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**TSM-CPP/SPCB/TS-03/2024-13/160**  
**September 27, 2024**

**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 2023-24 for M/s. Tata Steel Limited, TSM – CPP

**Reference:** 1. Consent Order No. 14211/IND-I-CON-6306 dated 04.09.2024  
2. Consent Order No.4602/IND-I-CON-6306 dated 30.03.2024

Dear Sir,

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 Tata Steel Limited, TSM-CPP At: Ganthigadia, PO: Nuahata, Via: Banarpal, Dist.: Angul, Odisha, for the financial year 2023-24.

This is for your kind information and necessary record please.

**Thanking you**  
**Yours faithfully,**  
**For Tata Steel Limited TSM CPP**

*Anoop Srivastava*

**Anoop Srivastava**  
**Chief Environment - TSM**

**Encl: As above**

**Copy to:**

1. The Regional Officer, Odisha State Pollution Control Board, Angul, Odisha.
2. Deputy Director General, MOEF&CC, Integrated Regional Office (EZ), A/3, Chandrashekarapur, Bhubaneswar-751023

*[Signature]*  
30.09.2024

**TATA STEEL LIMITED**

Ganthigadia Nuahata Banarpal Angul 759 128 Odisha India Tel 91 6762 352000

Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 6665 7371 Fax 91 22 66657724

Corporate Identification Number L27100MH1907PLC000260 Website www.tatasteel.com

[FORM-V]

(See rule 14 of The Environment Protection Act, 1986)

Environment Statement for the financial year ending 31<sup>st</sup> March 2024

**PART – A**

<b>General Information</b>		
	Name of the Company	<b>TSM-CPP (Formerly known as M/s. Angul Energy Limited)</b>
1.	Name & Address of the owner/occupier of the industry, operation or process	Sri Rajesh Kumar Agrawal, Chief Power Systems TSL-TSM CPP At: Ganthigadia PO: Nuahata Via: Banarpal Dist.: Angul Pin: 759128, Odisha
2.	Industry Category	-
	Primary (STC Code),	Coal Based Thermal Power Plant
	Secondary (STC Code)	Category -Red
3.	Production capacity-Units	Production Capacity: 465 MW (2x150 MW + 1x165 MW)
4.	Year of establishment	2010
5.	Date of last environment statement submitted	30 <sup>th</sup> September,2023 vide letter no.- AEL/SPCB/BE-03/2023-04/109

**PART – B**

<b>Water &amp; Raw material Consumption</b>		
<b>1: Total Water Consumption (m<sup>3</sup>/d)</b>		
<b>Water Consumption</b>	<b>During the previous Financial Year 2022-23</b>	<b>During the current Financial Year 2023-24</b>
<b>Industrial Process Consumption</b> (Inside Works as Makeup water)	484	523
<b>Industrial Cooling Consumption</b> (Inside Works for Cooling Tower)	11571	13291
<b>Domestic Consumption</b> (Inside Works as Drinking water)	90	90

<b>2: Water Consumption per unit of the product (m<sup>3</sup>/MWh)</b>		
<b>Name of the Products</b>	<b>Process Water Consumption per unit of product m<sup>3</sup>/MWh)</b>	
	<b>2022-23</b>	<b>2023-24</b>
Electricity	2.79	2.57

<b>3: Raw Material Consumption (Works):</b>			
<b>Name of Raw materials</b>	<b>Name of Products</b>	<b>Consumption of raw material per unit of product (MT/MW)</b>	
		<b>During the previous Financial Year (2022-23)</b>	<b>During the current Financial Year (2023-24)</b>
Coal	Electricity	0.875	0.862

**PART – C**

**Pollution discharged to Environment per unit of Output  
(Parameters as specified in the Consent issued)**

**(a) Water:**

<b>Pollutants</b>	<b>Quantity of pollutants discharged (mass/day)</b>		<b>Concentrations of pollutants discharged (mass/volume)</b>		<b>% of variation from prescribed standards</b>
	<b>(Tonnes/day)</b>		<b>(mg/l)</b>		<b>In % (referring CTO)</b>
	<b>2022-23</b>	<b>2023-24</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2023-24</b>
TSS	Zero discharge is being maintained. Effluents are being treated in ETP/STP and reused.				
COD					
Ammonia as N					
BOD					
Phenols					
Cyanide as CN <sup>-</sup>					

**(b) Air:**

Parameters	2022-23	2023-24	2022-23	2023-24	2022-23
	Tons/day		mg/Nm3		In % (referring CTO)
PM	0.42	0.63	25.3	26.6	(-) 46.80%
SO <sub>2</sub>	13.18	20.41	725.6	944.5	(+) 57.41%
NO <sub>2</sub>	1.35	1.95	57.8	94.8	(-) 78.93%

- As per MoEF&CC notification vide No. G.S.R.682 (E) dtd.05.09.23, SO<sub>2</sub> emission reduction timeline has been extended up to 31<sup>st</sup> December 2025. Lime injection project is under construction stage.

**1. Surface Water Quality**

Parameter	Unit	Kisinda Nalla		Lingra Nalla	
		U/S	D/S	U/S	D/S
pH Value	-	6.88-7.8	6.62-7.60	6.72-8.05	6.69-7.79
Colour	Hazen	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
Temperature	°C	25-28	25-30	25-29	25-28
Total Suspended Solids	mg/l	4-25.40	3.10-30.10	2.80-16	4.20-36
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	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)
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	11.76-88	23.52-76	15.68-47.52	20-47.52
Chlorides as Cl	mg/l	19.59-88.17	19.59-74.23	14.70-64.33	14.70-58.78
COD	mg/l	7.70-26.90	7.70-19.20	7.68-16	7.70-23.04
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	0.89-10.1	0.25-4.91	0.22-0.97	0.27-1.61
Free Ammonia	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
Chromium as Cr <sup>+6</sup>	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
Iron as Fe	mg/l	0.18-3.10	0.08-1.80	0.07-10.75	0.22-1.32
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	0.58-2.87	0.45-2.01	0.69-2.32	0.56-1.86
O&G	mg/l	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)
Phenolic Comp	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
Phosphate as P	mg/l	0.08-0.31	0.08-0.28	0.14-0.60	0.08-0.24
RFC	mg/l	0.1-5.37	0.1-8.98	0.1-2.68	0.1-13.96
Selenium (as Se)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
Sulphate mg/l	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
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	0.95-3.01	0.74-2.84	0.98-2.60	0.8-2.20
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; Zero liquid discharge is being maintained.

## 2. ETP Treated Water Quality

Parameter	UOM	ETP-1		
		Min	Max	Avg
pH	-	6.70	7.41	7.06
Total Suspended Solid	mg/l	BDL (DL:2.5)	74	18.61
Oil & Grease	mg/l	BDL (DL:5.0)	BDL (DL:5.0)	BDL (DL:5.0)
Chemical Oxygen Demand (COD)	mg/l	BDL (DL:4.0)	20	10.88
Biochemical Oxygen Demand (BOD) (27° C for 3 days)	mg/l	BDL (DL:2.0)	5.40	3.24
Iron as Fe	mg/l	BDL (DL:0.05)	2	0.62

### 3. Sewage Treatment Plant -Treated outlet quality

Parameter	UOM	AEL STP			Colony STP		
		Min	Max	Avg	Min	Max	Avg
pH	-	6.79	7.64	7.19	6.79	7.52	7.07
Total Suspended Solid	mg/l	BDL (DL:2.5)	74	21.2	5.4	56	22.83
Biochemical Oxygen Demand (BOD) (27° C for 3 days)	mg/l	4.3	28	12.55	BDL (DL:2.5)	28	13.56

### 4. Ambient Air Quality

Parameters	UoM	CAAQMS-2			CAAQMS-3			CAAQMS-4		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
PM <sub>10</sub>	µg/m <sup>3</sup>	72.80	261.00	144.84	45.40	291.24	126.98	32.70	253.62	139.09
PM <sub>2.5</sub>	µg/m <sup>3</sup>	28.50	95.65	54.70	19.95	147.71	58.34	15.92	113.19	53.34
SO <sub>2</sub>	µg/m <sup>3</sup>	15.85	24.91	20.33	2.05	27.91	7.19	5.52	7.96	6.49
NO <sub>x</sub>	µg/m <sup>3</sup>	8.90	9.80	9.51	9.80	33.53	17.91	12.01	16.54	14.00
CO	mg/m <sup>3</sup>	0.66	0.83	0.75	0.51	0.90	0.72	0.20	0.66	0.31

Parameters	UoM	CAAQMS-5			CAAQMS-6			CAAQMS-7		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
PM <sub>10</sub>	µg/m <sup>3</sup>	49.13	236.87	138.25	49.52	205.63	119.78	54.24	290.74	163.85
PM <sub>2.5</sub>	µg/m <sup>3</sup>	16.32	79.74	48.42	16.64	69.40	39.17	22.38	143.63	72.69
SO <sub>2</sub>	µg/m <sup>3</sup>	11.66	17.49	13.57	8.18	11.26	9.57	11.61	50.63	30.68
NO <sub>x</sub>	µg/m <sup>3</sup>	7.55	11.30	9.06	8.10	27.42	22.27	8.60	36.51	21.98
CO	mg/m <sup>3</sup>	0.50	0.96	0.61	0.26	1.08	0.76	0.66	1.26	0.85

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 are derived from 8 hourly average data.

**PART – D**

<b>Hazardous Wastes</b> <b>(As specified under The Hazardous and Other Wastes (Management &amp; Transboundary Movement) Rules, 2016)</b>		
<b>Hazardous waste</b>	<b>Total Quantity (MT)</b>	
	<b>During the previous Financial Year (2022-23)</b>	<b>During the current Financial Year (2023-24)</b>
<b>(a) From Process</b>		
Used Oil	20.7	12.27
Waste residue containing oil	0.012	0.077
Insulation Waste	19.03	36.44
Discarded Container Barrel/Liners contaminated with Hazardous waste chemicals	456 Nos.	603 Nos.
<b>(b) From Pollution Control Facilities: NIL</b>		

**PART – E**

**Solid Wastes**

**Total Quantity Generated**

<b>Name of the Waste</b>	<b>Total Quantity Generated (MT)</b>	
	<b>During the previous Financial Year (2022-23)</b>	<b>During the current Financial Year (2023-24)</b>
<b>(a) From Process</b>		
Bottom Ash	151886	100585
<b>(b) From Pollution Control Facilities</b>		
Fly Ash	422061	672865

**(c) (1). Quantity Recycled/Reutilized within the Unit**

<b>Name of the Waste</b>	<b>Total Quantity Recycled/Reutilized within the Unit (MT)</b>	
	<b>During the previous Financial Year (2022-23)</b>	<b>During the current Financial Year (2023-24)</b>
1. Ash (internal and external brick manufacturing unit)	91138	140241

**(c) (2). Quantity Sold**

<b>Name of the Waste</b>	<b>Total Quantity Sold (MT)</b>	
	<b>During the previous Financial Year (2022-23)</b>	<b>During the current Financial Year (2023-24)</b>
Fly Ash (Cement Manufacturing unit)	79628	191913

**(c) (3). Total Quantity Disposed/Stored**

<b>Name of the Waste</b>	<b>Total Quantity (MT)</b>	
	<b>2022-23</b>	<b>2023-24</b>
1. Ash (Used for quarry filling and low-lying area reclamation)	192784	52753
2. Ash (Used for road making)	207245	348687
3. Stored in interim ash pond	3152	0



## PART – F

Chemical Composition of majority of waste as produced in process of TSM-CPP operation is given below:

Name of the Wastes	Chemical Composition (%)				Disposal Method
Fly Ash	SiO <sub>2</sub>	55.30	Na <sub>2</sub> O	0.07	<ul style="list-style-type: none"> <li>• Supply to cement plant and to bricks manufacturing unit free of cost on door delivery model.</li> <li>• Supply to NH construction.</li> <li>• Reclamation of stone quarry.</li> </ul>
	Al <sub>2</sub> O <sub>3</sub>	28.93	K <sub>2</sub> O	0.28	
	Fe <sub>2</sub> O <sub>3</sub>	3.70	Cr <sub>2</sub> O <sub>3</sub>	0.02	
	TiO <sub>2</sub>	1.25	NiO	0.01	
	MnO <sub>2</sub>	0.05	CuO	0.01	
	CaO	0.02	ZnO	0.016	
	MgO	0.10	BaO	0.061	
	P <sub>2</sub> O <sub>5</sub>	0.04	SO <sub>3</sub>	0.10	
	Cl <sup>-</sup>	0.50	LoI	3.00	
	F	4.8			
Bottom Ash	SiO <sub>2</sub>	55.51	Na <sub>2</sub> O	0.07	<ul style="list-style-type: none"> <li>• Supply to cement plant.</li> <li>• Supply to NH construction.</li> <li>• Reclamation of stone quarry.</li> </ul>
	Al <sub>2</sub> O <sub>3</sub>	16.30	K <sub>2</sub> O	0.25	
	Fe <sub>2</sub> O <sub>3</sub>	11.84	Cr <sub>2</sub> O <sub>3</sub>	0.01	
	TiO <sub>2</sub>	0.80	NiO	0.01	
	MnO <sub>2</sub>	0.23	CuO	0.01	
	CaO	0.40	ZnO	0.01	
	MgO	1.37	BaO	0.01	
	P <sub>2</sub> O <sub>5</sub>	0.17	SO <sub>3</sub>	0.12	
	Cl <sup>-</sup>	6.05	LoI	1.55	
	F	1.76			

## PART – G

Sl.No	Pollution abatement measures taken in 2023-24.	Impact of pollution control measures on conservation of natural resources and cost of production.
1	LED Lights	2256 nos. LED lights installed to reduce carbon footprint.
3	Green Belt Development	Greenbelt has been developed in around 33% of plant area (including outside area).

4	Air Pollution Control Measures	High Frequency Transformer Rectifier (HFTR) and Micropulse installed to further reduce stack emissions
		Pneumatic conveying of ash from ESPs to silos to reduce fugitive emissions
		All conveyors and junction houses are fully covered.
		All internal roads made pucca and regular cleaning of roads with sweeping machine.
		Reduction of fugitive dust emission by reducing ash leakages. Optimize ash handling operation to reduce unnecessary conveying of air which increase the life span of pipeline.
6	Energy Conservation	Installation of 50 kWh on grid Solar Rooftop for harnessing of solar power to reduce aux power consumption and carbon footprint. 3653 KWH power was generated in FY'24.
7	Dust Suppression	Permanent water sprinkling arrangement on roads and ash silo has been done for dust suppression.

<b>Cost expenditure of Pollution Control for FY 24</b>	
<b>Description</b>	<b>Expenditure in crores during 2023-24 (in Rs. Crores)</b>
Air Pollution Control	10.25
Water Pollution Control	2.04
Solid Waste Management	41.62
Hazardous Waste Management	0.11
<b>Total</b>	<b>74.02</b>

## **PART – H**

### **Additional measures/investment proposals for environmental protection including abatement of pollution, and prevention of pollution.**

- Improvement in water recycling facility for reducing the specific water consumption.
- Installation of more Mercury analyzers in remaining stacks.
- Installation of roof top solar panel for harnessing 50 kWp solar power.
- Installation of De-SOx project to limit the SO<sub>2</sub> level <600 mg/Nm<sup>3</sup>.
- Installation of additional COG/Natural gas-based burner along with the existing coal fired burner to facilitate the simultaneous dual firing of by product COG along with coal to reduce PM emission, ash generation and other environmental parameters.
- Increase in utilization of ash percentage in brick and cement manufacturing.
- Circular economy has been adopted by reusing the by-products of steel plant such as char and DRI ESP dust as a fuel for power plant.

## **PART – I**

### **Any other undertaken project for improving the quality of environment:**

- Installed industrial vacuum cleaner (IVC) at Junction house and material transfer point of Raw material handling section.
- Installed GPS based IT system to track the movement of fly ash trucks on real time basis including its loading and unloading geo fenced.
- Transit pass has been implemented to avoid unauthorized disposal.
- 100% ash utilization is being ensured.
- Environment performance parameters such as particulate matter emissions, specific water consumption and effluent quality etc. are within the standards (Improvement in terms of emissions reduction after HFTR).
- Installed wheel washing station near ash silo to reduce the carryover of dust by wheel of vehicle.
- Maintaining Zero effluent discharge by reusing and recycling the treated wastewater.
- Lowest ever Specific Raw water consumption of 2.57 M<sup>3</sup>/MW achieved in FY'24 against the previous best 2.79 M<sup>3</sup>/MW in FY'23.
- Treated ETP/STP water is being used for ash conditioning.

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