TSL/SPCB/TS-30/2025-06/594
September 25, 2025

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

Subject: Environmental Statement for the financial year 2024-25 for Residential Township of Tata Steel Limited Meramandali, Dhenkanal

Reference: Consent Order No.5425/IND-I-CON-6826 dated 31.03.2022

Dear Madam,

In reference to the captioned subject and letter cited above, we are submitting herewith the "Annual Environmental Statement (Form-V)" duly filled in the prescribed format for the Residential Township of Tata Steel Limited at Narendrapur, Via: Meramandali, Dist. Dhenkanal, Odisha, for the financial year 2024-25 for your kind perusal.

This is in line with the compliance to the statutory requirement.

Thanking you

Yours faithfully,

For Tata Steel Limited

Anoop Srivastava

Anoop Srivastava
Chief Environment -TSM

Copy to:

1. Deputy Director General of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office, A/3, Chandshekharpur, Bhubaneswar – 751023.
2. Regional Officer, State Pollution Control Board, Odisha, Angul.
3. The Member Secretary, SEIAA, Odisha, Qr.No.5RF-2/1, Unit-IX, Bhubaneswar-751022

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[FORM-V]
(see rule 14)
Environment Statement for the financial year ending 31st March 2025 for Tata Steel Limited, Meramandali

PART – A

1.	Name & Address of the owner/occupier of the industry, operation or process	Sri Thachat Viswanath Narendran, CEO & MD Tata Steel Limited At: Narendrapur, PO: Kusupanga Via: Meramandali, Dist.: Dhenkanal, Pin: 759121, Odisha
2.	Industry Category	Red-A
	Primary (STC Code),	Large Metallurgical Industry
	Secondary (STC Code)	Integrated Iron & Steel Industry
3.	Production capacity-Units	• Production Capacity: 5.6 MTPA Crude Steel. • Production During 2024-25: 5.19 Million Tons Crude Steel. (Major units are: RMHS & RMPP, Sinter Plants, DRI, Coke Ovens, Blast Furnaces, Lime Plant, SMS, BOF, HSM, CRM, Captive Power Plant, Industrial By-Product Management Division and Utilities including Air Sepretaion Units.)
4.	Year of establishment	2006
5.	Date of last environment statement submitted	13th September, 2024 vide letter no.TSL/SPCB/TS-03/2024-15/489

PART – B

I) Water Consumption (m^3/day)

Water Consumption	During the previous Financial Year (2023-24)	During the current Financial Year (2024-25)
Industrial Consumption (Inside Works as Makeup water)	51,029	52,993
Domestic Consumption (Inside Works as Drinking water)	3,773	4,054

Name of the Products	Fresh water consumption/ unit of products (m^3/tcs)	
	During the previous Financial Year (2023-24)	During the current Financial Year (2024-25)
Crude Steel (Slab/ Billet)	3.36	3.41

II) Raw Material Consumption (Works):

Name of Raw materials	Name of Products	Consumption of raw material per unit of output (MT/tcs)	
		During the previous Financial Year (2023-24)	During the current Financial Year (2024-25)
Iron Ore (Lump &Fine)	Crude Steel (Slab/Billet)	1.26	1.22
Purchase Pellet		0.33	0.36
Limestone & Dolomite		0.37	0.35
Quartz		0.03	0.03
Coking Coal		0.67	0.67
Non-Coking coal		0.35	0.30
Scrap		0.07	0.06
Ferro-Chromium		0.0003	0.0002
Ferro-Manganese		0.0029	0.0027
Ferro-Silicon		0.0002	0.0001
Silico-Manganese		0.0011	0.0011
Zinc		0.0007	0.0007
Zinc Alloy (Premix)		0.0008	0.0012

PART – C

Pollution generated
(Parameters as specified in the Consent issued)

Pollutants	Quantity of pollutants discharged to Lingra Nallah (mass/day)		Concentrations of pollutants discharged to Lingra Nallah (mass/volume)		% of variation from prescribed standards in CTO
	(Tons/day)		(mg/l)		%
(a) Water	**2023-24**	**2024-25**	**2023-24**	**2024-25**	**2024-25**
TSS	0.188	0.238	90.17	51.83	(-) 48.17 %
COD	0.080	0.101	38.26	32.67	(-) 86.93 %
Ammonia as N	0.046	0.006	2.24	0.1	(-) 99.80 %
BOD	0.089	0.011	4.28	3.78	(-) 87.40 %
Phenols	< 0.0015	< 0.0013	BDL (< 0.5)	BDL (< 0.5)	(-) 50 %
Total Cyanide (as CN^-)	< 0.0003	< 0.0003	BDL (< 0.1)	BDL (< 0.1)	(-) 50%

Note: BDL: Below detection limit, Detection Limit for Phenols and Cyanide is 0.5 and 0.1 respectively.

Pollutants	Quantity of pollutants discharged (mass/day)		Concentrations of pollutants (mass/volume)		% of variation from prescribed standards in CTO
(b)Air (emissions)	**2023-24**	**2024-25**	**2023-24**	**2024-25**	**2024-25**
	Tons/day		**mg/Nm^3**		**%**
PM	6.59	6.50	14.33	13.51	(-) 72.98 %
SO2	50.52	49.73	418.93	427.26	(-) 28.79 %
NOx	24	20.85	143.72	130.88	(-) 70.92 %

1. Surface Water Quality (2024-2025)

Parameter	Unit	Kisinda Nalla		Lingra Nalla	
		U/S	D/S	U/S	D/S
pH Value	-	6.92 – 8.58	7.32 – 8.35	6.78 - 8.50	7.36 - 8.56
Colour	Haze n	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)	BDL (DL:1.0)
Temperature	ºC	25 – 25.3	25 – 25.2	25 – 25.2	25 – 25.2
Total Suspended Solids	mg/l	3.8 - 31.2	2.6- 28.3	3.2-14	4.1-18.2
Ammoniacal Nitrogen	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
Arsenic as As	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
BOD, 3days at 27°C	mg/l	2.1-5.6	2.0-5.6	2.6-5.3	3.2-6.4
Boron as B	mg/l	BDL (DL:0.25)	BDL (DL:0.25)	BDL (DL:0.25)	BDL (DL:0.25)
Cadmium as Cd	mg/l	BDL (DL:0.001)	BDL (DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
Calcium as Ca	mg/l	18.1-80.8	16.5-80.8	13-89.0	16.8-64.4
Chlorides as Cl	mg/l	8.6-158.4	9.7-148.5	11.1-152	13.2-126
COD	mg/l	9.6 – 28.0	12.0 – 23.0	3.4 – 20	7.8 - 28
Copper (as Cu)	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
Cyanide as CN	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
Fluoride as F-	mg/l	0.22 - 4.2	0.21 – 6	0.13 - 1.2	0.17 - 2.6
Free Ammonia	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
Hexa Chromium (Cr^{+6})	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
Iron as Fe	mg/l	0.96 – 5.4	0.14-4.9	0.18 – 2.0	0.16-1.0
Lead (as Pb)	mg/l	BDL (DL:0.005)	BDL (DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
Manganese (as Mn)	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
Mercury (as Hg)	mg/l	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)
Nickel (as Ni)	mg/l	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
Nitrate as N	mg/l	0.36 – 0.86	0.16 – 1.14	0.60 – 1.89	0.11 – 3.89
O&G	mg/l	BDL (DL:1.4)	BDL (DL:1.4)	BDL (DL:1.4)	BDL (DL:1.4)
Phenolic Compound	mg/l	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)
Phosphate as P	mg/l	0.11 - 0.85	0.07 - 0.84	0.10 – 0.29	0.10 to 0.40
Residual Free Chlorine (RFC)	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
Selenium (as Se)	mg/l	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
Sulphide (as S) mg/l	mg/l	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)	BDL (DL:0.05)
Total Kjheldal Nitrogen (TKN)	mg/l	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)	BDL (DL:0.3)
Total Chromium (as Cr)	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Total Nitrogen Content	mg/l	0.51-2.02	0.68 – 1.55	0.74 - 2.08	0.60 - 4.68
Vanadium (as V)	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
Zinc (as Zn)	mg/l	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)

NB: U/S: Upstream; D/S: Downstream; BDL: Below Detection Limit; DL: Detection Limit

2. ETP Treated Effluent Quality (2024-2025)

Parameter	UOM	BOD-1Treated effluent			BOD-2 Treated effluent		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.8	7.6	7.2	6.65	7.2	6.9
Total Suspended Solid	mg/l	28	80	54	22	48	35
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)
Chemical Oxygen Demand (COD)	mg/l	120	230	175	110	180	145
Biochemical Oxygen Demand (BOD)(27°C for 3 days)	mg/l	16.5	29	22.5	15.8	27	21.3
Total Cyanide (as CN^-)	mg/l	0.12	0.2	0.16	0.11	0.14	0.12
Phenol	mg/l	0.48	0.87	0.67	0.57	0.81	0.69

Parameter	UOM	ETP-1			ETP-2		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.93	8.15	7.54	6.53	7.88	7.20
Total Suspended Solid	mg/l	13	37	25	18	35	26.5
Chemical Oxygen Demand (COD)	mg/l	19	45	32	18	34	26
Biochemical Oxygen Demand (BOD) (27°C for 3 days)	mg/l	3.5	7	5.25	3.3	5.4	4.35
Iron as Fe	mg/l	0.27	0.72	0.49	0.1	0.6	0.35
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)

Parameter	UOM	ETP-3			CRM ETP		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.76	8.3	7.53	6.76	8.13	7.44
Total Suspended Solid	mg/l	19	41	30	18	87	52.5
Chemical Oxygen Demand (COD)	mg/l	29	37	33	100	180	140
Biochemical Oxygen Demand (BOD) (27°C for 3 days)	mg/l	3.7	5.4	4.55	14.6	26.2	20.4
Iron as Fe	mg/l	0.29	0.89	0.59	0.79	2.8	1.79
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)

3. Sewage Treatment Plant -Treated outlet quality (2024-2025)

Parameter	UOM	BF-1 STP			SMS-1 STP		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.91	7.85	7.38	6.51	7.81	7.16
TSS	mg/l	18	47	32.50	18	42	30
BOD	mg/l	7.8	41	24.40	8.7	44	26.35

4. Water Discharge Quality (2024-2025)

Parameter	UOM	Discharge to Lingra Nallah			Discharge to Kisinda Nallah		
		Min	Max	Avg	Min	Max	Avg
pH	-	7.42	8.43	8.10	7.34	8.34	7.84
Total Suspended Solid	mg/l	21	247	51.83	33	61	44.67
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)
Chemical Oxygen Demand (COD)	mg/l	22	66	32.67	28	39	34.92
Biochemical Oxygen Demand (BOD)(27°C for 3 days)	mg/l	2.80	4.50	3.78	3.20	5.20	3.97
Total Cyanide	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
Ammonical Nitrogen	mg/l	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	0.10	4.10	1.08

5. Ambient Air Quality (2024-2025) – Monitored at CAAQMS

Parameters	UoM	Norm	CAAQMS-1			CAAQMS-2			CAAQMS-3		
			Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
PM10	µg/m³	100	39.7	184	114	69.6	243	162	105	193	153
PM2.5	µg/m³	60	13.3	67.9	39.6	26.5	113	63.4	35.4	96.9	57.4
SO_2	µg/m³	80	10.9	39.6	16.3	21.5	23.4	22.7	2.1	10.1	5.1
NO_2	µg/m³	80	6.2	24.9	18.1	4.6	12.4	9.7	16.1	19.3	18.0
CO	mg/m³	2	0.4	0.8	0.6	0.43	0.9	0.7	0.7	1.2	0.9

Parameters	UoM	Norm	CAAQMS-4			CAAQMS-5		
			Min	Max	Avg	Min	Max	Avg
PM10	µg/m³	100	41.5	188	109	64.2	242	139
PM2.5	µg/m³	60	14.8	92.0	52.7	22.3	103	55.8
SO_2	µg/m³	80	5.2	8.1	6.1	8.1	18.7	13.1
NO_2	µg/m³	80	7.2	33.5	18.5	7.3	26.8	14.0
CO	mg/m³	2	0.2	0.6	0.3	0.2	0.9	0.5

Parameters	UoM	Norm	CAAQMS-6			CAAQMS-7		
			Min	Max	Avg	Min	Max	Avg
PM10	µg/m³	100	85.0	187	132	79.1	246	143
PM2.5	µg/m³	60	32.3	63.7	45.0	30.4	126	64.1
SO_2	µg/m³	80	8.7	19.6	14.1	8.1	50.6	32.0
NO_2	µg/m³	80	14.7	26.5	20.8	14.6	22.4	17.1
CO	mg/m³	2	0.4	1.0	0.7	0.7	1.1	0.8

NB. CAAQMS-1: Near Township; CAAQMS-2: Near AEL Boundary; CAAQMS-3: Near CRM; CAAQMS-4: Near Water Complex; CAAQMS-5: Near Coke Oven 2; CAAQMS-6: Near Wagon Tippler; CAAQMS-7: Near Material Gate.
Values are derived from 24 hourly average data except CO values which are derived from 8 hourly average data.

6. Ambient Air Quality (2024-2025) – Manual Monitoring Report

Parameters	UoM	CAAQMS-1			CAAQMS-2		
		Min	Max	Avg	Min	Max	Avg
Ammonia (NH3)	µg/m³	21.6	53.4	29.6	21.0	46.0	27.5
Arsenic as (As)	µg/m³	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
Benzene	µg/m³	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)
Benzo(a)Pyrene	µg/m³	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)
Carbon monoxide (CO)	µg/m³	0.2	0.6	0.5	0.3	0.8	0.6
Lead (as Pb)	µg/m³	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nickel as Ni	µg/m³	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nitrogen Dioxide as (NO2)	µg/m³	22.8	45.8	29.7	25.9	45.1	31.1
Ozone (as O3)	µg/m³	20.4	33.9	24.2	22.8	29.3	26.8
PM_{10}(Particulate Matter<10 µm)	µg/m³	67.1	95.8	74.3	76.5	97.3	85.8
$PM_{2.5}$ (Particulate Matter < 2.5 µm)	µg/m³	32.8	51.3	37.6	42.5	57.2	46.9
Sulphur Dioxide as (SO2)	µg/m³	6.2	9.2	7.0	6.4	11.0	7.6

Parameters	UoM	CAAQMS-3			CAAQMS-4		
		Min	Max	Avg	Min	Max	Avg
Ammonia (NH3)	µg/m³	17.6	55.6	24.9	30.1	48.7	35.1
Arsenic as (As)	µg/m³	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
Benzene	µg/m³	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)
Benzo(a)Pyrene	µg/m³	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)
Carbon monoxide (CO)	µg/m³	0.3	1.0	0.6	0.2	0.8	0.5
Lead (as Pb)	µg/m³	0.6	0.1	0.6	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nickel as Ni	µg/m³	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nitrogen Dioxide as (NO2)	µg/m³	23.4	48.8	27.6	22.0	40.3	27.3
Ozone (as O3)	µg/m³	21.4	30.2	22.2	24.8	30.6	27.2
PM_{10}(Particulate Matter<10 µm)	µg/m³	76.9	98.7	82.5	70.8	92.9	77.3
$PM_{2.5}$ (Particulate Matter < 2.5 µm)	µg/m³	37.2	54.7	42.0	34.6	48.1	39.9
Sulphur Dioxide as (SO2)	µg/m³	6.9	9.4	7.8	6.7	7.8	7.3

Parameters	UoM	CAAQMS-5			CAAQMS-6		
		Min	Max	Avg	Min	Max	Avg
Ammonia (NH3)	µg/m^3	31.9	57.6	36.3	27.6	47.3	32.0
Arsenic as (As)	µg/m^3	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
Benzene	µg/m^3	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)
Benzo(a)Pyrene	µg/m^3	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)
Carbon monoxide (CO)	µg/m^3	0.3	1.0	0.8	0.4	0.8	0.6
Lead (as Pb)	µg/m^3	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nickel as Ni	µg/m^3	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nitrogen Dioxide as (NO2)	µg/m^3	23.1	42.3	39.5	30.2	42.1	35.7
Ozone (as O3)	µg/m^3	23.6	30.4	26.7	24.5	38.8	29.0
PM10(Particulate Matter<10 µm)	µg/m^3	82.6	96.7	88.9	72.5	95.6	87.0
PM2.5 (Particulate Matter < 2.5 µm)	µg/m^3	45.2	57.0	49.5	36.3	52.1	45.8
Sulphur Dioxide as (SO2)	µg/m^3	7.8	9.1	8.5	6.9	9.3	8.3

Parameters	UoM	CAAQMS-7		
		Min	Max	Avg
Ammonia (as NH3)	µg/m^3	18.3	57.6	28.1
Arsenic as (As)	µg/m^3	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
Benzene	µg/m^3	BDL(DL:4.2)	BDL(DL:4.2)	BDL(DL:4.2)
Benzo(a)Pyrene	µg/m^3	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)
Carbon monoxide (as CO)	µg/m^3	0.4	1.0	0.8
Lead (as Pb)	µg/m^3	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nickel as Ni	µg/m^3	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Nitrogen Dioxide as (NO2)	µg/m^3	24.6	42.3	31.3
Ozone (as O3)	µg/m^3	21.6	30.4	25.6
PM10(Particulate Matter<10 µm)	µg/m^3	72.6	96.7	82.6
PM2.5 (Particulate Matter < 2.5 µm)	µg/m^3	33.9	57.0	43.3
Sulphur Dioxide as (SO2)	µg/m^3	6.6	9.1	7.7

PART – D

(As specified under The Hazardous and Other Wastes (Management & Transboundary Movement Rules, 2016)		
Hazardous waste	**Total Quantity (MT)**	
	During the previous Financial Year (2023-24)	**During the current Financial Year (2024-25)**
(a) From Process		
Used/ Spent Oil	276.83	270
Waste residue containing oil	390.3	330
Oily Sludge		
Rejected Chemical Container	Nil	560
Insulation Material	97.58	200
Alkali Residue	15	10
Zinc Ash & Zinc Dross	394.55	376
Spent Solvent (Waste Thinner – Oily Waste)	90.76	38
Waste Copper	-	20
Used Lead acid battery including grid plates and other lead scrap/ashes/residues/Lead Pot	-	98
(b) From Pollution Control Facilities		
BOD plant Sludge (Coke Oven By-Product Plant Residue)	3739.68	4052
Decanter Tar Sludge (Coal Tar Sludge)	1860	2526
ETP Sludge/Chemical Sludge from wastewater treatment plant	673.84	1230
Air Pollution Control Device dust/residue (Flue dust, Gas Cleaning Plant Sludge, LD Sludge, Air Pollution Control Device dust/residue)	237697.76	227790

PART – E

Solid Wastes

Total Quantity Generated

Name of the Waste	Total Quantity Generated (MT)	
	During the previous Financial Year (2023-24)	During the current Financial Year (2024-25)
(a) From Process		
1. Char (DRI)	163377	150996
2. BF Slag (Granulated Slag + Air Cooled Slag)	1892405	1815360
3. SMS Slag (LD)	989074	984092
4. Bottom Ash	27567	16985
5. Other Waste of DRI (Wet Scrapper Dust +Acreation Material +Cold ESP+Cooler Oversize)	-	148685
(b) From Pollution Control Facilities		
1. Fly Ash	419397	374884
2. Mill Scale	73430	71103
3. WHRB Ash	-	279702

(C-1). Quantity Recycled or Reutilised (Internal Utilisation)

Name of the Waste	Total Quantity (MT)	
	During the previous Financial Year (2023-24)	During the current Financial Year (2024-25)
1. Char (DRI)	80756	91264
2. BF Slag (Granulated Slag + Air Cooled Slag)	0	56761
3. SMS Slag (LD)	372736*	257302
4. Mill Scale	92212	94807
5. Other Waste of DRI (Wet Scrapper Dust +Acreation Material +Cold ESP+Cooler Oversize)	-	51158

(C-2). Quantity Recycled or Reutilised (External Utilisation) (MT)

Name of the Waste	Total Quantity (MT)	
	During the previous Financial Year (2023-24)	During the current Financial Year (2024-25)
1. Char (DRI)	82563	89849
2. BF Slag (Granulated Slag + Air Cooled Slag)	1907127	1830391
3. SMS Slag (LD)	2068827*	2215384#
4. Other Waste of DRI (Wet Scrapper Dust +Acreation Material +Cold ESP+Cooler Oversize)	-	85671
5. Fly Ash & Bottom Ash (Sent to Cement Plant, Road Making, Brick Making, Balance if any sent to filling of low lying area)	446964	391869
6. Ash generated from Waste Heat Recovery Boilers of DRI (WHRB)	-	279702

Note:

***FY 2023-24:** The total quantity of SMS slag was 2,441,562 MT for Financial Year 2023-24 comprises of external utilisation (2,068,827 MT) and internal utilisation (372,736 MT). Please note that figure submitted in the previous environment statement of FY 2023-24 was inadvertently and erroneously noted as 3,090 MT SMS slag which was reported under external utilisation.

#FY 2024-25: The quantities of SMS Slag given in the external utilisation includes legacy stock, embedded pre 2018. There may be still legacy stock available within the premises which shall be subsequently utilised as per the CPCB guidelines.

PART – F

Chemical Composition of majority of waste as produced in process of Tata Steel Limited, Meramandali operation is given below:

Name of the Wastes	Chemical Composition (%)				Disposal Method
ETP-Sludge	SiO_2	: 39.21	Na_2O	:0.41	Reuse within Plant
	Al_2O_3	: 23.32	K_2O	:1.65	
	Fe(T)	: 10.3	P_2O_5	:0.06	
	TiO_2	:0.36	$S0_3$	:0.28	
	MnO	:0.049	C	:3.51	
	CaO	:0.78	Cl	:0.23	
	MgO	:1.21	LOI	:16.28	
ETP Sludge From CRM	SiO_2	: 2.40	Na_2O	: 1.22	Stored in special containers followed by disposal at CHWTSDF/ Reuse within Plant
	Al_2O_3	: 1.15	K_2O	: 0.52	
	Fe(T)	: 3.72	P_2O_5	: 0.45	
	TiO_2	: 0.03	$S0_3$	: 0.17	
	MnO	: 0.10	C	: 17.5	
	CaO	:21.81	Cl	: 1.13	
	MgO	: 2.54	LOI	: 42.75	
BOD plant Sludge	Al_2O_3	: 0.08	K_2O	: 0.65	Mixed with coal and used in Coke making process
	Fe(T)	: 7.28	P_2O_5	: 0.06	
	TiO_2	: 0.36	$S0_3$	: 0.45	
	MnO	: 0.064	Cl	: 0.23	
	CaO	: 0.16	LOI	: 80.2	
	MgO	:0.02			
	Na_2O	: 0.24			
Decanter Tar Sludge	Al_2O_3	: 0.04	K_2O	: 0.026	Mixed with coal and used in Coke making process
	Fe(T)	: 0.01	P_2O_5	: 0.16	
	TiO_2	: 0.94	$S0_3$	: 0.07	
	MnO	: 0.001	Cl	: 0.29	
	CaO	: 0.015	LOI	: 66.4	
	MgO	:0.003			
	Na_2O	: 0.005			
Alkali Residue	Al_2O_3	: 0.84	K_2O	: 0.42	Stored in designated containers followed by disposal at CHWTSDF/ Reuse within plant
	Fe(T)	: 49.97	P_2O_5	: 0.001	
	TiO_2	: 0.21	$S0_3$	: 0.85	
	MnO	: 0.374	Cl	: 0.16	
	CaO	: 1.87	LOI	: 43.2	
	MgO	:1.13			
	Na_2O	: 0.38			
Flue Dust	SiO_2	: 4.18	Na_2O	:1.13	Reused in Sinter Plant with in plant permises
	Al_2O_3	: 1.79	K_2O	:1.37	
	Fe(T)	: 57.7	P_2O_5	:0.001	
	TiO_2	:0.09	$S0_3$	:1.78	
	MnO	:0.056	C	:10.24	

	CaO MgO	:2.28 :0.74	Cl LOI	: 0.13 :11.4	
BOF GCP Sludge (LD Sludge)	SiO_2 Al_2O_3 Fe(T) TiO_2 MnO CaO MgO	: 4.32 : 1.78 : 53.1 :0.12 :0.095 :12.45 :4.02	Na_2O K_2O P_2O_5 $S0_3$ C Cl LOI	:1.16 :0.97 :0.001 :0.31 :0.85 :0.075 :2.75	Reused in Sinter Plant with in plant premises/Sold to authorized recyclers
SMS Slag	SiO_2 Al_2O_3 Fe(T) TiO_2 MnO CaO MgO	: 13.42 : 1.78 : 26.7 :0.84 :0.022 :45.22 :10.80	Na_2O K_2O P_2O_5 $S0_3$ C Cl LOI	:1.58 :0.88 :0.20 :0.20 :0.07 : 0.27 :0.52	After recovery of metal in metal recovery plant, metallic part is used in SMS/sold to recycler. Non metallic portion is used externally/internally in: i) Sinter Making ii) Brick Making iii) Road Making iv) Utilized in low lying area/hardstanding
Mill Scale	SiO_2 Al_2O_3 Fe(T) TiO_2 MnO CaO MgO	: 0.09 : 0.32 : 65.4 :0.01 :0.012 :0.20 :0.99	Na_2O K_2O P_2O_5 $S0_3$ C Cl LOI	:1.33 :0.74 :0.001 :0.03 :0.13 : 0.05 :2.47	Reused in Sinter Plant with in plant permises
BF GCP Sludge	SiO_2 Al_2O_3 Fe(T) TiO_2 MnO CaO MgO	: 14.65 : 1.94 : 29.3 :0.15 :0.049 :3.44 :1.45	Na_2O K_2O P_2O_5 $S0_3$ C Cl LOI	:1.33 :0.87 :0.001 : 1.46 : 30.7 : 0.45 : 35.71	Reused in Sinter Plant with in plant premises/Sold to authorized recyclers
BF Slag (Granulated Slag + Air Cooled Slag)	SiO_2 Al_2O_3 Fe(T) TiO_2 MnO CaO MgO	: 32.99 : 15.58 : 1.10 :0.71 :0.065 :31.77 :9.14	Na_2O K_2O P_2O_5 $S0_3$ C Cl LOI	:1.55 :1.34 :0.001 : 1.61 : 0.24 : 0.14 : 0.61	• Sold to cement Plant. • Used in Construction

PART – G

S.N	Pollution abatement Measures taken in 2024-25	Impact of pollution control measure on conservation of natural resources and consequently on the cost of production
1	• Central Effluent Treatment Plant commissioned and operated. • Blast Furnace Slag granulation unit condensate water recovery and reuse. • Rainwater harvesting structures constructed for use of water in different applications. • Cycle of Concentration (CoC) maintained more than 5 at Power Systems.	Reduction of Specific Water consumption
2	• Installation of Air Pollution Control Equipment's • Increase of non-coal power generation from 40% to 83% • 44% power generation from waste heat recovery • Commissioning of 470 KW micro turbine • Improvement in BF fuel rate (560 kg/thm to 518 kg/thm) through increase in Pulverised Coal Injection (PCI) rate and agglomerate burden. • Improvement of DRI fuel rate from 1256 to 735 kg/tdri	• Reduction in specific PM emission and to be continued. • Reduction in CO2 emission
3	Green Belt Development - 51,873 nos. saplings were planted both inside and outside the plant during April 2024 to March 2025.	

Details of Plantation (nos.) done from April 2024 to March 2025

Month	Plantation in Numbers		Species
	Inside	Outside	
April 2024	87	4000	*Peltophorum, Terminalia cattapa, Pongamia, Kadamba, Pongamia, Neem, Mimousopselangi, Michelia Champak, Samnea samam, Cassia seamea, Jacaranda, Cassia fistula, Momousops elangi, Custard apple, Mango, Jackfruit, Guava, Sapota*
May 2024	0	20	
June 2024	3831	1520	
July 2024	11774	1470	
August 2024	9400	2600	
September 2024	6310	3040	
October 2024	942	2500	
November 2024	4050	0	
December 2024	0	250	
January 2025	24	0	
February 2025	0	0	
March 2025	55	0	
Total	**36473**	**15400**	

PART – H

Additional investment proposals for environmental protection including abatement of pollution:

- Upgradation of the existing pollution control equipment to minimize the levels of particulate matter (PM) emissions.
- Adaption of best available technology to achieve best in class performance.
- Strive for benchmark status in specific stack dust emissions.
- Improvement in water recycling facility for further reduction in specific fresh water consumption.
- New pollution control equipment with more stringent designed for less emission.
- Rain water harvesting.

The Environment (Protection) Rules, 1896

PART – I
(Miscellaneous)

Any other particulars in respect of environment protection and abatment of pollution:

- LD slag after metal recovery, is being used internally in the manufacturing process as well as externally in brick, road making & hardstand works. Slag Atomisation Plant is also in operation.
- Energy efficiency improvement in operations of TSM works by installing variable Frequency Drive and Back Pressure Turbo Generator.
- Installation of industrial vacuum cleaner (IVC) at Junction houses and material transfer point.
- Installation of DE system at junction house 35 & raw material coveying lines.
- COG injection in Blast Furnace & COG injection in DRI.Trial run conducted for Biochar injection in Blast furnaces.
- Reduction of Green House Gas emissions through several decarbonization initiatives.
- Tata Steel Limited, Meramandali is certified by Integared Management System (ISO 14001:2015, ISO 9001:2015 & ISO 45001:2018). IMS audit is being carried out to comply the requirement & management review meeting is being conducted as per ISO requirement to address the concerns of audit and adequate steps taken for continuous environmental improvement.
- Tata Steel Limited Meramandali, is one of the three Integrated Iron & Steel Companies of Tata Steel received ResponsibleSteel™ certification. ResponsibleSteel™ certification is a globally recognized standard aimed at promoting sustainability and responsibility in the steel industry. The audit process involves of various stakeholders, including industry players, civil society, and NGOs, in developing the standards. Specific criteria that companies must meet to be certified, focusing on environmental, social, and governance aspects.

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