनः प्रयोग को बढ़ावा देना।
- हमारी गतिविधियों से जुड़े खतरों और जोखिमों को कम करके चोट और खराब स्वास्थ्य को रोकना।
- एकीकृत प्रबंधन प्रणाली गतिविधियों में श्रमिकों और उनके प्रतिनिधियों का परामर्श और भागीदारी ।
- सभी हितधारकों को सामाजिक रूप से जवाबदेह कार्य संस्कृति प्रदान करना ।
- सभी लागू कानूनी और अन्य आवश्यकताओं का पालन करना ।
- गुणवत्ता, व्यावसायिक स्वास्थ्य और सुरक्षा और पर्यावरण प्रदर्शन में निरंतर सुधार के लिए आईएमएस की समीक्षा करना ।

तिलक पटनायक
मुख्य महाप्रबंधक (खनन)

Revision No. 1

Date of Revision: 08-02-2023

Annexure- XXII

BARSUA-TALDIH-KALTA IRON MINE

TOTAL EXPENDITURE INCURRED FOR ENVIRONMENTAL PROTECTION MEASURES DURING THE YEAR 2024-25.

Sl. No.	Environmental Protection Measures	Amount (in Lakhs)
1	Maintenance of Gardens	25.02
2	Plantation and Maintenance	10.84
3	Maintenance of Safezy Zone	21.61
4	Environmental Monitoring	12.68
5	Maintenance of CAAQMS	0.66
6	Modification of Zero Discharge System	113.72
7	Disposal of Hazardous Waste	4.92
8	Water Spraying	34.71
9	Payment for Protection Watchers	26.86
10	Operational cost of Motor Grader	13.46
11	Construction of Check Dam	19.78
12	Monitoring of Protection measures	7.34
13	Purchase of Mechanised Road Sweeping Machine	43.75
14	Purchase of Truck Mounted Mist Cannon	41.75
15	Purchase of Display Board for Environmental Parameters	5.20
16	Expenditure towards Environmental Management Cell	75.60
17	Disposal of Tailings	131.65
Total		**589.53**