o/c

TSL/MoEF&CC/BS-01/2025-03/560
May29, 2025

The Director(s)
Ministry of Environment, Forest & Climate Change,
Integrated Regional Office,
A/3, Chandrasekharpur,
Bhubaneswar-751023

Subject: Submission of half yearly EC compliance reports of 5.6 MTPA, 3.1 MTPA& 1.5 MTPA capacity integrated steel plant of M/s. Tata Steel Limited, Meramandali for the period from October' 2024 to March' 2025.

Reference: i. EC vide letter No. J-11011/829/2008-IA-II(I); dated: 20.07.2012 of 5.6 MTPA
ii. EC vide letter No. J-11011/405/2007-IA-II(I); dated: 22.09.2008 of 3.1 MTPA
iii. EC vide letter No. J-11011/8/2005-IA-II(I); dated: 29.06.2005 of 1.5 MTPA

Dear Sir,

With reference to the captioned subject and cited reference, we are herewith submitting six monthly compliance reports for the conditions stipulated in the Environmental Clearance of 5.6 MTPA, 3.1 MTPA& 1.5 MTPA Integrated Steel Plant of M/s. Tata Steel Limited, Meramandali for the period from October' 2024 to March' 2025 along with monitoring reports for your kind perusal.

The soft copies of the aforesaid compliance reports is also being sent through mail (roez.bsr-mef@nic.in) for your kind information and necessary record please. Also copy of 5.6 MTPA, 3.1 MTPA & 1.5 MTPA EC compliance is being uploaded on MoEF&CC web site on portal http:// environmental clearance.nic.in.

Hope, the above are in line with the statutory requirements.

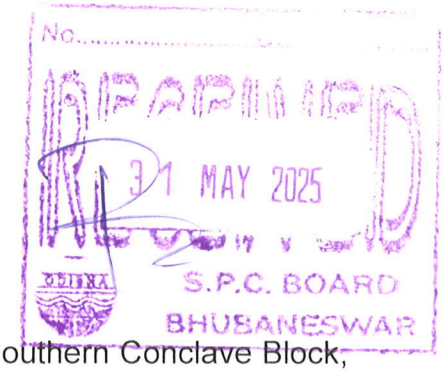
Thanking you

Yours faithfully,

For Tata Steel Limited

Anoop Srivastava

Anoop Srivastava
Chief Environment - TSM



Copy to:
1. The Zonal Officer, Central Pollution Control Board, Southern Conclave Block, 502, 5th& 6th Floors, 1582 Rajdanga Main Road, Kolkata – 700107.
2. The Member Secretary, SPCB, Parivesh Bhawan, A/118, NilakanthaNagar, Unit-VIII, Odisha, Bhubaneswar-751012
3. Regional Officer, State Pollution Control Board, Angul,Odisha.

SPECIFIC CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	Compliance to all the specific and general conditions stipulated for the existing plant by the Central / State Government shall be ensured and regular reports submitted to the Ministry's Regional Office at Bhubaneswar / SPCB.	• Compliance with stipulated specific & general conditions is ensured. Regular compliance reports, including monitoring data have been sent to MOEF&CC, CPCB and SPCB. • The latest half yearly compliance report was submitted vide letter no. TSL/MoEF&CC/TS-01/2024-04/506 dated 25.11.2024.
ii	The target dates / schedule given for compliance to the conditions of environmental clearance for 3.1 MTPA Steel Plant to the State Pollution Control Board and to the Ministry shall be adhered to and reports regularly submitted to MoEF Regional Office at Bhubaneswar.	• Conditions of EC for 3.1 MTPA steel Plant have been complied with. Conditions of EC for 3.1 MTPA steel Plant have been complied with. • Six monthly compliance reports including monitoring data for the conditions stipulated in EC for 3.1 MTPA capacity integrated steel plant have been sent to MOEF&CC, CPCB and SPCB. • The latest half yearly compliance report was submitted vide letter no. TSL/MoEF&CC/TS-01/2024-04/506 dated 25.11.2024.
iii	The 'Consent to Operate' shall be granted by SPCB only after satisfactory compliance of the conditions stipulated in the environmental clearance and Consent granted by the SPCB for the 3.1 MTPA steel plant. A joint visit shall be conducted by MoEF Regional Office at Bhubaneswar and SPCB in this regard. Periodic review of the project regarding compliance to the conditions stipulated shall be undertaken based on the compliance report submitted by the proponent within four months. The compliance status shall be monitored by the Regional Office of the Ministry at Bhubaneswar.	Renewal of Consent to Operate for 5.6 MTPA integrated steel plant was granted by OSPCB vide letter no 5823/IND–I–CON-5440, dated. 24.03.2025 and is valid up to 31.03.2027.
iv	Measures shall be undertaken to mitigate particulate matter levels in the ambient air and a time bound action plan shall be submitted. On-line ambient air quality	• Bag filters, ESP have been installed with operating unit to reduce particulate matter levels. Pollution control equipment is being operated & monitored continuously. Details

	monitoring and continuous stack monitoring facilities for all the stacks shall be provided and sufficient air pollution control devices viz. Electro Static Precipitator (ESP), Gas cleaning plant (GCP), Bag Filter (BF) etc. shall be provided to keep the emission levels below by installing energy efficient technology.	of the list of pollution control devices is enclosed as **Annexure I.** • Gas Cleaning scrubbers have been installed at Coke Oven, Blast Furnace and BOF. • Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed to monitor the ambient air quality in the different locations of Tata Steel Limited in consultation with SPCB, Odisha. • Implemented various improvement projects e.g., installation of new technology power supply controller at Sinter plant (HFTR- High frequency transformer rectifier) in process ESP & Micropulse in dedusting ESP of sinter plant to keep emission level below the norms.
v	The bag filter shall be installed at the coal crusher and the screening area. Pneumatic dust handling system shall be provided at ESP hoppers in the sinter plant. The existing bag filters shall be upgraded. Fixed type water sprinklers shall be installed in the internal roads and at the material handling area to control the fugitive emission. Dry fog system shall be installed in the coal handling area. Dry sweeping (vacuum process) shall be carried out prior to water sprinkling on roads.	• Bag filters and Dry Fog Dust Suppression System (DFDS) have been provided at the coal circuit. Dry fog dust suppression systems have been provided in the iron ore circuit at crushing and screening points of raw material handling areas. • Pneumatic dust handling system has been provided at ESP hoppers in the Sinter Plant-I. • Fixed type water sprinkler systems have been installed at various internal roads and at the material handling areas. • Mechanized Road sweepers have been deployed for dry sweeping of roads and shop floors. • Industrial vacuum cleaning systems have been provided & being used.
vi	The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November 2009 shall be followed.	National Ambient Air Quality Standards (NAAQS) are being followed. Online real-time data is being transmitted to OSPCB server.
vii	Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.	• Bag filter, ESP have been installed to reduce particulate matter levels. Details of the list of pollution control devices are enclosed as **Annexure I.** • Gas Cleaning scrubbers have been installed at Coke Ovens, Blast Furnaces and BOF.

		• Fugitive emission and stack emission monitoring are being carried out as per CPCB guidelines, and records are being maintained.
viii	Proper PPE shall be provided to all the workers including contract workers.	Necessary PPEs such as safety helmets, safety shoes, gloves, goggles, ear plugs and earmuffs etc. have been provided to all the workers working on the shop floors including contract workers.
ix	The natural drain / nallah present on the northern side of the project site shall not be disturbed. The main gate of the plant beyond the nallah shall be shifted and the area should be developed into garden for public use.	The natural nallah (Kisinda Nallah) present on the northern side of the plant has not been disturbed. A drop gate has been provided on the main road beyond Nallah to control traffic.
x	Water requirement for expansion from River Brahmani shall not exceed 3,400m^3/hr. All the effluent should be treated and used for ash handling, dust suppression and green belt development. No effluent shall be discharged and 'zero discharge' shall be adopted. Sanitary sewage should be treated in septic tank followed by soak pit for treatment of effluent run-off from the coal washery area, settling pond shall be de-silted regularly and additional settling tank shall be constructed.	• Freshwater consumption during the period Oct'24 to Mar'25 for the Steel plant is within the allocated quantity of 3400 m^3/hr. • All effluents are being treated through respective ETPs followed by Central Effluent Treatment Plant to recycle the treated effluent and achieve zero effluent discharge. • Treated effluent is being reused for dust suppression, ash handling, make up for DRI, Sinter and green area development. • The sanitary sewage is being treated in Sewage Treatment Plant and used for green belt development and low-end application in plant. • Settling tanks are being desilted regularly.
xi	Efforts shall be made to make use of rain water harvested. If needed, capacity of the reservoir should be enhanced to meet the maximum water requirement. Only balance water requirement shall be met from other sources.	Adequate number of rainwater harvesting ponds have been constructed to collect surface runoff water which is being used for plant applications.
xii	Regular monitoring of influent and effluent, surface, sub-surface and ground water (including chromite) should be ensured and treated wastewater should meet the norms prescribed by the State Pollution Control Board or described under the Environment	• Monitoring of influent, effluent, surface and groundwater quality has been carried out regularly. • Leachate study is carried out and submitted to OSPCB periodically.

	(Protection) Act whichever are more stringent. Leachate study for the effluent generated and analysis shall also be regularly carried out and report submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.	• The water quality monitoring reports for the period from Oct' 2024 to Mar' 2025 are enclosed as **Annexure II.**
xiii	All the blast furnace (BF) slag shall be provided to the cement manufacturers. Scrap shall be used in steel melting shop (SMS) and SMS slag and kiln accretions shall be properly utilized. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner. Fly ash shall be utilized for the cement manufacturing and filling of mined out area after carrying geo hydrological study to prevent ground water pollution.	• Blast furnace slag is being supplied to cement manufacturers based on long term MoU with the cement manufacturer. • The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metal from slag. Recovered metallics used in the steel making process as scrap. The non-magnetic slag being sized and used for various applications such as internally used in sinter plant, SMS, road making, hard stand and supplied to outside customer for cement making, low lying area filling/hard stand brick making & road construction. • Ash are being utilized in brick manufacturing and road construction, low lying area filling & abandoned quarries.
xiv	Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid / hazardous waste should be submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB.	• Solid waste handling, storage, utilization, and disposal are being done scientifically. The toxic metal content and compositional analysis of solid waste are carried out regularly. The analysis report of solid waste is enclosed as **Annexure III.** • Annual return (Form-IV) of hazardous waste is regularly submitted to the Statutory Authority. Latest return was submitted vide letter No. TSL/SPCB/TS07/2024-01/462 dated June 20, 2024.
xv	Vehicular pollution due to transportation of raw material and finished products shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.	• Vehicles carrying raw materials and process wastes are being covered with tarpaulin to avoid dust emission during transportation. • Arrangements have been made by installation of water sprinklers & mist cannons at raw material handling areas to control dust emissions during loading and unloading of raw materials at site.

		• Additionally, dry fog dust suppression systems have been installed in entire coal circuit and at the unloading points of raw material handling area to control fugitive dust. • Wheel washing systems have been installed. • Mechanized road sweepers are in operation for dry sweeping of internal roads and shop floors.
xvi	The raw materials should regularly (six monthly) be monitored for trace metals and management plan shall be submitted to SPCB and MOEF Regional Office at Bhubaneswar.	The analysis of trace metals in raw materials is being done by CSIR-IMMT, Bhubaneswar. Copy of the latest report is enclosed as **Annexure IV.**
xvii	All internal roads shall be black topped. The roads shall be regularly cleaned with mechanical sweepers. A 3-tier avenue plantation using native species shall be developed along the roads.	• Internal roads have been concreted/paved and the same are being cleaned regularly by using mechanical road sweepers. • Avenue plantation using native species has been developed along the roads wherever feasible.
xviii	An action plan for transfer from wet to dry quenching shall be submitted to the SPCB and MOEF Regional Office at Bhubaneswar within three months. The target date shall not be more than six years from the date of environmental clearance accorded for 3.1 MTPA Steel Plant i.e. 22.9.2008. Adequate space shall be provided for the retro fitting the dry coke quenching facility.	Coke dry quenching has been commissioned & being operated at Coke Ovens.
xix	Risk and tragedy Management Plan along with the mitigation measures shall be prepared and a copy submitted to the Ministry's Regional Office at Bhubaneswar, SPCB and CPCB within three months of issue of environment clearance letter.	Risk and tragedy Management plan (on-site emergency plan) has been approved by the Directorate of Factories and Boilers; Odisha vide letter no. IV(IH)(3-149/11/3143 dated 19.10.2022. The approval letter is attached as **Annexure V**.
xx	As proposed, green belt shall be developed in 33 % of plant area as per the CPCB guidelines in consultation with the DFO.	• Green belt development is under progress in and around the plant complex by planting indigenous species. 33% of the area (includes Plant, R&R and CSR) has been covered under green belt development. Rapid plantation using Miyawaki method

		has also been implemented along the boundary wall. • Plantation of saplings is being done regularly based on the availability of vacant areas.
xxi	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Plants should be implemented.	Tata Steel Limited has implemented CREP recommendations. The CREP compliance is attached herewith as **Annexure VI.**
xxii	All the commitments made to the public during the Public Hearing in Public Consultation meeting held on 28th October, 2010 should be satisfactorily implemented and a separate budget for implementing the same should be allocated and information submitted to the Ministry's Regional Office at Bhubaneswar.	Compliance with the commitments made to the public during Public Hearing are complied. Public hearing compliance report is attached as **Annexure VII**.
xxiii	At least 5 % of the total cost of the project should be earmarked towards the Enterprise Social Commitment (ESC) based on Public Hearing issues and item-wise details along with time bound action plan should be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program should be ensured accordingly in a time bound manner.	Various CSR activities have been undertaken since the inception of the plant by providing facilities of sanitation, drinking water, education, health care, road, communication etc. Further, CSR activities and its related expenditure has been substantially increased after acquisition of the industry by Tata Steel Limited. Detailed CSR expenditure for FY'25 is enclosed as **Annexure VIII**.
xxiv	The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, 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.	Necessary infrastructure and housing facilities were provided for workers during the construction phase of the plant within the site.
xxv	The company shall set up State-of-the-art-environment control/monitoring and research lab with R& D facilities for waste utilization studies. The laboratory staff shall be provided with adequate training for use and maintenance of the equipment's. An action plan in this regard shall be submitted to SPCB and MOEF Regional Office at Bhubaneswar within three months.	Monitoring of influent, effluent, surface and groundwater quality is being carried out regularly in NABL accredited laboratory. An environmental research group is also working for research activities in environmental technology.

(For the period from October' 2024 to March' 2025)

GENERAL CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	Relevant stipulations made by the State Pollution Control Board, Odisha and the State Government have been complied with.
ii	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	As per MoEF&CC notification as per the MoEF& CC Notification No. S.O.980(E) dated: 02.03.2021 "no increase in pollution load" (NIPL) was studied by an expert agency for the following and the same was verified by State Pollution Control Board. I. Enhancement of Hot Metal production from 3.919 MTPA to 5.0 MTPA vide OSPCB letter no. 246/IND-II-NOC-NIPL/24 dated 04.01.2022. II. Installation of one no. of LRF of 190 T/heat and expansion of carrying capacity of two nos. of existing ladle from 180 T/heat to 190 T/heat vide OSPCB letter no.886/IND-II-NOC-NIPL/27 dated 20.01.2022. III. Subsequently CTO was granted vide letter 5823/IND–I–CON-5440, dated. 24.03.2025 and is valid up to 31.03.2027.
iii	The gaseous emissions from various process units shall conform to the load/mass-based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location.	• Bag filters, ESPs have been installed within operating unit to reduce particulate matter levels. Details of the list of pollution control devices is enclosed as **Annexure I.** • Gas Cleaning scrubbers have been installed at Coke Ovens, Blast Furnace and BOF.
iv	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM_{10}, SO_2 and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at	Seven CAAQM stations have been established in consultation with the SPCB in Tata Steel Ltd. Meramandali complex. Half yearly monitoring reports are being submitted to the Regional Office of MoEF&CC, SPCB, and CPCB at regular intervals. Summary of AAQ monitoring report for the period from Oct'24 to Mar'25 is attached as **Annexure IX.**

	Bhubaneswar and the SPCB/CPCB once in six months.	The previous half yearly compliance report was submitted vide letter no. TSL/MoEF&CC/TS-01/2024-04/506 dated 25.11.2024.
v	Industrial waste water shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December 1993 or as amended form time to time. The treated waste water shall be utilized for plantation purpose.	The industrial as well as domestic wastewater is being treated and reused for various purposes like slag quenching, coke quenching, dust suppression and green belt development inside the plant premises. The monitoring reports of Industrial wastewater are being submitted to SPCB/CPCB/MOEF&CC at regular intervals.
vi	The overall noise levels in and around the plant area shall be kept well within the standards 85 dB(A) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (nighttime).	Acoustic hoods, silencers, enclosures etc. on all sources of noise generation have been provided. Work zone noise monitoring is being carried out and records are being maintained. The ambient and work zone noise level monitoring report for the period of Oct'24 to Mar'25 is enclosed as **Annexure X**.
vii	Occupational health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act. The workers including the contract workers shall be provided with proper personal protection equipment.	Occupational health surveillance of the workers is being done periodically and records maintained as per the Factories Act. Necessary PPEs are being provided to all employees, including the contractual workers.
viii	The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	Adequate number of rainwater harvesting ponds have been constructed to collect surface runoff water which is being used for plant applications.
ix	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	• Compliance with environmental protection measures as recommended in EIA / EMP report is ensured. • Various socio-economic development programs covering education, safe drinking water, sports, health care etc. are undertaken in nearby villages. • Various CSR activities have been undertaken since the inception of the plant by providing facilities of sanitation, drinking

		water, education, health care, road, communication etc. Further, CSR activities and its related expenditure has been substantially increased after acquisition of the industry by Tata Steel Limited. Detailed CSR expenditure for FY'25 is enclosed as **Annexure VIII**.
x	The requisite funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. An implementation schedule for implementing all the conditions stipulated herein shall be submitted to the Regional Office of the Ministry at Bhubaneswar. The funds so provided shall not be diverted for any other purpose.	• Adequate funds are being provided for pollution control and to meet recurring costs. • The funds earmarked for environmental pollution control measures are not diverted for any other purpose. • The company has invested adequate capital expenditure to improve the mix of clean power and also reduction of carbon emissions.
xi	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, If any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	Clearance letters were sent to all concerned and uploaded onto our Company web site, which can be viewed at http://www.tatasteel.com.
xii	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF at Bhubaneswar. The respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely PM_{10}, SO_2, NO_x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects, shall be monitored and displayed at a convenient location near the main gate of the Company in the public domain.	Compliance status is uploaded in the Company's web site at http://www.tatasteel.com. The compliance report including results of monitored data is periodically submitted to the Regional Office of MoEF&CC, CPCB and SPCB, Odisha. Parameters are being monitored in ambient air and stack emission are being displayed near the main gate of the Company.

xiii	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF&CC, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bhubaneswar / CPCB / SPCB shall monitor the stipulated conditions	• The half yearly compliance report is being submitted to the Regional Office of the MoEF&CC, CPCB and SPCB. • The previous half yearly compliance report was submitted vide our letter TSL/MoEF&CC/TS-01/2024-04/506 dated 25.11.2024
xiv	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEF at Bhubaneswar by e-mail.	• The Environmental Statement in Form-V is being submitted to SPCB/CPCB/MOEF&CC regularly. • The Environment Statement for FY 2023-24 was submitted vide letter no. TSL/SPCB/TS-03/2024-15/489, dated 13.09.2024.
xv	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office at Bhubaneswar.	• The advertisement was published in both Odia & English newspapers named "The Sambad" and "The New Indian Express" respectively on dated 24.07.2012. • The same has already been communicated to the Regional Office of MOEF&CC, Bhubaneswar vide our letter no. BSL/MoEF&CC/BS-01/2012-08 dated 24.07.2012.
xvi	Project authorities 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 and the date of commencing the land development work.	Project activities related to the 5.6 MTPA integrated steel plant have been completed. Consent to Operate has been obtained from OSPCB vide letter No. 5823/IND–I–CON-5440, dated. 24.03.2025 and is valid up to 31.03.2027.

SPECIFIC CONDITIONS:

SL	CONDITIONS	COMPLIANCE STATUS
i	Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan shall be submitted. Online ambient air quality monitoring and continuous stack monitoring facilities for all the stacks and sufficient air pollution control devices like ESP and Bag house etc. shall be provided to keep the emission levels below 100 mg/Nm^3. Bag filters should be provided to the induction furnace to control the particulate emission below 100 mg/Nm^3. Inter-locking system shall be provide to ESP's. Monitoring reports shall be submitted to the Ministry's Regional office at BBSR, CPCB, and OPCB on six monthly basis.	• Bag filters, ESP have been installed with operating unit to reduce particulate matter levels. Pollution control equipment is being operated & monitored continuously. Details of the list of pollution control devices is enclosed as **Annexure I.** • Gas Cleaning scrubbers have been installed at Coke Oven, Blast Furnace and BOF. • Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed to monitor the ambient air quality in the different locations of Tata Steel Limited in consultation with SPCB, Odisha. • Implemented various improvement projects e.g., installation of new technology power supply controller at Sinter plant (HFTR-High frequency transformer rectifier) in process ESP & Micropulse in dedusting ESP of sinter plant to keep emission level below the norms.
ii	Electrostatic precipitators (ESP's) to DRI plant, waste heat recovery boiler (WHRB) and fluidized bed boiler (FBB) and bag house to blast furnace (BF) shall be provided to control gaseous emission within 100 mg/Nm$^{3.}$ The gases from the DRI Kilns and BF after recovery of heat in WHRB shall be passed through ESP to control gaseous emissions. Smoke hood and fume extraction system with cyclone and bag filters should provided to IF, LRF and CCM to keep the dust in work zone environment within the permissible limit. Cyclone and bag filters shall be provided to SMS.	Following facilities have been installed to control dust emissions: **DRI & WHRB:** • The Plant has installed 10 nos. of DRI Kiln of 500 TPD each with WHRB system connected to ESPs at the hot end of the DRI Kiln and De-dusting system at the cold end of the DRI kiln. **BLAST FURNACE:** • Bag filter have been installed in Cast House and stock house. To keep the emission well within the norms. **IF, LRF & CCM:** • Smoke hood and fume extraction system of adequate capacity have been provided

		to IF, LRF & CCM to keep the dust in work zone environment within the permissible limit. **SMS II:** • Fume extraction system along with cyclonic system and bag filters have been installed to take care of the fugitive emissions in the Steel Making Shop.
iii	All the standards prescribed for the coke oven plants shall be followed as per the latest guidelines. Proper and full utilization of coke oven gases in power plant using waste heat recovery steam generators shall be ensured and no flue gases should discharged into the air.	• All efforts are being taken to comply with the prescribed standards and guidelines for the coke oven facility, for which bag filters are installed in coke oven-1 and coke oven-2 respectively. Also, wastewater treatment plant (BOD plant) has been installed at both coke oven plant. • The cleaned Coke Oven Gas (COG) is utilized in HSM, CO battery heating, Lime Plant, BF power plant and gas fired boiler for power generation. • Provisions have also been made for storage of COG in gas holder tank of capacity 50,000 m3.
iv	Dry coke quenching method shall be adopted in the proposed recovery type of the coke oven within 5 years of grant of environmental clearance.	Coke dry quenching has been commissioned & being operated at Coke Ovens.
v	Gaseous emission levels including secondary fugitive emissions from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed.	• Bag filters, ESP have been installed with operating unit to reduce particulate matter levels. Pollution control equipment is being operated & monitored continuously. Details of the list of pollution control devices is enclosed as **Annexure I.** • Gas Cleaning scrubbers have been installed at Coke Oven, Blast Furnace and BOF. • Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed to monitor the ambient air quality in the different locations of Tata Steel Limited in consultation with SPCB, Odisha.

		• Implemented various improvement projects e.g., installation of new technology power supply controller at Sinter plant (HFTR-High frequency transformer rectifier) in process ESP & Micropulse in dedusting ESP of sinter plant to keep emission level below the norms.
vi	Bag filters, dust suppression system and extraction system shall be provided to raw materials handling areas, crusher house, junction towers, feed points, etc. to control fugitive emissions. Water sprinkling shall be done at loading and unloading points.	• Bag filters and Dry Fog Dust Suppression System (DFDS) have been provided at the coal circuit. Dry fog dust suppression systems have been provided in the iron ore circuit at crushing and screening points of raw material handling areas. • Pneumatic dust handling system has been provided at ESP hoppers in the Sinter Plant-I. • Fixed type water sprinkler systems have been installed at various internal roads and at the material handling areas. • Mechanized Road sweepers have been deployed for dry sweeping of roads and shop floors. • Industrial vacuum cleaning systems have been provided & being used.
vii	Vehicular pollution due to transportation of raw material and finished products shall be controlled. Proper arrangements shall also be made to control dust emissions during loading and unloading of the raw material and finished product.	• Vehicles carrying raw materials are being covered with tarpaulin to proact during transportation. • Water sprinkling arrangement has been made by installation of rotary gun sprinklers at raw material handling areas to control dust emissions during loading and unloading of raw materials at site. • Additionally, dry fog dust suppression system having have been installed in entire coal circuit and at the unloading points of raw material handling area to control fugitive dust. • Wheel washing systems are in operation at DRI, RMHS, BFPP1, BFPP2 and WHRB. • Mechanized road sweepers are in operation for dry sweeping of internal roads and shop floors with dust suction facility.

viii	Total water requirement should not exceed 1, 29,600 m^3/day. Permission for drawl of 2,40,000 m^3/day is obtained from Department of water resources, Govt. of Orissa, vide letter dated 4th December, 2003. No ground water shall be used. Closed circuit circulating/ cooling water shall be provided to reduce the water consumption. The wastewater from the de-mineralized (DM) plant shall be neutralized in neutralization pit. The wastewater from BF-GCP and coal washery shall be treated in thickener and used in the pig casting machine. Acidic and alkaline effluent from DM water plant shall be neutralized and reused in the plant through ash pond. Blow down from boilers and cooling tower shall be reused in the plant itself. All the other effluent shall be treated in effluent treated plant (ETP) and all the treated wastewater from process or for dust suppression, green belt development and various other activities at the sites. No wastewater shall be discharged outside the premises and zero effluent discharge shall be ensured. Domestic effluent shall be treated in existing sewage treatment plant (ETP) and used for green belt development.	• Freshwater consumption during the period Oct'24 to Mar'25 for the Steel plant is well within the allocated quantity of 3400 m^3/hr. • All effluents are being treated through respective ETPs followed by Central Effluent Treatment Plant to recycle the treated effluent and achieve zero effluent discharge. • Treated effluent is being reused for dust suppression, ash handling, make up for DRI, Sinter and green area development. • Process effluent after treatment is being reused. • The sanitary sewage is being treated in 4 Nos. of Sewage Treatment Plant and used for green belt development and low-end application in plant.
ix	Phenolic effluent shall be treated in BOD plant and used for quenching of hot coke. Continuous monitoring of total organic compounds shall be done at the outlet of ETP (BOD plant)	• The Phenolic effluent is being treated in the BOD plant and treated effluent is being reused for quenching of hot Coke at Coke Oven-I. • Online analyzer has been installed to have a check on the treated water quality of the effluent generated from the BOD Plant.

x	DRI fines, coke breeze, sinter dust, GCP dust, SMS dust, Scale, Iron ore fines shall be used in sinter plant. The coal washery rejects and middling shall be used in AFBC based power plant and shall not be disposed off anywhere else. All the blast furnace slag shall be granulated and provided to cement manufactures for further utilization.	• DRI fines are being used in SMS and Sinter Dust, GCP dust, SMS dust, Scales, Iron Ore Fines are used in Sinter plant. • The entire quantity of blast furnace slag is dispatched to cement manufacturers based on long term MoU with the cement manufacturer. • SMS slag is being used in sinter plant after processing in metal recovery plant. • Balance slag is being used for the soling of roads.
xi	AFBC plant shall be installed before installation of sponge iron plant so that utilization of char in the AFBC boiler is ensured. All the char from DRI plant shall be utilized in AFBC boiler of power plant and no char shall be disposed off anywhere else. Unusable scrap, coal and iron ore fines will be used in SMS. All the other solid wastes including broken refractory mass and kiln accretions shall be properly disposed off in environment- friendly manner.	• AFBC plant is not in operation. • Char is being stored in demarcated places and utilized in CFBC boiler. • All unusable scrap, coal and iron ore fines are being utilized in SMS. • Refractory mass and kiln accretions are being properly disposed off.
xii	All the slag from SMS, EAF, LRF and IF shall be used for land filling and road making only after passing through Toxic Chemical Leachability Potential (TCLP) test. Otherwise, slag shall be disposed in secured landfill as per CPCB guidelines. Used oil shall be sold to authorized recyclers/ re-processors only.	• Blast furnace slag is being supplied to cement manufacturers based on long term MoU with the cement manufacturer. • The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metal from slag. Recovered metallics used in the steel making process as scrap. The non-magnetic slag being sized and used for various applications such as internally used in sinter plant, SMS, road making, hard stand and supplied to outside customer for cement making, low lying area filling/hard stand brick making & road construction. • Ash are being utilized in brick manufacturing and road construction, low lying area filling & abandoned quarries. • Used oil is being sold to authorized recyclers/re-processors.

xiii	Proper handling, storage, utilization and disposal of all the solid waste shall be ensured and regular report regarding toxic metal content in the waste material and its composition, end use of solid/hazardous waste shall be submitted to Ministry's Regional office at BBSR, CPCB and OPCB.	• Solid waste handling, storage, utilization and disposal are being done scientifically. The toxic metal content and compositional analysis of solid waste are being carried out regularly. The analysis report of solid waste is attached as **Annexure-III**. • Annual return (Form-IV) of hazardous waste is being regularly submitted to SPCB Odisha. Latest return was submitted vide letter No. TSL/SPCB/TS07/2024-01/462 dated June 20, 2024.
xiv	A time bound action plan shall be submitted to reduce solid waste its proper utilization and disposal.	• The solid wastes generated from various plant units are being efficiently recycled back within the plant processes. During FY'25 overall solid utilization was 100%. Necessary steps are being taken for maximum utilization of solid waste.
xv	Proper utilization of fly ash shall be ensured as per Fly Ash Notification 1999 as amendment in 2003.	• Ash are being utilized in various applications given below as per MoEF&CC/CPCB guidelines to achieve 100% ash utilization: ○ Supplied to nearby fly ash brick manufacturing units at free of cost on door delivery model. ○ Supplied to NHAI for road construction. ○ Balance ash if any is being utilized in reclamation of low-lying areas & abandoned stone quarries as per guidelines of CPCB/ OSPCB after grant of necessary consents.
xvi	As proposed, green belt shall be developed in 550 acres (33%) out of total 1, 664.5 acres in and around the plant as per the CPCB guidelines in consultation with DFO.	• Green belt development is under progress in and around the plant complex by planting indigenous species as per CPCB guidelines. 33% of area (This includes Plant, R&R and CSR) has been covered under green belt. Rapid afforestation using MiyaWaki method in consultation with IIT, Kharagpur has been initiated. • Plantation of saplings are done regularly based on the availability of vacant area. Proper maintenance of green coverage is being ensured throughout the year.

xvii	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the steel plants shall be implemented.	• Tata Steel Limited has implemented all CREP recommendations. CREP compliance is attached as **Annexure-VI.**

GENERAL CONDITIONS:

SL	CONDITIONS	COMPLIANCE STATUS
i	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	• All relevant stipulations made by SPCB and the State Government are being complied with.
ii	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	• As per MoEF&CC notification as per the MoEF& CC Notification No. S.O.980(E) dated: 02.03.2021"no increase in pollution load" (NIPL) was studied by expert agency for the followings and the same were verified by State Pollution Control Board. I. Enhancement of Hot Metal production from 3.919 MTPA to 5.0 MTPA vide OSPCB letter no. 246/IND-II-NOC-NIPL/24 dated 04.01.2022. II. Installation of one no. of LRF of 190 T/heat and expansion of carrying capacity of two nos. of existing ladle from 180 T/heat to 190 T/heat vide OSPCB letter no.886/IND-II-NOC-NIPL/27 dated 20.01.2022. III. Subsequently CTO was granted vide letter 5823/IND–I–CON-5440, dated. 24.03.2025 and is valid up to 31.03.2027.
iii	The gaseous emissions from various process units shall conform to the load/mass-based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The State Board may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time the emission level shall go beyond the prescribed standards. Interlocking facility shall be provided so that process can be automatically stopped in case emission level exceeds the limit.	• All the existing units have been provided with adequate air pollution control devices to keep the emission within the stipulated standards. • Results of gaseous emission levels from various stacks conform to the standards and a detailed monitoring report is enclosed as **Annexure-XI.**

iv	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM10, SO2 and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.	• Seven CAAQM stations have been established in consultation with the SPCB in Tata Steel Meramandali complex. Half yearly reports are being submitted to the Regional Office of MoEF&CC, SPCB and CPCB at regular intervals. Summary of AAQ monitoring report for the period from Oct'24 to Mar'25 is attached as **Annexure-IX.** • The last half yearly compliance report was submitted vide letter no. TSL/MoEF&CC/TS-01/2024-04/506 dated 25.11.2024.
v	In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Further, specific measures like water sprinkling around the coal stock piles and asphalting or concreting of the roads shall be done to control fugitive emission.	To have a control on fugitive emissions, following measures have taken: • Bag filters have been installed at various junction houses. • Continuous sprinkling of water is being done around the coal stockpiles. • Water sprinkling arrangement has been made by installation of rotary gun sprinklers at raw material handling areas to control dust emissions during loading and unloading of raw materials at site. • Construction of Paved Quality Concrete (PQC) roads are being made within the plant premises and is being cleaned and maintained through mechanized housekeeping systems. • Periodical water sprinkling on all the internal roads within the plant premises is being done as per the planned schedule. • Double lip seals with dual sealing system have been installed. • Installed dust collector system in conveyor line.
vi	Industrial waste water shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The	• The industrial as well as domestic wastewater is being treated and utilized for various purposes like slag quenching, coke quenching, dust suppression and green belt development inside the plant premises.

	treated waste water shall be utilized for plantation purpose.	• The monitoring reports of Industrial wastewater are being submitted to SPCB/CPCB/MOEF&CC at regular intervals.
vii	The overall noise levels in and around the plant area shall be kept well within the standards 85 dB(A) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (night time).	• Acoustic hoods, silencers, enclosures etc. on all sources of noise generation have been provided. Work zone noise monitoring is being carried out and record is being maintained. • A report of ambient noise levels recorded within the premises is enclosed as **Annexure-X**.
viii	Occupational health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act.	• Occupational health surveillance of the workers is being periodically done. PME once in a year, Food handler test: Once in a year. • Necessary PPEs have been provided to all the employees including the contractual workers.
ix	The company shall develop surface rain water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table.	• Earthen ponds and HDPE pond have been constructed to harvest rainwater. This water is reused in the process when required. • Surface runoff water collected from DRI & RMHS area are channelized through drains into a series of storage pond for harvesting..
x	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	• Compliance with all environmental protection measures as recommended in EIA / EMP report is ensured. • Various socio-economic development programs covering education, safe drinking water, sports and health care etc are undertaken in nearby villages. • A detailed breakup of CSR initiatives is enclosed as **Annexure- VIII.**
xi	The adequate funds shall be earmarked towards capital cost and recurring cost / annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.	• Adequate funds are being provided by the management for pollution control and to meet recurring costs. Environmental requirements are given top priority for fund allocation and approval of capital projects.

		• The funds earmarked for environment pollution control measures are not diverted for any other purpose. • The company has invested adequate capital expenditure to improve mix of clean power & also reduction of carbon emissions.
xii	The Regional Office of this Ministry at Bhubaneswar / CPCB/ OPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	• The half yearly compliance report is being submitted to the Regional Office of the MoEF&CC, CPCB and SPCB. • The last half yearly compliance report was submitted vide our letter no. TSL/MoEF&CC/TS-01/2024-04/506 dated 25.11.2024.
xiii	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office at Bhubaneswar.	• The advertisement was published in both Odia & English newspapers named "The Sambad" and "The New Indian Express" respectively. • The same has already been communicated to the Regional Office of MOEF&CC, Bhubaneswar vide letter no. BSL/ENV/10/08 dated 17.10.2008.
xiv	Project authorities 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 and the date of commencing the land development work.	• Project was completed and in operation. Consent to Operate has been obtained from OSPCB vide letter No 5823/IND–I–CON-5440, dated. 24.03.2025 and is valid up to 31.03.2027.

SPECIFIC CONDITIONS:

SL	CONDITIONS	COMPLIANCE STATUS
i	The gaseous emissions from various process units shall conform to the load/mass based standards notified by the Ministry on 19th May, 1993 and standards prescribed from time to time. The state board may specify more stringent standards for the parameters keeping in the view the nature of the industry and its size and location. At no time the emission level should go beyond the prescribed standards. In the event of failure of any pollution control system adopted by the unit, the respective unit should not be restarted until the control measures are rectified to achieve the desired efficiency.	• Bag filters, ESP have been installed with operating unit to reduce particulate matter levels. Pollution control equipment is being operated & monitored continuously. Details of the list of pollution control devices is enclosed as **Annexure I.** • Gas Cleaning scrubbers have been installed at Coke Oven, Blast Furnace and BOF. • Continuous Ambient Air Quality Monitoring Stations (CAAQMS) have been installed to monitor the ambient air quality in the different locations of Tata Steel Limited in consultation with SPCB, Odisha. • Implemented various improvement projects e.g., installation of new technology power supply controller at Sinter plant (HFTR-High frequency transformer rectifier) in process ESP & Micropulse in dedusting ESP of sinter plant to keep emission level below the norms.
ii	There shall be no discharge of process effluent. As reflected in the EIA/EMP report, the company shall undertake water conservation measures by recycling the water from the gas cleaning plant and cooling tower blow down. The plant design shall be base on 100% recirculation system to achieve zero discharge. The domestic waste water after treatment in STP shall be used for green belt development.	• Rate of water consumption during the period Oct'24 to Mar'25 for the Steel plant is within the allocated quantity. • All effluents are being treated through respective ETPs followed by Central Effluent Treatment Plant to recycle the treated effluent and achieve zero effluent discharge. • Treated effluent is being reused for dust suppression, ash handling, make up for DRI, Sinter and green area development. • Settling tanks are being desilted regularly. • The sanitary sewage is being treated in 4 Sewage Treatment Plants and used for green belt development and low-end application in plant.
iii	In plant control measures for checking fugitive emissions from spillage/raw materials handling shall be provided. Further specific measures like provisions of dust	• Adequate Bag filters, Dry Fog Dust Suppression Systems (DFDS) and Single Fluid Dedusting Systems (SFDS) have been provided at the coal circuit.

	extraction & dust suppression system for product & raw materials handling, conveyor transfer points, water sprinkling system at waste disposal area to control the fugitive emissions shall be provided. Data on fugitive emission shall be regularly monitored & records maintained.	• Dust suppression system have been provided in the iron ore circuit at crushing and screening points of raw material handling areas. • Pneumatic dust handling system has been provided at ESP hoppers in the Sinter Plant-I. • Chain conveyor dust handling system has been provided at ESP hoppers of sinter plants II and III. • Vehicles carrying raw materials are being covered with tarpaulin to proact during transportation. • Water sprinkling arrangement has been made by installation of rotary gun sprinklers at raw material handling areas to control dust emissions during loading and unloading of raw materials at site. • Additionally, 486 nos. of dry fog dust suppression system having have been installed in entire coal circuit and at the unloading points of raw material handling area to control fugitive dust. • Wheel washing systems are in operation at DRI, RMHS, BFPP1, BFPP2 and WHRB. • Mechanized road sweepers are in operation for dry sweeping of internal roads and shop floors with dust suction facility.

iv	The company shall use gas from the DRI for power generation & blast furnace gas for BF Stoves, sinter plant & furnace heating. The exhaust gas from the kiln shall be cleaned by dry gas cleaning system. The waste gas shall be passed through dust settling chamber to settle the coarse dust particulate & post combustion chamber to burn the CO in the flue gas. The boiler shall utilize the waste heat for steam generation. The particulate emissions shall be controlled by installation of ESP & the particulate emissions shall not exceed 100 mg/Nm3.	• The Plant has installed 10 nos. of DRI Kiln of 500 TPD each with WHRB system connected to ESPs at the hot end of the DRI Kiln and De-dusting system at the cold end of the DRI kiln. • The particulate emission from the Stack is well within the limit. The monitoring data are enclosed as **Annexure-XI**.
v	The company shall install centralized de-dusting system to control the primary emissions from the induction furnace top as canopy hood at the top of furnace to capture secondary emissions.	• The centralized de-dusting system has been established to control primary emissions from the induction furnace top as canopy hood to capture secondary emissions.
vi	The company shall take measures for installation of continuous ambient air quality monitoring stations and data sent electronically to SPCB/CPCB.	• Seven Nos. of CAAQM stations have been established in consultation with the SPCB in Tata Steel Meramandali complex. Half yearly reports are being submitted to the Regional Office of MoEF&CC, SPCB and CPCB at regular intervals. Summary of AAQ monitoring report for the period from Oct'24 to Mar'25 is enclosed as **Annexure-IX.** • The last half yearly compliance report was submitted vide letter no. TSL/MoEF&CC/TS-01/2024-04/506 dated 25.11.2024.
vii	SMS slag from induction furnace, EAF & LF shall be used for road making and railway blast. Coal washery middling and char from DRI shall be used for power generation. BF Slag should be granulated & sold to cement manufacturers. Scrap, coal & iron ore fines shall be reused. Fly ash shall be used for bricks manufacturing.	• Blast furnace slag is being supplied to cement manufacturers based on long term MoU with the cement manufacturer. • The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metal from slag. Recovered metallics used in the steel making process as scrap. The non-magnetic slag being sized and used for various applications such as internally used in sinter plant, SMS,

		road making, hard stand and supplied to outside customer for cement making, low lying area filling/hard stand brick making & road construction. ○ Ash are being utilized in brick manufacturing and road construction, low lying area filling & abandoned quarries.
viii	Resettlement & Rehabilitation plan for displacement of families shall be as per the land acquisition Act & state government guidelines.	• The Resettlement & Rehabilitation plan for displacement of families has already made as per the Land Acquisition Act & State Government guidelines.
ix	A green belt of adequate width density shall be developed in 195 acres of plant area. Selection of plant species as per the CPCB guidelines.	• Green belt development is under progress in and around the plant complex by planting indigenous species as per CPCB guidelines. Till Mar'25, 33% of area (This includes Plant, R&R and CSR) has been covered under green belt. Rapid afforestation using MiyaWaki method in consultation with IIT, Kharagpur has been initiated. • Plantation of saplings are done regularly based on the availability of vacant area.
x	The company shall undertake community welfare measures for the local villagers & earmark separate funds for construction of schools, hospitals, community hall for peripheral development of all the villagers located around the plant site.	• The following community welfare measures are being undertaken. a. Education: School Infrastructure, education project: QUEST and drinking water at schools b. Drinking Water in the village (Through pipeline, tube well and deep bore well). c. Health: Primary Health Service through mobile medical unit and control of Dengue & Malaria are being under taken. d. A detailed breakup of CSR initiatives is enclosed as **Annexure- VIII.**
xi	The company shall obtain forest clearance for diversion of 151.92 acres of village forest land under forest (conservation) act, 1980 before undertaking construction activity.	• Necessary forest clearances have already been obtained vide file no. 8-84/2005-FC dated 13.11.2006.

xii	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the factories act.	• Occupational health surveillance of the workers is being periodically done. PME once in a year, Food handler test : Once in a year. • Necessary PPEs are provided to all the employees including the contractual workers.
xiii	Recommendations made in the CREP shall be implemented	• Tata Steel Limited has implemented all CREP recommendations.
xiv	Company shall keep proper housekeeping within the plant premises.	• Various initiatives are being taken for proper housekeeping within the Plant premises. Mechanized Road Sweepers, truck mounted mix canon has been deployed to clean up roads periodically.
xv	The company shall undertake rainwater harvesting measures to harvest the rainwater for utilization in the lean season as well as to recharge the ground water table.	Adequate number of rainwater harvesting ponds have been constructed to collect surface runoff water which is being used for plant applications.

GENERAL CONDITION:

SL	CONDITIONS	COMPLIANCE STATUS
i	The project authorities must strictly adhere to the stipulations made by the Orissa State Pollution Control Board and the State Government.	All relevant stipulations made by SPCB and the State Government are being complied.
ii	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	• As per MoEF&CC notification as per the MoEF& CC Notification No. S.O.980(E) dated: 02.03.2021"no increase in pollution load" (NIPL) was studied by expert agency for the followings and the same were verified by State Pollution Control Board. I. Enhancement of Hot Metal production from 3.919 MTPA to 5.0 MTPA vide OSPCB letter no. 246/IND-II-NOC-NIPL/24 dated 04.01.2022. II. Installation of one no. of LRF of 190 T/heat and expansion of carrying capacity of two nos. of existing ladle from 180 T/heat to 190 T/heat vide OSPCB letter no.886/IND-II-NOC-NIPL/27 dated 20.01.2022.

		III. Subsequently CTO was granted vide letter 5823/IND–I–CON-5440, dated. 24.03.2025 and is valid up to 31.03.2027.
iii	At least four ambient air quality monitoring stations shall be established in the downward direction as well as where maximum ground level concentration of PM_{10}, SO_2 and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission shall be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the SPCB/CPCB once in six months.	• Seven nos. of CAAQM stations have been established in consultation with the SPCB in Tata Steel Meramandali integrated complex. Half yearly reports are being submitted to the Regional Office of MoEF&CC, SPCB and CPCB at regular intervals. Summary of AAQ monitoring report is attached as **Annexure-IX.** • The last half yearly compliance report was submitted vide letter no. TSL/MoEF&CC/TS-01/2024-04/506; dated 25.11.2024.
iv	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.	• The industrial as well as domestic wastewater is being treated and reused in various purposes like slag quenching, coke quenching, dust suppression and green belt development inside the plant premises. • The monitoring reports of Industrial wastewater are being submitted to SPCB/CPCB/MOEF&CC at regular intervals.
v	The overall noise levels in and around the plant area shall be kept well within the standards 85 dB(A) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels should conform to the standards prescribed under EPA Rules, 1989 viz. 75 dB (A) (daytime) and 70 dB (A) (nighttime).	• Acoustic hoods, silencers, enclosures etc. on all sources of noise generation have been provided. Work zone noise monitoring is being carried out and maintained record. • A report of ambient noise levels recorded within the premises is enclosed as **Annexure-X**.
vi	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programmes, educational programmes, drinking water supply and health care etc.	• Compliance to all environmental protection measures as recommended in EIA / EMP report is ensured. • Various socio-economic development programs covering education, safe drinking water, sports and health care etc. are undertaken in nearby villages. • A detailed breakup of CSR initiatives is enclosed as **Annexure- VIII.**

vii	The project authority will provide separate fund both recurring and non-recurring to implement the conditions stipulated by the MoEF as well as the State Govt. along with the implementation schedule for all the conditions stipulated therein. The funds so provided should not be diverted for any other purposes.	• Adequate funds are being provided by the management for pollution control and to meet recurring costs. Environmental requirements are given top priority for fund allocation and approval of capital projects. • The funds earmarked for environment pollution control measures are not diverted for any other purpose. • The company has invested adequate capital expenditure to improve mix of clean power & also reduction of carbon emissions.
viii	The Regional Office of the Ministry at Bhubaneswar / CPCB / SPCB will monitor the stipulated conditions. A six monthly compliance report and monitoring data along with statistical interpretation should be submitted to them regularly.	• Six monthly compliance report and monitoring data are being submitted regularly. Last report has been submitted vide letter No. TSL/MoEF&CC/TS-01/2024-04/506; dated 25.11.2024.
ix	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same should be forwarded to the Regional office at Bhubaneswar.	• Published in Times of India (English) dated 06.07.2005 and in Samaya (Oriya) dated 07.07.2005. • The same has already been communicated to the Regional Office of MOEF&CC, Bhubaneswar.
x	Project authorities 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 and the date of commencing the land development work.	• Project was completed and in operation. CTO was granted vide letter No 5823/IND–I–CON-5440, dated. 24.03.2025 and is valid up to 31.03.2027.

Annexure-I

DETAILS OF AIR POLLUTION CONTROL DEVICES

SL	Process	Bag filters (Nos)	ESP (Nos)	Other Pollution Control Devices
1.	RMHS & RMPP	03	-	Gun Sprinklers-128 nos. Auto DFS-24nos.
2.	Coke oven - I	04	-	Scrubber-01 nos.
3.	Coke oven - II	11	-	Scrubber-04 nos.
4.	Sinter Plant – I	01	03	-
5.	Sinter – II & III	09	04	-
6.	DRI	05	15	-
7.	Blast Furnace - I	03	-	Scrubber-01 nos.
8.	Blast Furnace - II	04	-	Scrubber-01 nos.
9.	Lime Plant	10	-	-
10.	SMS - II	07	-	-
11.	SMS - III	03	-	Scrubber-02 nos.
12.	Blast Furnace Power Plant - I	-	03	-
13.	Blast Furnace Power Plant - II	-	02	-
	Total	**60**	**27**	**Scrubber-9 Nos., Gun Sprinklers-128 Nos. Auto DFS-24 Nos.**

Annexure-II

Summary of Surface Water Quality Analysis

(Period: From October 2024 to March 2025)

S. N	Parameter	Unit	Kishinda Nala		Lingara Nala		Brahamani River	
			U/S	D/S	U/S	D/S	U/S	D/S
1	pH Value	-	7.24-8.35	7.72-8.35	7.75-8.61	7.64-8.56	7.08-8.27	7.24-8.14
2	Colour	Hazen	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)
3	Temperature	Deg C	25-25.2	25-25.2	25-25.2	25-25.2	25-25.2	25-25.2
4	Total Suspended Solids	mg/l	18-31.2	2.6-28.3	3.2-14	4.1-13.1	3-20.2	8-20.3
5	Arsenic as As	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
6	BOD, 3days at 27°C	mg/l	2.1-2.5	3.2-4.6	2.6-5.3	3.2-4.6	3.2-8.3	2.4-5.8
7	Boron as B	mg/l	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)
8	Cadmium as Cd	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
9	Calcium as Ca	mg/l	18.1-36	16.5-42	22.1-42.4	16.8-43	8-22	8-22
10	Chlorides as Cl	mg/l	8.6-45.26	9.7-45.26	11.1-116.9	13.2-116.9	4.8-21	11.31-19
11	COD	mg/l	7.9-8	12-19.6	3.4-7.6	7.8-9.8	3.2-8.3	9.8-14
12	Copper (as Cu)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
13	Cyanide as CN	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
14	Fluoride as F-	mg/l	0.82-4.2	1.2-6	0.13-1.2	0.17-2.6	0.16-4.5	0.11-2.9
15	Hexa Chromium as Cr +6	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)

16	Iron as Fe	mg/l	1.84-5.4	0.14-1.8	0.27-0.8	0.16-0.17	0.21-1.9	0.18-2.1
17	Lead (as Pb)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
18	Manganese (as Mn)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
19	Mercury (as Hg)	mg/l	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)	BDL(DL:0.0002)
20	Nickel (as Ni)	mg/l	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
21	O&G	mg/l	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)	BDL(DL:1.4)
22	Phenolic Comp	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
23	Phosphate as P	mg/l	0.32-0.34	0.26-0.28	0.16-0.21	0.19-0.23	0.12-0.28	0.24-0.32
24	RFC	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)
25	Selenium (as Se)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
26	TKN	mg/l	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)
27	Zinc (as Zn)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)

Note: BDL: Below Detectable Limit; DL: Detectable Limit, U/S: Upstream D/S: Downstream
Source: Monitoring/ Analysis report of S.K. Mitra Private Limited and Environment Laboratory of TSM.

Summary of Treated Domestic Effluent Analysis

(Period: From October 2024 to March 2025)

S.N.	Location	Parameters in Range		
		pH	Suspended Solid in mg/l	BOD (3 days at 27°C) in mg/l
1.	Colony STP	6.50-7.38	32-53	23-32
2.	AEL STP	6.51-7.71	31-42	24-44
3.	BF-1 STP	7.05-7.77	29-47	24-41

Summary of Effluent Treatment Plant Analysis

(Period: From October 2024 to March 2025)

S. No	Location	Parameters in Range					
		pH	Suspended Solid in mg/l	Chemical Oxygen Demand in mg/l	BOD (3days at 27°C) in mg/l	Oil & Grease	Iron as Fe
1.	ETP-1 (Outlet)	6.93-7.69	18-37	32-38	5.1-6.2	<4.0	0.27-0.62
2.	ETP-2 (Outlet)	6.56-7.52	22-35	26-34	4.5-5.4	<4.0	0.12-0.55
3.	ETP-3 (Outlet)	7.36-8.30	19-38	30-35	4.1-5.4	<4.0	0.35-0.46
4.	CRM (ETP Outlet)	6.76-7.38	44-87	110-180	16.3-26.2	<4.0	1.51-2.60
5.	BF-1 (Thickener Outlet)	6.91-7.36	66-89	34-45	4.7-7.3	<4.0	-
6.	BF-2 (Thickener Outlet)	6.78-7.18	39-82	40-47	4.9-7.7	<4.0	-
7.	BOF (Thickener Outlet)	8.13->10.0	58-71	37-45	5.4-8.2	<4.0	-

S. No	Location	Parameters in Range						
		pH	Suspended Solid in mg/l	Chemical Oxygen Demand in mg/l	BOD (3days at 27°C) in mg/l	Oil & Grease	TCN	Phenol
1.	Coke Oven-1 (BOD-1 Outlet)	6.85-6.99	30-41	130-230	19.6-27.5	<4.0	0.13-0.20	0.48-0.77
2.	Coke Oven-2 (BOD-2 Outlet)	6.65-6.88	33-48	110-180	15.8-23.9	<4.0	<0.1	0.57-0.69

Summary of ground water level monitoring report inside plant premises

(Period: From October 2024 to March 2025)

S.N.	Location with description	Sample Code	Depth of Monitoring Bore Well (m)	Longitude	Latitude	Ground Water Level (m)
1	Colony near STP	GW-1	50.29	20^0 47.956'	85^0 15.076'	2.52
2	RMHS Near Wagon Tippler	GW-2	91.44	20^0 49.045'	85^0 15.734'	2.64
3	Near Blast Furnace-2	GW-3	49.38	20^0 47.752'	85^0 15.993'	4.3
4	Near Railway bridge	GW-4	47.55	20^0 47.250'	85^0 15.613'	2.45

Ground Water Quality Analysis

S.N.	Parameter	Unit	GW-2	GW-3	GW-4	GW-6	Standard as per IS-10500-2012
1	p H	-	7.81	7.51	8.03	7.41	6.50-8.50
2	Colour	Hazen	Colourless	Colourless	Colourless	Colourless	15
3	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	-
4	T. Hardness (as CaCO3)	mg/l	312	436	188	348	300
5	Calcium as Ca	mg/l	21	18	29	53	75
6	Magnesium as Mg	mg/l	62	94	28	52	30
7	Iron as Fe	mg/l	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	0.3
8	Chloride as Cl	mg/l	19	15	189	42	250
9	Fluoride as F-	mg/l	2.2	2.2	4.5	1.6	1
10	Dissolved solids	mg/l	466	560	2039	445	500
11	Nitrate as NO3	mg/l	BDL(DL:0.2)	BDL(DL:0.2)	12	7.72	45
12	Chromium as Cr+6	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	0.050
13	Alkalinity as CaCO3	mg/l	400	508	732	344	200

Summary of ground water level monitoring report inside plant premises

Ground Water Level
Period: April 2025

S. No	Location	Sample Code	Longitude	Latitude	Water Level from GL (m) BGL
					April'25
1	Kharagprasad	GW-01	20^0 49.299'	85^0 18.923'	4.05
2	Charadagadia	GW-02	20^0 47.768'	85^0 17.083'	7.86
3	Sibpur	GW-03	20^0 46.941'	85^0 14.394'	7.29
4	Kochilamada	GW-04	20^0 47.541'	85^0 16.802'	5.95
5	Galapada	GW-05	20^0 48.142'	85^0 18.600'	6.23
6	Motonga	GW-06	20^0 48.143'	85^0 18.599'	5.72
7	Narendrapur	GW-08	20^0 49.483'	85^0 15.530'	5.20
8	Khaliberena	GW-09	20^0 46.946'	85^0 14.396'	4.78
9	Ganthigadia	GW-10	20^0 48.501'	85^0 15.118'	1.80

Ground Water Quality Analysis Report of surrounding villages

February 2025

S.N.	Parameters	unit	GW-01	GW-02	GW-03	GW-04	GW-05	GW-06	GW-07	GW-08	GW-9
1	**pH**	**-**	8.12	8.04	7.55	8.08	8.01	7.69	8.21	8.03	8.01
2	**Odour**	**-**	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	**Colour**	**mg/l**	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)	BDL(DL:2.0)
4	**Turbidity**	**N.T. U**	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)
5	**Total Dissolved Solids (as TDS)**	**mg/l**	848	841	888	860	876	946	792	780	758
6	**Aluminium as Al**	**mg/l**	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
7	**Anionic Surface-Active Agents as (MBAS)**	**mg/l**	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
8	**Boron as B**	**mg/l**	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)	BDL(DL:0.25)
9	**Calcium as Ca**	**mg/l**	114	108	114	130	100	130	123	106	139
10	**Chloride as Cl**	**mg/l**	57	37	24	93	143	56	89	143	96
11	**Copper as Cu**	**mg/l**	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
12	**Fluoride as F**	**mg/l**	1.7	1.9	2.6	3.1	3.8	4.2	1.3	1.4	1.9
13	**Residual Free Chlorine**	**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)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
14	**Iron as Fe**	**mg/l**	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)	BDL(DL:0.05)
15	**Magnesium as Mg**	**mg/l**	28	29	25	25	29	40	29	22	14
16	**Manganese as Mn**	**mg/l**	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
17	**Mineral Oil**	**mg/l**	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)	BDL(DL:0.5)
18	**Nitrate as NO3**	**mg/l**	BDL(DL:0.2)	2.4	3.2	17.4	7.3	5.6	33.2	19	27.6
19	**Phenolic Compounds as C6H5OH**	**mg/l**	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)
20	**Selenium as Se**	**mg/l**	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
21	**Sulphate as**	**mg/l**	87	133	89	121	143	112	158	143	126

	SO4										
22	**Total Alkalinity as CaCO3**	**mg/l**	435	431	420	416	451	500	467	420	482
23	**Total Hardness as CaCO3**	**mg/l**	402	392	388	428	370	492	430	356	406
24	**Zinc as Zn**	**mg/l**	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
25	**Cadmium as Cd**	**mg/l**	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
26	**Cyanide as CN**	**mg/l**	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
27	**Lead as Pb**	**mg/l**	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
28	**Mercury as Hg**	**mg/l**	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)	BDL (DL:0.0002)
29	**Nickel (as Ni)**	**mg/l**	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)	BDL(DL:0.01)
30	**Total Arsenic (as As)**	**mg/l**	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)
31	**E. coli**	**/100ml**	Not Detected	Not Detected	Not Detected	Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

---------- End of Report ----------

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

RIGHT TO INFORMATION

No – NITR/CH/2025/L/0477 - 28/05/25 FTS-250528 – 7227

BF SLAG QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel, Meramandali, Odisha**
2. Sampling Location : **BF SLAG**
3. Date of Sampling : 06th February, 2025
4. Date of Analysis : 10th February, 2025
5. Sample Collected By : TATA STEEL, MERAMANDALI

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
COMPOSITIONAL ANALYSIS REPORT				
1	SiO_2	Photometric/XRF	%	31.84±0.5
2	FeO	Photometric/XRF	%	0.84±0.1
3	Al_2O_3	Photometric/XRF	%	21.16±0.5
4	CaO	Photometric/XRF	%	33.26±0.5
5	MgO	Photometric/XRF	%	8.32±0.5
6	MnO	Photometric/XRF	%	0.017±0.01
7	Sulphur	Photometric/XRF	%	0.35±0.01
8	TiO_2	Photometric/XRF	%	0.824±0.01
9	K_2O	Photometric/XRF	%	0.786±0.01
10	Basicity	Photometric/XRF	-------	1.01

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Saumya S. Mohapatra
Reviewed BY

Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

RIGHT TO INFORMATION

BF SLAG QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel, Meramandali, Odisha**
2. Sampling Location : **BF SLAG**
3. Date of Sampling : 06th February, 2025
4. Date of Analysis : 10th February, 2025
5. Sample Collected By : TATA STEEL,MERAMANDALI

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
TRACE ANALYSIS REPORT				
1	Hg	US-EPA Method	mg/Kg	0.929
2	As	US-EPA Method	mg/Kg	389
3	Se	US-EPA Method	mg/Kg	6.82
4	Sb	US-EPA Method	mg/Kg	195
5	Ba	US-EPA Method	mg/Kg	175
6	Cd	US-EPA Method	mg/Kg	54.01
7	Cr	US-EPA Method	mg/Kg	39.46
8	Cr(VI)	US-EPA Method	mg/Kg	0.927
9	Pb	US-EPA Method	mg/Kg	1.02
10	Mn	US-EPA Method	mg/Kg	1.007
11	Ag	US-EPA Method	mg/Kg	3.08
12	Co	US-EPA Method	mg/Kg	184
13	Cu	US-EPA Method	mg/Kg	525
14	Mo	US-EPA Method	mg/Kg	BDL
15	Ni	US-EPA Method	mg/Kg	78.42
16	V	US-EPA Method	mg/Kg	BDL
17	Zn	US-EPA Method	mg/Kg	82

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Saumya S. Mohapatra
Reviewed BY
Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

GCP SLUDGE BF QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel,Meramandali, Odisha**
2. Sampling Location : **GCP SLUDGE BF**
3. Date of Sampling : 06th February, 2025
4. Date of Analysis : 11th February, 2025
5. Sample Collected By : TATA STEEL ,Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
COMPOSITIONAL ANALYSIS REPORT				
1	pH	----------	--------	7.44
2	MOISTURE	----------	%	35.9
3	Cr	Photometric/XRF	%	1.62±0.5
4	Fe	Photometric/XRF	%	29.04±0.5
5	Ni	Photometric/XRF	%	2.76±0.1
6	Mn	Photometric/XRF	%	1.39±0.01
7	F	Photometric/XRF	PPM	1.27±0.01

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Saumya S. Mohapatra
Reviewed BY

Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

GCP SLUDGE BF QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel, Meramandali, Odisha**
2. Sampling Location : **GCP SLUDGE BF**
3. Date of Sampling : 06th February, 2025
4. Date of Analysis : 11th February, 2025
5. Sample Collected By : TATA STEEL ,Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
TRACE ANALYSIS REPORT				
1	Hg	US-EPA Method	mg/Kg	0.542
2	As	US-EPA Method	mg/Kg	12.76
3	Se	US-EPA Method	mg/Kg	0.631
4	Sb	US-EPA Method	mg/Kg	1.190
5	Ba	US-EPA Method	mg/Kg	121.6
6	Cd	US-EPA Method	mg/Kg	6.1
7	Cr	US-EPA Method	mg/Kg	129.7
8	Cr(VI)	US-EPA Method	mg/Kg	0.875
9	Pb	US-EPA Method	mg/Kg	0.92
10	B	US-EPA Method	mg/Kg	312.9
11	Ag	US-EPA Method	mg/Kg	1.09
12	Co	US-EPA Method	mg/Kg	30.21
13	Cu	US-EPA Method	mg/Kg	53.8
14	Mo	US-EPA Method	mg/Kg	4.43
15	Ni	US-EPA Method	mg/Kg	351.49
16	V	US-EPA Method	mg/Kg	90.09
17	Zn	US-EPA Method	mg/Kg	86.013
18	F^-	US-EPA Method	mg/Kg	0.030

19	CN -	US-EPA Method	mg/Kg	0.032
20	Hydrazine	US-EPA Method	mg/Kg	0.0103

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Soumya S. Mohapatra
Reviewed by

Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

FLYASH (AEL) QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel, Meramandali, Odisha**
2. Sampling Location : **FLYASH (AEL)**
3. Date of Sampling : 6th F e b r u a r y , 2025
4. Date of Analysis : 13th February, 2025
5. Sample Collected By : TATA STEEL ,Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
COMPOSITIONAL ANALYSIS REPORT				
1	SiO_2	Photometric/XRF	%	57.69±0.5
2	Al_2O_3	Photometric/XRF	%	21.24±0.5
3	CaO	Photometric/XRF	%	3.63±0.5
4	MgO	Photometric/XRF	%	1.41±0.5
5	MnO	Photometric/XRF	%	0.02±0.01
6	Na2O	Photometric/XRF	%	0.41±0.01
7	TiO_2	Photometric/XRF	%	1.33±0.01
8	P2O5	Photometric/XRF	%	0.31±0.01
10	K2O	Photometric/XRF	%	0.56
11	LOI	----------	%	6.51

Tested BY
Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Soumya S. Mohapatra
Reviewed BY
Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

FLYASH (AEL) QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel, Meramandali, Odisha**
2. Sampling Location : **FLYASH (AEL)**
3. Date of Sampling : 1st March, 2024
4. Date of Analysis : 25th March, 2024
5. Sample Collected By : TATA STEEL ,Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
TRACE ANALYSIS REPORT				
1	Hg	US-EPA Method	mg/Kg	0.102
2	As	US-EPA Method	mg/Kg	22.854
3	Se	US-EPA Method	mg/Kg	3.68
4	Sb	US-EPA Method	mg/Kg	2.16
5	Ba	US-EPA Method	mg/Kg	186.42
6	Cd	US-EPA Method	mg/Kg	0.773
7	Cr	US-EPA Method	mg/Kg	76.65
8	Cr(VI)	US-EPA Method	mg/Kg	0.921
9	Pb	US-EPA Method	mg/Kg	58.03
10	Mn	US-EPA Method	mg/Kg	7.15
11	Ag	US-EPA Method	mg/Kg	1.66
12	Co	US-EPA Method	mg/Kg	11.72
13	Cu	US-EPA Method	mg/Kg	26.54
14	Mo	US-EPA Method	mg/Kg	4.61
15	Ni	US-EPA Method	mg/Kg	35.39
16	V	US-EPA Method	mg/Kg	171.15
17	Zn	US-EPA Method	mg/Kg	121.42

Tested BY
Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Soumya S. Mohapatra
Reviewed BY
Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

BED ASH (AEL) QUALITY ANALYSIS REPORT

1. **Name of the Industry** : **M/s. TATA Steel,Meramandali, Odisha**
2. Sampling Location : **BED ASH (AEL)**
3. Date of Sampling : 6th February, 2025
4. Date of Analysis : 15th February, 2025
5. Sample Collected By : TATA STEEL ,Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
COMPOSITIONAL ANALYSIS REPORT				
1	SiO_2	Photometric/XRF	%	63.01±0.5
2	Fe2O3	Photometric/XRF	%	2.42±0.1
3	Al_2O_3	Photometric/XRF	%	19.06±0.5
4	CaO	Photometric/XRF	%	2.31±0.5
5	MgO	Photometric/XRF	%	1.10±0.5
6	MnO	Photometric/XRF	%	0.141±0.01
7	Na2O	Photometric/XRF	%	0.281±0.01
8	TiO_2	Photometric/XRF	%	1.197±0.01
9	P2O5	Photometric/XRF	%	0.24±0.01
10	K2O	Photometric/XRF	%	0.75±0.01
10	LOI	----------	%	5.11±0.1

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Soumya S. Mohapatra

Reviewed BY

Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

BED ASH (165 MW PP) QUALITY ANALYSIS REPORT

1. **Name of the Industry** : **M/s. TATA Steel,Meramandali, Odisha**
2. Sampling Location : **BED ASH (AEL)**
3. Date of Sampling : 6th February, 2025
4. Date of Analysis : 16th February, 2025
5. Sample Collected By : TATA STEEL ,Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
	TRACE ANALYSIS REPORT			
1	Hg	US-EPA Method	mg/Kg	0.068
2	As	US-EPA Method	mg/Kg	21.61
3	Se	US-EPA Method	mg/Kg	2.63
4	Sb	US-EPA Method	mg/Kg	2.46
5	Ba	US-EPA Method	mg/Kg	151.43
6	Cd	US-EPA Method	mg/Kg	0.75
7	Cr	US-EPA Method	mg/Kg	72.41
8	Cr(VI)	US-EPA Method	mg/Kg	0.772
9	Pb	US-EPA Method	mg/Kg	55.61
10	Mn	US-EPA Method	mg/Kg	68.71
11	Ag	US-EPA Method	mg/Kg	1.653
12	Co	US-EPA Method	mg/Kg	11.64
13	Cu	US-EPA Method	mg/Kg	24.41
14	Mo	US-EPA Method	mg/Kg	4.23
15	Ni	US-EPA Method	mg/Kg	31.4
16	V	US-EPA Method	mg/Kg	155.47
17	Zn	US-EPA Method	mg/Kg	121.26

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Saumya S. Mohapatra
Reviewed BY
Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

SLUDGE WET SCRUBBER QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel, Meramandali, Odisha**
2. Sampling Location : **WET SCRUBBER SLUDGE**
3. Date of Sampling : 06th February, 2025
4. Date of Analysis : 17th February, 2025
5. Sample Collected By : TATA STEEL, Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
COMPOSITIONAL ANALYSIS REPORT				
1	pH	----------	---------	7.63
2	MOISTURE	----------	%	41
3	Fe	Photometric/XRF	%	21.07±0.5
4	Ni	Photometric/XRF	%	0.61±0.1
5	Mn	Photometric/XRF	%	0.24±0.01
6	F	Photometric/XRF	PPM	31±0.01

Tested BY
Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Saumya S. Mohapatra
Reviewed BY
Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

GCP SLUDGE QUALITY ANALYSIS REPORT

1. Name of the Industry : **M/s. TATA Steel, Meramandali, Odisha**
2. Sampling Location : **WET SCRUBBER SLUDGE**
3. Date of Sampling : 6th February, 2025
4. Date of Analysis : 17th February, 2025
5. Sample Collected By : TATA STEEL, Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
TRACE ANALYSIS REPORT				
1	Hg	US-EPA Method	mg/Kg	0.942
2	As	US-EPA Method	mg/Kg	21.51
3	Se	US-EPA Method	mg/Kg	0.681
4	Sb	US-EPA Method	mg/Kg	1.04
5	Ba	US-EPA Method	mg/Kg	122.81
6	Cd	US-EPA Method	mg/Kg	7.14
7	Pb	US-EPA Method	mg/Kg	1.017
8	B	US-EPA Method	mg/Kg	297.62
9	Ag	US-EPA Method	mg/Kg	2.041
10	Co	US-EPA Method	mg/Kg	31.20
11	Cu	US-EPA Method	mg/Kg	57.10
12	Mo	US-EPA Method	mg/Kg	6.86
13	Ni	US-EPA Method	mg/Kg	953.32
14	V	US-EPA Method	mg/Kg	101.02
15	Zn	US-EPA Method	mg/Kg	78.24
16	F^-	US-EPA Method	mg/Kg	BDL
17	CN^-	US-EPA Method	mg/Kg	BDL
18	Hydrazine	US-EPA Method	mg/Kg	BDL
19	Phenols	US-EPA Method	mg/Kg	BDL
20	Total N	US-EPA Method	mg/Kg	3.137
22	NH_4 - N	US-EPA Method	mg/Kg	0.269
23	NO_3 –N	US-EPA Method	mg/Kg	2.665
24	OIL	US-EPA Method	mg/Kg	53.65

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Soumya S. Mohapatra

Reviewed BY

Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

RIGHT TO INFORMATION

WHRB ASH QUALITY ANALYSIS REPORT

1. Name of the Industry : M/s. TATA Steel, Meramandali, Odisha
2. Sampling Location : WHRB ASH
3. Date of Sampling : 6th February, 2025
4. Date of Analysis : 20th may, 2025
5. Sample Collected By : TATA STEEL, Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
COMPOSITIONAL ANALYSIS REPORT				
1	SiO_2	Photometric/XRF	%	51.32±0.5
2	Al_2O_3	Photometric/XRF	%	15.14±0.5
3	CaO	Photometric/XRF	%	2.61±0.5
4	MgO	Photometric/XRF	%	1.49±0.5
5	MnO	Photometric/XRF	%	0.01±0.01
6	Na2O	Photometric/XRF	%	0.39±0.01
7	TiO_2	Photometric/XRF	%	1.31±0.01
8	P2O5	Photometric/XRF	%	0.29±0.01
10	K2O	Photometric/XRF	%	0.54
11	LOI	----------	%	8.0

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Soumya S. Mohapatra

Reviewed BY

Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

राष्ट्रीय प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF TECHNOLOGY
राउरकेला ROURKELA – 769008. ओडिशा ODISHA

WHRB ASH QUALITY ANALYSIS REPORT

1. Name of the Industry : M/s. TATA Steel, Meramandali, Odisha
2. Sampling Location : WHRB ASH
3. Date of Sampling : 6 th February, 2025
4. Date of Analysis : 20th May, 2025
5. Sample Collected By : TATA STEEL ,Meramandali

Sl. No.	Parameter	Testing Methods	Unit	Analysis Results
TRACE ANALYSIS REPORT				
1	Hg	US-EPA Method	mg/Kg	0.84
2	As	US-EPA Method	mg/Kg	12.854
3	Se	US-EPA Method	mg/Kg	3.66
4	Sb	US-EPA Method	mg/Kg	2.26
5	Ba	US-EPA Method	mg/Kg	184.41
6	Cd	US-EPA Method	mg/Kg	0.752
7	Cr	US-EPA Method	mg/Kg	68,05
8	Cr(VI)	US-EPA Method	mg/Kg	0.834
9	Pb	US-EPA Method	mg/Kg	58.36
10	Mn	US-EPA Method	mg/Kg	6.13
11	Ag	US-EPA Method	mg/Kg	1.31
12	Co	US-EPA Method	mg/Kg	08.72
13	Cu	US-EPA Method	mg/Kg	24.54
14	Mo	US-EPA Method	mg/Kg	4.63
15	Ni	US-EPA Method	mg/Kg	33.10
16	V	US-EPA Method	mg/Kg	152.13
17	Zn	US-EPA Method	mg/Kg	117.31

Tested BY

Er. Samarendu Mohanty
Tech. Asst. (SG-II)
Chemical Engg. NIT, Rourkela

Soumya S. Mohapatra
Reviewed BY
Prof. Soumya S. Mohapatra
Asst. Professor
Department of Chemical Engineering
Principal Investigator

सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत
CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
Council of Scientific & Industrial Research
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Name & Address of the Party:	Tata Steel Ltd. At-Narendrapur, P.O.-Kusupanga Via-Meramandali, Dist-Dhenkanal Pin-759121, Odisha.
Your Ref. No.:	Work Order No.: 3000156889/A06, Date: 26.10.2023
Sample Details:	1. Indian Coal (01 No.) 2. Imported Coal (01 No.) 3. Iron Ore (01 No.) 4. Lime stone (01 No.)
Date of Receiving:	12.02.2025
Date(s) of Conducting Test:	03.03.2025
Date of Completion of Test:	28.04.2025

Method Adopted:

1. Proximate analysis of coal samples by classical methods.
2. Major and trace element analysis of Coal, Iron ore, lime stone and Dolomite samples through wet chemical route by gravimetric, AAS and ICP-OES techniques.
3. Coal samples were leached with distilled water at a solid: liquid ratio of 1:20 for Fluoride analysis using ISE.

Detail Report: Following data tables are enclosed:

Table-1. Proximate analysis of coal samples.
Table-2. Chemical composition analysis of coal samples.
Table-3. Trace element analysis of coal samples.
Table-4. Chemical composition analysis of Iron ore, Lime stone and Dolomite samples.
Table-5. Trace element analysis of Iron ore, Lime stone and Dolomite samples.

16/05/2025
(J. Das)
Pr. Technical Officer
MMC Dept.

16/05/25
(Dr. B. Nayak)
Chief Scientist
PL & Head, MMCD

N.B.: The samples are not drawn by CSIR-IMMT. Liability, if any, for the institute arising in connection with the testing shall be subject to ceiling of amount received by the institute from the client. The report should not be interpreted in part.

सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत
CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
Council of Scientific & Industrial Research
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-1. Proximate analysis of coal samples.

Sample ID	Moisture (%)	Volatile Matter (%)	Ash (%)	Fixed Carbon (%)
Indian coal	1.97	25.46	45.16	27.41
Imported coal	2.30	24.06	11.48	62.16

Table-2. Chemical composition analysis of coal samples.

Sl. No.	Component	Concentration in Test Samples, %	
		Indian Coal	Imported Coal
1	SiO_2	24.56	5.24
2	Al_2O_3	14.49	3.46
3	Fe_2O_3	1.24	0.31
4	TiO_2	0.93	0.18
5	MnO	0.008	0.01
6	CaO	0.24	0.61
7	MgO	0.06	0.07
8	Na_2O	0.88	0.4
9	K_2O	0.63	0.14
10	P_2O_5	0.10	0.10
11	S/SO_3	0.48/1.2	0.72/1.8
12	LOI	54.24	87.16

16/05/25

(Dr. B. Nayak)
Chief Scientist
PL & Head, MMCD

16/05/2025

(J. Das)
Pr. Technical Officer
MMC Dept.

सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत
CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
Council of Scientific & Industrial Research
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-3. Trace element analysis of coal samples

Sl. No.	Parameters	Trace element concentrations in test samples		
		Unit	Indian coal	Imported coal
1	Pb	mg/kg	22.95	2.94
2	Cd	mg/kg	BDL	BDL
3	Cu	mg/kg	49.0	16.7
4	Ni	mg/kg	52.83	23.87
5	Co	mg/kg	12.23	5.06
6	Cr	mg/kg	57.52	21.49
7	Zn	mg/kg	83.6	19.07
8	Ag	mg/kg	1.23	0.48
9	Sb	mg/kg	6.45	1.67
10	Mo	mg/kg	2.92	0.31
11	V	mg/kg	56.55	19.82
12	Se	mg/kg	1.77	0.28
13	Ba	mg/kg	180.74	23.5
14	As	mg/kg	139.5	37.2
15	Hg	mg/kg	0.91	0.62
16	B	%	0.35	0.13
17	F^- in water leaching (1:20) solutions.	mg/L	0.38	0.13

16/05/25

(Dr. B. Nayak)
Chief Scientist
PL & Head, MMCD

16/05/2025

(J. Das)
Pr. Technical Officer
MMC Dept.

सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत
CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
Council of Scientific & Industrial Research
Bhubaneswar - 751013, Odisha, INDIA
Diamond Jubilee 1964-2024
आज़ादी का अमृत महोत्सव
सीएसआईआर CSIR भारत का नवाचार इंजन The Innovation Engine of India

TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-4. Chemical composition analysis of Iron ore and Lime stone samples.

Sl. No.	Component	Concentration in Test Samples, %	
		Iron Ore	Lime Stone
1	SiO_2	1.08	3.36
2	Al_2O_3	5.07	0.98
3	Fe_2O_3	86.14	0.14
4	TiO_2	0.43	0.03
5	MnO	0.016	0.023
6	CaO	0.09	43.35
7	MgO	0.01	9.54
8	Na_2O	1.26	0.86
9	K_2O	0.12	0.27
10	P_2O_5	0.25	0.012
11	S/SO_3	0.052/0.13	0.064/0.16
12	LOI	4.35	40.15

16/05/2025
(J. Das)
Pr. Technical Officer
MMC Dept.

16/05/25
(Dr. B. Nayak)
Chief Scientist
PL & Head, MMCD

सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत
CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
Council of Scientific & Industrial Research
Bhubaneswar - 751013, Odisha, INDIA

TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-5. Trace element analysis of Iron ore and Lime stone samples.

Sl. No.	Parameters	Trace element concentrations in test samples		
		Unit	Iron Ore	Lime Stone
1	Pb	mg/kg	0.26	0.05
2	Cd	mg/kg	BDL	BDL
3	Cu	mg/kg	13.54	4.97
4	Ni	mg/kg	1.15	6.62
5	Co	mg/kg	5.75	4.07
6	Cr	mg/kg	93.1	12.25
7	Zn	mg/kg	31.94	15.76
8	Ag	mg/kg	0.42	0.80
9	Sb	mg/kg	0.18	0.07
10	Mo	mg/kg	BDL	BDL
11	V	mg/kg	69.5	3.83
12	Se	mg/kg	BDL	0.12
13	Ba	mg/kg	70.26	16.48
14	As	mg/kg	0.76	23.6
15	Hg	mg/kg	0.53	0.38
16	B	%	0.67	0.51

16/05/2025

(J. Das)
Pr. Technical Officer
MMC Dept.

16/05/25

(Dr. B. Nayak)
Chief Scientist
PL & Head, MMCD

Government of Odisha
DIRECTORATE OF FACTORIES AND BOILERS, ODISHA.
KHARAVEL NAGAR, UNIT-3, BHUBANESWAR-751001, PH. NO. 2396070.
****

Letter No. IV (IH) (3)-149/11/ 3143 / Dated, the 19/10/2022

To

The Occupier,
M/s. TATA Steel Meramundali,
At- Narendrapur, PO- Kusupanga, Meramundali,
Dist. - Dhenkanal.

Sub: Acceptance of Updated On-Site Emergency Plan

Ref: Your letter Your L. No. TSM/DFBC/22/62 dated 12.08.2022.

Sir,

In inviting the reference on the subject cited above & in pursuance of provision under Rule 12 of the Odisha Factories (Control of Major Accident Hazard) Rules, 2001, the updated On-Site Emergency Plan of your MAH factory having identified **Hazardous substances LDO,HSD,LPG, LIQUID OXYGEN, HYDROGEN, NaOH, H_2SO_4 & TRANSFORMER OIL** bearing Sl.No. **176/22** is hereby provisionally accepted, subject to conditions as mentioned hereunder:-

01. Consequent upon any modification / alteration in future the On-Site Emergency plan shall be prepared and submitted for acceptance.
02. The **possible hazards** associated with the factory and ***'Dos' and 'Don'ts'*** shall be displayed in prominent pace adjacent to main gate & conspicuous places inside the factory with the measures to be taken in case of such incident.
03. Each key personnel of the command structure shall be provided with a **worksheet** containing their duties and responsibilities.
04. **Mock Drill** shall be scheduled through PAReSHRAM portal at least once in every six months involving zonal Asst. Director of Factories and Boilers / Divisional Dy. Directors of Factories and Boilers concerned & DCG members.
05. Annual report on hold of Mock Drills shall be submitted to the authorities of District Administration under intimation to Assistant Director of Factories & Boilers/Deputy Director of Factories & Boilers/Director of Factories & Boilers
06. Awareness programmes on hazard & mitigation shall be made amongst workers and people living in the vicinity

The accepted copy of the updated On-Site Plan is sent herewith, the receipt of which may please be acknowledged and photocopy of the same be provided to the following authorities.

- Addl. Secretary to Govt. of Odisha, Home (Special Section) Department, Bhubaneswar.
- Principal Secretary to Govt. of Odisha, Labour & ESI Department, Bhubaneswar
- Collector & District Magistrate, Dhenkanal.
- Superintendent of Police, Dhenkanal.

P.T.O.

- District Fire Office, Dhenkanal.
- Chief Medical Officer, Dhenkanal.
- Asst. Director of Factories & Boilers, Dhenkanal Zone.
- Dy. Director of Factories & Boilers, Angul Division.

Yours faithfully,

Director of Factories and Boilers, Odisha

Memo No. 3194 / Dated, the 19/10/2022

Copy to the Asst. Director of Factories and Boilers Dhenkanal Zone / Dy. Director of Factories and Boilers, Angul Division for information and necessary action.

Dy. Director of Factories and Boilers, Safety

(-) copy to renewal file

Annexure-VI

CORPORATE RESPONSIBILTY FOR ENVIRONMENT PROTECTION COMPLIANCE

1. Coke Oven Plants

Action Points (I) : To meet the parameters PLD (% leaking doors), PLL (% leaking lids), PLO (% leaking off take), of the notified standards under EPA within three years (by December 2005). Industry will submit time bound action plan and PERT Chart along with the Bank Guarantee for the implementation of the same.

Compliance: PLD (% leaking doors), PLL (% leaking lids), PLO (% leaking off take) are being monitored on monthly basis and reports are within the notified standards. Summary report for Oct 2024 to March 2025 is enclosed.

No. of Batteries	No. of Observations	Number of times standard exceeded	Parameters							
			PLD (%)		PLL (%)		PLO (%)		Charging Emission (Sec.)	
			Max	Min	Max	Min	Max	Min	Max	Min
Coke Oven-1 Battery# 1	6	Nil	9.71	2.05	1.43	0	0.36	0	25	10
Coke Oven-1 Battery# 2	6	Nil	0.82	0	3.28	0	0.55	0	71	20
Coke Oven-2 Battery# 1	6	Nil	0.82	0	1.64	0	0.55	0	55	16

Action Points (II) : To rebuild at least 40% of the coke oven batteries* in next 10 years (by December 2012).

Compliance: Not applicable as the batteries at coke ovens #1& 2 are new.

2. Steel Melting Shop

Action Points (I) : Fugitive emissions - To reduce 30% by March 2004 and 100% by March 2008 (including installation of secondary de-dusting facilities).

Compliance : Primary and secondary dust extraction system have been installed to reduce Fugitive dust emission from SMS. Summary report for the period from Oct 2024 to March 2025 is enclosed.

Sl. No.	Name of the Unit	PM_{10} Concentration in µg/m3	Standard in µg/m3
1.	SMS-II furnace area	527	4000
2.	SMS-III BOF furnace area	328	3000

3. **Blast Furnace**

Action Points (I) Direct inject of reducing agents -- by June 2013

Compliance : The blast furnace has been commissioned with direct injection of PCI up to 200 Kg/Ton of Hot metal. Summary report for the period from Oct 2024 to March 2025 is enclosed.

Sl. No.	Name of the Unit	PCI in Kg/Ton (Avg)
1.	BF-I	183
2.	BF-II	170

4. **Solid Waste/ Hazardous Waste Management**

Action Points (I) Utilization of Steel Melting Shop (SMS) / Blast Furnace (BF) Slag as per the following schedule: By 2004 - 70%, By 2006 - 80% and By 2007 - 100%.

Compliance :

- Most of the industrial solid wastes are reused internally in different units. Like Flue dust, GCP sludge, Bag filter dust of SMS & BF, coal dust, mill scale, lime fines are used in sinter making. DRI Char is being used along with coal in Power plant.
- The entire quantity of blast furnace slag is dispatched to cement manufacturers based on long term MoU with the cement manufacturer.
- Summary report of BF slag and LD slag generation and utilization report for the period from Oct 2024 to March 2025 is enclosed.
- Fly ash is also being supplied to
  - nearby fly ash brick manufacturing units, free of cost, for maximum utilization of ash.
  - Cement plants through bulker.
  - Construction of national highway (NH-55).
  - Balance if any is being utilized in reclamation of low lying areas & abandoned stone quarries as per guidelines of CPCB/ OSPCB after grant of necessary consents.
- The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metallic from the non-magnetic part and sized for various applications. Some of the key applications of LD slag product are as below:

  - recovered metallics used in steel making process as a scrap,
  - recovered fines used in sinter making process for replacement of lime,
  - non-mag utilization in cement manufacturing, road making, and hard sand applications.

  Solid waste utilization percentage is given below.

Sl. No.	Name of the Unit	Generation in MT	Utilization in MT
1.	BF Slag	891032	931699
2.	LD Slag	518017	928680

NB. 1160205MT of legacy LD Slag has been utilized during this period.

Fly ash : 100%
BF slag : 100%
SMS Slag: 100%

5. Hazardous Wastes

Action Points (I) : Charge of tar sludge / ETP sludge to Coke Oven by June 2003.

Compliance : The tar sludge/ETP sludge is being reused in coke oven along with coal for energy recovery.

Action Points (II): Inventorization of the Hazardous Waste as per Hazardous waste (M&H) Rules, 1989 as amended in 2000 and implementation of the Rules by Dec.2003. (tar sludge, acid sludge, waste lubricating oil and type fuel falls in the category of Hazardous Waste)

- **Compliance:** Inventorization of the Hazardous Waste has been done as per the Hazardous & Other Waste (Management and Transboundary Movement) Rules,2016. Accordingly, Hazardous Waste Authorisation has been taken from State Pollution Control Board Odisha, which is valid till 31.03.2027. Summary report of tar sludge / BOD plant sludge generation and utilization report for the period from Oct 2024 to March 2025 is enclosed.

Sl. No.	Name of the Unit	Tar sludge Generation in MT	Tar sludge Utilization in MT	BOD sludge Generation in MT	BOD sludge Utilization in MT
1.	Coke Oven-I & II	1145.4	1145.4	2247.3	2247.3

6. Water Conservation/ Water Pollution

Action Points (I) To reduce specific water consumption to 5 m3/t for long products and 8 m3/t for flat products by December 2005.

Compliance: The following initiative have been undertaken to reduce the specific water consumption.

Reduction of freshwater consumption in closed circuit by increasing the Cycle of Concentration (COC) up to 8. Reuse of treated wastewater back in the process

- **Industrial wastewater treatment**: Installed state- of-art technologies 3 nos. ETPs at CRM & Coke Ovens and 3 nos. of thickener at Blast Furnaces 1&2 and Steel Making Shops.
- **Surface runoff Treatment**: 02 nos. of common effluent treatment plants have been installed to treat surface runoff from DRI, Power Plant and RHMS. 27 Nos. of settling pits have been constructed to remove the suspended solids.
- **Domestic wastewater treatment**: Installed 5 nos. STPs with Fluidized aerobic bed (FAB). Reuse of treated water for cooling tower make up, coal washery make up, dust suppression, slag quenching, slurry making and gardening purposes. SOP has been framed and implemented for operation & maintenance of all ETPs and STPs.
- **Coke Ovens** are equipped with Coke Dry Quenching Unit. WHRB of capacity 94.5 TPH at Coke Oven – II & 64 TPH at Coke Oven - I have been commissioned.

A rainwater harvesting (RWH): High-Density Polyethylene ('HDPE') lined pond of capacity 50,000 m3 had been constructed for harvesting of rainwater and reuse in different applications.

The specific water consumption of the of last three years is given below :

FY 23 : 3.55 m3/tcs
FY 24 : 3.19 m3/tcs
FY 25 : 3.41 m3/tcs

Action Points (II): To operate the CO-BP effluent treatment plant efficiently to achieve the notified effluent discharge standards. - by July 2003.

Compliance : The Phenolic effluents of both the Coke Ovens are being treated in BOD plant. The treated effluent is within the stipulated and reused in Coke & slag quenching and dust suppression.

Action Points (III) : Installation of Continuous stacks monitoring system & its calibration in major stacks and setting up of the online ambient air quality monitoring stations by June 2005.

Compliance : 39 Nos. Continuous online stack monitoring system for PM (Continuous Emission Monitoring System - CEMS) and 20 Nos. Continuous online stack monitoring system for Gaseous parameter (SO2 & NOx) (Continuous Emission Monitoring System - CEMS). 7 Nos. Ambient Air Quality Monitoring system (CAAQMS) has also been commissioned. Real time data is being transferred to OSPCB server through RTDMS (IOT device). All analyzers are being calibrated half yearly.

Action Points (IV) : To operate the existing pollution control equipment efficiently and to keep proper record of run hours, failure time and efficiency with immediate effect. Compliance report in this regard is submitted to CPCB / SPCB every three months.

Compliance : All the pollution control facilities are being operated efficiently and record is being maintained. Details of energy meter readings of ESPs/Bag filters are being furnished to OSPCB on monthly basis.

7. Sponge Iron Plants

Action Points (I) : Inventorisation of sponge iron plants to be completed by SPCBs/CPCB by June 2003 and units will be asked to install proper air pollution control equipments by December 2003 to control primary and secondary emissions.

- **Compliance** : The following air Pollution Control Equipment's have been installed to control primary and secondary emissions.
  - 5 Nos. of ESPs have installed at product handling area.
  - 3 Nos. bag filters have installed at junction house and transfer building to control fugitive dust emission.
  - 2 Nos. Wheel Washing System also is in operation.
  - 10 Nos. Pug mill have installed at Cold ESP and Char Silos.
  - Seal plates installed across all conveyors to prevent material fall at ground.
  - Belt sway switches are installed to prevent the one-sided movement of conveyors and to stop the conveyor movement immediately in case of material spillage.
  - Suitably designed nozzles installed at unloading point to prevent dust fall.
  - Increased the frequency of road sweeping machine operation and strict monitoring.

Compliance to the commitment made during Public Hearing on 28.10.2010 at 11.00 am for proposed expansion of steel plant from 3.1 to 5.6 MTPA

1. **Points raised: Measures taken for air pollution and fugitive dust control**

Commitment made: For air pollution control ESP, bag filters, dry fog collection systems and fugitive dust water sprinklers, mobile tankers are provided. The air pollution control equipments are operative. There is improvement in the DRI areas with regard to dust/fugitive emissions.

Compliance:

- 5 Nos. of ESPs have installed at product handling area, 6 Nos. bag filters have installed at junction house and transfer building to control fugitive dust emission.1 Nos. Wheel Washing System also is in operation.10 Nos. Pug mill have installed at WHRB ash unloading point. 5Nos. of pug mill have been installed at Cold ESP and Char Silos. Pneumatic conveying of raw material / ash to reduce fugitive emission from solid/ dust handling.
- Encapsulation of conveying system & Installation of Telescopic chute to minimize dust emission during unloading of bottom ash.
- Provisions of high efficiency dust collection systems like Electrostatic precipitators 27 nos.), Bag filters (60 nos.), Scrubbers (9 nos.) etc.
- Installation of dust suppression system (DFS- 242 nozzles) at coal circuit, iron ore circuit and at Ash transfer points. Installation of gun sprinklers (128 Nos) at raw material yard to reduce fugitive emission.
- Technological improvements like Power supply of ESP (Electrostatic precipitator) using High frequency transformer rectifier/Micro pulse-based rectifier.
- Spillage reduction in conveyor junction houses by installation of new technology sealing using double skirt rubber and commissioning of new dust extraction system in junction houses helped to reduce fugitive emission significantly.
- Periodic maintenance of pollution control equipment & proper housekeeping is being done by a professional expert team.
- Six Nos. of Wheel Washing System have been installed at BFPP-I , BFPP-II, RMHS DRI & WHRB to minimize carry over of mud/dust with the trucks and consequently deposition on road which in turn contribute to ambient air quality. Washing water is being recycled.
- 6 no. of Portable PM_{10} Analyzer have been installed at strategic location of different unit to assess Ground Level Concentration of PM_{10}.
- IVC (Industrial Vacuum Cleaner) has been installed for mechanical cleaning of dust to reduce fugitive emission during manual cleaning.
- Dust suppression system has been installed in Wagon Tippler to reduce fugitive dust emission during Wagon tippling.

- Successful commissioning of Portable dedusting machine at the conveyor junction house to reduce fugitive emission.
- Mechanized Road sweepers have been deployed for dry sweeping of internal roads and shop floors with dust suction facility.
- Vehicles carrying raw materials are being covered with tarpaulin to proact during transportation.

2. Points raised: Wastewater Management

Commitment made: The discharge of wastewater/runoff from plant to outside is minimized and facilities are on progress for retaining all treated wastewater and will be reused in captive plantation and dust suppression etc.

Compliance:

- All effluents are being treated in primary treatment plants (19 nos.) in steel plant attached with respective units and Effluent Treatment Plants (3 nos.) centrally.
- Treated water is being reused for dust suppression, ash handling, make up for DRI & cooling towers and for green area development.
- Process effluent after treatment is being reused. During the period Oct'24 to Mar'25, 3066555 m3 of water has been recycled. However, we are further improving the efficiency of the water management system by technology intervention to increase the utilization.
- The sanitary sewage is being treated in 4 Sewage Treatment Plants and used for green belt development and low-end application in plant.
- Rainwater harvesting of capacity 50000m3 with HDPE liner has been constructed to store & reuse rainwater.
- Zero Effluent Discharge (ZED) project will be commissioned in May 2025.

3. Solid waste management

Commitment made:

The bottom ash slurry is being disposed off in two ash ponds already constructed. The entire ash will be made semi solid and will be dispatched in HDSD system to MCL mine cavities already acquired. At present ash is dumped inside vacant areas of the plant premises.

Compliance :

- Solid waste handling, storage, utilization and disposal are being done scientifically. The toxic metal content and compositional analysis of solid waste are being carried out regularly.
- The SMS slag (LD slag) is processed in material recovery plant (MRP) for separation of metallic from the non-magnetic part and sized for various applications. Some of the key applications of LD slag product are:

- recovered metallics used in steel making process as a scrap,
- recovered fines used in sinter making process for replacement of lime,
- non-mag utilization in cement manufacturing, road making, and hard sand applications.

- Fly ash is also being supplied to nearby fly ash brick manufacturing units, free of cost, for maximum utilization of ash.
- Fly ash is also being supplied to cement plants through rake & bulker.
- Fly ash is being used in the construction of national highway (NH-55).
- Ash is also being used in filling low lying areas & abandoned stone quarries as per guidelines of CPCB/ OSPCB after grant of necessary consents. Presently no fly ash is being disposed in MCL mine void.

4. Obtaining clearance for coal washery

Commitment made:
The industry has already obtained consent to operate of the Board as stated.

- Compliance : Consent to Operate has been obtained from SPCB vide letter no 5823/IND–I–CON-5440, dated. 23.03.2023 and is valid up to 31.03.2027.

5. Employment opportunities

Commitment made:

By setting up the unit lots of scopes will be generated with regard to employment for the local people, indirect employment, generation of small business etc. This will enhance the quality of life in the project affected areas.

Compliance:
All displaced persons (40 Nos) from the village Raghunathpur have been given permanent employment. Moreover, for project affected persons (indirectly about 22332 Nos) of all adjacent seven villages have been given indirect job.

6. Plantation in 33% of the acquired area

They have not planted in 33% of the total area. However, plantation work is in progress in outside areas as well as inside plant premises.

Compliance:

Green belt development is under progress in and around the plant complex by planting indigenous species as per CPCB guidelines. Till Mar'25, 33% of area (This includes Plant,

R&R and CSR) has been covered under green belt. Rapid afforestation using MiyaWaki method in consultation with IIT, Kharagpur has been initiated. Plantation of saplings are done regularly based on the availability of vacant area.

7. Regarding water supply to the affected villages

They have supplied drinking water facilities to villages (Sarpa, Raghunathpur, Narendrapur, and Sibpur in Dhenkanal and Ghantigadia & Talbahal in Angul districts). Besides, they have supplied 8" pipes of 1500 meters under RWSS water supply scheme for supply of water to village Kusupanga, Mangalpur, Manpur and Kurunti.
However, supplying of drinking water to the periphery villages will be expedited and in summer water shall be provided in tankers wherever it is required.

Compliance:

Various CSR activities have been undertaken since the inception of the plant by providing facilities of sanitation, drinking water, education, health care, road, communication etc. Further, CSR activities and its related expenditure has been substantially increased after acquisition of the industry by Tata Steel Limited.

Drinking water through pipeline is being supplied to seven nearby adjacent villages such as Ghantigadhia, Raghunathpur, Sarpa, Nuagaon, Shibapur, Talbahal and Narendrapur.

8. Regarding water supply to the affected villages Other peripheral development

Lots of activities so far done by the project proponent in all the affected villages like water supply, electrification etc. This expansion will definitely help in performing these activities in future. The unit assured villagers to do medical camp and eradication of blindness campaign for peripheral and affected villages.

The industry will take up following peripheral development and will also do as per directions of the concerned authorities:

1. Extensive plantation in outside areas will be carried out.
2. Scope for local persons for ITI training.
3. Health check up camps will be made in the affected areas.
4. Supply of drinking water to the project affected persons.
5. Village roads will be constructed as per the requirements.
6. Aid will be provided to village schools.

Compliance :

- Extensive plantation in outside areas have been carried out in nearby villages.
- We are organizing the health check up camps in the adjacent villages on regular basis.
- Drinking water through pipeline is being supplied to seven nearby adjacent villages such as Ghantigadhia, Raghunathpur, Sarpa, Nuagaon, Shibapur, Talbahal and Narendrapur.
- Village roads are being constructed and repaired on need basis.

- Schools in adjacent villages are being supported by us in terms of infrastructure like school buildings, boundary walls, drinking water, study material and remunerations to teachers.

9. Change of place of public consultation

The venue, time and date were decided by the district administration.

Annexure-VIII

CSR EXPENDITURE AND ACTIVITY HIGHLIGHTS (Around Tata Steel Limited, Meramandali) For Period April 2024 to March 2025		
PROGRAM HEAD	**Expenditure in Lakhs**	**MAJOR INTERVENTIONS/REMARKS**
HEALTH	153.85	Public Health Unit; Rishta; Project Drishti, Poshan NCD, VBD
Agriculture	126.51	Agricultural activity
Environment	3.03	Plantation
Empowerment	106.37	GCE
DRINKING WATER	166.38	Installation of tubewells; supply of drinking water
Ethnicity	14.1	Cultural events
Rural Infra	211.61	Community infrastructure projects
EDUCATION	828.61	School infrastructure; Education sugnature project, Green school project, Pre-matric coaching
SPORTS	24.26	
Skill Development	7.2	
Miscellaneous	253.85	wages and overheads
TOTAL	**1895.77**	**Rs.18.96 Crores**

SUMMARY OF AMBIENT AIR QUALITY MONITORING RESULTS
MONTHLY AVERAGE VALUES
(Period from Oct'24 to Mar'25)

Month	Locations of Monitoring	Monthly Average				
		Unit in µg/m³				Unit in mg/m³
	Pollutant	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
	Standard	100	60	80	80	2
Oct'24	CAAQMS-1	114.61	22.72	17.51	24.66	0.66
	CAAQMS-2	115.40	41.32	23.12	11.31	0.73
	CAAQMS-3	105.46	41.13	6.39	18.68	0.73
	CAAQMS-4	67.27	33.57	8.10	25.70	0.25
	CAAQMS-5	92.97	34.30	8.32	20.93	0.96
	CAAQMS-6	106.28	34.50	14.75	18.66	1.00
	CAAQMS-7	93.08	47.40	50.66	15.56	0.74
Nov'24	CAAQMS-1	144.77	41.61	15.28	24.96	0.70
	CAAQMS-2	156.66	70.39	23.08	9.64	0.71
	CAAQMS-3	135.67	66.24	6.46	18.04	0.79
	CAAQMS-4	112.29	72.17	5.49	29.34	0.21
	CAAQMS-5	147.43	64.61	8.11	19.90	0.52
	CAAQMS-6	176.41	55.09	14.58	18.78	0.84
	CAAQMS-7	216.03	95.54	24.14	18.51	1.10
Dec'24	CAAQMS-1	160.55	46.26	15.12	24.75	0.73
	CAAQMS-2	216.80	94.39	23.07	9.61	0.92
	CAAQMS-3	163.75	76.05	5.65	19.37	1.27
	CAAQMS-4	126.61	84.24	5.24	33.54	0.61
	CAAQMS-5	148.71	66.81	9.14	26.89	0.53
	CAAQMS-6	149.22	53.69	14.59	24.62	0.52
	CAAQMS-7	186.13	91.94	10.11	20.38	1.15
Jan'25	CAAQMS-1	184.69	52.22	18.52	17.25	0.41
	CAAQMS-2	243.09	113.05	23.08	5.47	0.72
	CAAQMS-3	191.31	96.96	5.42	17.68	1.14
	CAAQMS-4	113.65	71.37	5.95	31.58	0.47
	CAAQMS-5	150.84	57.52	14.81	10.84	0.62
	CAAQMS-6	174.27	46.45	15.26	18.28	0.43
	CAAQMS-7	246.13	126.09	10.54	14.65	1.15

Feb'25	CAAQMS-1	180.65	55.67	22.90	9.66	0.82
	CAAQMS-2	220.07	101.39	23.17	9.72	0.43
	CAAQMS-3	193.09	77.35	9.42	16.17	1.20
	CAAQMS-4	132.01	59.52	5.69	24.10	0.69
	CAAQMS-5	140.82	52.02	18.79	13.42	0.90
	CAAQMS-6	154.70	44.05	15.46	15.72	0.49
	CAAQMS-7	206.59	102.64	8.13	18.40	0.99
March'25	CAAQMS-1	167.68	67.94	39.69	6.23	0.71
	CAAQMS-2	233.49	94.75	23.15	4.61	0.76
	CAAQMS-3	175.38	67.95	10.18	19.16	1.26
	CAAQMS-4	117.66	51.89	6.70	23.87	0.59
	CAAQMS-5	150.84	57.52	14.81	10.84	0.62
	CAAQMS-6	134.42	63.79	19.60	14.77	0.52
	CAAQMS-7	187.26	86.61	14.75	18.41	0.97

All values are in $\mu g/m^3$ except CO values are in mg/m^3. All Values are derived from 24 hourly average data except CO values which are derived from 8 hourly average data.

CAAQMS 1: Near Township; CAAQMS 2: Near Utility Department; 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, UM: Under Maintenance.

Annexure-X

Environment Management Laboratory

TATA Steel Meramandali, Odisha

(Period from Oct'24 to Mar'25)

Ref. No. EMD/LAB/2024/0002

			OCT-24	NOV-24	DEC-24	JAN-25	FEB-25	MAR-25
S. N	Name of the unit	Location	Leq					
1	BF-2 Cast House	Near Motor I D Fan 1	83.5	82.3	80.8	80.3	82.2	Leq
		Near Motor I D Fan-2	84.9	84.9	83.9	84.7	84.9	81.2
		Near Motor I D Fan-3	85.4	85.8	85.6	85.0	85.2	85.1
		Near Cooling tower area	81.3	80.5	80.8	80.0	80	83.3
		Near Fire Pump House Building area	93.7	92.7	89.5	90.2	91.7	80.6
		PCI-1	83.9	82.5	82.8	82.3	82.5	92.5
		PCI-2	84.1	84	84.9	84.1	84.8	83.3
		CA Fan-1,2,3	86.3	86.8	92.3	89.3	87.4	84.4
		Control room	58	59.3	59.7	59.4	59.5	86.8
		Near B F-2 Furnace area	82.8	82.1	78.5	81.5	80.3	59.3
2	BF-2 Stock House	Near ID Fan 1	84.5	84.8	84.4	83.7	83.8	81.4
		Near ID Fan 2	85	85.1	84.7	84.4	84.3	84.8
		Control room office	59.2	59.1	59.2	58.9	61.4	83.9
3	Lime Plant	Near De dusting-2 ID Fan	81.9	83.7	83.2	80.1	80.4	60.2
		Near Blower room area	92.7	91.5	91.3	87.2	87.9	83.7
		Near Cooling tower area	80.2	81.7	81.2	80.7	79.4	89.4
		Near De dusting-3 ID Fan	SD	SD	81.2	81	77.9	82.1
		Near De dusting-4 ID Fan	SD	84.5	83.3	SD	78.9	81.7
		Near Pump House area	85.4	85.4	85	85.8	85.4	SD
		Screening House 01	88.1	SD	84.2	86.5	SD	85.8
		Screening House 02	SD	84.6	SD	88.2	SD	SD
		Screening House 03	90.1	85	87.4	89.3	86.6	85.3
		Screening House 04	87.9	86.4	87.3	88.8	87.2	84.8
		Screening House 05	87.2	85.3	86.1	SD	85.5	SD
		Delivery Building	82.7	84.2	85.1	84.6	84.6	84.5
		Near Outside Office area	77.7	80.1	76.7	78.5	68.9	90.2
		Gas Boosting Station	91	90.8	86	86.8	89.1	80.2
		Inside office building	61.3	59.8	60.9	59.7	63.7	89.6
4	BF PP-1 Boiler-01	Near ID Fan -1	84.7	SD	SD	SD	82.5	60.1
		Near ID Fan -2	SD	82.2	82.4	82.7	82.6	80.8
		Near FD Fan	90	86.5	86.9	86.3	88.9	81.7
		Near Boiler-1 Area	83.6	81.4	83.9	81.7	83.1	89.2
5	BF PP-1 Boiler-02	Near ID Fan -1	SD	SD	84.1	SD	SD	81.9
		Near ID Fan-2	SD	SD	85.8	SD	SD	83.8
		Near FD Fan	SD	SD	90.9	SD	SD	84.3
		Near Boiler-2 Area	SD	SD	84.6	SD	SD	91.5
6	BF PP-1 Boiler-03	Near ID Fan -1	84.2	83.6	SD	83.6	83.8	85.2
		Near ID Fan -2	85.4	85.1	SD	86.2	84.6	SD
		Near FD Fan	93.9	93.5	SD	93.5	91.3	SD
		Near Blower (9 m)	90.3	88.8	88.4	86.4	87.9	SD
		TG Floor (8.5 m)	89.6	86.5	87.2	87.8	86.4	87.8
		Near Boiler-3 Area	88.7	84.4	SD	83.5	85.7	88.4
		Near Control room office	62.4	63.4	66.8	66.5	63.2	SD
7	Gas fired boiler 60 TPH Area	Near ID Fan -1	SD	81.5	80.2	80.4	80.6	62.6
		Near ID Fan -2	SD	81.3	80.5	80.1	81.4	80.2
		Near FD Fan 1	SD	82	82.2	81.7	82.7	81
		Near FD Fan 2	SD	82.1	82.8	83.6	82.5	81.5
		60 TPH Blower feed water pump	SD	84.6	83.9	84.2	84.7	81.1

Environment Management Laboratory

TATA Steel Meramandali, Odisha

(Period from Oct'24 to Mar'25)

		Near Boiler area	SD	80.3	81.7	82.1	81.5	84.8
8	Gas fired boiler 125 TPH Area	Near ID Fan -1	82.5	81	82.4	SD	82.5	82.6
		Near ID Fan -2	83.8	84.2	83.9	SD	84.8	83.5
		Near FD Fan -1	87.1	86.2	87.6	SD	87.6	84.4
		Near FD Fan -2	87.5	87.1	88.1	SD	87.5	87.3
		Near Boiler area	82	81.7	82	SD	81.6	87.8
		125 TPH Blower feed Water pump	85.1	85	85.2	SD	85.3	82.1
9	Gas fired boiler 250 TPH Area	Near ID Fan -1 area	80.2	81.4	80.1	82.6	80.5	86.3
		Near ID Fan -2 area	82	81.6	81.1	81.7	80.6	81.6
		Near FD Fan -1 area	84.7	82.5	84.6	84.6	84.8	82.5
		Near FD Fan -2 area	85.7	82.6	84.5	84.9	85	84.8
		Near Boiler area	81.7	80.3	82.7	83.3	83.7	84.9
		250 TPH Blower feed water pump	85.9	86.3	86.2	85.8	86.2	82.4
		Office and Control Room	60.5	60.2	60.2	61.2	61.1	87.5
10	DRI	KILN NO-1						61.6
		Near Cooling tower area	80.5	78.6	79.2	80.2	SD	
		Near De-dusting 01 ID Fan	86.5	85.9	86.2	86.3	84.9	78.8
		Near 1& 2 control room office	60	60.8	60	59.2	58.7	86.2
		Near Cooler area	80.3	80	80.1	80.5	SD	59.4
		Near Lobe Compressor room	83.9	84	85.7	85.5	SD	79.9
		KILN NO-2						84.2
		Near Cooling tower area	SD	SD	81.1	81.2	80.6	
		Near Cooler area	SD	SD	80.2	80	80.1	78.4
		Near Lobe Compressor room	SD	SD	83.6	85.4	84.5	79.5
		KILN NO-3						84.9
		Near Cooling tower area	SD	SD	SD	SD	80	
		Near De-dusting 02 ID Fan	SD	SD	85.8	85.3	85.6	78.6
		Near 3& 4control room office	58.5	61.6	59.3	61.5	59.3	85.2
		Near Cooler area	SD	SD	SD	SD	80.4	58.4
		Near Lobe Compressor room	SD	SD	SD	SD	85	80.2
		KILN NO-4						81.9
		Near Cooling tower area	SD	SD	80	80	80.2	
		Near Cooler area	SD	SD	80.4	79.9	80.5	79.2
		Near Lobe Compressor room	SD	SD	84.9	84.8	84.9	78.5
		KILN NO-5						80.9
		Near Cooling tower area	81.5	81.1	78.5	SD	SD	
		Near De-dusting 03 ID Fan	87.1	86.4	86.8	86.1	86.3	SD
		Near 5& 6 control room office	59.3	59.3	60.5	60.3	58.5	85.2
		Near Cooler area	80.4	80.5	80.2	SD	SD	58.6
		Near Lobe Compressor room	87.5	83.1	84.5	SD	SD	SD
		KILN NO-6						SD
		Near Cooling tower area	81.1	81.7	78.2	79.5	80.4	
		Near Cooler area	81	79.4	80	80.2	79.5	78.5
		Near Lobe Compressor room	89.2	84.4	85	85.8	83.7	79.9
		KILN NO-7						83.5
		Near Cooling tower area	80.9	SD	80.1	80.5	82.3	
		Near De-dusting 04 ID Fan	86.8	SD	86.5	86.8	87.7	80.6
		Near 7& 8 control room office	60.3	63.2	60.2	60.2	60.2	86.3
		Near Cooler area	80.7	SD	80.1	81	79.3	59.1
		Near Lobe Compressor room	86	SD	83.8	86.3	82.8	78.3
		KILN NO-8						85.5
		Near Cooling tower area	SD	SD	SD	80.1	80.6	
		Near Cooler area	SD	SD	SD	80.4	80.8	78.5

Annexure-X

Environment Management Laboratory

TATA Steel Meramandali, Odisha

(Period from Oct'24 to Mar'25)

		Near Lobe Compressor room	SD	SD	SD	84.8	82.7	79.7
		KILN NO-9						82.5
		Near Cooling tower area	81	78.3	79.3	79.6	80.5	
		Near 9&10 control room office	58.4	61.5	60.1	60.5	60	80.2
		Near Cooler area	81.5	76.9	78.2	80	80.2	63.3
		Near Lobe Compressor room	88.6	84.4	85.1	84.2	82.4	79.7
		KILN NO-10						81.4
		Near Cooling tower area	79.7	76.9	78.8	SD	80.5	
		Near De-dusting 05 ID Fan	86.4	85.9	86.1	86	85.8	80
		Near Cooler area	79.9	77.9	79.5	SD	79.7	85.2
		Near Lobe Compressor room	81.1	84.5	84.8	SD	80.4	79.5
11	110 MW Power Plant	Boiler-01						79.7
		ID Fan	82.5	81.6	SD	84.1	83.9	
		Near Boiler area	84.8	84.8	SD	81.2	80.7	83.5
		Boiler-02						84.9
		ID Fan	SD	80.6	81.4	83.4	84.5	
		Near Boiler area	SD	81.7	83.6	81.8	81.1	81.8
		Boiler-03						79.5
		ID Fan	82.7	81.4	SD	SD	85	
		Near Boiler area	83.8	80.3	SD	SD	81.4	80.4
		Boiler-04						81.1
		ID Fan	SD	SD	82.5	SD	84.7	
		Near Boiler area	SD	SD	81.9	SD	79.8	82.5
		Boiler-5						80.7
		ID Fan	85.2	85.1	85.1	84.8	SD	
		Near Boiler area	82.6	81.8	83.7	82	SD	SD
		Boiler-6						SD
		ID Fan	85.8	85.8	83.8	84.1	84.8	
		Near Boiler area	81.7	82.6	81.5	81.8	82.1	SD
		Boiler-7						SD
		ID Fan	85.8	86	86	85.6	85.5	
		Near Boiler area	83.7	81.5	82.3	81.7	80.4	86.2
		Boiler-8						80.1
		ID Fan	SD	SD	85.2	85	85.2	
		Near Boiler area	SD	SD	81.6	80.3	81.7	84.8
		Boiler-9						79.2
		ID Fan	85	84.8	84.8	84.6	84.3	
		Near Boiler area	82.9	81	81.7	80.8	80.6	85
		Boiler-10						81.2
		ID Fan	86	85.7	86.2	SD	85.1	
		Near Boiler area	81.4	80.8	80.9	SD	81.6	85.8
		AFBC Boiler Area	SD	SD	SD	SD	SD	81.5
		Near 33 TG MW	85.9	SD	SD	86.4	86.8	SD
		Near 77 TG MW	86.5	85.8	86.7	86.9	87	85.3
12	BF-1 Cast House	Near Bag House Motor I D Fan-1	86	85.6	86	86.7	85.1	86.4
		Near Bag House Motor I D Fan-2	85.8	85.4	85.8	82.6	SD	84.9
		Near Bag House Motor I D Fan-3	85.3	86.2	86.5	84.8	84.8	SD
		Near Bag House Motor I D Fan-4	85.9	SD	82.7	86.3	85.5	85.2
		Near secondary Cooling tower area	81.7	79.5	80.1	80.7	78.8	84.7
		Near Main Pump House Building area	87.4	86.8	86.1	85.6	85.3	81.8
		Near PCI building	86.9	SD	SD	87.1	85.8	86.7
		Near B F-1 Furnace	82	80.1	76.4	80.4	80.4	86.5
13		Near Bag House Motor I D Fan-1	SD	83.5	SD	SD	SD	80.3

Environment Management Laboratory

TATA Steel Meramandali, Odisha

(Period from Oct'24 to Mar'25)

	BF-1 Stock House	Near Bag House Motor I D Fan-2	84.2	SD	84.3	84.4	84.9	SD
		BF-1 Office	61.7	61.2	61.2	59.7	60.2	84.5
		Near Fines building Area	81.8	79.1	70.4	81.3	80.5	59.8
14	CRM	Near CRM Mill Complex Area	81.4	82.9	81.6	82.1	81.3	81.4
		Near Fire water pump house area	85	85.7	85.7	85.8	85.2	80.6
		Near T.L.L	SD	85.1	85.2	SD	SD	84.8
		Near A.R.P building	88.4	87.6	86.3	87.7	86.4	85.4
		Near Air Receiver Tank area	94.3	91.2	89.2	90.2	90.5	85.8
		Near ETP area	83.7	81.6	80.3	81.3	82.8	91.6
		Near GP-1 Zinc Pot	SD	SD	SD	SD	SD	82.7
		Near GP-2 Zinc Pot	SD	86.1	86.8	SD	87.9	SD
		Near GP-3 Zinc Pot	83.7	87.2	86.3	86.4	88.5	86.2
		Colour Coating Line	SD	81.3	81.8	SD	84.3	86.3
		Mill-1	87	85.9	SD	87.2	86.7	83.9
		Mill-2	86.4	89.6	87.8	SD	85.3	SD
		Mill-3	SD	85.2	85.4	SD	85.1	86.5
		CRM Plant Office	63.1	59.2	58.7	59.3	60.4	84.9
		ECL	85.5	85.6	86.1	SD	85.4	61.7
		CRCA	SD	SD	SD	82.7	87.5	84.8
		SPM	88.9	88	87.5	85.1	84.5	SD
		RGM	80.2	83.2	79.7	81.5	82.7	85.3
15	Sinter Plant-1	Near Main ID Fan 1	89.9	90	91.8	91.4	90.1	SD
		Near Cooler Fan area 1	83.8	82.6	84.6	84.1	84.5	90.3
		Near Cooler Fan area 2	84.9	83.5	83.4	84.2	83.6	83.8
		Near Cooler Fan area 3	84.7	83.8	SD	84.8	84.8	82.7
		Near Cooler Fan area 4	85.5	84.8	85.4	85.8	85.6	83.9
		Near 85m2 ESP ID Fan	85.7	86.4	85.1	85.8	85.1	85.4
		Near 110m2 ESP ID Fan	86.5	86.8	87.3	86.7	86.4	85.7
		Near Pump House Building area	82.9	80.2	81.1	81.6	80.3	86.3
		Near bag filter ID Fan	88.7	86.9	86.4	86.9	86.8	80.2
		Product Screen	86.3	86.4	86.7	87.2	86.7	85.5
		Flux and Coke Crushing House	81.6	80.3	81.2	81.6	80.2	87.2
		Sinter Machine 15 mtr	85.4	84.9	85.3	85.5	84.5	81.6
		9 m office room	60.6	60.8	61.5	60	61.3	85.2
		15 m office	61.2	59.3	58.2	61.3	61.4	61.7
		19 m office	60.1	61.5	61	60.2	60.5	62
		Store area	79.3	78.4	77.2	63.7	78.9	62.3
		Electrical office	62	61.9	62.4	59.4	63.8	63.8
		Proportioning Building	79.5	79.2	78.6	81.3	81.2	61.6
		Mixing House	81.9	80.4	79.1	80.5	80.5	80.5
		Sinter machine 19 mtr	84.3	85.7	85.5	83.8	85.1	81
16	Coke Oven-1	Near Stone Cutter Building area	80.6	84.1	84.2	84.2	84.5	85
		Near M.H.S I.D Fan	85.4	SD	SD	SD	SD	84.2
		Near Coal Pushing & Charging I D Fan Area	SD	SD	SD	SD	SD	SD
		Near Battery-1 area	76.2	80.4	80.1	81.3	81.4	SD
		Near Battery-2 area	79.1	80.1	79.8	80.4	80.7	81.1
		Control room office	62.9	58.4	58.3	61.4	61.3	80.3
		Laboratory	61.6	58	59	59.6	59.1	60.3
17	Sinter Plant-02	Near Main ESP ID	82.4	84.3	76.1	82.5	84.3	59.7
		Near PD ESP ID Fan	82.9	82.7	77.2	81.6	82.7	83.7
		Near Cooler Fan 1	85.1	84.8	86.3	81.2	83.8	82.7
		Near Cooler Fan 2	83.5	83.9	76.5	80.4	83.5	84.8

Environment Management Laboratory

TATA Steel Meramandali, Odisha

(Period from Oct'24 to Mar'25)

		Near Cooler Fan 3	85.3	85.3	73.3	82.7	84.2	85
		Control Room Area	61.8	59	63	58.7	58.8	84.4
		ESP Area	82	82.6	80	80.9	81.9	60
		Near M. N. D Area	81.3	80.1	79.8	81.8	80.6	82.1
18	Sinter Plant-03	Near Main ESP ID Fan	84.3	84.9	80.2	83.5	83.8	81.6
		Near PD ESP ID Fan	80.2	81.8	74.6	80.6	82.6	84.8
		Near Cooler Fan 1	86.1	85.4	80.1	83.8	85.1	80.2
		Near Cooler Fan 2	85.4	85.7	81.3	82.9	84.8	84.9
		Near Cooler Fan 3	85.9	87.1	83.4	84.1	83.7	85.8
		SP2,3RCPHTPM circle	89.9	90.2	90.4	91	90.5	83.9
		ESP Area	81.6	80.5	78.3	81.8	80.7	90.2
		Pumphouse Area	82.8	81	81.7	82.7	81.9	82.1
		Near M. N. D Area	80.4	80.2	80.1	81.6	81.2	81.5
		Control Room Area	60.4	58	59.1	60	59	81.7
		Infront of Entrance of DG 250 KVA SP2&SP3 (Door Close Condition)	83.5	83.7	80	83.5	82.5	61
19	BOF Shop	Near Secondary ID Fan 1	SD	94.1	94.2	91.4	90.7	83.8
		Near Secondary ID Fan 2	91.5	94.7	95.1	91.6	SD	93.3
		Near Secondary ID Fan area 3	92.5	94.5	92.8	SD	90.4	93.8
		Near Secondary ID Fan area 4	92.4	SD	SD	SD	90.8	90.9
		Near Cooling Tower area	82.8	84.3	83.0	82.6	82.7	SD
		Near Primary/ Secondary ID Fan area 1/2	82.1	83.6	83.5	83.6	83.8	83.4
		BOF Briquetting plant	80.3	82.8	82.6	82.5	83.2	84.6
		Bag House T44B ID Fan	84.8	86.1	85.1	84.9	84.6	81.5
		BOF office area	62.4	62.4	59.8	61.6	61.5	85.2
		Near Wage bridge area	79.3	75.6	81.5	81.7	81.3	61.5
20	SMS-2-FES-1&2	Near Motor ID Fan area-1 area	88	90.8	SD	88.9	89.4	81.7
		Near Motor ID Fan area-2 area	87.5	88.3	88.6	89	89.1	86.6
		Near Motor ID Fan area-4 area	89.4	90.5	88.8	89.7	88.5	87.1
		Near Motor ID Fan area-6 area	88	89.5	SD	89.4	87.8	87.4
		Booster House (ID Fan)	83.7	84.2	84.2	84.1	84.5	88.2
		Near Control room Area	66.5	68.3	58.4	59.4	59.1	84.5
21	HSM	Near COG Fan Area	SD	84.8	84.8	84.4	84.1	59.4
		Near RHF Office area (Pulpit)	72.8	70.8	68.3	80.2	83	85.2
		Near RM-2 area	85.2	85.7	85.4	85.3	88.2	80.4
		Near Roll Shop area	82.3	80.9	79.8	80.6	81.3	87.2
		Near HSM Quality Lab area	63.4	62.7	63.2	59.5	60	80
		Near B F G Motor Fan RHF area	84.8	81.5	83	81.3	83.9	59.2
		Near Combustion air blower - 1	SD	85.7	85.2	85.5	85.2	83.5
		Near Combustion air blower- 2	SD	86.2	85.7	85.2	85.7	85
		DC pulpit office area	82.7	75.1	69.4	83.9	61.2	86.4
		Near RM-1 area	85.5	87.4	86.8	85.4	87.8	59.4
		FM area	86.2	86	86.4	85.7	86.3	86.9
		Laminar area	86.1	85.9	85.6	84.8	87.1	84.2
		Near DC sampling Station	81.2	82.3	83.1	82.5	84.8	83.5
		Near Re-heating Furness area	80.8	81.6	80.9	81.4	84.1	82.8
22	Coke Oven-2	Near Exhauster house area	85.9	85.7	86.5	86.3	87.1	82.5
		Near Chemical Dosing E.T.P room area	80.5	80	80	80.9	80	86.5
		Near Pusher car Emission control system ID Fan	79.7	82	81.7	80.7	82	81.3
		Near Guide car emission I D Fan	80.9	81.7	81.5	82.4	82.5	82.2
		Near Water pumphouse area	86.4	86.8	85.8	85.4	85.8	81.1
		Near Battery cellar ventilation blower	SD	SD	SD	SD	SD	86.2

Environment Management Laboratory

TATA Steel Meramandali, Odisha

(Period from Oct'24 to Mar'25)

		Near Battery coke oven gas de-graphitizing blower	SD	SD	SD	SD	SD	SD
		Pushing emission control system ID Fan	82.3	81.9	81.2	80.2	80.4	SD
		Control Room Office	57.2	59.4	58.7	60.9	59.4	81.9
23	BFPP-2 Boiler-2	Near I.D. Fan 1	SD	SD	82.5	82.8	82.6	60.3
		Near I.D. Fan 2	SD	SD	83.1	82.5	83	82.4
		Near P.A. Fan	SD	SD	89.2	89.3	89.7	83
		Near S.A. Fan	SD	SD	90	89.6	89.8	89.2
		Near Boiler -2 area	SD	SD	84.8	83.6	83.9	89.8
		Near cooling tower-area	84.7	84.5	84.9	84.3	84.8	84.8
24	BFPP-2 Boiler-3	Near I.D. Fan 1	83.2	83.6	SD	SD	SD	84.9
		Near I.D. Fan 2	83.5	83.9	SD	SD	SD	SD
		Near P.A. Fan	89.9	90.1	SD	SD	SD	SD
		Near S.A. Fan	89.3	90.2	SD	SD	SD	SD
		Near TG floor	89.3	88.6	88.3	87.2	87.5	SD
		Near Blower	90	89.8	89.7	88.4	87.8	86.3
		Control room	61.4	61	64.2	60.7	61.5	87.5
		Near Boiler -3 area	83.9	84.8	SD	SD	SD	60.5
25	Oxygen Plant-02	Near Nitrogen compressor House-1	103	106.2	107.6	106.5	105.1	SD
		Near Nitrogen compressor House-2	103.8	105.2	105.9	105.3	104.5	105.9
		Near Nitrogen compressor House-3	105.1	SD	SD	SD	SD	104.7
		Near Air compressor House area 1	109.9	105.6	108.2	107.2	106.8	104.3
		Near Control room office outside area	95.3	91.5	94.8	94.7	92.3	105.1
		Control Room Office	62.8	60.5	63.3	57.4	60.5	92.8
		Near A/ C Package room area	83.2	80	80.3	81.2	81.7	62.8
		Near Argon cold box area	82.6	80.1	78.8	80.7	81.5	82.4
		Near cooling tower	81.7	81.6	79.6	80.1	82.2	81.3
		Near 340 TPD new compressor House exit	89.8	85.1	SD	89.7	90.7	80.2
		Near 340 TPD new compressor House Entrance	88.9	89.6	SD	90.2	87.2	85
		Near 1120 TPD air compressor house	SD	103.5	99.3	98.4	98.6	90.4
		Pump House area	85.9	85.8	84.6	85.6	84.8	98.4
		Near Turbine-1 area	84	84.9	81.8	83.5	85	85.7
26	BB Plant	Near BB Plant Bunker ID Fan 1	82.4	80.9	81.2	81.1	81.4	84.8
		Near BB Plant flux building ID Fan 2	83.7	82.3	SD	83.3	82.7	82.4
		Near BB Plant crushing & screening building	80.2	80	SD	81.4	80	83.6
		Near BB Plant coke screening building	80.5	SD	SD	80.8	80.3	82.7
		Near BB Plant compressor house 1 &2	SD	SD	SD	SD	SD	SD
		BB Plant Office	58.9	58.7	59.3	58.9	59.7	SD
27	RMPP	Near CSB-1 I D Fan	SD	83.2	83.5	83.5	84.2	59.5
		Near CSB-2 I D Fan	SD	86.8	85.1	85.7	87.7	82.7
		Near BB plant site office	80.9	81.2	80	80.2	80	85.4
		Near P.C.S building	SD	80.4	80.6	80	80.4	79.2
		Near T.C.S building	SD	83.6	81.8	81.2	81.2	80.1
		Near S.C.S building	SD	81.5	81.7	83.1	78.8	80.5
		Control Room Office	59.3	58.5	59.6	59.3	59.3	79.7
		Near Pumphouse Area	85.2	80.4	82	81.4	80.9	58.4
		Near O.P.S building	80.4	79.5	81.4	SD	SD	81.3
		Near O.S.C building	79.9	82.2	82.5	81.5	81.7	80.4
		Near O.T.C building	80.2	82.7	83.7	SD	SD	82
28	Coal Washery	Hammer Building Area	80.2	80.4	80.6	80	80.5	70.4
		Screening Building	80.1	80	80.8	79.6	79.3	80.4

Environment Management Laboratory

TATA Steel Meramandali, Odisha

(Period from Oct'24 to Mar'25)

		Power Plant Feeding Silo	82.4	84.6	84.5	83.5	83.8	80.1
		Lab & Office Area	58.7	59.2	58.8	58.4	59.7	83.6
29	RMHS	Yard No-1 to 4	79.9	80.5	80.1	80.7	80.5	58
		Yard No-5 to 6	80	80.1	80.3	80.4	80.3	80
		Near 3 EP-2 RMHS-III Electrical Building	59.3	81.3	58.5	58.3	59.2	79.6
		RMHS Office	60.1	58.3	58	59.8	58.8	58.9
		Wagon Tippler -1	SD	SD	83.2	SD	81.4	59.1
		Wagon Tippler -4	SD	81.6	SD	SD	SD	SD
		Wagon Tippler -3	SD	SD	SD	SD	SD	SD
		Wagon Tippler -2	SD	SD	SD	82.5	SD	SD
		Tunnel area	SD	82.4	82.7	83.2	83.8	81.3
		RMHS-2 offline crusher Screen area	84.8	80.2	SD	SD	84.7	83.5
		RMHS-2 offline crusher area	81.3	84.4	82.7	SD	81.3	SD
30	CCH 2	Entrance of air compressor house gate 1	82.4	82.6	81.2	82.1	80.2	SD
		Entrance of air compressor gate 2	83	80.1	80.9	81.8	80.8	85.4
		Inside store cum rest house	80.7	80	80	80.3	79.1	82.3
		Inside compressor house	90.2	90.9	92.1	91.8	90.9	80.7
		Near air compressor	91.7	93.4	93.4	95.7	95	88
		Inside office area	60	60	68.3	63.2	62.1	93.6
		Inside compressor operator cabin	80.2	80.5	80.3	81.1	80.5	61.5
31	BFPP2 ash conveying compressor house	Entrance of air compressor house	83.8	82.5	82.7	82.9	82.6	82.5
		Inside compressor house	84.9	84.9	85.3	85.7	85.3	82.2
		Near air compressor	86.2	85.6	86.2	86.5	86.4	86.7
32	IBMD	Crusher Tata office (container)	58.3	59.1	58	58.8	58.5	85
		Entrance of Weigh Bridge	80	80	80	80	80	60.1
		Scraped Yard	80.4	80.5	80.3	81.3	81.7	80.2
		New Sarpa MRP-II (Operator Cabin)	SD	61.4	59.2	56.7	58	81.5
		New MRP Screen-II-New MRP	SD	SD	SD	SD	SD	58.5
		New MRP Screen-I-New MRP	SD	SD	SD	SD	SD	SD
		New MRP-Loading Point Area	SD	SD	SD	SD	SD	SD
		Office & Operator Cabin (Old MRP)	58.5	61.1	58.3	59	60.7	SD
		Old MRP Screen-I&II-New MRP	78.5	SD	80.1	SD	80.1	58.8
		Old MRP Screen-III-New MRP	79.6	SD	80.6	81.8	81.3	80.3
		Old MRP-Loading Point	81.7	SD	81.4	82.6	82.6	80.5

Annexure - XI

SUMMARY OF STACK MONITORING

Period: From October' 24 to March' 25

S.N	Stack Attached to	Average Monthly Result of Particulate Matter (PM) in mg/Nm3						Standard as per CTO
		Oct'24	Nov'24	Dec'24	Jan'25	Feb'25	Mar'25	
1	AFBC	SD	SD	SD	SD	SD	SD	-
2	Sinter Plant -1 (85 M2 ESP)	28.89	24.61	14.46	21.93	29.81	27.9	100
3	Blast Furnace –I, Cast House	14.31	15.34	15.11	19.19	10.5	13.2	100
4	Blast Furnace –I, Stock House	17.39	14.17	15.36	16.82	18.23	11.7	100
5	SMS- 1	Shut Down (Plant not in Operation)						100
6	SMS 2 (FES 1)	6.63	5.44	6.65	10.74	12.43	11.1	100
7	SMS 2 (FES 2)	8.46	9.23	7.23	9.147	9.4	16.3	100
8	BFPP ESP 1	21.03	19.33	12.91	15.68	17.8	22.8	50
9	BFPP ESP 2	SD	SD	43.96	41.18	42.88	27.5	50
10	BFPP ESP 3	10.27	13.55	22.74	28.13	13.56	SD	50
11	Sinter Plant- 2	30.45	30.27	29.65	30.07	29.98	29.5	50
12	Sinter Plant- 3	31.98	32.5	29.25	32.52	32.34	31.6	50
13	SMS- 3 BOF (secondary chimney)	2.04	3.11	5.77	10.91	11.59	14.2	50
14	BFPP- 2 Boiler- 2	5.01	9.47	9.31	9.164	8.85	7.0	50
15	BFPP- 2 Boiler- 3							
16	Coke oven (Battery- 1)	11.82	7.68	11.26	14.11	20.33	25.6	50
17	Coke oven (Battery- 2)	22.99	18.12	21.01	24.34	34.46	34.9	50
18	Coke oven- 2 (Battery- 2)	23.4	23.05	24.02	18.77	16.13	15.9	50
19	Blast Furnace –2, Cast House	11.28	12.94	13.68	15.66	12.98	10.7	50
20	Blast Furnace –2, Stock House	8.16	10.23	7.88	7.787	11.61	20.6	50
21	WHRB-1	31.12	20	19.49	14.67	9.99	22.0	50
22	WHRB-2	SD	16.52	15.85	17.79	16.95	24.9	50
23	WHRB-3	24.9	16.89	SD	22.59	26.02	28.4	50
24	WHRB-4	SD	30.25	22.52	25.96	19.23	18.2	50
25	WHRB-5	20.94	22.7	18.32	7.595	15.05	SD	50
26	WHRB-6	29.69	30.97	15.09	17.16	21.11	12.8	50
27	WHRB-7	26.46	23.86	28.46	28.43	25	14.9	50
28	WHRB-8	29.51	SD	22.29	23.45	23.4	24.0	50
29	WHRB-9	14.99	16.8	19.93	34.07	32.4	30.5	50
30	WHRB-10	15.13	15.05	12.27	SD	18.42	13.1	50
31	DRI, Dedusting- 1	17.76	17.36	19.58	24.46	26.93	19.7	100
32	DRI, Dedusting- 2	18.29	23.83	36.89	37.05	11.13	43.8	100
33	DRI, Dedusting- 3	24.97	23.97	20.6	10.77	20.9	11.7	100
34	DRI, Dedusting- 4	15.26	8.24	16.91	25.89	11.37	13.7	100
35	DRI, Dedusting- 5	11.26	11.24	29.74	10.01	18.42	18.0	100

SD- Shut Down (Plant not in Operation)

SUMMARY OF STACK MONITORING

Period: From October 24 to March, 25

Month		Oct'24		Nov'24		Dec'24		Jan'25		Feb'25		Mar'25	
S.N.	Stack Attached to	Result in mg/Nm3											
		SO_2	NO_X	SO_2	NO_X	SO_2	NO_X	SO_2	NO_X	SO_2	NO_X	SO_2	NO_X
1	BFPP ESP 1	1282.01	113.08	1629.51	150.83	1478.88	156.11	1501.10	174.31	1494.50	176.96	1379.89	157.86
2	BFPP ESP 2	SD		SD		812.95	391.69	1525.53	635.57	1125.00	400.22	1484.70	501.68
3	BFPP ESP 3	1054.28	356.83	1077.24	405.66	992.75	388.69	1045.46	430.21	993.30	378.37	SD	
4	Sinter Plant- 2	191.95	117.36	191.88	104.85	149.47	130.54	117.35	83.71	165.20	118.61	130.11	108.51
5	Sinter Plant- 3	289.61	110.51	271.10	250.70	233.10	194.98	270.07	197.50	315.30	201.21	212.43	145.76
6	BFPP- 2 Boiler- 2	932.49	33.60	919.90	32.30	850.30	33.57	1021.55	29.56	677.20	28.22	827.69	41.57
7	BFPP- 2 Boiler- 3												
8	Coke oven (Battery-1)	94.00	165.28	35.57	137.31	37.53	144.32	63.20	360.51	40.10	349.50	201.59	330.62
9	Coke oven (Battery-2)	104.55	319.65	38.63	332.41	20.70	356.25	38.19	411.50	59.60	403.98	60.86	321.02
10	Coke oven- 2 (Battery- 2)	18.74	201.61	25.06	240.88	13.98	225.22	16.88	234.13	34.00	324.00	21.16	378.33
11	WHRB-1	592.46	42.58	774.12	65.58	655.56	33.85	413.52	29.42	567.40	43.08	605.03	41.85
12	WHRB-2	SD		596.75	71.92	616.44	79.89	698.80	59.24	718.40	48.07	594.97	72.31
13	WHRB-3	451.80	27.11	124.05	151.16	SD		938.08	UM	896.80	27.60	880.55	27.60
14	WHRB-4	SD		693.00	89.33	937.57	38.90	920.15	32.41	1024.30	27.87	1034.54	28.83
15	WHRB-5	670.14	110.80	741.97	125.60	886.94	125.60	868.10	36.35	824.70	50.36	SD	
16	WHRB-6	220.76	67.32	207.75	135.00	528.84	135.00	650.49	31.00	564.10	45.85	585.06	64.75
17	WHRB-7	506.19	55.20	363.01	43.25	311.90	39.00	716.83	33.00	702.50	33.00	751.43	86.00
18	WHRB-8	425.33	117.33	SD		648.00	50.00	521.00	35.00	340.00	53.00	340.00	53.00
19	WHRB-9	85.36	13.92	95.00	65.00	479.60	33.30	877.22	26.46	851.70	26.50	905.14	26.50
20	WHRB-10	176.92	91.05	341.31	136.00	275.44	34.00	SD		996.70	72.47	558.36	80.36

SD: Shut Down (Plant not in Operation); UM: Under Maintenance

---------- End of Report ----------