By E-Mail

Ref.No.: MGM/P&E/15/23

Date: 27/09/2023

To
The Member Secretary,
Odisha State Pollution Control Board,
Paribesh Bhawan,
A/118, Nilakantha Nagar,
Bhubaneswar, 751012

Subject: Submission of Annual Environmental Statement in FORM-V for the year ending 31st March 2023 in respect of Bamebari Iron and Manganese Mine of M/s Tata Steel Ltd.

Reference: Rule-14 under Environmental (Protection) Amendment Rule, 1993 (G.S.R.386,22.04.1993)

Dear Sir,

We are hereby submitting the **A**nnual **E**nvironmental **S**tatement in "FORM-V" prescribed under the above referenced statute, for the year ending 31st March 2023 in respect of Bamebari Iron and Manganese Mine of M/s Tata Steel Ltd., At/Po-Bichhakundi, Dist-Keonjhar, Odisha.

This is for your kind information and perusal please. Receipt of the same may please be acknowledged.

Thanking You

Yours Faithfully

F: Tata Steel Limited

Head, Mine & Production Planning

Bamebari Iron & Manganese Mine

Ferro Alloys Mineral Division

Enclosure: Annual Environmental Statement (FORM-V) for the Financial Year ending 31st March 2023

Copy To:

1) Zonal Office Kolkata, Central Pollution Control Board, South end Conclave, Block 502, 5th and 6th Floors, 1582 Rajdanga Main Road, Kolkata, West Bengal 700107.
2) The Regional Officer, State Pollution Control Board, Baniapat, DD College Road, Keonjhar, Odisha-758001.
3) MoEF&CC Eastern Regional Office, A/3, Chandrasekharpur, Bhubaneswar-751023

TATA STEEL LTD.
Ferro Alloys & Minerals Division, Manganese Group of Mines, At/P.O.: Bichhakundi, Via: Joda,
Dist: Keonjhar Odisha – 758 034 Tel.: 9238101370, e-mail : mnminesadmin@tatasteel.com
Regd.Office : Bombay House, 24 Homi Modi Street, Mumbai – 400 001 Tel 912266658282, Fax 912266657724
Corporate Identity Number L27100MH1907PLC000260 website : www.tatasteel.com

TATA

TATA STEEL

ANNUAL ENVIRONMENTAL STATEMENT
for FY 2022-23

[FORM – V]

For the year ending 31st MARCH 2023

[Rule-14 under Environmental (Protection) Amendment Rule, 1993]
(G.S.R.386,22.04.1993)

Submitted By:

Bamebari Iron & Manganese Mine

M/s. Tata Steel Limited

At/Po: Bichhakundi, Via-Joda

District- Keonjhar, Odisha -758 034

FORM V

[See Rule 14 of Environment (Protection) Amendment Rules, 1993]

ENVIRONMENTAL STATEMENT

(for the financial year ending the 31st March 2023)

PART – A

(i)	Name and Address of the Owner / occupier of the industry operation or process.	:	**BAMEBARI IRON & MANGANESE MINE**
	Nominated Owner:		Mr. T.V. Narendran Managing Director, M/s TATA Steel Ltd. Jamshedpur, Dist- East Singhbhum Jharkhand – 831 001
	Agent:		Mr. Awnish Kumar, Chief (Manganese Group of Mines), Joda, FAMD, TATA Steel Ltd. P.O.: Bichhakundi, Via: Joda Dist.: Keonjhar, Odisha – 758 034
(ii)	Industry Category	:	Opencast Mining (Metal-Manganese Ore)
(iii)	Production Capacity – Units	:	**83,200 Tonnes Per Annum** (Manganese Ore or 0.832 LTPA (as per Environmental Clearance & Consent to Operate)
(iv)	Year of Establishment	:	1938
(v)	Date of the last environmental statement submitted	:	28/09/2022

PART – B

Water and Raw Material Consumption: Mining is not a manufacturing process thus water is not a raw material essential for production; however, water is used for haul road dust suppression and other support services which are not directly linked with the quantum of production.

(1) Water Consumption m^3/day (Av. figures for 2022-23)

Process : 38.14 m^3/day (Dust Suppression by sprinkling) (**Total- 13920m^3**)

Cooling : Nil (All the process are dry processes)

Domestic : 57.60 m^3/day (**Total- 21026m^3**)

Name of the Products	Process water consumption per unit of product output	
	During the previous Financial year	During the current Financial year
	(1)	(2)
(1) Manganese Ore	Nil	Nil

Remarks: *Manganese Ore is produced by mechanized mining method, which does not involve beneficiation and thus precludes the consumption of water. Unlike manufacturing*

processes, production from mining doesn't involve water as raw material for any of the operational activities. Water is essentially used for dust suppression and domestic consumption. Entire process of mining is dry methods.

(2) Raw material consumption: Unlike manufacturing processes, mining doesn't involve any such raw materials; However, uses various other resources for ancillary services essential to ensure mining such as Diesel, Electricity and Explosives, etc.

The table below reflects the production and dispatch figures for the last two financial year

Name of the raw materials	Name of the product	Consumption of raw materials per unit* (MT- Metric Tonnes) During the current Financial year (Year 2021-22)	During the current Financial year (Year 2022-23)
-Nil-	Manganese Ore	**Production** 56182.00MT **Despatch** 48065.2MT	**Production** 83073.00MT **Despatch** 77445.65MT

Remarks**: The ore produced from Mine head is used as raw material to produce ferro manganese. Certain ancillary resources used for mining operation during FY 2022-23 is as follows: **Diesel (548.019KL), Explosive (118325Kg), Electricity (781.545Mw-h).

PART – C

Pollution discharged to environment / unit of output (Parameter as specified in the Consents issued)

Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of Pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
(a) Water	-Nil-	-Nil-	Not Applicable
	There are no direct/indirect sources for discharge of effluents/pollutants to the environment. Environmental quality parameters are monitored from time to time to assess the water quality of the nearby streams/nallahs and monsoon runoff from the mining areas. The environmental quality parameters are monitored, and reports are submitted to SPCB as well as MoEF&CC along with six monthly compliance reports.		
(b) Air	-Nil-	-Nil-	Not Applicable
	There is no such point source of emission from the mine. Major source of air pollutants is fugitive dust generated mainly due to the movement of vehicles/HEMMs in the haul roads, drilling/blasting activities etc, which is fugitive in nature and thus has not been quantified in mass/day. The environmental quality parameters are monitored, and reports are submitted to SPCB as well as MoEF&CC along with six monthly compliance reports.		

PART – D
(Hazardous Wastes)

[As specified under the Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016]

HAZARDOUS WASTES	TOTAL QUANTITY	
	During the previous Financial year	During the current Financial year
(i) From Process Waste containing Oil	**Year (2021-22)** Nil	**Year (2022-23)** Nil
Used Oil- HW-5.1 (in Ltrs.)	310	790
Residual waste containing oil- HW-5.2 (Kgs)	5Kgs.	8Kgs.
Empty Barrells – HW 33.1 (in Kgs)	120 (04 barrels)	150 (05 barrels)
Contaminated cotton rags – HW 33.2 (in Kgs)	1	0.5
(ii) From pollution control facilities	Nil	Nil

Remark: There are no such pollution control system where hazardous waste shall be generated.

PART – E
(Solid Wastes)

	Total Quantity	
	During the previous Financial year	During the current Financial year
	Year (2021-22)	**Year (2022-23)**
(a) From Process **(Overburden Material)**	312444 MT	221084 M^3 (552710 MT)
(b) From pollution control facilities	Nil	Nil
(c)		
(1) Quantity recycled or re-utilized within the unit	Nil	Nil
(2) Sold	Nil	Nil
(3) Disposal	312444MT	221084 M^3 (552710 MT)

PART – F

(Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes)

- **Characterization of Hazardous Waste: -** The significant source of hazardous waste is Used oil (HW-5.1) is mainly Hydrocarbons and consist of lubricants, coolants, transformer oil and hydraulic oil.

- Overburden being the only significant solid **waste** contains lateritic morrum, shale and quartzite, etc.
- Horticultural Waste: Dry leaves and other garden waste and canteen food waste being purely organic and biodegradable in nature are getting composted at our facilities.

- **Disposal Practice: -**
  - **SOLID WASTES** -OB dumps are maintained as per the approved scheme of mine plan where proper terraces and peripheral drains are constructed supported with gabion wall/retention wall to arrest the silt/sediments during monsoon season. Once the slope of the dumps is stabilised then the dumps are reclaimed by plantation of native varieties of forestry saplings.

  - USED OIL -The used oil generated at various sources is collected in leak proof barrels and then is kept on an impervious floor with oil catch pit. The storage area is properly fenced, and caution board displayed. The used oil collected from sites are centrally auctioned to an SPCB authorised/registered recycler for recycling.
  - Provision of impervious pit for collection of oily waste in the workshop premises in addition to the existing practice of collection at specified barrels.

  - An automatic waste composter has been procured for composting all the biodegradable waste within our facilities.

PART – G

(Impact of pollution abatement measures taken on conservation of natural resources and on the cost of production**)**

1. Water spraying on haul Roads and Mine Pits is done regularly to suppress the dust.
2. All the haul roads in the mining area are made up of morrum & compacted. Regular repair is being done by dozer & grader after spreading the layer of sweet morrum over it.
3. Wet drilling is practices along with controlled blasting followed for minimal dust generation and prevent fly rocks.
4. Total plantation for FY 2022-23 for the dump and other available fonts was 3181 Nos of local forestry species such as Neem, Mahaneem, Sisam, Karanj, Sal, Mahoghani, etc.
5. Apart from the conservation efforts, around 2.0 ha of safety zone has been planted with the theme of Bamboo Forestry corridor by 1850 nos of trees along the National Highway in front of Bamebari Township.
6. The mine management proactively undertakes various environmental activities for the conservation/protection of environment. The cost incurred towards environmental measures are earmarked in a separate fund center. An abstract on the approximate cost spent towards environmental measures in respect of Bamebari Iron & Manganese Mine is as follows:

Table.: Environmental Expenditure for FY 2021-22

S.No.	Environmental Conservation/ Protection Measures	Expenditure (Lacs-INR)	
		Proposed	Actual
1	Afforestation on Dump slopes (3181 saplings/1.0Ha)	4.5	5.24
2	Construction/Maintenance of retaining wall (410mtrs)	3.5	2.40
3	Construction/Maintenance of Garland drain, settling pits with check dam	0.80	0.95

S.No.	Environmental Conservation/ Protection Measures	Expenditure (Lacs-INR)	
		Proposed	Actual
4	Env. Awareness/Mines Environment & Mineral Conservation Week Celebration	4.5	4.8
5	Annual Environmental Monitoring	6.5	7.0
6	Operation & Maintenance of Automatic Wheel Wash System	4.0	5.20
7	Safety Zone Plantation-Bamboo Plantation Work	10.5	15.60
8	Environmental Performance Audit-HW Mgmt.	3.2	2.85
9	Dust Suppression-Mobile Water Tanker	10.5	15.5
10	Operation & Maintenance of STP	3.5	6.0
11	Telemetric System for GW Monitoring	0.30	0.30
12	Annual Water Audit by FICCI	2.0	3.5
13	Operation & Maintenance of WTP	3.5	5.0
	Total	**57.3**	**74.34**

7. In addition, Tata Steel Rural Development Society also undertakes the peripheral development activities with a large magnitude such as extending support in agricultural and other livelihood options, Water Harvesting ponds, etc.

PART – H

(Additional measures / investment proposal for environmental protection, abatement of pollution, prevention of pollution)

a) Garland drains and toe wall around the OB dumping shall be provided to check and channelize surface run-off.
b) Plantation of forestry species shall be planted over the inactive waste dump slopes to arrest the airborne dust.
c) Development of Safety Zone Plantation with Bamboo Forestry over 2.0 ha with around 1850 nos of saplings.
d) Vetiver Plantation has been done in inactive dump slope over 1 Acre
e) Green belt has been developed along colony and mining.
f) Soil Conditioning and treatment practices followed for land reclamation
g) In-House generation of saplings of forestry varieties : 50000 Nos.

PART – I

(Any other for improving the quality of environment)

1. With compliance to conditions of Environment Clearance obtained from MoEF&CC, the following monitoring is being done at regular interval.

   - Ground Water Level at nearby bore wells
   - Trace metal in dust fall

- Ground water quality at lower level
- Meteorological monitoring
- Trace metals such as Fe, Cr+6, Cu, Se, As, Cd, Hg, Pb, Zn and Mn at specific locations for both surface water (downstream & upstream) and ground water at lower elevation is being periodically monitored by referring to the standards as per IS10500:2012.

2. Topsoil generated during excavation are utilized immediately for nursery development and dump slope plantation.

3. Measures taken to control Air Pollution: -
   - Water sprinkling on the haul road,
   - Provision of dust masks to the workmen,
   - Adoption of wet drilling arrangement in the drill machines and
   - Black topped road in the residential colony.
   - Green belt along mining and colony
   - Native sapling and vetiver plantation in inactive dumps.
   - Wheel Wash facility installed & being operated

4. Measures taken to control Water Pollution: -
   - Construction of toe wall and garland drain along the dump slope to prevent surface run-off during monsoon.
   - Construction of soak pits for discharge of sanitary sewage.
   - Provision of oil separation pit for effluents coming out of workshop.
   - Native sapling and vetiver plantation in inactive dumps.
   - STP for domestic effluent in Bamebari colony.

5. Measures taken to control Noise & Ground Vibration: -
   - Thick plantation has been developed around the mines and office building to provide a canopy cover
   - Implementation of advance blasting technique (NONEL) to reduce the blast induced ground vibration and
   - Workmen are provided with earmuff while working near heavy earth moving machineries.

6. Measures taken to control Land Degradation: -
   - Afforestation around the non-active dump for stabilization and
   - Reclamation and rehabilitation of mined out area as per approved Scheme of Mining.

7. Surveillance of Occupational Health: - Periodical Medical Examination of employees (departmental & contractual) are conducted as per prescribed norms of Mines Rule, 1955. The initial and periodical examination includes blood haematology, blood pressure, detailed cardiovascular assessment, neurological examination etc.

8. The mine is certified with ISO-14001:2015 (Environment Management System).

PHOTOGRAPHS OF ENVIRONMENTAL MEASURES AT BAMEBARI

PHOTOGRAPHS OF WHEEL WASH FACILITY

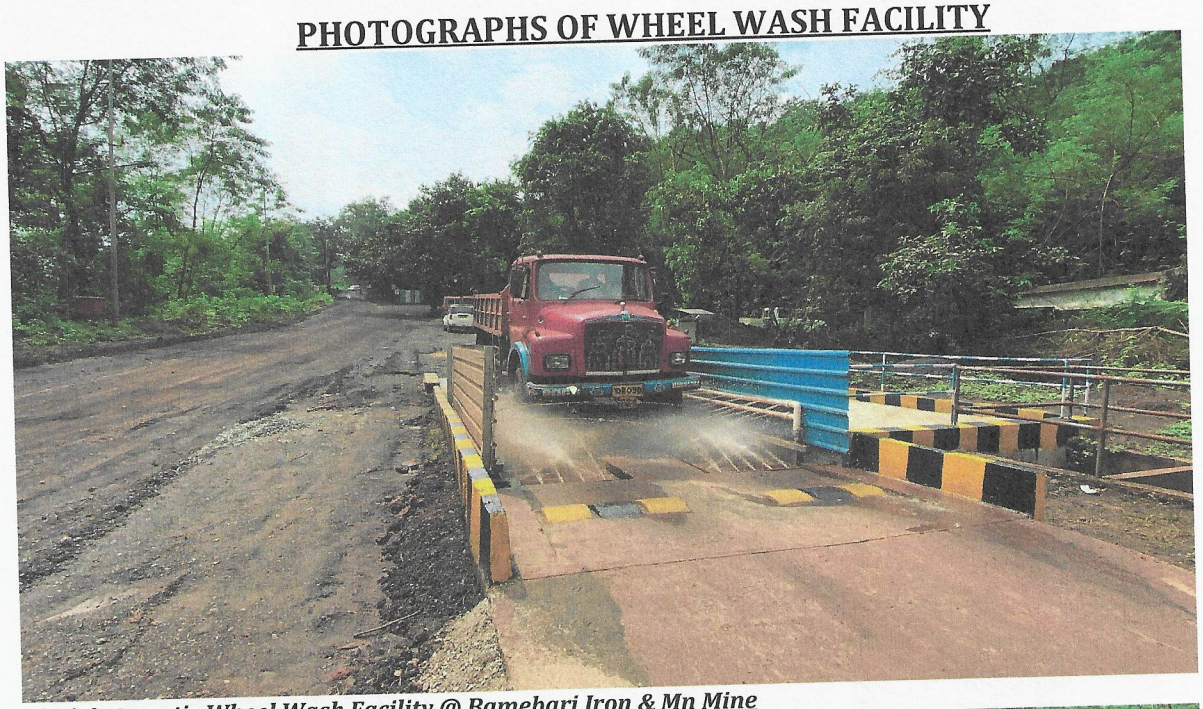

Fig.1 Automatic Wheel Wash Facility @ Bamebari Iron & Mn Mine

Fig.2 Wheel Wash System in Operation at Bamebari Iron & Mn Mine