



**The Member Secretary
State Pollution Control Board, Odisha
Paribesh Bhawan
A/118, Nilakantha Nagar, Unit - VIII
Bhubaneswar - 751012**

MD/ ENV/ 1223 / 120 / 2024

Date: 27th September 2024

**Sub: Environmental Statement of Khondbond Iron & Manganese Mine, M/s
Tata Steel Limited for 2023-24.**

Dear Sir

Kindly find attach herewith the Environmental Statement in the prescribed format (Form V) as per "Environmental (Protection) Amendment Rules 1992" of our Khondbond Iron & Manganese Mine for your kind perusal.

Thanking you,

Yours faithfully
f: Tata Steel Limited

A handwritten signature in blue ink, appearing to read 'Abhinav', with a horizontal line underneath.

Area Manager (Environment), OMQ

Encl: As above

**Copy to: The Regional Officer, State Pollution Control Board, At: Baniapata,
College Road, Keonjhar - 758001, Odisha**

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ENVIRONMENT STATEMENT 2023-24



Khondbond Iron & Manganese Mine

KHONDBOND IRON & MANGANESE MINE

TATA STEEL LIMITED

September 2024

FORM - V
(See Rule -14)

ENVIRONMENT STATEMENT FOR THE FINANCIAL YEAR ENDING THE 31st MARCH, 2022

KHONDBOND IRON & MANGANESE MINE, TATA STEEL LIMITED

PART-A

1	Name and address of the owner/ occupier of the industry, operation or process	:	Mr Rajesh Kumar, Mine Manager (Khondbond) Khondbond Iron & Manganese Mine Tata Steel Limited, Joda Dist.- Keonjhar, Odisha – 758034
	Nominated Owner	:	Mr Gedela V Satyanarayana, Chief (Khondbond) Khondbond Iron & Manganese Mine Tata Steel Limited, Joda Dist.- Keonjhar, Odisha – 758034
2	Industry Category	:	Mr. Atul Bhatnagar, General Manager, OMQ division, Administrative Building, Noamundi Iron Mine, Tata Steel Limited PO.: Noamundi, Dist.-West Singhbhum Jharkhand – 833217
3	Production Capacity*	:	Mr T V Narendran, Managing Director & CEO, Tata Steel Limited, PO: Jamshedpur, Dist.: East Singhbhum, Jharkhand-831001
4	Year of Establishment	:	Opencast Iron & Manganese Mining & Processing & Dispatch Industry (Major)
5	Date of last Environmental Statement submitted.	:	Mine: 08 MTPA Iron Ore & Manganese :0.1MTPA Beneficiation & Dispatch: 08 MTPA Iron Ore
			1960
			28 th September 2023, vide letter no. MD/ENV/827/120/2023 for the year 2022-23.

*As per Environmental Clearance

PART-B

Water and Raw Material Consumption

(i) Water Consumption:

<u>Consumption Head:</u>	2022-23 (in cu.m/day) (Annual Average)	2023-24 (in cu.m/day) (Annual Average)
Process	3547.53	1011.14
Spraying in mine pit, services	303.53	410.10
Domestic	435.33	506.96
Name of the product	Process water consumption per product output (m³/MT)	
Iron Ore	0.20	0.06
Manganese Ore	NA	NA

This is a mechanised mine producing iron ore. The iron ore processing is dry crushing and screening only. Dust suppression at C&S plant is carried out through a scientific way using dry fog system, thus reducing the requirement of water to very minimum level.

ii) Raw Material Consumption

The following items have been consumed/ utilized:

Name of Raw Materials	Consumption of Raw Material	
	During previous financial year (2022-23)	During current financial year (2023-24)
High Speed Diesel	5657016 Litre	5108413 Litre
Lubricants	111300 Litre	88672 Litre
Grease	13601 Kg	12815 Kg
Explosive of all types (Explosive, codex, detonator)	1980125 kg	1754390 kg
Gas	2332276 Cu.m	6046 Cu.m
Tyres	81 nos.	54 nos.
Drill rods	309 nos.	237 nos.
Electricity Consumed	18505000 kwh	26368881 kwh
Electricity Generated		

PART-C
POLLUTION DISCHARGED TO ENVIROMENT/ UNIT OF OUTPUT
(Parameters as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass / day)	Concentration of Pollutants discharges (mass / day)	Percentage of variation from prescribed standards with reasons
a) Water	<p>The Khondbond Iron & Manganese Mine with the processing plant, the iron and manganese mine pits are separately operated. The processing plant is a zero effluent discharge unit; all the effluent generated from the processing of iron ore is collected from slime pond and recycled & reused by 100% in various activities including dust suppression and iron ore processing.</p> <p>One sewage treatment plant (STP) of 10 KLD is installed & in operated and entire treated water is recycled & reused for plantation and gardening purpose.</p> <p>One effluent treatment plant (ETP) of 7 KLD is installed & in operated and entire treated water is recycled & reused for plantation and gardening purpose.</p> <p>The HEMM cleaning & washing unit passed through ETP and water is recycled back.</p> <p>All the water quality results of STP & ETP are attached herewith in annexure-1.</p>		
b) Air	<p>The Khondbond Iron & Manganese Mine is an opencast iron mine with processing plant & dispatch unit. The air quality in the form of fugitive, dust fall, ambient, respirable is being measured and monitored regularly and is well within limits.</p> <p>All the dust generating points such as loading -unloading devices are equipped with dust arresting system such as dry fog, fixed & mobile water sprinklers, mist spray, dust extractors -bag filters, water scrubbers etc.</p>		

Pollutants	Quantity of Pollutants discharged (mass / day)	Concentration of Pollutants discharges (mass / day)	Percentage of variation from prescribed standards with reasons
	<p>Three continuous ambient air quality monitoring stations with PM₁₀, PM_{2.5}, SO_x, NO_x, (NO₂ & NO) & CO parameters are continuously being monitored with online data connectivity at state Pollution Control Board server.</p> <p>A thick & dense vegetation is also placed in all surrounding the area which significantly reduced the pollution load.</p> <p>The results of air quality monitoring is attached as annexure-2.</p>		

PART-D
HAZARDOUS WASTES

As specified under the Hazardous & Other Waste (Management & Trans boundary Movement) Rules, 2016 and amendment thereof

Hazardous Wastes	Total Quantity	
	During previous financial year (2022-23)	During current financial year (2023-24)
(a) From Process <ul style="list-style-type: none"> • Used Oil • Waste containing Oil • Lead Bering residues (Batteries etc) • Rejected & used hose pipes 	70860 litre NIL Nil	72950 litre NIL 7.47 MT 4.87 MT
ii) From Pollution Control Facility <ul style="list-style-type: none"> • Waste oil from oil & grease separation pit • Sludge from oil and grease separation pit 	Nil (Included in process) All the Hazardous waste generated is disposed as per law.	

PART-E
SOLID WASTES

Solid wastes from Khondbond Iron & Manganese Mine is being categorized in two parts i.e. Overburden/rejects removed during mining operations and slime/tailings generated from beneficiation / processing of Iron Ore. All the materials overburden and tailings are stocked in designated place inside the mine. However, other solid waste is also being generated from mining and processing / beneficiation activity. Currently no slime/tailings generated as the process plant is under construction.

Sources	Total Quantity	
	During previous financial year (2022-23)	During current financial year (2023-24)
a) From Process <ul style="list-style-type: none"> • From mining as Overburden • Rejects 	2763607.76 Tonne 675360 Tonne	527412.47 Tonne 148160 Tonne

<ul style="list-style-type: none"> • From OB Plant as Tailing 	Not Applicable	56545 Tonne
b) From Pollution Control Facility	Not Applicable	Not Applicable
c) i. Quantity recycled or reutilized within the unit	225581.74 Tonne	159155.13 Tonne
ii. Quantity sold	Nil	Nil
<ul style="list-style-type: none"> • General Office waste 		
iii. Quantity disposed	2763607.76 tonne	527412.47 tonne
<ul style="list-style-type: none"> • Mining overburden 		
<ul style="list-style-type: none"> • Rejects 	Nil	Nil
<ul style="list-style-type: none"> • Canteen & colony waste 	Organic wastes are disposed off in dumps	Organic wastes are disposed off in environmental friendly manner.

PART-F

PLEASE SPECIFY THE CHARACTERISTICS (IN TERMS OF COMPOSITION AND QUANTUM) OF HAZARDOUS AS WELL AS SOLID WASTES AND INDICATE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTES

The Khondbond Iron & Manganese Mine and processing / beneficiation generate hazardous waste mainly in the form of used oil. The used oil is being generated from HEMM maintenance, which are used in manning operations. The used oil is disposed to authorized agency for recycling and reuse. During handling and maintenance of HEMM, the oil-soaked materials (jute etc.) is being kept and disposed in impervious pit. The hazardous waste such as used batteries is sold to authorized agency.

The other solid waste in the form of overburden and sub-grade mineral are stocked in designated place.

PART-G

IMPACT OF POLLUTION ABATEMENT MEASURES TAKEN ON CONSERVATION OF NATURAL RESOURCES AND ON THE COST OF PRODUCTION

- Khondbond Iron & Manganese Mine is a star rated iron mine as per Sustainable Development Framework (SDF) has declared by Indian Bureau of Mines, Ministry of Mines, Govt. of India and has adopted various mineral conservation techniques such as blending of waste / subgrade materials, use of low-grade ore etc as per customer quality requirements.
- For conservation of natural resources, high efficiency HEMM are used with adequate maintenance so as to reduce the fuel consumption. Zero effluent discharge is being maintained.
- For ground water augmentation, various rainwater harvesting structures are made, the capacity of pond ~ 47,793 m³/yr which harvest the rainwater through various RWH structures. Piezometers are also installed in mines.
- New Fleet Management System (FMS) for better and efficient working of the HEMM was introduced in the mines which significantly reduced diesel consumption.

PART-H

ADDITIONAL MEASURES/ INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION

- Coir matting was done on fine stocks to prevent any erosion that can lead to pollution. Various toe wall, garland drains are made as per progressive mine plan & mine closure plan. Bio Toilets were also installed in area.
- Bio-gas plant for adequate disposal of canteen waste & reduction of LPG are installed.
- The check dams are strengthened with two additional RWH structure.
- For biodiversity conservation, a niche -nesting project implemented at Khondbond. Plantation of local species, development of local nursery at site in area various scientific studies such as Carbon Sequestration study, ground vibration study etc. done. Miyawaki Plantation method is being followed for rapid green cover of the overburden dumps.
- Awareness programme such as World environment day, Biodiversity Day, Swachhata pakhwada, Earth day was organised for creating awareness of people regarding conservation of Natural resources in year 2023-2024. It incurred the cost of ₹ 2 lakh. (approx.)
- The above abatement measures have resulted in improvement of air and water quality, reduction in noise levels, and improvement greenery within the lease. In addition, Tata Steel Rural Development Society (TSRDS) is engaged in peripheral developmental activities in villages around the mine. The projects of the Society include irrigation and agricultural extension projects, plantation programmes, creation of SAVE FOREST groups, civic amenities development, medical care and health education, rural sports and skill development, rural cultural promotion, etc.

PART-I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

- Khondbond Iron & Manganese Mine of Tata Steel Ltd. is a captive mine and is certified for the Integrated Management System (ISO-9001:2015, ISO-14001:2015 & OHSAS-18001:2007 and SA:8000) from last two decades. The unit has obtained various prestigious accolades.
- The Company is having a full-fledged Environmental Management Department with personnel from different backgrounds to take care of all environmental aspects relating to mines of Tata Steel. This department has in house capabilities for monitoring various environmental parameters and suggesting to the management necessary abatement measures.
- Various awareness programs throughout the year conducted in the area which included celebration of World Environment Day, World Water Day, Mine Environment & Mineral Conservation Week, World Bio-diversity Week, Annual Flower & Vegetable Show etc. In which environment conservation models, current & future proposals are made, environment messages through Nukkad natak, poems, slogans, swachhata drive is being done every year.
- All above efforts make the mine clean – green and sustainable. In the year 2023-24, Rs 25.77 Cr (approx.) are spent on various environmental activities from Khondbond Iron & Mn Mine.


Manager (Environment)
Khondbond Iron Mine

Manager (Environment), Khondbond

WATER QUALITY DATA 2023-24
Khondbond Iron & Manganese Mine
(Annual Average)

	SEWAGE TREATMENT PLANT 10 KLD	EFFLUENT TREATMENT PLANT 7 KLD	
Parameters	Outlet		Standard
pH	7.80	7.63	5.5–9.0
DO (mg/l)	7.16	7.10	-
TSS (mg/l)	16.66	17.23	100
Oil & Grease (mg/l)	1.83	1.88	10
BOD 5 days (mg/l)	15.70	15.65	30
COD (mg/l)	36.85	36.24	250

SURFACE WATER			
Parameters	Sona river Upstream	Sona river Downstream	Standard
pH	8.02	7.91	6.0–9.0
DO (mg/l)	6.52	6.17	>4.0
TSS (mg/l)	30.0	25.0	-
BOD 5 days (mg/l)	22.61	2.43	30
COD (mg/l)	11.77	10.06	-
Iron (mg/l)	0.41	0.36	0.5
Fecal Coliform	BDL	BDL	5000

Note: BDL – Below detection limit.


Manager (Environment)
Khondbond Iron Mine

AIR QUALITY DATA 2023-24
Annual Average Air quality of Khondbond Iron & Manganese Mine of FY'24

Pollutants	Concentration of pollutants ($\mu\text{g}/\text{m}^3$)	Standards ($\mu\text{g}/\text{m}^3$)
Near Pit-3		
1. PM ₁₀	58.13	100
2. PM _{2.5}	21.73	60
3. SO ₂	10.76	80
4. NO _x	20.84	80
5. CO	BDL	4*
Near Manganese Mine		
1. PM ₁₀	59.13	100
2. PM _{2.5}	21.48	60
3. SO ₂	10.91	80
4. NO _x	20.78	80
5. CO	BDL	4*
Near 16-D		
1. PM ₁₀	54.75	100
2. PM _{2.5}	20.64	60
3. SO ₂	11.11	80
4. NO _x	20.72	80
5. CO	BDL	4*
Near Security Barrack		
1. PM ₁₀	60.03	100
2. PM _{2.5}	22.06	60
3. SO ₂	10.72	80
4. NO _x	21.12	80
5. CO	BDL	4*

*BDL – Below detective limit


 Manager (Environment)
 Khondbond Iron Mine