TSJ/EMD/C-41/091/23 Date: 31 May 2023

Additional Principal Chief Conservator of Forests
(Eastern-Central) Regional Office (ECZ)
Ministry of Environment, Forests & Climate Change
2nd **Floor, Hea**dquarter-Jharkhand State Housing Board,
Harmu Chowk, Ranchi-834002

Sub.: Submission of Half Yearly (October 2022 to March 2023) Environment Clearances Compliance Reports (ECCR) for Tata Steel Jamshedpur Main Works, Jamshedpur, District- East Singhbhum, Jharkhand

Reference:
1. EC of TSJ Works for 5 MTPA vide MoEF letter no. J-11011/221/2003-IA.II (I) dated 24.05.2005
2. EC of TSJ Works for 6.8 MTPA vide MoEF letter no. J-11011/317/2006-IA.II (I) dated 16.04.2007
3. EC of TSJ Works for 9.7 MTPA vide MoEF letter no. J-11011/691/2007-IA.II (I) dated 11.05.2010
4. EC of TSJ Works for 11 MTPA vide MoEF&CC letter no. J-11011/691/2007-IA.II (I) dated 01.03.2016

Dear Sir,

This has reference to the captioned subject and cited references. We wish to inform you that we have uploaded the Half Yearly ECCR for the period from **October'2022 to March'2023** on MoEF&CC portal http://environmentclearance.nic.in/. Confirmation of the same is attached.

We are herewith submitting the softcopy of the same for your ready reference. You are requested to kindly acknowledgement the same and place in your records.

Thanking you

Yours Faithfully
For Tata Steel Limited

Utsav Kashyap
Head, Environment Clearance & Compliance (TSL)
Encl: As above

Copy to:
1. Zonal Officer, Central Pollution Control Board, Southern Conclave, Block 502, 5th and 6th Floors, 1582 Rajdanga Main Road, Kolkata - 700 107
2. Member Secretary, Jharkhand State Pollution Control Board, T.A. Division Building, HEC Campus, Dhurwa, Ranchi – 834004
3. Regional Officer, Jharkhand State Pollution Control Board, Jamshedpur

TATA STEEL LIMITED
Environment Management Jamshedpur 831 001 India
Mob- 8092087043 (M) e-mail utsav.kashyap@tatasteel.com
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

TSJ/EMD/C-38/091/23 Date: 31 May 2023

Additional Principal Chief Conservator of Forests
(Eastern-Central) Regional Office (ECZ)
Ministry of Environment, Forests & Climate Change
2nd **Floor, Hea**dquarter-Jharkhand State Housing Board,
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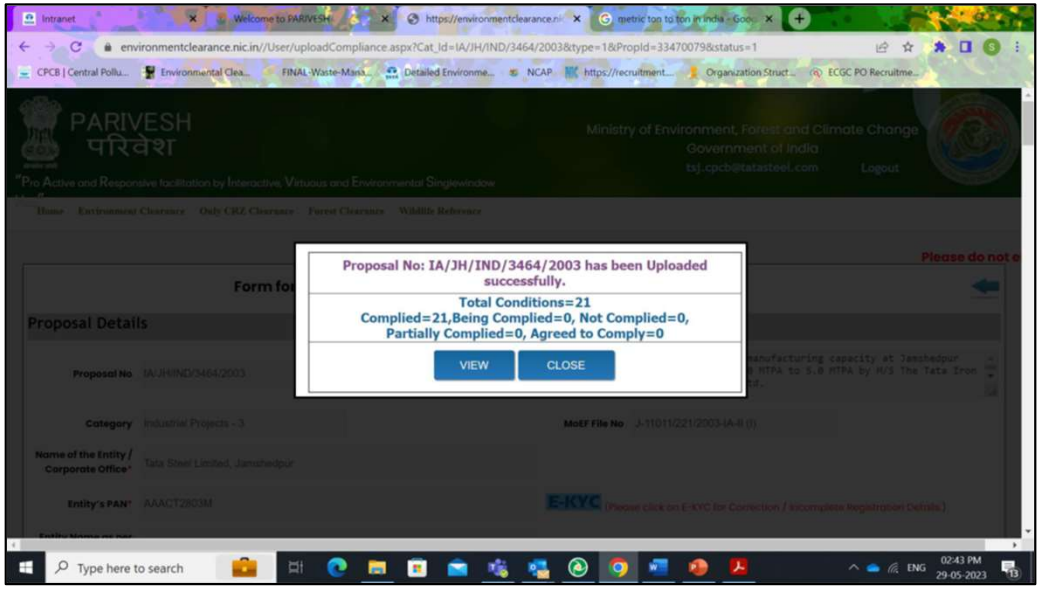
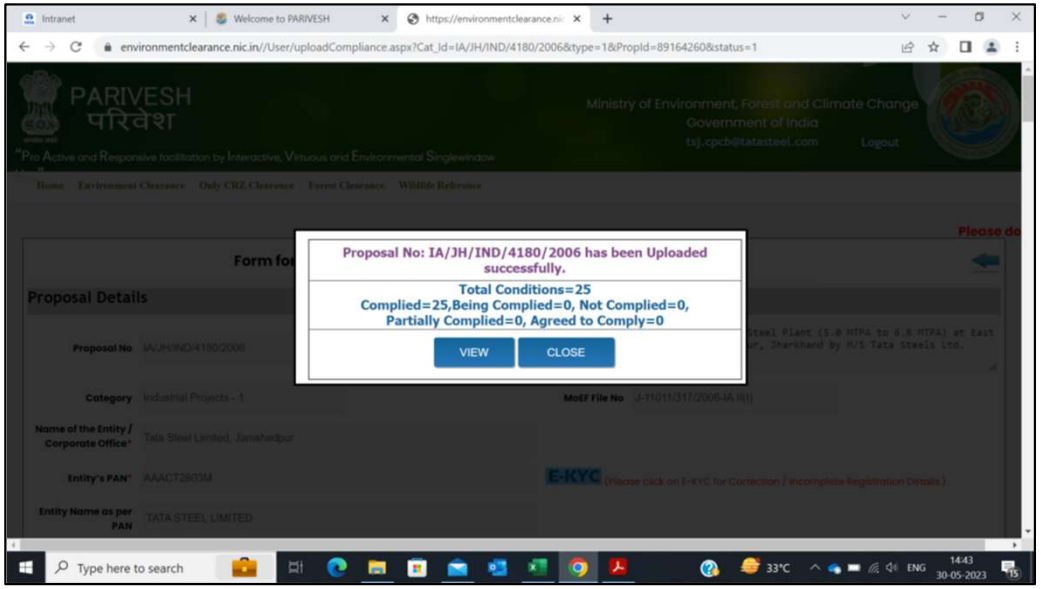
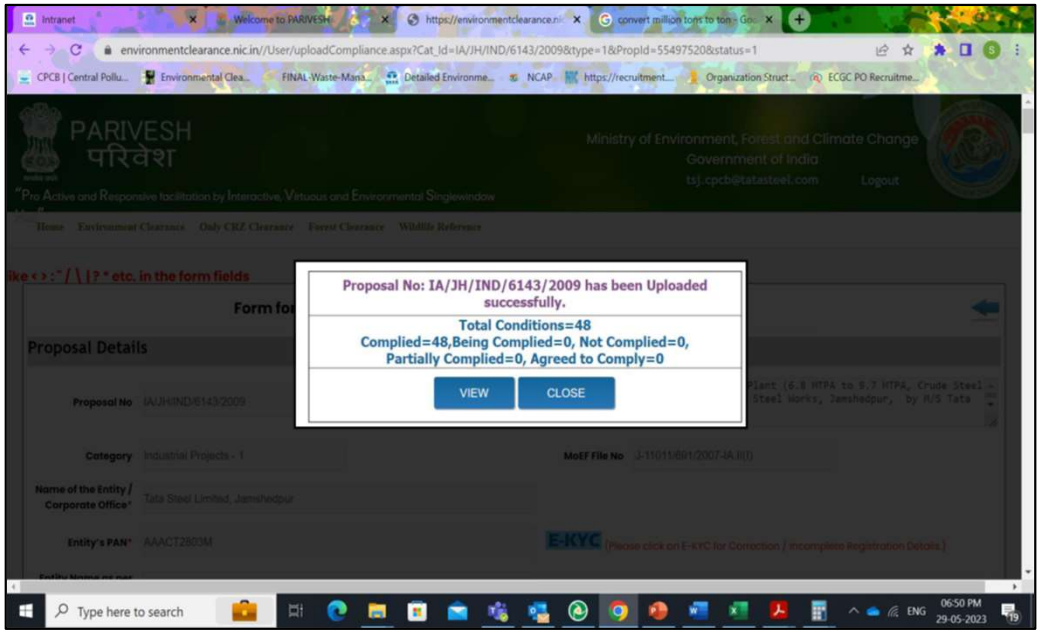
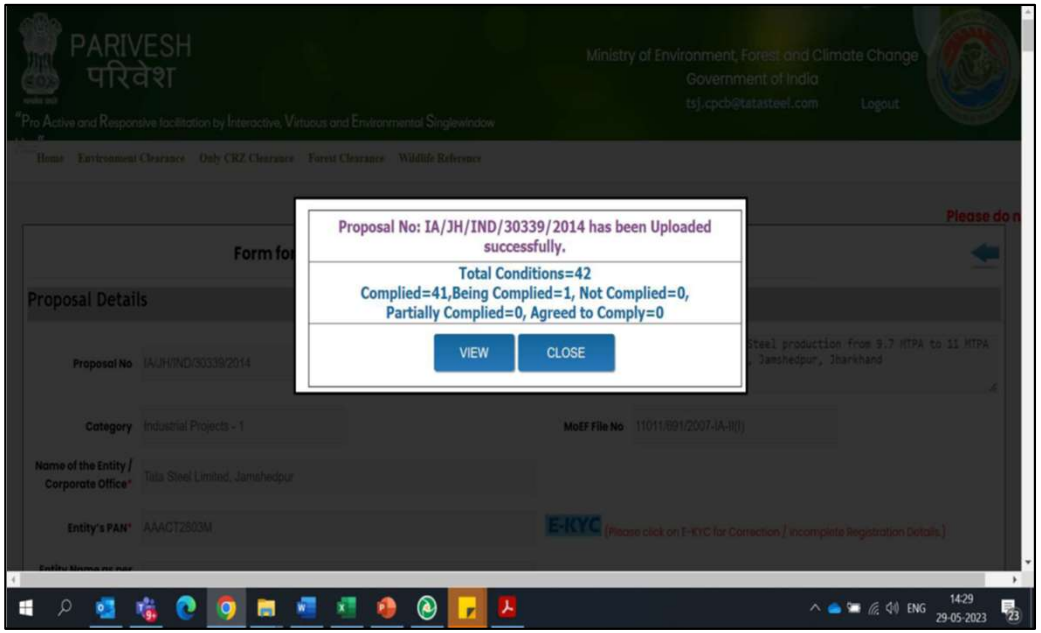
Online Submission Confirmation









ENVIRONMENTAL CLEARANCE COMPLIANCE STATUS REPORT

October 2022 to March 2023

Tata Steel Limited, Jamshedpur

(MAIN WORKS & TOWN)

Six Monthly Compliance Status report of Environmental Clearance from expansion of 4 to 5 MTPA Crude Steel Production

ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR

SN	Condition	Compliance Status
Specific Conditions:		
i.	The gaseous emissions from various process units should 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 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.	Several Projects have been implemented to control Gaseous Emission levels including secondary fugitive emissions from all the sources. Secondary fugitive dust emissions inside the plant in different areas is being controlled and monitored in line with the CPCB guidelines and MoEF&CC standards. All the existing and new units are provided with adequate pollution control equipment (PCEs) to ensure the emission levels within specific legal requirement. We will be abiding by the stipulated condition in regards of operation of the pollution control systems adopted. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
ii.	As reflected in the EIA/EMP report, the wastewater generation shall not exceed from the existing level from various units namely, Sponge iron plant, steel melting shop, rolling mill, rotary hearth furnace. The company shall undertake closed circuit system for the wastewater treatment and the sludge recycled to the sinter plant. The recovery and recycling of Susangharia nalla water shall be carried to recycle 800m^3/hr water. The Jugsalai and Ram Mandir nalla shall be made zero discharge. However, 31300 m^3/d of treated effluent after confirming to the prescribed standards shall be discharge into Subarnarekha River. The treated wastewater to be discharged into the Kharkai river should remain at the existing level of 1364m^3/d. The domestic wastewater after treatment in STP should be used for green belt development.	• Water taken from Subarnarekha River for steelmaking as make-up water is within the recommended capacity by State Government. • A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant. Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and is under ramp up stage to treat and recycle the balance wastewater generated from various units. • Wastewater containing suspended solids is passed through clarifloculation plant to recover and reuse the clarified water for cooling or cleaning. All the mills are equipped with respective primary effluent treatment plants with settling tanks and oil skimming facility. • Closed circuit cooling systems have been installed. Catch pits at all the five designated outlets. have been constructed to recycle the treated effluent within plant. Zero effluent discharge status has been achieved for 4 out of 5 designated outlets. • All the effluent quality (pH, Ammoniacal Nitrogen, COD, BOD, Phenol, Cyanide, TSS, etc) are within discharge norms. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

iii.	In plant control measures for checking fugitive emission from spillage/raw materials handling should be provided. Further specific measures like provision of dust extraction system at sinter plant, stock house fume extraction system at cast house of blast furnace shall be installed. Particulate emissions shall not exceed 100mg/Nm3. Further de-dusting facilities at new lime kiln, sinter plant and wet suppression system at raw material bedding and blending plant shall be provided.	To check the fugitive emission in raw material handling, dry-fog dust suppression systems are effectively operating. Spillage on the road, along the conveyors, if any, is collected and recycled. ESP and Bag Houses are installed in Sinter Plants. Cast Houses of Blast furnaces are having Fume Extraction System. Lime Kilns have been provided with Bag House. The emissions from the stacks are within specified limits.
iv.	The company shall phase out steam coal burning by using by-products fuel gas and replace existing wet quenching facility of coke oven battery No. 5, 6 and 7 by dry quenching to recover energy and reduce CO2 greenhouse gas emission.	• The conversion of all the coal-fired boilers to gas firing in PH # 3, PH#4 & PH # 5 has been completed since FY'19. • Coke dry quenching facility has been commissioned at battery no. #10 & #11.
v.	As per the solid waste management plan submitted to the Ministry, about 7268 TPD of solid waste shall be generated. There shall be no generation of boiler ash as BF gas would be used instead of coal. The company shall recycle the BF and LD slag for cement manufacturing, road embankment, construction and filing up of low-lying areas. As per the plan submitted to the Ministry the company shall reuse 100% of BF and LD slag by December 2007.	• Online slag granulation facilities have been implemented in all Blast Furnaces. • All the BF Slag is being granulated and made available to the Cement plants for cement making. • All the boilers of Captive power plants have been converted from coal fired to gas fired, thus there is no generation of fly ash in the power plant. • Blast furnace (BF) slag are provided to cement manufacturers for further utilization in cement making as per the MoUs signed with M/s Nuvoco Vistas, M/s Dalmia Cement, M/s ACC, M/s JSW Bengal and M/s Emami Cement. • LD Slag after metal recovery is being used internally in the manufacturing process as well as externally in brick and road making works. "Tata Nirmaan" and "Tata Aggretto" are branded product of LD slag for its external utilization. • Additional initiatives undertaken for improving the utilization of LD Slag: o Co-processing of LD Slag at Cement Kilns. o Open & closed Steam Aging inside Works o Use of LD Slag in road making & railway ballast. • For the period during April 2022 to March 2023, the solid waste utilization was 104% excluding storage of LD slag at Galudih for processing. Status of Solid Waste, hazardous and other waste generation, and utilization from April 2022 to March' 2023 is enclosed as **Annexure – VI.**

vi.	a. The chrome sludge (251kg/d) generated from the colour coating shall be disposed of in the lined pit within the plant premises and oily sludge (25TPD) shall be incinerated. b. The company shall undertake ground water quality monitoring around the chrome sludge disposal site and data submitted to the Ministry.	• Chrome sludge is being disposed through authorized TSDF i.e., Adityapur Waste management Pvt Ltd.
vii.	A green belt adequate width and density should be developed in an area of 7.0 ha of plant area in addition to the 75 ha of area already afforested within and around the plant premises as per the CPCB guidelines.	• Total area under green cover within Jamshedpur town including steel works is approx. 2400 ha out of 5094 ha which is more than the required 33% green cover area. • We have planted 1,33,683 nos. saplings during April 2022 to March 2023 inside the works, Jugsalai Muck Dump area and in Township in the same period. Every year plantation done in available space. The following indigenous plant species are being planted: • Karanj, Syzygium, fox tail Palm, Arica Palm, Mahagoney, Conocarpus, Juniperious, Kanel, Hibicus, Tecoma, Cassia fistula, *Terminalia argintia*, Bottel brush, Arjun, Putranjiva, Ashoka, Juniperus, Exeroa , Karanj, Plumeria, Cassia fistula, Hemliya, Spathodia etc.
viii.	The company shall undertake rainwater-harvesting measures to harvest the rainwater for utilisation in the lean season as well as to recharge the ground water table.	• 31 nos. of rainwater harvesting structures have been provided inside the plant area of which some area has the facility of Ground Water Recharge system. RWH structures have been constructed based on the maximum rainfall of last 20 yrs.
ix.	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per Factories Act.	The health surveillance is being done as per Factory Act. Records are maintained at the Occupational Health Services. Health check-up for contractor's persons is conducted regularly.
x.	Recommendations made in the CREP shall be implemented.	Tata Steel has implemented the recommendations of CREP. CREP report is enclosed as **Annexure-IV**.
xi	The company shall carry out life cycle assessment for monitoring to assess the overall environmental improvement of the plant with respect to consumption norms of natural resources and energy and specific norms for waste generation.	Tata Steel had participated in the life cycle assessment conducted with the government agencies.

B. General Conditions		
i.	The project authorities must adhere to the stipulations made by the Jharkhand Environment Conservation Board and the State Government.	We are abiding by all the compliance conditions made by JSPCB and State Government of Jharkhand.
ii.	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	Environmental Clearance for the expansion from 6.8 MTPA to 9.7 MTPA Steel Plant was granted vide MoEF letter no. J-11011/691/2007-IA. (II) dated May 11, 2010. Environmental Clearance for the expansion from 9.7 MTPA to 11 MTPA Steel Plant was granted vide MoEF letter no. J-11011/691/2007-IA. (II) dated March 1, 2016. Necessary Environment Clearance will be taken before any further expansion or modification.
iii.	At least four ambient air quality-monitoring stations should be established in the downward direction as well as where maximum ground level concentration of SPM, SO2 and NOx are anticipated in consultation with the state pollution Control Board. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional office at Bhubaneswar and State Pollution Control Board/Central Pollution Control Board once in six months.	• 4 online CAAQMS have been commissioned to monitor PM_{10}, $PM_{2.5}$, SO_2, NOx, CO continuously inside the Works. There are 8 manual AAQMS located both inside the plant and outside the plant area. • The monthly monitoring reports by NABL accredited environment laboratory is being submitted to JSPCB and six-monthly reports are being submitted to ministries. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
iv.	Industrial wastewater should be properly collected, treated to conform to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. The treated wastewater should be utilized be for plantation purpose.	• A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant conforming to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. • Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and is under ramp up stage to treat and recycle the balance wastewater generated from various units. • Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

v.	The overall noise level in and around the plant area should be kept well within the standards (85 dBA) 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 dBA (daytime) and 70 dBA (nighttime).	• Personal Protective Equipment (PPE) have been provided to all the workers/officers to avoid any accompanied noise hazards. Facilities like silencers, enclosures, hood etc have been provided to reduce noise at source. The monitored data in the work zone reveals that the noise level does not exceeds 85 dB (A) for 8 hr exposures. Similarly, in the ambient also, the noise levels meet the prescribed standards. • The ambient noise level monitoring is being done at different part of the Jamshedpur town in frequent interval outside Steel Works to assess the ambient noise level status. Noise level in the town is found beyond the standard in few occasions. The possible reason of equivalent noise levels in respect of all categories of areas exceeded the standards for day and night times is due to heavy traffic movement in the town, market and commercial activities, festivals and other domestic celebrations and frequent religious rituals. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
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 programmes, educational programmes, drinking water supply and health care etc.	• All the environmental protection measures and safeguards such as APCEs, ETPs, hazardous waste proper handling, transfer and disposal have been deployed as recommended in the EIA/EMP report. • Socio economic development activities are regularly undertaken in and around Jamshedpur through the two agencies namely, Tata Steel Rural Development Society and Tata Steel Community Development & Welfare Services Centres. The development activities undertaken in the surrounding community are need based and are in the field of health care, education, mid-day meals in schools, sports and culture, self-employment, drinking water, rural electrification, etc. Tata Steel also facilitate the Institutes like R D Tata Technical Institute, Tata Football Academy, Tata Archery Foundation, etc. which encourages the local talent to develop themselves and participate at National and International levels.
vii.	The project authorities shall provide an amount of Rs 286 crores (question no. xix part b) funds both recurring and non-recurring to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation schedule for all the	The 5 MTPA project has been completed. All the pollution control equipment has been commissioned and are being operated and maintained regularly. In FY 23 total capital expenditure and recurring cost for environment are 354 Crore and 94.8 Crores,

	conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	respectively. The funds for capital investment on pollution control equipment are not diverted.
vii.	The Regional Office of this Ministry at Bhubaneswar/ Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six-monthly compliance report and the monitored data along with statistical interpretation should be submitted to them regularly.	Six monthly compliance reports and the monitored data are being submitted regularly. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
ix.	The Project Proponent should inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the State Pollution Control Board/ Committee and may also be seen at Website of the Ministry of Environment and Forests at http./envfor.nic.in. This should 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.	The Notice has been advertised in two local newspapers viz. Chamakta Aaina (Hindi) and The Avenue Mail (English) on June 04, 2005, and communication to this effect was also sent to the MoEF&CC.
x.	The Project Authorities should 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.	It has been complied as the project has already been completed and Consent to Operate has been issued by Jharkhand State Pollution Control Board.

ENVIRONMENTAL CLEARANCE COMPLIANCE STATUS REPORT

October 2022 to March 2023

Tata Steel Limited, Jamshedpur

(MAIN WORKS & TOWN)

Six Monthly Compliance Status report of Environmental Clearance from expansion of 5 to 6.8 MTPA Crude Steel Production

ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR

SN	Condition	Compliance Status
	Specific Conditions	
i.	The gaseous emissions from various process units shall conform to the load/mass-based standards notified by this Ministry on 11th 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 facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.	Several Projects have been implemented to control Gaseous Emission levels including secondary fugitive emissions from all the sources. Secondary fugitive dust emissions inside the plant in different areas is being controlled and monitored in line with the CPCB guidelines and MoEF&CC standards. All the existing and new units are provided with adequate pollution control equipment (PCEs) to ensure the emission levels within specific legal requirement. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
ii.	Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan shall be submitted. On-line stack monitoring facilities for all the stacks including new sinter plant and powerhouse and sufficient air pollution control devices shall be provided to keep the emission levels below 50 mg/Nm^3 and reports submitted to the Jharkhand SPCB and CPCB.	• 4 online CAAQMS have been commissioned to monitor PM10, PM2.5, SO2, NO2, CO continuously. • All ESPs have been upgraded of all relevant production units while the same is under progress at LD Shop #1. The agreed emission for their upgraded emission has been guaranteed to be ≤50 mg/Nm^3. • Low NOx burners have been provided in all the new units. • Similarly, in almost all the unit's alert facility have been provided in case of units exceed any prescribed emission level as the interlocking is technically not feasible in all the production units. • Please find enclosed a list of air pollution control devices for each of production unit as **Annexure-II**. • Please find enclosed the updated status of implementation of action plan to reduce dust emission level in each of production unit and raw material storage area as **Annexure III.**
iii.	In-plant control measures for checking fugitive emissions from all the vulnerable sources shall be provided. Dust extraction system and dry fogging system will be provided to control air emissions at material transfer and sizing plants. ESP and bag filters shall be provided wherever required to keep the emission levels below 50 mg/Nm^3 particularly in 'H'-BF stock house, BF cast houses and Sinter stock house. Low NO burners will be installed to control NO emissions. Gas cleaning plant shall be provided to BF. Further, specific measures like water	The status of control measures in the units are as follows. • Installed ESPs and Bag Houses in the "H" Blast Furnace, Sinter Plant#4. • Dust control systems, dry fog system and water spraying have been provided at the material handling systems. • Low NOx burners have been installed. The following control measures are in place to check the fugitive emissions. • Bag Houses, water-spraying arrangements are provided at all potential dust generating points.

	sprinkling shall be carried out and fugitive emissions shall be controlled, regularly monitored and records maintained.	• All the boilers of Captive power plants have been converted from coal fired to gas fired, thus there is no generation of fly ash in the power plant. • Regular cleaning of shop floor area with the help of mechanical dust collector, road sweepers, is being done. • Monitoring of fugitive emission is being done at the regular intervals and records kept. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
iv.	Gaseous emission levels including secondary fugitive emissions shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB in this regard shall be followed.	• Several Projects have been implemented to control Gaseous Emission levels including secondary fugitive emissions from all the sources. • Secondary fugitive dust emissions inside the plant in different areas is being controlled and monitored in line with the CPCB guidelines and MoEF&CC standards.
v.	Total water requirement from River Subarnarekha shall not exceed 3,91,800 m^3/day as per the permission accorded by the State Govt. No ground water shall be used. GCP wastewater treatment plants for 'H'-BF and Billet Caster no. 3 shall be provided. The treated process effluent shall be recycled and re-used in cooling tower as well as for green belt development. Cooling towers blow down shall be used for granulation, coke quenching, dust suppression and other non-product uses. Treated effluent discharge into the streams/river shall not exceed 37,000 m^3/day. Domestic effluent shall be treated in Sewage Treatment Plant (STP).	• Water taken from Subarnarekha River for steelmaking as make-up water is within the recommended capacity by State Government. • A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant. Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and is under ramp up stage to treat and recycle the balance wastewater generated from various units. • New BOD plant has been commissioned and existing BOD has been upgraded to treat the additional effluent generated from Coke Oven Batteries including Batteries 10 & 11. A tertiary treatment with RO is being implemented at BOD plant to ensure zero discharge from coke oven. • Wastewater containing suspended solids is passed through clarifloculation plant to recover and reuse the clarified water for cooling or cleaning. All the mills are equipped with respective primary effluent treatment plants with settling tanks and oil skimming facility. • Closed circuit cooling systems have been installed. Catch pits at all the five

		designated outlets have been constructed to recycle the treated effluent within plant. Zero effluent discharge status has been achieved for 4 out of 5 designated outlets. • All the effluent quality (pH, Ammoniacal Nitrogen, COD, BOD, Phenol, Cyanide, TSS, etc) are within discharge norms. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
vi.	Continuous monitoring of Total Organic Compounds (TOC) shall be done at the outlet of ETP (BOD plant).	• The BOD plant has facility of continuous monitoring of TOC. • Similarly monitoring of other parameters on the outlet of the BOD plant is being done regularly.
vii.	Ground water monitoring around the solid waste disposal site / secured landfill (SLF) shall be carried out regularly and report submitted to the Ministry's Regional Office at Bhubaneswar, CPCB and OPCB.	We are regularly conducting the ground water monitoring around the waste disposal site at five locations. Analysis report submitted to JSPCB indicates that concentration of heavy metals is well within the prescribed limits. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached.
viii.	Solid wastes shall be reused in the cement plant, road construction and railway ballast. BF slag shall be granulated in cast house and used for cement making. LD slag shall be processed in Waste Recycling Plant and subsequently recycled in the BF LD sludge and sinter plants. Remaining slag shall be used for road construction and filling the low-lying areas. The Chrome sludge in the form of Cr^{+3} shall be dumped only in the secured landfill located within the plant premises and proper disposal of Chrome sludge shall be ensured. Oily waste shall be burnt in the incinerator.	• All the BF Slag is being granulated and made available to the Cement plants for cement making. • Blast furnace (BF) slag are provided to cement manufacturers for further utilization in cement making as per the MoUs signed with M/s Nuvoco Vistas, M/s Dalmia Cement, M/s ACC, M/s JSW Bengal and M/s Emami Cement. • LD Slag after metal recovery is being used internally in the manufacturing process as well as externally in brick and road making works. "Tata Nirmaan" and "Tata Aggretto" are branded product of LD slag for its external utilization. • Additional initiatives undertaken for improving the utilization of LD Slag: • Co-processing of LD Slag at Cement Kilns. • Open & closed Steam Aging inside Works • Use of LD Slag in road making & railway ballast. • Flue dust generated are recycled within the plant, Mill scales, LD sludge, lime fines and flue dust are also recycled back to sinter plant. • Blast Furnace gas cleaning plant (GCP) sludge is re-utilized within the manufacturing process. • Chrome sludge is being disposed through authorized TSDF i.e., Adityapur Waste management Pvt Ltd.
ix.	Fly ash shall be used in cement plants. Bottom ash shall be disposed off in a suitably designed landfill as per CPCB	• All the boilers of Captive power plants have been converted from coal fired to gas fired, thus there is no generation of fly ash in the power plant.

	guidelines to prevent leaching to the sub-soil and underground aquifer.	• Ash generation from the captive power plants has been stopped due to no coal firing at Power Plants since FY'19.
x.	Practice of disposal of solid wastes along the river shall be immediately stopped and efforts shall be made to remove the solid waste from the banks of the river.	There is no disposal of solid waste along the riverbank from Tata Steel.
xi.	A time bound action plan should be submitted to reduce solid waste, its proper utilization and disposal. Action plan for the reclamation of Jugsalai Muck disposal site submitted to the Ministry shall be implemented in a time bound manner.	An action plan for Solid waste management has been submitted to JSPCB vides our letter no. EMD/C-02/460/11 dated December 16, 2011. We have also submitted road map regarding future generation and the disposal of solid waste vide our letter no. EMD/C-33/124/13 dated June 22, 2013. Tata Steel has taken several steps to improve the solid waste utilization. For the period during April 2022 to March 2023, the solid waste utilization was 104% excluding storage of LD slag at Galudih for processing. Various actions have been already planned to improve the solid waste utilization further. The reclamation of JMD has been completed. A rainwater harvesting facility has been constructed at the top of the JMD which is being utilized for development of greenery. Besides this, there is a provision to pump surface drainage carry out from the plant to JMD area for development of greenery.
xii.	The company shall develop surface as well as ground water harvesting structures to harvest the rainwater for utilization in the lean season besides recharging the ground water table.	31 nos. of rainwater harvesting structures have been provided inside the plant area of which some area has the facility of Ground Water Recharge system. RWH structures have been constructed based on the maximum rainfall of last 20 yrs.
xiii.	Green belt shall be developed in 1157.7 ha (33 %) out of total 4391.85 ha. within and around the plant premises as per the CPCB guidelines in consultation with DFO.	• Total area under green cover within Jamshedpur town including steel works is approx. 2400 ha out of 5094 ha which is more than the required 33% green cover area. • We have planted 1,33,683 nos. saplings during April 2022 to March 2023 inside the works, Jugsalai Muck Dump area and in Township in the same period. Every year plantation done in available space. The following indigenous plant species are being planted: Karanj, Syzygium, fox tail Palm , Arica Palm, Mahagoney, Conocarpus, Juniperious, Kanel, Hibicus, Tecoma, Cassia fistula, *Terminalia argintia*, Bottel brush, Arjun, Putranjiva, Ashoka, Juniperus, Exeroa, Karanj, Plumeria, Cassia fistula, Hemliya, Spathodia etc.

xiv.	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	The health surveillance is being done as per Factory Act. Records are maintained at the Occupational Health Services. Regular health surveillance is being conducted i.e. 2 times in a year to all the workers who have already attended more than 40 years of age. The workers having age less than 40 years are undergone occupational health surveillance program once in a year.
xv.	Recommendations made in the Corporate Responsibility for Environment Conservation (CREP) issued for the steel plants shall be implemented.	CREP recommendations have been implemented. CREP report is enclosed as **Annexure-IV** of Monitoring and Analysis report.
	General Conditions	
i.	The project authorities must strictly adhere to the stipulations made by the Jharkhand Pollution Control Board (Jharkhand SPCB) and the State Government.	We are abiding by all the compliance conditions made by JSPCB and State Government of Jharkhand.
ii.	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	• Environmental Clearance for the expansion from 6.8 MTPA to 9.7 MTPA Steel Plant was granted vide MoEF letter no. J-11011/691/2007-IA. (II) dated May 11, 2010. • Environmental Clearance for the expansion from 9.7 MTPA to 11 MTPA Steel Plant was granted vide MoEF letter no. J-11011/691/2007-IA. (II) dated March 1, 2016. • Necessary Environment Clearance will be taken before any further expansion or modification.
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 SPM, SO_2 and NO_X are anticipated in consultation with the Jharkhand SPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Bhopal and the Jharkhand SPCB/CPCB once in six months.	• 4 online CAAQMS have been commissioned to monitor PM_{10}, $PM_{2.5}$, SO_2, NOx, CO continuously inside the Works. There 8 manual AAQMS located both inside the plant and outside the plant area. • The monthly monitoring reports by NABL accredited environment laboratory is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEF&CC, Ranchi and CPCB. • Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
iv.	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 11th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.	• A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant

		conforming to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. • Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and is under ramp up stage to treat and recycle the balance wastewater generated from various units. • Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
v.	The overall noise levels in and around the plant area shall be kept well within the standards (85 dBA) 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 dBA (daytime) and 70 dBA (nighttime).	• Personal Protective Equipment (PPE) have been provided to all the workers/officers to avoid any accompanied noise hazards. Facilities like silencers, enclosures, hood etc have been provided to reduce noise at source. The monitored data in the work zone reveals that the noise level does not exceeds 85 dB (A) for 8 hr exposures. Similarly, in the ambient also, the noise levels meet the prescribed standards. • The ambient noise level monitoring is being done at different part of the Jamshedpur town in frequent interval outside Steel Works to assess the ambient noise level status. Noise level in the town is found beyond the standard on few occasions. The possible reason of equivalent noise levels in respect of all categories of areas exceeded the standards for day and night times is due to heavy traffic movement in the town, market and commercial activities, festivals and other domestic celebrations and frequent religious rituals. • Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
vi.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA and EMP report. Further, the company must undertake socio-economic development activities in the surrounding villages like community development programs, educational programs, drinking water supply and health care etc.	• Implementation of protection measures as indicated in the EIA for 6.8 MTPA plant units have been complied which includes ESPs, bag filters, on-line slag granulation system for blast furnaces and wastewater treatment plants etc. • Socio economic development activities are regularly undertaken in and around Jamshedpur through the two agencies namely, Tata Steel Rural Development Society and Tata Steel Community Development and Welfare Services Centers. The development activities undertaken in the surrounding community are need based and are in the field of health care, education, mid-day meal at schools, sports and culture, self-employment, drinking

		water, rural electrification, etc. Tata Steel also facilitate the Institutes like R D Tata Technical Institute, Tata Football Academy, Tata Archery Foundation, etc. which encourages the local talent to develop themselves and participate at National and International levels.
vii.	As mentioned in the EIA and EMP, ₹ 259.00 Crores and ₹18.5 Crores earmarked towards the capital cost and recurring cost/annum for environmental pollution control measures shall be judiciously utilized 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.	The funds for capital investment on pollution control equipment were not diverted. The 6.8 MTPA project has been completed. All the pollution control equipment has been commissioned and are being operated and maintained regularly. In FY 22 total capital expenditure and recurring cost for environment are 354 Crore and 94.8 Crores respectively. The funds for capital investment on pollution control equipment are not diverted.
viii.	The Regional Office of this Ministry at Bhubaneswar/ CPCB/Jharkhand SPCB will monitor the stipulated conditions. A six-monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	Six monthly compliance reports and the monitored data are being submitted regularly to MoEF&CC and JSPCB. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
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 OSPCB/Committee 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 shall be forwarded to the regional office.	The Notice has been advertised in two local newspapers *viz.* Uditvani (Hindi) and Avenue Mail (English) on April 21, 2007 and communication to this effect was also sent to the MoEF vide our letter no. EMD/C-32/2118/07 dated August 18, 2007.
x.	Project authorities should 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.	It has been complied as the project has already been completed and Consent to Operate has been issued by Jharkhand State Pollution Control Board.

ENVIRONMENTAL CLEARANCE COMPLIANCE STATUS REPORT

October 2022 to March 2023

Tata Steel Limited, Jamshedpur

(MAIN WORKS & TOWN)

Six Monthly Compliance Status report of Environmental Clearance from expansion of 6.8 to 9.7 MTPA Crude Steel Production

ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR

A. Specific Conditions:

i. **Compliance to all the specific and general conditions stipulated for the existing plant by the Central/State Govt. shall be ensured and regular reports submitted to the Ministry and its Regional Office at Bhubaneswar.**

Compliance Status:

a. The compliance reports of environmental safeguard stipulated in the earlier environment clearance letter dated 11th May 2010 was submitted to Ministry's Regional Office vide letter no. **EMD/C-41/204/22**.
b. **MoEF&CC:** http://environmentclearance.nic.in/
c. **Company:**(https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

ii. **Efforts shall be made to reduce RSPM levels in the ambient air and a time bound action plan shall be submitted. On-line ambient air quality monitoring and continuous stack monitoring facilities for all the stacks shall be provided and sufficient air pollution control devices *viz.* Electrostatic precipitator (ESP), bag house, gas cleaning plant, bag filters etc. shall be provided to keep the emission levels below 50 mg/Nm³ by installing energy efficient technology. Low NOx burners shall be installed to control NOx emissions. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit.**

Compliance Status:

- 4 nos. of online CAAQMS have been commissioned to monitor PM10, PM2.5, SO2, NO2, CO continuously.
- All ESPs have been upgraded of all relevant production units while the same is under progress at LD Shop #1. The agreed emission for their upgraded emission has been guaranteed to be ≤50 mg/Nm³.
- Low NOx burners have been provided in all the new units.
- Similarly, in almost all the unit's alert facility have been provided in case of units exceed any prescribed emission level as the interlocking is technically not feasible in all the production units.
- Please find enclosed a list of air pollution control devices for each of production unit as **Annexure-II**.
- Please find enclosed the updated status of implementation of action plan to reduce dust emission level in each of production unit and raw material storage area as **Annexure III.**

iii. **Existing electrostatic precipitator (ESP) shall be upgraded and provided to new units to control gaseous emissions within 50 mg/Nm³. ESPs shall be provided to pellet plant, cast house and stock house of blast furnaces and LD#3 shop. Waste gas from the drying and grinding unit of pellet plant shall be cleaned by bag filters. Adequate provisions shall be made to control NOx emissions. Bag house shall be provided to Lime kilns. Data on ambient air quality stack emissions and fugitive emissions shall regularly submit to the Ministry's Regional Office at Bhubaneswar, Jharkhand Pollution Control Board (JPCB) and Central Pollution Control Board (CPCB) once in six months.**

Compliance Status:

- All ESPs have been upgraded of all relevant production units while the same is under progress at LD Shop #1. The agreed emission for their upgraded emission has been guaranteed to be ≤50 mg/Nm³.

- 3 nos. of bag filters have been provided in the Pellet Plant to control waste gas from the drying and grinding unit.
- Low NOx burners have been provided in all the new units to meet the prescribed standards.
- 12 nos. of Bag House have been provided in Lime Plant in process and dedusting units.
- Bag Filters have been provided in the Cast House and Stock House of all the Blast Furnaces.
- Monthly monitoring reports are being submitted to JSPCB and six-monthly monitoring reports are being submitted along with EC compliance reports to Ministry's Regional office, CPCB and JSPCB. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.
- The status of completed and Ongoing projects is mentioned in **Annexure-III**.

iv. **Land based fume extraction system shall be provided to coke oven battery # 10 and 11 to arrest fugitive emissions during charging and pushing operations. The coke oven gas shall be de-sulphurised by reduction of H_2S content of coke oven gas in the by-product recovery section to below 500 mg/Nm^3. On-line charging with high pressure liquor aspiration (HPLA) for extraction of oven gas, leak proof oven doors, hydraulic door and door frame cleaner, water sealed AP caps and charging & pusher side emission extractor device shall be provided for the coke oven batteries to maintain VOC emissions within permissible limit. Land based fume extraction system for pushing emission control from coke ovens shall be provided.**

Compliance Status:

- Land based fume extraction, desulphurization facilities, online charging with HPLA, Hydraulic door and door frame clearance, water seal AP caps and charging and pusher side emission extractor device etc. are in place in both coke ovens battery #10 & #11 to minimize leaks from doors CAPs, etc. and to meet the CREP recommendations. Coke oven gas is being desulphurized in Battery #10 & #11. H_2S content is maintained below 500 mg/Nm^3. Land based fume extraction system for pushing emission control for new coke ovens batteries #10 & #11 have been provided.

v. **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 heat recovery steam generators shall be ensured and no flue gases shall be discharged into the air. Sulphur shall be recovered from the coke oven gases from new product plant.**

Compliance Status:

- As per the CREP guidelines, % of PLD, PLL & PLO of all batteries are being monitored thrice in a month. The max % of PLD is found to be 6.49 in Battery#9, max % of PLL found to be 1.47 in Battery#7 and % of maximum PLO is found to be 3.96 in Battery#7 and maximum charging emission is found to be 85 sec in Battery#9.
- Byproduct gas is recovered and used for power generation in captive Powerhouse # 3, #4 & #5, and heating purpose in all the mills. Power is also being generated in TRT at G, H & I Blast Furnace. 593.80 tons of Sulphur has been recovered from coke oven gas in FY'23 (Apr'22 to March'23) and sold to authorized buyers.

vi. Only dry quenching method in the coke oven in new battery # 10 & 11 shall be adopted.

Compliance Status:

- Coke dry quenching (CDQ) facility is commissioned in the new Coke Oven Batteries #10 and #11 and are in operation.

vii. The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November' 2009 shall be followed.

Compliance Status:

- 4 nos. of Ambient Air Quality stations have been commissioned inside plant for the monitoring of all 12 parameters as per G.S.R. No. 826(E) dated 16th November' 2009 and is being analyzed by the environment laboratory inside Works accredited with NABL accreditation no.TC-8363 dated 21.02.2022 having validity till 20.02.2024. All the monitoring results are found within prescribed limit.
- Monthly monitoring reports are being submitted to JSPCB and six-monthly monitoring reports are being submitted along with EC compliance reports to Ministry's Regional office, CPCB and JSPCB. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

viii. In-plant control measures for checking fugitive emissions from all the vulnerable sources including bag filters and fume extraction system shall be provided. Dry fog dust suppression system / water sprinkling system shall be provided in raw material handling areas to control fugitive dust emissions. Fugitive emissions from different sources shall also be controlled by covered conveyors, water sprinkling in open yards and with dry fogging in the closed zones. Further, specific measures like asphalting of the roads within premises shall be carried out to control fugitive emissions. Fugitive emissions shall be controlled, regularly monitored and records maintained.

Compliance Status:

- Necessary air pollution control measures are provided to control fugitive dust emission. Please find enclosed a list of air pollution control devices for each of production unit as **Annexure-II**.
- All the areas of dedusting operation as junction house, transfer tower, conveyors relate to bag filters and/or dry fog dust suppression system.
- All these locations are being monitored once in month.
- A total of 424 nos. of points for dust suppression system (DS) are commissioned at various locations inside Works.
- A total of 71 nos. Industrial vacuum cleaners (IVC) are commissioned at various locations inside Works.
- All the internal roads have been constructed with concrete.
- All the fugitive emissions within plant locations are monitored and records are maintained.

ix. 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. New standards issued by the Ministry vide G.S.R. 414(E) dated 30th May, 2008 shall be followed.

Compliance Status:

- Several Projects have been implemented to control Gaseous Emission levels including secondary fugitive emissions from all the sources.
- Secondary fugitive dust emissions inside the plant in different areas is being controlled and monitored in line with the CPCB guidelines and MoEF&CC standards.

x. As proposed, Traffic decongestion plan shall be implemented in a time bound manner to reduce emissions in the Jamshedpur city and separate budget shall be allocated for implementing the same. Maximum in bound and out bound material movement shall be done by railway wagons only to reduce dust emissions. Measures like covered conveyors for handling of bulk materials, centralized screening of iron ore, rationalization of weighing system, use of higher capacity vehicles etc. shall be adopted to reduce dust emissions. Mechanized vacuum cleaning of arterial roads shall be carried out on regular basis to further reduce the dust emissions.

Compliance Status:

Under the traffic decongestion plan in Jamshedpur city:

- Strengthening of marine drive (Western corridor) has been implemented.
- Southeastern corridor is under development with the government of Jharkhand.
- To control high traffic on the major roads of the town, decongestion work is being continued with the effort based on evolving need.

Inside the plant:

- Automatic traffic control system is in place to control the traffic density as well as the safety including secondary emission inside the plant.
- Maximum in bound and out bound material movements are done by railway wagons to reduce dust emissions.
- All the loaded trucks are ensured to be covered with tarpaulin sheets to avoid dust getting air borne and thus generation of secondary emission.
- Sign board have been placed on all the critical areas to keep the speed of the vehicle within 35 kmph to control secondary emission along the internal road (VIP Road) and similarly the vehicle speed is limited to 16 kmph in the units.
- All the loaded trucks/dumpers coming inside the plant with their valid PUC.
- 4 nos. of mechanized vacuum cleaning sweepers are deployed within Works for regular cleaning and dust evacuation of roads.
- Dust from road being collected by these mechanized vacuum cleaning sweepers which are being reused in sinter making through RMBB.
- 2 nos. of mechanized vacuum cleaning sweepers are deployed in Jamshedpur town for regular cleaning and dust evacuation of roads.

xi. Vehicular pollution due to transportation of raw materials 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.

Compliance Status:

- Approx. all the raw material is being transported through railways to reduce the road transport load and vehicular pollution.
- Dry fog dust suppression and water sprinklers are provided to control dust emission during loading and unloading activity. A total of 424 nos. of points for dust suppression system (DS) are commissioned at various locations inside Works.
- Tyre washing facility has also been provided in 08 strategic locations to keep tyres clean to reduce dust emission on roads.

xii. As proposed, total water requirement from River Subarnarekha shall not exceed 33.3 MGD although permission for 227 MGD water is obtained vide letter dated 7th January, 1992. Closed circuit cooling system shall be provided to reduce further water consumption. All the wastewater from various units shall be treated in the common effluent treatment plant (CETP) for primary, secondary, and tertiary treatment shall be either recycled or used for dust suppression, slag quenching and green belt development etc. within the lease hold area. The phenolic effluent from the by-product recovery section of coke oven battery # 10 and 11 shall be treated in BOD plant. Wastewater containing suspended solids shall be passed through clarifloculation plant to recover and reuse the clarified water for cooling or cleaning. Mill effluent containing oil and suspended solids shall be passed through oil skimmers and filter press. No treated wastewater shall be released out the premises and 'Zero' discharge shall be adopted by recycling all the treated water in the plant itself including from the existing plant.

Compliance Status:

- Due to water recycling facilities, the total water requirement from River Subarnarekha shall not cross 33.3 MGD for Steel Works.
- A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant. This CETP is being augmented from 4 MGD to 9 MGD to treat and recycle the balance wastewater generated from various units.
- Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and is under ramp up stage to treat and recycle the balance wastewater generated from various units.
- New BOD plant has been commissioned and existing BOD has been upgraded to treat the additional effluent generated from Coke Oven Batteries including Batteries 10 & 11. A tertiary treatment with RO is being implemented at BOD plant to ensure zero discharge from coke oven.
- Wastewater containing suspended solids is passed through clarifloculation plant to recover and reuse the clarified water for cooling or cleaning. All the mills are equipped with respective primary effluent treatment plants with settling tanks and oil skimming facility.
- Closed circuit cooling systems have been installed. Catch pits at all the five designated outlets. have been constructed to recycle the treated effluent within plant. Zero effluent discharge has been achieved in 4 out of 5 designated outlets.
- All the effluent quality (pH, Ammoniacal Nitrogen, COD, BOD, Phenol, Cyanide, TSS, etc) are within discharge norms. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

xiii. Efforts shall be made to make use of rainwater harvested. If needed, capacity of the reservoir shall be enhanced to meet the maximum water requirement. Only balance water requirement shall be met from other sources.

Compliance Status:

- There are two ponds inside Steel works viz. Upper Cooling Pond (UCP) and Lower Cooling Pond (LCP), which stores and harvest most of the surface run off with cooling water of the units.

- 31 nos. of rainwater harvesting structures in different office buildings have been provided inside the plant area of which some area has the facility of Ground Water Recharge system.
- RWH structure has been constructed based on the maximum rainfall of last 20 yrs.

xiv. Continuous monitoring of Total Organic Compounds (TOC) in the wastewater treated in BOD plant from the coke oven plant shall be done at the outlet of ETP (BOD plant). All the treated wastewaters shall be monitored for pH, BOD, COD, oil & grease, cyanide, phenolic compounds, Chromium+6 etc. besides other relevant parameters.

Compliance Status:

- The BOD plant has facility of continuous monitoring of TOC. TOC Analyzer has been installed at the outlet.
- Similarly monitoring of other parameters on the outlet of the BOD plant is being done regularly.
- The monthly monitoring report for all the relevant parameters are being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEF&CC at Ranchi and CPCB.

xv. Regular monitoring of influent and effluent and surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or prescribed under the E(P) 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, Jharkhand, SPCB and CPCB.

Compliance Status:

- All the treated effluent from outlets is being monitored regularly.
- Online effluent monitoring system has been commissioned in all the outlets to monitor effluent quality on a real-time basis.
- Online effluent monitoring data relates to CPCB and JSPCB.
- Surface water quality of rivers Subarnarekha and Kharkai is also being monitored as a part of regular monitoring.
- There are two cooling waters pond whose water quality is also regularly monitored as part of sub surface water quality.
- Ground water quality is also being monitored at 5 locations both inside and outside plant premises.
- The monthly monitoring data is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEF&CC at Ranchi and CPCB.
- Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

xvi. Zero' effluent discharge shall be strictly followed, and no additional wastewater shall be discharged outside the premises. Domestic wastewater shall be treated in septic tanks followed by soak pit and used for green belt development.

Compliance Status:

- As per the water balance and plan of zero effluent discharge, all the plant effluent is being recycled into different process units for various uses. The rainwater which is being discharged into the nearby nallah is being collected and in low lying area and settled water is let out thereafter.
- Closed circuit cooling systems have been installed. Catch pits at all the five designated outlets. have been constructed to recycle the treated effluent within plant. Zero effluent discharge has been achieved in 4 out of 5 designated outlets.

xvii. As proposed, the water consumption shall not exceed 5.7 m^3/Ton of steel at 9.7 MTPHY stage.

Compliance Status:

The specific water consumption has been reduced to 1.97 m^3/tcs during FY'23 as compared to 5.58 m^3/tcs for FY'14.

Year	Specific Water Consumption (m^3/tcs)
FY 14	5.58
FY 15	5.54
FY 16	4.39
FY 17	3.83
FY 18	3.68
FY 19	3.27
FY 20	2.80
FY 21	2.25
FY 22	2.18
FY 23	1.97

xviii. All the blast furnace (BF) slag shall be granulated and provided to cement manufacturers for further utilization in cement making as per the MoUs signed with various companies including M/s Lafarge, M/s Eco-cement & M/s ACC. LD slag after metal recovery shall be used in sinter plant, blast furnaces and LD convertor, aggregates making, road ballast making, soil conditioning etc. All the flue dust generated shall be recycled within the plant to the maximum extent. Mill scales, LD sludge, lime fines and flue dust shall be recycled back to the sinter plant. The BF gas cleaning plant sludge shall be used for manufacturing briquettes.

Compliance Status:

- Online slag granulation facilities have been implemented in all Blast Furnaces.
- All the BF Slag is being granulated and made available to the Cement plants for cement making.
- Blast furnace (BF) slag are provided to cement manufacturers for further utilization in cement making as per the MoUs signed with M/s Nuvoco Vistas, M/s Dalmia Cement, M/s ACC, M/s JSW Bengal and M/s Emami Cement.
- LD Slag after metal recovery is being used internally in the manufacturing process as well as externally in brick and road making works. "Tata Nirmaan" and "Tata Aggretto" are branded product of LD slag for its external utilization.
- Additional initiatives undertaken for improving the utilization of LD Slag:
  - Co-processing of LD Slag at Cement Kilns.
  - Open & closed Steam Aging inside Works

  - Use of LD Slag in road making & railway ballast.
- Flue dust generated are recycled within the plant, Mill scales, LD sludge, lime fines and flue dust are also recycled back to sinter plant.
- Blast Furnace gas cleaning plant (GCP) sludge is re-utilized within the manufacturing process.

xix. As proposed, coal tar sludge and BOD sludge shall be recycled for coke making by mixing with the coal charge and used in the coke ovens. Chromium sludge shall be disposed in a HDPE lined secured landfills as per the CPCB guidelines within the complex. All the other solid waste including broken refractory mass shall be properly disposed of in environment-friendly manner. Oily waste and spent oil shall be provided to authorized recyclers/reprocesses.

Compliance Status:

- Coal Tar sludge and BOD Sludge generated from By Product Plant is being recycled in coke plant by mixing with raw materials. The report for FY'23 is enclosed under **Annexure-IV**.
- Chrome sludge is being disposed through authorized TSDF i.e., Adityapur Waste management Pvt Ltd.
- All other kind of process wastes are being reutilized in sinter plant.
- Oily waste and spent oil are sold to authorized recyclers/reprocesses.

xx. All the slag shall be used for land filling inside the plant or used as building material only after passing through Toxic Chemical Leachability Potential (TCLP) test. Toxic Chromium sludge and other hazardous substances recovered from the slag and output waste shall be disposed off in secured landfill as per CPCB guidelines.

Compliance Status:

- LD Slag are used for road making.
- The TCLP test conducted by external approved agency.
- Leachate potential of all heavy metals is negligible.
- Chrome sludge is being disposed through authorized TSDF i.e., Adityapur Waste management Pvt Ltd.

xxi. As proposed, Jugsalai muck dump (JMD) shall be reclaimed in a time bound manner by covering the dump site with geo-netting and vegetation along with localized water harvesting.

Compliance Status:

- The reclamation of JMD has been completed. A rainwater harvesting facility has been constructed at the top of the JMD which is being utilized for development of greenery. Besides this, there is a provision to pump surface drainage carry out from the plant to JMD area for development of greenery.

xxii. A time bound action plan shall be submitted to reduce solid waste, its proper utilization and disposal to the Ministry's Regional Office at Bhubaneswar, Jharkhand SPCB and CPCB.

Compliance Status:

- An action plan for Solid waste management has been submitted to JSPCB vides our letter no. EMD/C-02/460/11 dated December 16, 2011. We had also submitted road map regarding future generation and the disposal of solid waste vide our letter no. EMD/C-33/124/13 dated June 22, 2013.

- For the period during April 2022 to March 2023, the solid waste utilization was 103% excluding storage of LD slag at Galudih for processing. Status of Solid Waste, hazardous and other waste generation, and utilization from April 2022 to March 2023 is enclosed as **Annexure – VI.**

xxiii. 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 the Ministry's regional office at Ranchi, Jharkhand SPCB and CPCB.

Compliance Status:

- Most of the process solid waste are reutilized within the manufacturing process.
- Information regarding solid waste and hazardous waste is being submitted in Environment Statement to the Board every year. Environment statement for FY'22 is attached as **Annexure-V**.
- Status of Solid Waste, hazardous and other waste generation, and utilization from April 2022 to March 2023 is enclosed as **Annexure – VI.**

xxiv. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 1999 and subsequent amendment in 2003. All the fly ash shall be provided to cement and brick manufacturers for further utilization and "Memorandum of Understanding" shall be submitted to Ministry's Regional Office at Bhubaneswar.

Compliance Status:

- All the boilers of Captive power plants have been converted from coal fired to gas fired, thus there is no generation of fly ash in the power plant.
- Ash generation from the captive power plants has been stopped due to no coal firing at Power Plants since FY'19.

xxv. A Risk and Disaster Management Plan along with the mitigation measures shall be prepared and a copy submitted to the Ministry's Regional Office at Ranchi, Jharkhand SPCB and CPCB within 3 months of issue of environment clearance letter.

Compliance Status:

- Disaster Management Institute, Bhopal has verified and certified the Risk assessment report and Disaster Management Plan vide their letter no. DMI/IDMU/Con-227/24 dated April 16, 2012. The same has been submitted to JSPCB.
- Copy of updated On-site Emergency Plan & Disaster Control approval by Chief Inspector of Factories, Jharkhand vide letter no. 615 dated 29.05.2020 is attached as **Annexure-VII.**

xxvi. As proposed, green belt shall be developed in more than 33 % area within and around the plant premises as per the CPCB guidelines in consultation with DFO.

Compliance Status:

- Total area under green cover within Jamshedpur town including steel works is approx. 2400 ha out of 5094 ha which is more than the required 33% green cover area.
- We have planted 1,33,683 nos. saplings during April 2022 to March 2023 inside the works, Jugsalai Muck Dump area and in Township in the same period. Every year plantation done in available space.

The following indigenous plant species are being planted:

Karanj, Syzygium, Fox tail Palm, Arica Palm, Mahagoney, Conocarpus, Juniperious, Kanel, Hibicus, Tecoma, Cassia fistula, Terminalia argintia, Bottel brush, Arjun,

Putranjiva, Ashoka, Juniperus, Exeroa, Karanj, Plumeria, Cassia fistula, Hemliya, Spathodia etc.

xxvii. Prior permission from the State Forest Department shall be taken regarding likely impact of the expansion of the proposed steel plant on the reserve forests. Measures shall be taken to prevent impact of particulate emissions / fugitive emissions, if any from the proposed plant on the surrounding reserve forests viz. Jora Pahar PF, Sand Pcha Rahar PF, Deluse RF located within 10 km radius of the project. Further, Conservation Plan for the conservation of wild fauna in consultation with the State Forest Department shall be prepared and implemented.

Compliance Status:

- Prior Permission from State Forest Department has been obtained vide their memo. No. 2605 dated 20.10.2010.

- Wildlife Conservation Plan for Tata Steel has been prepared with the help of approved external agency recommended by State Forest Department and the same has been approved by Principal Chief Conservator of Forests – Wildlife (PCCF-WL) GoJ on Nov 13, 2017. Further, Payment of levies as per w.r.t. approved SSWLCP of Tata Steel Limited has been deposited into DFO Jamshedpur account vide challan no. 108 dated: 20.02.2023 (Annexure-). Wildlife Conservation Plan will be implemented as directed by Department of Forest, Jharkhand and approved SSWLCP.

xxviii. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Plants shall be implemented.

Compliance Status:

- CREP recommendations have been implemented. Please find enclosed the same as **Annexure – IV**.

xxix. All the commitments made to the public during the Public Hearing / Public Consultation meeting held on 18th June, 2009 shall be satisfactorily implemented and a separate budget for implementing the same shall be allocated and information submitted to the Ministry's Regional Office at Bhubaneswar.

Compliance Status:

All the commitments made to the public during the Public Hearing are being implemented.

xxx. At least 5 % of the total cost of the project *i.e.* ₹ 750.00 Crores shall be earmarked towards the corporate social responsibility and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program shall be ensured accordingly in a time bound manner.

Compliance Status:

- It is being complied as per the requirement under the Companies Act. The amount spent by the Company on Corporate Social Responsibility (CSR) activities is given below.
- A total of ₹ 1441 Crores spent in and around Jamshedpur since FY'11 (since inception of 9.7 MTPA Projects) till FY'23 are as follows:

FY	Total Spent on CSR in Cr.	CSR spent in and around Jamshedpur in Cr.
2011	126	97.15
2012	146	106.43

2013	171	120.34
2014	212	136.95
2015	171	56.11
2016	204	83.62
2017	194	73.36
2018	232	82.19
2019	315	159.73
2020	193	76.52
2021	267	102.42
2022	406	185.62
2023	481	160
	Total	1441

- It is reported in the Company's Integrated Report. These reports are available on the website of Tata Steel and may be seen/downloaded from https://www.tatasteel.com/investors/integrated-reportannual-report/

xxxi. The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

Compliance Status:

- The construction work has been completed. All the necessary infrastructure and facilities such as food, medical health care, toilets, safe drinking water, etc. had been provided to construction labor during the project work.

B. General Conditions:

i. The project authorities must strictly adhere to the stipulations made by the Jharkhand Pollution Control Board and the State Government.

Compliance Status:

- We are abiding by all the compliance conditions made by JSPCB and State Government of Jharkhand.

ii. No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).

Compliance Status:

- No further expansion or modifications beyond the existing capacity of 11 MTPA in the plant will be carried out without prior approval from MoEF&CC. The detail of production of various products for last five years are as follows:

Product	Unit	Capacity granted in EC	FY'18	FY'19	FY'20	FY'21	FY'22	FY'23
Hot Metal	MTPA	12.5	10.9	10.8	10.8	9.87	10.83	11.06
Crude Steel		11	10.0	10.2	10.2	9.34	10.24	10.64

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.

Compliance Status:

- ESPs are being upgraded of all relevant production units. Among these 6 ESPs of Sinter P1ant have already been upgraded. Several projects have been taken to monitor gaseous emissions from ESPs. The agreed emission for their upgraded emission has been guaranteed to be 50 mg/Nm^3.
- ESPs have been provided in pellet plant (Hood Stack, Wind Box Stack and Central dedusting stack) and bag filters in other areas where dedusting as the main criteria.
- Bag Filters are provided in the Cast House and Stock House of H and I Blast Furnace each. As explained as above, 3 bag filters have been provided in the pellet plant to control waste gas from the drying and grinding unit of pellet plant.

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, PM2.5, SO2 and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Ranchi and the SPCB/CPCB once in six months.

Compliance Status:

- 4 nos. of online CAAQMS have been commissioned to monitor PM_{10}, $PM_{2.5}$, SO_2, NOx & CO continuously inside the Works. There is one mobile monitoring facility & 8 manual AAQMS located both inside the plant and outside the plant area.
- The monthly monitoring reports by NABL accredited environment laboratory is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEF&CC, Ranchi and CPCB.
- Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

v. 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 from time to time. The treated wastewater shall be utilized for plantation purpose.

Compliance Status:

- A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant conforming to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time.
- Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and is under ramp up stage to treat and recycle the balance wastewater generated from various units.
- Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

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) (night-time).

Compliance Status:

- Personal Protective Equipment (PPE) have been provided to all the workers/officers to avoid any accompanied noise hazards. Facilities like silencers, enclosures, hood etc have been provided to reduce noise at source. The monitored data in the work zone reveals that the noise level does not exceeds 85 dB (A) for 8 hr exposures. Similarly, in the ambient also, the noise levels meet the prescribed standards.
- The ambient noise level monitoring is being done at different part of the Jamshedpur town in frequent interval outside Steel Works to assess the ambient noise level status. Noise level in the town is found beyond the standard in few occasions. The possible reason of equivalent noise levels in respect of all categories of areas exceeded the standards for day and night times is due to heavy traffic movement in the town, market and commercial activities, festivals and other domestic celebrations and frequent religious rituals.
- Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

vii. Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

Compliance Status:

- Regular health surveillance is being conducted i.e. 2 times in a year to all the workers who have already attended more than 40 years of age. The workers having age less than 40 years are undergone occupational health surveillance program once in a year.

viii. The company shall develop surface as well as ground water harvesting structures to harvest the rainwater for utilization in the lean season besides recharging the ground water table.

Compliance Status:

- 31 nos. of rainwater harvesting structures have been provided inside the plant area of which some area has the facility of Ground Water Recharge system. RWH structures have been constructed based on the maximum rainfall of last 20 yrs.

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 Status:

- All the environmental protection measures and safeguards such as APCEs, ETPs, hazardous waste proper handling, transfer and disposal have been deployed as recommended in the EIA/EMP report.
- Socio economic development activities are regularly undertaken in and around Jamshedpur through the two agencies namely, Tata Steel Rural Development Society and Tata Steel Community Development & Welfare Services Centres. The development activities undertaken in the surrounding community are need based and are in the field of health care, education, mid-day meals in schools, sports and culture, self-employment, drinking water, rural electrification, etc. Tata Steel also facilitate the Institutes like R D Tata Technical Institute, Tata Football Academy, Tata Archery

Foundation, etc. which encourages the local talent to develop themselves and participate at National and International levels.

x. **As proposed, 2,107.00 Crores and ₹ 60.00 Crores shall be earmarked towards total capital cost and recurring cost/annum for environmental pollution control measures and judiciously utilized 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.**

Compliance Status:

- Capital expenditure on environment is being spent on Air Pollution Control, Solid Waste Management, Zero Wastewater Discharge and Others including Greenery, Online Monitoring, etc.
- In FY 23 total capital expenditure and recurring cost for environment are 354 Crore and 94.8 Crores respectively.
- The funds for capital investment on pollution control equipment are not diverted.

xi. **The Regional Office of this Ministry at Bhubaneswar/CPCB/Jharkhand SPCB will monitor the stipulated conditions. A six-monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.**

Compliance Status:

- Six monthly compliance reports and the monitored data are being submitted regularly.

xii. **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, Forests and Climate Change (MoEFCC) 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 shall be forwarded to the Regional office.**

Compliance Status:

The Notice has been advertised in two local newspapers viz. Hindustan (Hindi) and Hindustan Times (English) on May 18, 2010, and communication to this effect was also sent to the MoEF vide our letter no. EMD/C-33/128/10 dated June 15, 2010.

xiii. **A copy of Clearance letter shall be sent by 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 website of the company by the proponent.**

Compliance Status:

- The copy of Clearance letter has been sent to Zila Parishad, DIC, Local Body and all concerned vide EMD/C-33/129-137/10 dated June 15, 2010.
- The clearance letter is also uploaded on the company website: (https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

xiv. 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&CC at Ranchi, the respective Zonal Office of CPCB and the JPCB. The criteria pollutant levels namely; PM10, SO2, NOx (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:

- Six monthly compliance reports and the monitored data are being submitted regularly. The ambient air quality parameters are being monitored and displayed at the main gate of the company in the public domain.
- The six-monthly compliance reports along the monitored data is also uploaded in the website:(https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

xv. 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 MOEFCC at Bhubaneswar, the respective Zonal Office of CPCB and the JSPCB. The Regional Office of this Ministry at Bangalore / CPCB / JPCB shall monitor the stipulated conditions.

Compliance Status:

- Six monthly compliance reports are being submitted regularly in soft copy by e-mail as well as uploaded on MoEF&CC website.

xvi. 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 Offices of the MoEFCC at Ranchi by e-mail.

Compliance Status:

- The environmental statement for each financial year in Form-V is regularly being submitted to the Jharkhand State Pollution Control Board.
- Environment Statement for FY'22 has been submitted vide our letter no. EMD/C-23/168/22 dated September 22, 2022.
- The environmental statement has also been uploaded on the company's website: (https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

xvii. 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.

Compliance Status:

- It has been complied as the project has been already completed and Consent to Operate has been issued by Jharkhand State Pollution Control Board.

ENVIRONMENTAL CLEARANCE COMPLIANCE STATUS REPORT

October 2022 to March 2023

Tata Steel Limited, Jamshedpur

(MAIN WORKS & TOWN)

Six Monthly Compliance Status report of Environmental Clearance from expansion of 9.7 to 11 MTPA Crude Steel Production

ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR

A. Specific Conditions:

i. **The project proponent should install 24x7 air monitoring devices to monitor air emissions, as provided by the CPCB and submit report to Ministry and its Regional Office.**

Compliance Status:

- 4 nos. of online Continuous Ambient Air Quality Monitoring System (CAAQMS) have been commissioned to monitor PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO continuously.
- All stacks are being monitored by Online Continuous Emission Monitoring System (OCEMS) as per the standard given in MoEF&CC notification dated 31.03.2012.
- Real-time data of OCEMS relate to the server at CPCB, New Delhi and real-time data of AAQMS and OCEMS relate to the server at JSPCB, Ranchi.
- Monitoring reports for all relevant parameters from April 2022 to March 2023 are attached in **Annexure-I**.

ii. **The Project Proponent should ensure the compliance of environmental safeguard stipulated in the earlier environment clearance letter dated 11th May 2010 and submit the compliance report to the Ministry and its Regional Office, Ranchi.**

Compliance Status:

The six-monthly compliance reports of environmental safeguard stipulated in the earlier environment clearance letter dated 11th May 2010 was submitted to Ministry's Regional Office vide letter no. **EMD/C-41/204/22**

- The six-monthly compliance reports along with the monitored data is also uploaded on the following websites:
  a. **MoEF&CC:** http://environmentclearance.nic.in/
  b. **Company:**(https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

iii. **On-line ambient air quality monitoring shall be provided and sufficient air pollution control devices viz. Electrostatic precipitator (ESP), bag house, gas cleaning plant, bag filters etc. shall be provided to keep the emission levels below 50 mg/Nm³ by installing energy efficient technology. Low NOx burners shall be installed to control NOx emissions. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit. Efforts shall be made to further reduce PM_{10} and $PM_{2.5}$ levels in the ambient air and a time bound action plan shall be submitted.**

Compliance Status:

- 4 nos. of online CAAQMS have been commissioned to monitor PM10, PM2.5, SO2, NO2, and CO continuously.
- All ESPs have been upgraded of all relevant production units while the same is under progress at LD Shop #1. The agreed emission for their upgraded ESPs has been guaranteed to be ≤50 mg/Nm3.
- Low NOx burners have been provided in all the new units.
- Similarly, in almost all the unit's alert facility have been provided in case of units exceed any prescribed emission level as the interlocking is technically not feasible in all the production units.
- Please find enclosed a list of air pollution control devices for each of production unit as **Annexure-II**.

- Please find enclosed the updated status of implementation of action plan to reduce dust emission level in each of production unit and raw material storage area as **Annexure-III.**

iv. Existing Electrostatic Precipitator (ESP) shall be upgraded and provided to new units to control gaseous emissions within 50 mg/Nm^3. Waste gas from the drying and grinding unit of pellet plant shall be cleaned by bag filters. Adequate provisions shall be made to control NOx emissions. Bag house shall be provided to Lime kilns.

Compliance Status:

- All ESPs have been upgraded of all relevant production units while the same is under progress at LD Shop #1. The agreed emission for their upgraded ESP's has been guaranteed to be ≤50 mg/Nm^3.
- 3 nos. of bag filters have been provided in the Pellet Plant to control waste gas from the drying and grinding unit.
- Low NOx burners have been provided in all the new units to meet the prescribed standards.
- 12 nos. of Bag House have been provided in Lime Plant in process and dedusting units.

v. Land based fume extraction system shall be provided to coke oven battery to arrest fugitive emissions during charging and pushing operations. The coke oven gas shall be desulphurized by reduction of H_2S content of coke oven gas in the by-product recovery section to below 500 mg/Nm^3. On-line charging with high pressure liquor aspiration (HPLA) for extraction of oven gas, leak proof oven doors, hydraulic door and door frame cleaner, water sealed AP caps and charging & pusher side emission extractor device shall be provided for the coke oven batteries to maintain VOC emissions within permissible limit. Land based fume extraction system for pushing emission control from coke ovens shall be provided.

Compliance Status:

Land based fume extraction, desulphurization facilities, online charging with HPLA, Hydraulic door and door frame clearance, water seal AP caps and charging and pusher side emission extractor device etc. are in place in both coke ovens battery#10 & #11 to minimize leaks from doors CAPs, etc. and to meet the CREP recommendations. Coke oven gas is being desulphurized in Battery#10 & #11. H_2S content is maintained below 500 mg/Nm^3. Land based fume extraction system for pushing emission control for new coke ovens batteries #10 & #11 have been provided.

vi. 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 heat recovery steam generators shall be ensured and no flue gases shall be discharged into the air. Sulphur shall be recovered from the coke oven gases from new product plant.

Compliance Status:

- As per the CREP guidelines, % of PLD, PLL & PLO of all batteries are being monitored thrice in a month. The max % of PLD is found to be 6.49 in Battery#9, max % of PLL found to be 1.47 in Battery#7 and % of maximum PLO is found to be 3.96 in Battery#7 and maximum charging emission is found to be 85 sec in Battery#9.
- Byproduct gas is recovered and used for power generation in captive Powerhouse # 3, #4 & #5, and heating purpose in all the mills. Power is also being generated in TRT at G, H & I Blast Furnace. 593.80 tons of Sulphur has been recovered from coke oven gas in FY'23 and sold to authorized buyers.

vii. Only dry quenching method in the coke oven in new battery shall be adopted.

Compliance Status:

- Coke dry quenching (CDQ) facility is commissioned in the new Coke Oven Batteries #10 and #11 and are in operation.

viii. The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November' 2009 shall be followed.

Compliance Status:

- 4 nos. of Ambient Air Quality stations have been commissioned inside plant for the monitoring of all 12 parameters as per G.S.R. No. 826(E) dated 16th November' 2009 and is being analyzed by the environment laboratory inside Works accredited with NABL accreditation no.TC-8363 dated 21.02.2022 having validity till 20.02.2024. All the monitoring results are found within prescribed limit.
- Monthly monitoring reports are being submitted to JSPCB and six-monthly monitoring reports are being submitted along with EC compliance reports to Ministry. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

ix. In-plant control measures for checking fugitive emissions from all the vulnerable sources including bag filters and fume extraction system shall be provided. Dry fog dust suppression system / water sprinkling system shall be provided in raw material handling areas to control fugitive dust emissions. Fugitive emissions from different sources shall also be controlled by covered conveyors, water sprinkling in open yards and with dry fogging in the closed zones. Further, specific measures like asphalting of the roads within premises shall be carried out to control fugitive emissions. Fugitive emissions shall be controlled, regularly monitored and records maintained.

Compliance Status:

- Necessary air pollution control measures are provided to control fugitive dust emission. Please find enclosed a list of air pollution control devices for each of production unit as **Annexure-II**.
- All the areas of dedusting operation as junction house, transfer tower, conveyors relate to bag filters and/or dry fog dust suppression system.
- All these locations are being monitored once in month.
- A total of 424 nos. of points for dust suppression system (DS) are commissioned at various locations inside Works.
- A total of 77 nos. Industrial Vacuum Cleaners (IVC) are commissioned at various locations inside Works.
- All the internal roads have been constructed with concrete.
- All the fugitive emissions within plant locations are monitored and records are maintained.

x. 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. New standards issued by the Ministry vide G.S.R. 414(E) dated 30th May, 2008 shall be followed.

Compliance Status:

- Several Projects have been implemented to control Gaseous Emission levels including secondary fugitive emissions from all the sources.

- Secondary fugitive dust emissions inside the plant in different areas is being controlled and monitored in line with the CPCB guidelines and MoEF&CC standards.

xi. Traffic decongestion plan shall be implemented in a time bound manner to reduce emissions in the Jamshedpur city and separate budget shall be allocated for implementing the same. Maximum in bound and out bound material movement shall be done by railway wagons only to reduce dust emissions. Measures like covered conveyors for handling of bulk materials, centralized screening of iron ore, rationalization of weighing system, use of higher capacity vehicles etc. shall be adopted to reduce dust emissions. Mechanized vacuum cleaning of arterial roads shall be carried out on regular basis to further reduce the dust emissions.

Compliance Status:

Under the traffic decongestion plan in Jamshedpur city:

- Strengthening of marine drive (Western corridor) has been implemented.
- Southeastern corridor is under development with the government of Jharkhand.
- To control high traffic on the major roads of the town, decongestion work is being continued with the effort based on evolving need.

Inside the plant:

- Automatic traffic control system is in place to control the traffic density as well as the safely including secondary emission inside the plant.
- Maximum in bound and out bound material movements are done by railway wagons to reduce dust emissions.
- All the loaded trucks are ensured to be covered with tarpaulin sheets to avoid dust getting air borne and thus generation of secondary emission.
- Sign board have been placed on all the critical areas to keep the speed of the vehicle within 35 kmph to control secondary emission along the internal road (VIP Road) and similarly the vehicle speed is limited to 16 kmph in the units.
- All the loaded trucks/dumpers coming inside the plant with their valid PUC.
- 4 nos. of mechanized vacuum cleaning sweepers are deployed within Works for regular cleaning and dust evacuation of roads.
- Dust from road being collected by these mechanized vacuum cleaning sweepers which are being reused in sinter making through RMBB.
- 2 nos. of mechanized vacuum cleaning sweepers are deployed in Jamshedpur town for regular cleaning and dust evacuation of roads.

xii. Vehicular pollution due to transportation of raw materials 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.

Compliance Status:

- Approx. all the raw material is being transported through railways to reduce the road transport load and vehicular pollution.
- Dry fog dust suppression and water sprinklers are provided to control dust emission during loading and unloading activity. A total of 424 nos. of points for dust suppression system (DS) are commissioned at various locations inside Works.
- Tyre washing facility has also been provided in 08 strategic locations to keep tyres clean to reduce dust emission on roads.

xiii. All the wastewater from various units shall be treated in the common effluent treatment plant (CETP) for primary, secondary, and tertiary treatment and shall be either recycled or used for dust suppression, slag quenching and green belt development etc. within the lease hold area. The phenolic effluent from the by-product recovery section of coke oven battery shall be treated in BOD plant. Wastewater containing suspended solids shall be passed through clarifloculation plant to recover and reuse the clarified water for cooling or cleaning. Mill effluent containing oil and suspended solids shall be passed through oil skimmers and filter press. No treated wastewater shall be released outside the premises and 'Zero' discharge shall be adopted by recycling all the treated wastewater in the plant itself including from the existing plant.

Compliance Status:

- A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant. Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and is under ramp up stage to treat and recycle the balance wastewater generated from various units.
- New BOD plant has been commissioned and existing BOD has been upgraded to treat the additional effluent generated from Coke Oven Batteries including Batteries 10 & 11. A tertiary treatment with RO is being implemented at BOD plant to ensure zero discharge from coke oven.
- Wastewater containing suspended solids is passed through clarifloculation plant to recover and reuse the clarified water for cooling or cleaning. All the mills are equipped with respective primary effluent treatment plants with settling tanks and oil skimming facility.
- Closed circuit cooling systems have been installed. Catch pits at all the five designated outlets. have been constructed to recycle the treated effluent within plant. Zero effluent discharge has been achieved in 4 out of 5 designated outlets.
- All the effluent quality (pH, Ammoniacal Nitrogen, COD, BOD, Phenol, Cyanide, TSS, etc) are within discharge norms. Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

xiv. Efforts shall be made to make use of rainwater harvested. If needed, capacity of the reservoir shall be enhanced to meet the maximum water requirement. Only balance water requirement shall be met from other sources.

Compliance Status:

- There are two ponds inside Steel works viz. Upper Cooling Pond (UCP) and Lower Cooling Pond (LCP), which stores and harvest most of the surface run off with cooling water of the units.
- 31 nos. of rainwater harvesting structures in different office buildings have been provided inside the plant area of which some area has the facility of Ground Water Recharge system.
- RWH structure has been constructed based on the maximum rainfall of last 20 yrs.

xv. Continuous monitoring of Total Organic Compounds (TOC) in the wastewater treated in BOD plant from the coke oven plant shall be done at the outlet of ETP (BOD plant).

All the treated wastewaters shall be monitored for pH, BOD, COD, oil & grease, cyanide, phenolic compounds, Chromium+6 etc. besides other relevant parameters.

Compliance Status:

- The BOD plant has facility of continuous monitoring of TOC.
- Similarly monitoring of other parameters on the outlet of the BOD plant is being done regularly.
- The monthly monitoring report for all the relevant parameters are being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEF&CC at Ranchi and CPCB.

xvi. Regular monitoring of influent and effluent and surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or prescribed under the E(P) 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 Ranchi, Jharkhand, SPCB and CPCB.

Compliance Status:

- All the treated effluent from outlets is being monitored regularly.
- Online effluent monitoring system has been commissioned in all the outlets to monitor effluent quality on a real-time basis.
- Online effluent monitoring data relates to CPCB and JSPCB.
- Surface water quality of rivers Subarnarekha and Kharkai is also being monitored as a part of regular monitoring.
- There are two cooling waters pond whose water quality is also regularly monitored as part of sub surface water quality.
- Ground water quality is also being monitored at 5 locations both inside and outside plant premises.
- The monthly monitoring data is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEF&CC at Ranchi and CPCB.
- Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

xvii. All the blast furnace (BF) slag shall be granulated and provided to cement manufacturers for further utilization in cement making as per the MoUs signed with various companies including M/s Lafarge, M/s Eco-cement & M/s ACC. LD slag after metal recovery shall be used in sinter plant, blast furnaces and LD convertor, aggregates making, road ballast making, soil conditioning etc. All the flue dust generated shall be recycled within the plant to the maximum extent. Mill scales, LD sludge, lime fines and flue dust shall be recycled back to the sinter plant. The BF gas cleaning plant sludge shall be used for manufacturing briquettes.

Compliance Status:

- Online slag granulation facilities have been implemented in all Blast Furnaces.
- All the BF Slag is being granulated and made available to the Cement plants for cement making.
- Blast furnace (BF) slag are provided to cement manufacturers for further utilization in cement making as per the MoUs signed with M/s Nuvoco Vistas, M/s Dalmia Cement, M/s ACC, M/s JSW Bengal and M/s Emami Cement.

- LD Slag after metal recovery is being used internally in the manufacturing process as well as externally in brick and road making works. "Tata Nirmaan" and "Tata Aggretto" are branded product of LD slag for its external utilization.
- Additional initiatives undertaken for improving the utilization of LD Slag:
  - Co-processing of LD Slag at Cement Kilns.
  - Open & closed Steam Aging inside Works
  - Use of LD Slag in road making & railway ballast.
- Flue dust generated are recycled within the plant, Mill scales, LD sludge, lime fines and flue dust are also recycled back to sinter plant.
- Blast Furnace gas cleaning plant (GCP) sludge is re-utilized within the manufacturing process.

xviii. As proposed, coal tar sludge and BOD sludge shall be recycled for coke making by mixing with the coal charge and used in the coke ovens. Chromium sludge shall be disposed in a HDPE lined secured landfills as per the CPCB guidelines within the complex. All the other solid waste including broken refractory mass shall be properly disposed off in environment-friendly manner. Oily waste and spent oil shall be provided to authorized recyclers/reprocesses.

Compliance Status:

- Coal Tar sludge and BOD Sludge generated from By Product Plant is being recycled in coke plant by mixing with raw materials. The report for FY'23 is enclosed under **Annexure-IV**.
- Chrome sludge is being disposed through authorized TSDF i.e., Adityapur Waste management Pvt Ltd.
- All other kind of process wastes are being reutilized in sinter plant.
- Oily waste and spent oil are sold to authorized recyclers/reprocessors.

xix. All the slag shall be used for land filling inside the plant or used as building material only after passing through Toxic Chemical Leachability Potential (TCLP) test. Toxic Chromium sludge and other hazardous substances recovered from the slag and output waste shall be disposed off in secured landfill as per CPCB guidelines.

Compliance Status:

- LD Slag are used for road making.
- The TCLP test conducted by external approved agency.
- Leachate potential of all heavy metals is negligible.
- Chrome sludge is being disposed through authorized TSDF i.e., Adityapur Waste management Pvt Ltd.

xx. 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 the Ministry's regional office at Ranchi, Jharkhand SPCB and CPCB.

Compliance Status:

- Most of the process solid waste are reutilized within the manufacturing process.
- Information regarding solid waste and hazardous waste is being submitted in Environment Statement to the Board every year. Environment statement for FY'22 is attached as **Annexure-V**.
- Status of Solid Waste, hazardous and other waste generation, and utilization from April 2022 to March 2023 is enclosed as **Annexure – VI.**

xxi. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 1999 and subsequent amendment in 2003. All the fly ash shall be provided to cement and brick manufacturers for further utilization and "Memorandum of Understanding" shall be submitted to Ministry's Regional Office at Ranchi.

Compliance Status:

- All the boilers of Captive power plants have been converted from coal fired to gas fired, thus there is no generation of fly ash in the power plant.
- Ash generation from the captive power plants has been stopped due to no coal firing at Power Plants since FY'19.

xxii. A Risk and Disaster Management Plan along with the mitigation measures shall be prepared and a copy submitted to the Ministry's Regional Office at Ranchi, Jharkhand SPCB and CPCB within 3 months of issue of environment clearance letter.

Compliance Status:

- Disaster Management Institute, Bhopal has verified and certified the Risk assessment report and Disaster Management Plan vide their letter no. DMI/IDMU/Con-227/24 dated April 16, 2012. The same has been submitted to JSPCB.
- Copy of updated On-site Emergency Plan & Disaster Control approval by Chief Inspector of Factories, Jharkhand vide letter no. 615 dated 29.05.2020 is attached as **Annexure-VII.**

xxiii. As proposed, green belt shall be developed in more than 33 % area within and around the plant premises as per the CPCB guidelines in consultation with DFO.

Compliance Status:

- Total area under green cover within Jamshedpur town including steel works is approx. 2400 ha out of 5094 ha which is more than the required 33% green cover area.
- We have planted 1,33,68 nos. saplings during April 2022 to March 2022 inside the works, Jugsalai Muck Dump area and in Township in the same period. Every year plantation done in available space.

The following indigenous plant species are being planted:

Karanj, Syzygium, Fox tail Palm, Arica Palm, Mahagoney, Conocarpus, Juniperious, Kanel, Hibicus, Tecoma, Cassia fistula, Terminalia argintia, Bottel brush, Arjun, Putranjiva, Ashoka, Juniperus, Exeroa, Karanj, Plumeria, Cassia fistula, Hemliya, Spathodia etc.

xxiv. Prior permission from the State Forest Department shall be taken regarding likely impact of the expansion of the proposed steel plant on the reserve forests. Measures shall be taken to prevent impact of particulate emissions / fugitive emissions, if any from the proposed plant on the surrounding reserve forests viz. Jora Pahar PF, Sand Pcha Rahar PF, Deluse RF located within 10 km radius of the project. Further, Conservation Plan for the conservation of wild fauna in consultation with the State Forest Department shall be prepared and implemented.

Compliance Status:

- Prior Permission from State Forest Department has been obtained vide their memo. No. 2605 dated 20.10.2010.
- Wildlife Conservation Plan for Tata Steel has been prepared with the help of approved external agency recommended by State Forest Department and the same has been approved by Principal Chief Conservator of Forests – Wildlife (PCCF-WL) GoJ on Nov 13,

2017. Further, Payment of levies as per w.r.t. approved SSWLCP of Tata Steel Limited has been deposited into DFO Jamshedpur account vide challan no. 108 dated: 20.02.2023 (Annexure-). Wildlife Conservation Plan will be implemented as directed by Department of Forest, Jharkhand and approved SSWLCP.

xxv. All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Plants shall be implemented.

Compliance Status:

- CREP recommendations have been implemented. Please find enclosed the same as **Annexure – IV**.

xxvi. At least 5 % of the total cost of the project shall be earmarked towards the corporate social responsibility and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office at Ranchi. Implementation of such program shall be ensured accordingly in a time bound manner.

Compliance Status:

- It is being complied as per the requirement under the Companies Act. The amount spent by the Company on Corporate Social Responsibility (CSR) activities is given below.
- A total of ₹ 1441 Crores spent in and around Jamshedpur since FY'11 (since inception of 9.7 MTPA Projects) till FY'23 are as follows:

FY	Total Spent on CSR in Cr.	CSR spent in and around Jamshedpur in Cr.
2011	126	97.15
2012	146	106.43
2013	171	120.34
2014	212	136.95
2015	171	56.11
2016	204	83.62
2017	194	73.36
2018	232	82.19
2019	315	159.73
2020	193	76.52
2021	267	102.42
2022	406	185.62
2023	481	160
	Total	**1441**

- It is reported in the Company's Integrated Report. These reports are available on the website of Tata Steel and may be seen/downloaded from https://www.tatasteel.com/investors/integrated-reportannual-report/

xxvii. The company shall provide housing for construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.

Compliance Status:

- The construction work has been completed. All the necessary infrastructure and facilities such as food, medical health care, toilets, safe drinking water, etc. had been provided to construction labor during the project work.

B. General Conditions:

i. **The project authorities must strictly adhere to the stipulations made by the Jharkhand Pollution Control Board and the State Government.**

Compliance Status:

- We are abiding by all the compliance conditions made by JSPCB and State Government of Jharkhand.

ii. **No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).**

Compliance Status:

- No further expansion or modifications beyond the existing capacity of 11 MTPA in the plant will be carried out without prior approval from MoEF&CC. The detail of production of various products for last five years are as follows:

Product	Unit	Capacity granted in EC	FY'18	FY'19	FY'20	FY'21	FY'22	FY'23
Hot Metal	MTPA	12.5	10.9	10.8	10.8	9.87	10.83	11.06
Crude Steel		11	10.0	10.2	10.2	9.34	10.24	10.64

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 PM10, PM2.5, SO2 and NOx are anticipated in consultation with the SPCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Ranchi and the SPCB/CPCB once in six months.**

Compliance Status:

- 4 nos. of online CAAQMS have been commissioned to monitor PM_{10}, $PM_{2.5}$, SO_2, NOx & CO continuously inside the Works. There are 8 nos. of manual AAQMS located both inside and outside the plant area.
- The monthly monitoring reports by NABL accredited environment laboratory is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEF&CC, Ranchi and CPCB.
- Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

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 from time to time. The treated wastewater shall be utilized for plantation purpose.**

Compliance Status:

- A central effluent treatment plant (CETP) of 4 MGD has been constructed to treat and recycle most of the effluent by tertiary treatment with Reverse Osmosis (RO). Treated water from plant (CETP) primary, secondary and tertiary treatment is used through recycling or used for dust suppression, slag quenching and green belt development etc. inside the plant conforming to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time.
- Capacity of the existing CETP has been commissioned with recovery of additional 5 MGD, enhancing the overall treatment capacity of the CETP from 4 MGD to 9 MGD and

is under ramp up stage to treat and recycle the balance wastewater generated from various units.

- Monitoring reports for all relevant parameters from April 2022 to March 2023 is attached in **Annexure-I**.

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) (night-time).

Compliance Status:

- Personal Protective Equipment (PPE) have been provided to all the workers/officers to avoid any accompanied noise hazards. Facilities like silencers, enclosures, hood etc have been provided to reduce noise at source. The monitored data in the work zone reveals that the noise level does not exceeds 85 dB (A) for 8 hr exposures. Similarly, in the ambient also, the noise levels meet the prescribed standards.
- The ambient noise level monitoring is being done at different part of the Jamshedpur town in frequent interval outside Steel Works to assess the ambient noise level status. Noise level in the town is found beyond the standard on few occasions. The possible reason of equivalent noise levels in respect of all categories of areas exceeded the standards for day and night times is due to heavy traffic movement in the town, market and commercial activities, festivals and other domestic celebrations and frequent religious rituals.
- Monitoring reports for all relevant parameters from April 2022 to March 2022 is attached in **Annexure-I**.

vi. Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.

Compliance Status:

- Regular health surveillance is being conducted i.e., 2 times in a year for all the workers who have already attended more than 40 years of age. The workers having age less than 40 years are undergone occupational health surveillance program once in a year.

vii. The company shall develop surface as well as ground water harvesting structures to harvest the rainwater for utilization in the lean season besides recharging the ground water table.

Compliance Status:

- 38 nos. of rainwater harvesting structures have been provided inside the plant area of which some area has the facility of Ground Water Recharge system. RWH structures have been constructed based on the maximum rainfall of last 20 yrs.

viii. 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 Status:

- All the environmental protection measures and safeguards such as APCEs, ETPs, hazardous waste proper handling, transfer and disposal have been deployed as recommended in the EIA/EMP report.

- Socio economic development activities are regularly undertaken in and around Jamshedpur through the two agencies namely, Tata Steel Rural Development Society and Tata Steel Community Development & Welfare Services Centres. The development activities undertaken in the surrounding community are need based and are in the field of health care, education, mid-day meals in schools, sports and culture, self-employment, drinking water, rural electrification, etc. Tata Steel also facilitate the Institutes like R D Tata Technical Institute, Tata Football Academy, Tata Archery Foundation, etc. which encourages the local talent to develop themselves and participate at National and International levels.

ix. Requisite funds shall be earmarked towards total capital cost and recurring cost/annum for environmental pollution control measures to implement the conditions stipulated by the Ministry of Environment, Forests and Climate Change (MoEF&CC) 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 Ranchi. The funds so provided shall not be diverted for any other purpose.

Compliance Status:

- Capital expenditure on environment is being spent on Air Pollution Control, Solid Waste Management, Zero Wastewater Discharge and Others including Greenery, Online Monitoring, etc.
- In FY 23 total capital expenditure and recurring cost for environment are 354 Crore and 94.8 Crores respectively.
- The funds for capital investment on pollution control equipment are not diverted.

x. A copy of Clearance letter shall be sent by proponent to concern 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 website of the company by the proponent.

Compliance Status:

- The copy of Clearance letter has been sent to District Commissioner, Block Development Officer and Jamshedpur Notified Area Committee vide our letter no. EMD/C-41/32-34/16 dated March 04, 2016.
- The clearance letter is also uploaded on the company website: (https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

xi. 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&CC at Ranchi, the respective Zonal Office of CPCB and the JPCB. The criteria pollutant levels namely, PM10, SO2, NOx (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:

- Six monthly compliance reports and the monitored data are being submitted regularly. The ambient air quality parameters are being monitored and displayed at the main gate of the company in the public domain.
- The six-monthly compliance reports along the monitored data is also uploaded in the website:(https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

xii. 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 MOEFCC, the respective Zonal Office of CPCB and the JSPCB. The Regional Office of this Ministry at Ranchi / CPCB / JPCB shall monitor the stipulated conditions.

Compliance Status:

- Six monthly compliance reports are being submitted regularly in soft copy by e-mail as well as uploaded on MoEF&CC website.

xiii. 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 Offices of the MoEF&CC at Ranchi by e-mail.

Compliance Status:

- The environmental statement for each financial year in Form-V is regularly being submitted to the Jharkhand State Pollution Control Board.
- Environment Statement for FY'22 has been submitted vide our letter no. EMD/C-23/168/22 dated 22.09.2022.
- The environmental statement has also been uploaded on the company's website: (https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/)

xiv. 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, Forests and Climate Change (MoEF&CC) 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 shall be forwarded to the Regional office.

Compliance Status:

- The Notice has been advertised in two local newspapers viz. Prabhat Khabar (Hindi) and The Telegraph (English) on March 08, 2016. The same has also been informed to the regional office of MoEF&CC at Ranchi on March 09, 2016.

xv. 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.

Compliance Status:

- It is compiled as the project has been already completed and Consent to Operate has been issued by Jharkhand State Pollution Control Board.

MONITORING & ANALYSIS REPORT

April 2022 to March 2023

Tata Steel Limited, Jamshedpur
(MAIN WORKS & TOWN)

ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR

ANNEXURE-I

TATA STEEL

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
WORKS DRAINS EFFLUENT QUALITY TEST REPORT

Sample Location	Parameter	UoM	Apr-22			May-22			Jun-22			Jul-22			Aug-22			Sep-22		
			Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Susun Gharia Drain	pH	-	8.3	6.9	7.9	8.4	7.1	7.8	8.2	7.4	7.8	8.2	7.0	7.8	8.4	7.4	7.8	8.1	7.5	7.9
	Total Suspended solids	mg/L	90.0	22.0	58.7	85.0	36.0	68.0	81.0	56.0	69.2	98.0	40.0	66.8	94.0	24.0	78.6	94.0	22.0	54.1
	Oil & Grease	mg/L	2.4	1.0	1.6	1.6	0.8	1.1	1.6	0.8	1.2	2.0	0.8	1.3	2.8	1.2	2.0	2.8	1.6	2.2
	Ammonical Nitrogen (as N)	mg/L	9.2	2.3	5.3	11.0	1.8	4.2	18.6	1.6	5.5	10.8	2.1	5.6	33.8	2.6	7.0	17.0	2.2	5.9
	Cyanide (as CN-)	mg/L	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2
	Biological Oxygen Demand, BOD	mg/L	25.1	8.0	15.4	19.3	14.2	16.4	20.8	12.8	16.1	19.3	11.1	15.3	16.9	9.2	12.0	21.3	9.1	12.1
	Chemical Oxygen Demand, COD	mg/L	240.0	108.0	170.6	160.0	85.0	146.4	148.0	36.0	107.0	119.0	61.0	84.9	230.0	65.0	99.4	120.0	63.0	90.8
	Phenol	mg/L	0.4	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.5	0.1	0.2	0.2	0.1	0.2	0.4	0.1	0.2
Sample Location	**Parameter**	**UoM**	**Oct-22**			**Nov-22**			**Dec-22**			**Jan-23**			**Feb-23**			**Mar-23**		
			Max	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**
Susun Gharia Drain	pH	-	8.20	7.63	7.94	8.2	7.3	7.9	8.2	7.7	8.0	9.2	7.6	8.0	10.6	8.1	8.9	9.1	7.3	8.3
	Total Suspended solids	mg/L	90.0	28.0	58.1	88.0	36.0	58.2	86.0	36.0	56.8	94.0	18.0	67.9	86.0	20.0	40.8	98.0	30.0	66.4
	Oil & Grease	mg/L	2.8	1.2	1.9	2.8	1.2	2.1	3.2	1.6	2.4	3.2	2.0	2.5	3.2	2.0	2.7	4.0	2.4	3.2
	Ammonical Nitrogen (as N)	mg/L	7.7	1.9	3.9	20.5	2.0	7.2	25.3	2.8	12.3	41.4	2.8	16.2	42.1	7.0	19.1	46.1	6.6	21.7
	Cyanide (as CN-)	mg/L	0.2	0.1	0.2	0.2	0.1	0.2	1.3	0.1	0.3	8.8	0.1	1.1	2.9	0.1	0.2	0.9	0.1	0.2
	Biological Oxygen Demand, BOD	mg/L	29.9	7.8	12.0	15.0	10.0	11.5	12.5	7.5	9.9	12.0	8.0	9.2	14.0	8.0	10.8	20.0	9.0	14.0
	Chemical Oxygen Demand, COD	mg/L	140.0	70.0	110.5	152.0	78.0	106.2	140.0	70.0	100.6	125.0	29.0	83.7	165.0	54.0	95.7	197.0	55.0	118.4
	Phenol	mg/L	0.2	0.2	0.2	0.3	0.2	0.2	0.4	0.2	0.3	0.4	0.2	0.3	0.4	0.2	0.3	0.5	0.0	0.4

Note
Standards applicable as per Environment (Protection) (Third Amendment) Rules, 2012 issued in Gazette of India Notification vide No.: G. S. R. 277 (E) dated March 31, 2012.

This test report is generated by NABL Accredited TATA STEEL LIMITED JSR EMD LAB having accreditation No.TC-8363 dated 21-02-2022 having validity till 20-02-2024

Sr.Manager Environment Monitoring & Analysis
Environment Management Department

Head Envt.Monitoring Testing & Analysis (TSJ)
Environment Management Department

TATA STEEL

ANNEXURE-1

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
TREATED EFFLUENT QUALITY REPORT OF BOTP & CRM

Sample Location	Parameter	UoM	Apr-22			May-22			Jun-22			Jul-22			Aug-22			Sep-22		
	Parameter	**UoM**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**
BOT TREATED	pH	-	8.2	6.9	7.4	8.4	6.9	7.4	7.9	6.8	7.5	8.5	6.9	7.6	8.4	6.9	7.6	8.0	6.9	7.6
	Total Suspended solids	mg/L	86.0	31.0	71.5	90.0	45.0	70.3	79.0	50.0	69.3	96.0	33.0	64.7	98.0	20.0	60.5	94.0	38.0	74.8
	Oil & Grease	mg/L	2.4	0.8	1.4	2.0	1.0	1.4	2.0	0.8	1.4	2.0	1.2	1.6	2.8	1.2	1.9	2.4	1.2	1.9
	Ammonical Nitrogen (as N)	mg/L	32.7	3.4	11.8	29.1	1.5	9.6	39.0	2.6	13.7	25.6	1.3	9.1	33.5	1.5	15.9	29.5	1.7	12.6
	Cyanide (as CN-)	mg/L	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2
	Biological Oxygen Demand, BOD	mg/L	19.6	9.7	16.3	28.8	25.2	25.8	25.9	19.1	24.5	24.6	12.8	18.2	18.7	12.2	17.9	24.8	12.3	19.5
	Chemical Oxygen Demand, COD	mg/L	245.0	122.0	200.2	244.0	143.0	227.6	238.0	110.0	187.2	240.0	104.0	150.5	242.0	138.0	189.9	235.0	145.0	198.1
	Phenol	mg/L	0.3	0.2	0.2	0.2	0.0	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.1	0.2
	Parameter	**UoM**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**
CRM	pH	-	7.3	7.0	7.1	7.5	6.8	7.1	7.5	6.9	7.2	7.6	6.8	7.2	7.4	6.7	7.1	8.3	6.4	7.1
	Total Suspended solids	mg/L	59.0	41.0	49.0	62.0	31.0	45.7	60.0	37.0	46.6	64.0	27.0	49.5	66.0	24.0	47.6	88.0	34.0	55.6
	Oil & Grease	mg/L	2.0	1.0	1.1	1.6	0.6	1.0	1.6	0.8	1.1	3.2	0.8	1.6	4.3	0.8	2.6	3.6	1.2	2.7
	Ammonical Nitrogen (as N)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	N/A	0.5	0.2	0.3
	Cyanide (as CN-)	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA	NA
	Biological Oxygen Demand, BOD	mg/L	25.4	11.0	15.6	22.8	12.9	18.3	17.7	11.3	14.5	16.0	9.3	13.4	16.9	7.8	12.4	21.4	7.6	11.2
	Chemical Oxygen Demand, COD	mg/L	225.0	109.0	164.6	168.0	124.0	143.2	136.0	40.0	91.2	163.0	55.0	90.5	190.0	55.0	101.5	246.0	52.0	106.1
	Phenol	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	N/A	N/A	N/A	N/A	N/A	N/A	NA	NA	NA
Sample Location	**Parameter**	**UoM**	**Oct-22**			**Nov-22**			**Dec-22**			**Jan-23**			**Feb-23**			**Mar-23**		
	Parameter	**UoM**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**
BOT TREATED	pH	-	8.1	7.2	7.6	8.1	7.0	7.7	8.8	6.8	7.7	9.9	6.9	8.7	10.0	7.5	9.4	10.1	6.7	8.6
	Total Suspended solids	mg/L	92.0	50.0	72.4	88.0	42.0	69.3	82.0	34.0	56.0	98.0	46.0	77.2	78.0	26.0	45.8	98.0	22.0	54.0
	Oil & Grease	mg/L	2.8	1.6	2.1	2.8	1.2	2.2	3.2	1.6	2.4	3.2	1.6	2.3	3.2	2.0	2.6	4.0	2.0	2.8
	Ammonical Nitrogen (as N)	mg/L	18.4	2.0	7.9	44.8	2.8	25.3	76.3	16.6	38.1	99.9	8.5	59.2	128.4	20.8	66.0	94.1	15.1	47.2
	Cyanide (as CN-)	mg/L	0.2	0.2	0.2	0.2	0.1	0.2	3.1	0.1	0.5	6.5	0.1	1.0	0.4	0.1	0.2	0.9	0.1	0.2
	Biological Oxygen Demand, BOD	mg/L	24.3	18.2	18.9	25.0	13.3	19.9	20.0	12.0	16.2	20.0	10.0	16.0	20.0	13.3	16.1	25.3	15.0	19.4
	Chemical Oxygen Demand, COD	mg/L	240.0	185.0	212.1	232.0	162.0	206.0	238.0	151.0	196.7	241.0	160.0	213.0	242.0	182.0	219.2	242.0	120.0	216.2
	Phenol	mg/L	0.3	0.1	0.2	0.3	0.2	0.2	0.4	0.2	0.3	0.4	0.2	0.3	0.4	0.2	0.3	0.5	0.1	0.3
	Parameter	**UoM**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**
CRM	pH	-	8.3	6.5	7.3	8.4	6.5	7.2	7.9	6.6	7.2	7.7	6.5	7.0	7.8	6.4	7.2	7.4	6.5	7.0
	Total Suspended solids	mg/L	90.0	28.0	52.8	90.0	34.0	61.2	90.0	40.0	62.3	90.0	38.0	59.3	76.0	24.0	40.3	96.0	34.0	61.5
	Oil & Grease	mg/L	4.0	1.6	2.6	4.0	1.6	2.9	3.6	2.0	2.8	3.6	1.6	2.8	3.2	2.0	2.5	4.4	0.4	3.3
	Ammonical Nitrogen (as N)	mg/L	2.7	0.1	0.6	0.8	0.1	0.4	0.6	0.1	0.3	< 1.0	< 1.0	< 1.0	1.5	0.6	< 1.0	1.3	< 1.0	< 1.0
	Cyanide (as CN-)	mg/L	0.2	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0	< 0.1	< 0.1	< 0.1	0.1	0.0	0.1	0.1	< 0.1	< 0.1
	Biological Oxygen Demand, BOD	mg/L	12.5	9.2	11.0	16.0	9.0	11.3	16.0	9.0	11.1	12.0	8.0	9.8	13.0	7.0	9.3	18.0	9.0	11.6
	Chemical Oxygen Demand, COD	mg/L	218.0	92.0	120.5	148.0	83.0	113.0	168.0	80.0	110.7	150.0	72.0	92.8	144.0	73.0	94.7	192.0	50.0	106.1
	Phenol	mg/L	0.3	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.0	0.4	0.0	0.2	< 0.1	< 0.1	< 0.1	0.1	< 0.1	< 0.1

Note

Standards applicable as per Environment (Protection) (Third Amendment) Rules, 2012 issued in Gazette of India Notification vide No.: G. S. R. 277 (E) dated March 31, 2012.

This test report is generated by NABL Accredited TATA STEEL LIMITED JSR EMD LAB having accreditation No.TC-8363 dated 21-02-2022 having validity till 20-02-2024

Nagarjuna

Sr.Manager Environment Monitoring & Analysis
Environment Management Department

Head Envt.Monitoring Testing & Analysis (TSJ)
Environment Management Department

ANNEXURE-I

TATA STEEL

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
AMBIENT AIR QUALITY REPORT FOR INSIDE WORKS - FY23

Location	Parameter	UoM	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
WPFA	Particulate Matter, PM10	µg/m3	194.0	165.5	107.8	63.4	98.0	44.7	97.1	155.5	189.0	163.0	174.6	152.6
	Particulate Matter, PM2.5	µg/m3	43.0	47.5	27.0	23.4	30.4	21.5	31.7	33.5	66.0	52.0	48.5	43.1
	Sulphur Dioxide (SO2)	µg/m3	3.5	6.0	7.3	9.1	14.7	11.0	23.8	21.7	22.0	17.0	29.3	20.3
	Nitrogen Dioxide, (NO2)	µg/m3	29.0	18.2	16.5	24.6	22.8	44.8	38.0	57.2	48.0	42.0	50.0	30.3
	Carbon Monoxide(CO)	mg/m3	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Ammonia (NH3)	µg/m3	62.0	52.9	43.9	41.7	11.9	98.3	29.0	56.3	56.0	48.0	93.8	42.7
	Ozone (O3)	µg/m3	12.2	5.4	9.2	8.2	18.0	10.5	8.2	10.7	12.0	13.0	9.8	13.9
	Nickel (Ni)	ng/m3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Arsenic (As)	ng/m3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Lead (Pb)	µg/m3	0.1	0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzene (C6H6)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo alpha Pyrene (BaP)	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
CRM	**Parameter**	**UoM**	**Apr-22**	**May-22**	**Jun-22**	**Jul-22**	**Aug-22**	**Sep-22**	**Oct-22**	**Nov-22**	**Dec-22**	**Jan-23**	**Feb-23**	**Mar-23**
	Particulate Matter, PM10	µg/m3	197.0	128.6	124.5	52.1	56.8	77.6	136.3	236.9	229.0	249.0	268.3	247.3
	Particulate Matter, PM2.5	µg/m3	51.0	33.0	36.3	18.9	18.9	24.7	42.1	42.7	48.0	75.0	54.6	61.8
	Sulphur Dioxide (SO2)	µg/m3	8.1	5.9	7.7	15.6	7.0	10.7	14.1	27.7	17.0	14.0	27.8	22.0
	Nitrogen Dioxide, (NO2)	µg/m3	33.3	18.3	29.8	35.7	22.6	34.5	27.2	52.9	76.0	46.0	56.3	48.2
	Carbon Monoxide(CO)	mg/m3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.3
	Ammonia (NH3)	µg/m3	80.5	69.9	26.0	64.0	14.8	32.0	67.0	79.7	65.0	51.0	77.1	57.8
	Ozone (O3)	µg/m3	16.4	11.2	4.5	3.6	4.2	8.2	9.9	14.4	11.0	9.0	18.8	8.3
	Nickel (Ni)	ng/m3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Arsenic (As)	ng/m3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Lead (Pb)	µg/m3	0.1	0.1	< 0.1	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzene (C6H6)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo alpha Pyrene (BaP)	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PH#3	**Parameter**	**UoM**	**Apr-22**	**May-22**	**Jun-22**	**Jul-22**	**Aug-22**	**Sep-22**	**Oct-22**	**Nov-22**	**Dec-22**	**Jan-23**	**Feb-23**	**Mar-23**
	Particulate Matter, PM10	µg/m3	202.0	165.6	139.1	69.7	88.8	90.3	39.5	129.0	236.0	237.0	181.4	291.0
	Particulate Matter, PM2.5	µg/m3	61.6	39.8	34.4	23.9	35.2	34.6	16.2	25.3	62.0	69.0	45.4	70.7
	Sulphur Dioxide (SO2)	µg/m3	10.3	17.2	14.1	10.6	16.1	11.5	14.9	14.1	30.0	18.0	31.5	26.1
	Nitrogen Dioxide, (NO2)	µg/m3	40.1	39.8	24.4	28.9	22.4	34.5	29.7	21.8	53.0	50.0	57.7	58.1
	Carbon Monoxide(CO)	mg/m3	0.3	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3	0.3
	Ammonia (NH3)	µg/m3	64.6	54.7	64.6	76.2	64.9	84.3	68.7	73.5	98.0	45.0	63.0	52.1
	Ozone (O3)	µg/m3	19.7	14.0	3.8	4.9	6.7	4.3	8.1	7.9	8.0	13.0	11.7	12.2
	Nickel (Ni)	ng/m3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Arsenic (As)	ng/m3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Lead (Pb)	µg/m3	0.1	0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzene (C6H6)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo alpha Pyrene (BaP)	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PH#6	**Parameter**	**UoM**	**Apr-22**	**May-22**	**Jun-22**	**Jul-22**	**Aug-22**	**Sep-22**	**Oct-22**	**Nov-22**	**Dec-22**	**Jan-23**	**Feb-23**	**Mar-23**
	Particulate Matter, PM10	µg/m3	240.8	105.3	144.5	76.0	60.2	67.1	70.4	223.9	279.0	240.0	267.6	200.5
	Particulate Matter, PM2.5	µg/m3	47.0	22.4	37.5	24.3	18.8	20.5	26.9	58.6	87.0	74.0	77.8	54.2
	Sulphur Dioxide (SO2)	µg/m3	9.5	7.3	14.1	8.9	8.0	18.5	16.5	23.9	14.0	14.0	28.0	11.7
	Nitrogen Dioxide, (NO2)	µg/m3	36.8	28.4	26.9	22.7	21.1	33.9	19.6	60.0	49.0	50.0	57.5	31.5
	Carbon Monoxide(CO)	mg/m3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.3	0.3
	Ammonia (NH3)	µg/m3	61.1	44.8	43.5	72.9	16.0	32.6	58.7	60.9	61.0	59.0	57.5	63.6
	Ozone (O3)	µg/m3	12.8	6.0	3.8	3.4	3.9	7.5	7.2	7.8	13.0	16.0	10.3	10.3
	Nickel (Ni)	ng/m3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Arsenic (As)	ng/m3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Lead (Pb)	µg/m3	0.1	0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzene (C6H6)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo alpha Pyrene (BaP)	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Note:
Standards applicable as per National Ambient Air Quality Standards vide Notification No.: B-29016/20/90/PCI-L dated 18th November 2009.
UoM - Unit of Measurement
WPFA - West Plant First Aid Station
CRM - Cold Roll Mill
PH - Power House
NT - Not Traced

*** This test report is generated by NABL Accredited TATA STEEL LIMITED JSR EMD LAB having accreditation No.TC-8363 dated 21-02-2022 having validity till 20-02-2024**

Sr Manager
Environment Monitoring & Analysis

Head
Environment Monitoring, Testing & Analysis (TSJ)

TATA STEEL

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
NOISE LEVEL MONITORING REPORT SUMMARY

S.no	Area	UoM	Apr-22		May-22		Jun-22		Jul-22		Aug-22		Sep-22	
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
1	Near N Road Boundary Wall	dB(A) Leq	69.5	73.4	68.5	69.3	68.1	61.5	68.8	64.2	68.6	63.6	66.2	63.1
2	Near L Town Boundary Wall		70.1	70.6	70.0	71.4	69.5	65.0	70.2	65.6	70.2	64.8	68.6	64.7
3	Near Burma Mines Gate		69.6	71.3	69.2	68.5	69.7	61.4	70.1	64.9	71.5	67.4	70.3	60.5
4	Near Jugsalai Gate		71.1	68.6	69.4	71.1	69.0	64.8	69.2	65.2	72.3	65.8	71.0	63.5

Note:

Standards applicable as per Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S. O. 1046 (E), dated 22-11-2000

$ This test report was generated by TATA STEEL LIMITED JSR EMD LAB having NABL Accreditation No.TC-8363.

Note: Due to covid-19 lockdown night-time monitoring was not done (ND).

J. Nagarjuna Reddy

Sr. Manager
Monitoring and Analysis

for

Head
Environment Monitoring, Testing & Analysis
(TSJ)

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
NOISE LEVEL MONITORING REPORT SUMMARY

S.no	Area	UoM	Oct-22		Nov-22		Dec-22		Jan-23		Feb-23		Mar-23	
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
1	Near N Road Boundary Wall	dB(A) Leq	67.8	66.1	68.4	64.8	68.0	64.2	62.7	60.2	63.6	60.3	68.7	60.4
2	Near L Town Boundary Wall		71.4	65.0	71.3	67.2	70.2	68.4	71.6	68.8	61.2	59.3	70.3	64.1
3	Near Burma Mines Gate		70.6	68.0	72.8	63.0	70.8	68.5	60.4	60.6	59.7	58.4	61.7	60.2
4	Near Jugsalai Gate		73.7	66.2	70.1	66.4	71.7	69.4	69.3	62.5	62.8	61.5	69.2	63.5

Note:
Standards applicable as per Noise Pollution (Regulation and Control)
This test report is generated by NABL Accredited TATA STEEL LIMITED JSR EMD LAB having

Sr Manager

Environment Monitoring & Analysis

Head
Environment Monitoring, Testing & Analysis (TSJ)

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Apr-22			May-22			Jun-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
1	Blast Furnace	C - Stove	<5	-	-	<5	-	-	-	-	-
2	Blast Furnace	E - Stock & Cast House	10.8	-	-	10.8	-	-	6.5	-	-
3	Blast Furnace	E - Stove	-	-	-	-	-	-	-	-	-
4	Blast Furnace	F - Cast House	5.2	-	-	5.2	-	-	-	-	-
5	Blast Furnace	F - PCI	24.0	-	-	24.0	-	-	7.7	-	-
6	Blast Furnace	F - Stock House-DE	-	-	-	-	-	-	-	-	-
7	Blast Furnace	F - Stove	<5	-	<5	<5	-	<5	8.7	-	-
8	Blast Furnace	G - Cast House	-	-	-	-	-	-	-	-	-
9	Blast Furnace	G - PCI-01	9.1	-	-	9.1	-	-	-	-	-
10	Blast Furnace	G - PCI-02	<5	-	-	<5	-	-	21.8	38.8	43.0
11	Blast Furnace	G - PCI-03	<5	-	-	<5	-	-	9.5	-	-
12	Blast Furnace	G - Stock House	13.0	-	-	13.0	-	-	-	-	-
13	Blast Furnace	G - Stove	-	-	-	-	-	-	-	-	-
14	Blast Furnace	H - Cast House	-	-	-	-	-	-	-	-	-
15	Blast Furnace	H - PCI-01	<5	-	-	<5	-	-	-	-	-
16	Blast Furnace	H - PCI-02	-	-	-	-	-	-	5.7	-	-
17	Blast Furnace	H - Stock House	-	-	-	-	-	-	16.3	-	-
18	Blast Furnace	H - Stock House - DE	-	-	-	-	-	-	-	-	-
19	Blast Furnace	H - Stove	7.2	-	-	7.2	-	-	11.4	-	-
20	Blast Furnace	HMPP	-	-	-	-	-	-	-	-	-
21	Blast Furnace	I - Cast House	-	-	-	-	-	-	-	-	-
22	Blast Furnace	I - PCI	12.3	-	-	12.3	-	-	19.3	-	-
23	Blast Furnace	I - Stock House	-	-	-	-	-	-	-	-	-
24	Blast Furnace	I - Stove	-	-	-	-	-	-	13.5	-	-
25	Coke Plant	Battery 07	24.3	35.2	125.2	24.3	35.2	125.2	-	-	-
26	Coke Plant	Battery 08	37.5	48.9	170.1	37.5	48.9	170.1	14.9	-	116.5
27	Coke Plant	Battery 09	15.8	13.7	119.1	15.8	13.7	119.1	-	-	-
28	Coke Plant	Battery 10	21.3	11.3	263.6	21.3	11.3	263.6	-	-	-
29	Coke Plant	Battery 10 Pushing Dedusting	-	-	-	-	-	-	-	-	-
30	Coke Plant	Battery 11	23.0	7.8	280.0	23.0	7.8	280.0	22.8	-	-
31	Coke Plant	Battery 11 Pushing Dedusting	-	-	-	-	-	-	-	-	-
32	LD 1	LD 01 - Ladle Furnace 01	-	-	-	-	-	-	-	-	-
33	LD 1	LD 01 - Ladle Furnace 02	-	-	-	-	-	-	-	-	-
34	LD 1	LD 01 - Ladle Furnace 03	-	-	-	-	-	-	-	-	-
35	LD 1	LD 01 - Secondary Emission	6.1	-	-	6.1	-	-	-	-	-
36	LD 2	LD 02 - DE 01	<5	-	-	<5	-	-	<5	-	-
37	LD 2	LD 02 - DE 02	-	-	-	-	-	-	-	-	-
38	LD 2	LD 02 - DE 03	5.2	-	-	5.2	-	-	-	-	-
39	LD 2	LD 02 - DE 04	-	-	-	-	-	-	-	-	-
40	LD 2	LD 02 - DE 05	-	-	-	-	-	-	-	-	-
41	LD 2	LD 02 - DE 06	<5	-	-	<5	-	-	-	-	-
42	LD 2	LD 02 - DE 07	-	-	-	-	-	-	6.1	-	-
43	LD 2	LD 02 - DE 08	6.4	-	-	6.4	-	-	-	-	-
44	LD 2	LD 02 - DE 09	-	-	-	-	-	-	-	-	-
45	LD 2	LD 02 - Ladle Furnace 01	-	-	-	-	-	-	-	-	-
46	LD 2	LD 02 - Ladle Furnace 02	-	-	-	-	-	-	<5	-	-
47	LD 2	LD 02 - Secondary Emission - 01	-	-	-	-	-	-	-	-	-
48	LD 2	LD 02 - Secondary Emission - 02	-	-	-	-	-	-	-	-	-

ANNEXURE-I

TATA STEEL

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Apr-22			May-22			Jun-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
49	LD 2	LD 02 - Secondary Emission - 03	12.5	-	-	12.5	-	-	9.2	-	-
50	LD 3	LD 03 - Ladle Furnace 01	-	-	-	-	-	-	-	-	-
51	LD 3	LD 03 - Ladle Furnace 02	-	-	-	-	-	-	-	-	-
52	LD 3	LD 03 - Secondary Emission	-	-	-	-	-	-	-	-	-
53	Lime Plant	Merz Kiln 01	5.8	9.7	72.7	5.8	9.7	72.7	<5	-	57.7
54	Lime Plant	Merz Kiln 02	<5	-	-	<5	-	-	<5	29.3	212.7
55	Lime Plant	Merz Kiln 03& 04	<5	-	-	<5	-	-	-	-	-
56	Lime Plant	Merz Kiln 05	7.8	-	-	7.8	-	-	<5	-	-
57	Lime Plant	Merz Kiln 06	<5	-	-	<5	-	-	5.0	-	116.4
58	Lime Plant	Merz Kiln 06 - DE 12	-	-	-	-	-	-	-	-	-
59	Lime Plant	Merz Kiln 07	-	-	-	-	-	-	-	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	-	-	-	10.8	<5	35.1	-	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	-	-	-	10.6	<5	43.1	-	-	-
62	Lime Plant	Merz Kiln 7 DE15	-	-	-	-	-	-	-	-	-
63	Lime Plant	Merz Kiln 8	10.8	<5	35.1	-	-	-	5.3	-	-
64	Lime Plant	Merz Kiln 9	10.6	<5	43.1	-	-	-	6.3	-	-
65	Mills	CRM BAF	-	-	-	-	-	-	-	-	-
66	Mills	CRM CGL - 1	-	-	-	-	-	-	<5	-	-
67	Mills	CRM CGL - 2	-	-	-	-	-	-	-	-	-
68	Mills	CRM PLTCM	-	-	-	-	-	-	-	-	-
69	Mills	HSM RHF - 1	10.9	<5	165.0	10.9	<5	165.0	-	-	-
70	Mills	HSM RHF - 2	11.6	<5	203.5	11.6	<5	203.5	25.6	-	-
71	Mills	HSM RHF - 3	<5	-	82.0	<5	-	82.0	-	-	-
72	Mills	Merchant mill	45.5	-	-	45.5	-	-	36.3	-	-
73	Mills	New Bar Mill	-	-	-	-	-	-	-	-	-
74	Mills	Wire Rod Mill	38.3	-	-	38.3	-	-	21.6	-	-
75	Pellet Plant	PP - Central - Dedusting	-	-	-	-	-	-	-	-	-
76	Pellet Plant	PP - Drying Section	-	-	-	-	-	-	-	-	-
77	Pellet Plant	PP - Gas - Hood	96.1	-	-	-	-	-	6.0	26.3	60.5
78	Pellet Plant	PP - Gas - Wind Box	-	-	-	-	-	-	-	-	-
79	Pellet Plant	PP Grinding Section 01	-	-	-	-	-	-	-	-	-
80	Pellet Plant	PP Grinding Section 02	<5	-	-	-	-	-	5.8	-	-
81	Power House	PH - 3 - Boiler - 07&08	18.0	-	-	32.1	-	-	22.7	-	18.8
82	Power House	PH - 3 - Boiler 5	18.9	-	-	18.0	-	-	5.8	-	-
83	Power House	PH - 3 - Boiler 6	32.1	-	-	18.9	-	-	-	-	-
84	Power House	PH - 4 - Boiler - 4	-	-	-	-	-	-	17.8	-	-
85	Power House	PH - 4 - Boiler - 5	25.5	<5	25.1	25.5	<5	25.1	-	-	-
86	Power House	PH - 4 - Boiler 1&2	17.7	10.3	43.1	17.7	10.3	43.1	21.8	<5	45.5
87	Power House	PH - 5 - Boiler - B&C	-	-	-	-	-	-	13.8	-	-
88	Power House	PH - 5 - Boiler A	18.1	9.2	15.6	18.1	9.2	15.6	<5	-	-
89	Sinter Plant 1	SP - 1 Dedusting	-	-	-	-	-	-	<5	-	-
90	Sinter Plant 1	SP - 1 Waste Gas	69.5	-	-	69.5	-	-	67.2	-	-
91	Sinter Plant 2	SP - 2 Dedusting	-	-	-	-	-	-	-	-	-
92	Sinter Plant 2	SP - 2 High Line	-	-	-	-	-	-	<5	-	-
93	Sinter Plant 2	SP - 2 Waste Gas	44.1	-	-	44.1	-	-	-	-	-
94	Sinter Plant 3	SP - 3 Combined (WG & DD)	76.7	8.0	156.0	76.7	8.0	156.0	-	126.1	322.2
95	Sinter Plant 3	SP - 3 Dedusting	-	-	-	-	-	-	<5	-	-
96	Sinter Plant 4	SP - 4 Combined (WG & DD)	89.8	-	142.4	89.8	-	142.4	78.8	-	-

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.
*MSD-Major Shutdown

Manager-Environment
Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Jul-22			Aug-22			Sep-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
1	Blast Furnace	C - Stove	8.1	-	-	<5	20.7	-	<5	26.3	-
2	Blast Furnace	E - Stock & Cast House	-	-	-	-	-	-	-	-	-
3	Blast Furnace	E - Stove	-	-	-	-	-	-	-	-	-
4	Blast Furnace	F - Cast House	-	-	-	-	-	-	-	-	-
5	Blast Furnace	F - PCI	27.9	-	-	9.9	5.6	-	7.9	5.6	5.2
6	Blast Furnace	F - Stock House-DE	6.9	-	-	-	-	-	-	-	-
7	Blast Furnace	F - Stove	7.5	23.1	<5	8.9	-	-	<5	11.0	<5
8	Blast Furnace	G - Cast House	-	-	-	-	-	-	-	-	-
9	Blast Furnace	G - PCI-01	28.4	5.5	16.5	22.0	8.1	39.3	28.7	-	13.4
10	Blast Furnace	G - PCI-02	8.0	9.2	7.3	9.1	13.2	10.5	5.0	15.1	-
11	Blast Furnace	G - PCI-03	6.0	6.4	5.5	15.9	9.4	275.1	6.2	-	-
12	Blast Furnace	G - Stock House	-	-	-	-	-	-	-	-	-
13	Blast Furnace	G - Stove	10.1	-	-	-	-	-	-	-	-
14	Blast Furnace	H - Cast House	-	-	-	<5	-	-	-	-	-
15	Blast Furnace	H - PCI-01	<5	-	-	<5	9.8	<5	<5	-	-
16	Blast Furnace	H - PCI-02	<5	-	-	6.7	12.2	8.6	9.2	-	-
17	Blast Furnace	H - Stock House	-	-	-	8.1	-	-	-	-	-
18	Blast Furnace	H - Stock House - DE	-	-	-	-	-	-	-	-	-
19	Blast Furnace	H - Stove	-	-	-	10.0	40.3	28.4	<5	32.0	128.4
20	Blast Furnace	HMPP	-	-	-	-	-	-	-	-	-
21	Blast Furnace	I - Cast House	-	-	-	-	-	-	<5	-	-
22	Blast Furnace	I - PCI	7.3	26.2	26.2	15.6	-	-	<5	14.1	5.3
23	Blast Furnace	I - Stock House	-	-	-	-	-	-	-	-	-
24	Blast Furnace	I - Stove	14.2	30.1	23.6	-	-	-	10.0	-	-
25	Coke Plant	Battery 07	59.1	-	-	-	-	-	70.5	349.9	296.1
26	Coke Plant	Battery 08	6.1	294.8	52.4	25.3	361.1	191.3	9.1	134.0	146.7
27	Coke Plant	Battery 09	14.0	-	-	13.1	-	-	27.8	319.8	-
28	Coke Plant	Battery 10	-	-	-	18.3	688.6	110.0	26.5	-	-
29	Coke Plant	Battery 10 Pushing Dedusting	-	-	-	<5	-	-	-	-	-
30	Coke Plant	Battery 11	37.9	-	77.7	-	-	-	20.2	836.0	26.0
31	Coke Plant	Battery 11 Pushing Dedusting	-	-	-	-	-	-	-	-	-
32	LD 1	LD 01 - Ladle Furnace 01	-	-	-	-	-	-	<5	-	-
33	LD 1	LD 01 - Ladle Furnace 02	-	-	-	-	-	-	-	-	-
34	LD 1	LD 01 - Ladle Furnace 03	-	-	-	-	-	-	-	-	-
35	LD 1	LD 01 - Secondary Emission	-	-	-	-	-	-	-	-	-
36	LD 2	LD 02 - DE 01	-	-	-	-	-	-	-	-	-
37	LD 2	LD 02 - DE 02	-	-	-	-	-	-	-	-	-
38	LD 2	LD 02 - DE 03	-	-	-	-	-	-	-	-	-
39	LD 2	LD 02 - DE 04	-	-	-	-	-	-	<5	-	-
40	LD 2	LD 02 - DE 05	-	-	-	<5	-	-	-	-	-
41	LD 2	LD 02 - DE 06	-	-	-	-	-	-	-	-	-
42	LD 2	LD 02 - DE 07	-	-	-	-	-	-	<5	-	-
43	LD 2	LD 02 - DE 08	-	-	-	-	-	-	-	-	-
44	LD 2	LD 02 - DE 09	<5	-	-	-	-	-	<5	-	-
45	LD 2	LD 02 - Ladle Furnace 01	-	-	-	-	-	-	-	-	-
46	LD 2	LD 02 - Ladle Furnace 02	-	-	-	-	-	-	-	-	-
47	LD 2	LD 02 - Secondary Emission - 01	26.8	-	-	-	-	-	-	-	-
48	LD 2	LD 02 - Secondary Emission - 02	-	-	-	-	-	-	-	-	-

ANNEXURE-I

TATA STEEL

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Jul-22			Aug-22			Sep-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
49	LD 2	LD 02 - Secondary Emission - 03	-	-	-	<5	-	-	-	-	-
50	LD 3	LD 03 - Ladle Furnace 01	13.9	-	-	-	-	-	-	-	-
51	LD 3	LD 03 - Ladle Furnace 02	-	-	-	-	-	-	<5	-	-
52	LD 3	LD 03 - Secondary Emission	-	-	-	-	-	-	-	-	-
53	Lime Plant	Merz Kiln 01	<5	88.6	26.2	<5	-	-	<5	101.6	-
54	Lime Plant	Merz Kiln 02	<5	-	-	<5	-	-	<5	130.2	11.0
55	Lime Plant	Merz Kiln 03& 04	<5	-	-	<5	-	-	<5	175.2	7.0
56	Lime Plant	Merz Kiln 05	<5	109.1	12.2	<5	75.3	-	<5	-	-
57	Lime Plant	Merz Kiln 06	<5	112.8	7.3	<5	-	-	<5	181.0	9.2
58	Lime Plant	Merz Kiln 06 - DE 12	-	-	-	-	-	-	<5	-	-
59	Lime Plant	Merz Kiln 07	-	-	-	-	-	-	-	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	-	-	-	<5	-	-	-	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	-	-	-	-	-	-	-	-	-
62	Lime Plant	Merz Kiln 7 DE15	-	-	-	<5	-	-	-	-	-
63	Lime Plant	Merz Kiln 8	5.3	18.8	-	<5	105.0	<5	<5	-	-
64	Lime Plant	Merz Kiln 9	<5	39.5	-	<5	141.4	8.8	<5	361.0	54.0
65	Mills	CRM BAF	-	-	-	-	-	-	-	-	-
66	Mills	CRM CGL - 1	-	-	-	-	-	-	-	-	-
67	Mills	CRM CGL - 2	-	-	-	-	-	-	-	-	-
68	Mills	CRM PLTCM	-	-	-	-	-	-	-	-	-
69	Mills	HSM RHF - 1	20.5	431.0	10.1	-	-	-	-	-	-
70	Mills	HSM RHF - 2	-	-	-	-	-	-	-	-	-
71	Mills	HSM RHF - 3	-	-	-	-	-	-	-	-	-
72	Mills	Merchant mill	60.7	-	-	12.0	-	-	13.8	-	-
73	Mills	New Bar Mill	61.5	-	-	-	-	-	19.6	-	129.1
74	Mills	Wire Rod Mill	46.8	82.8	186.0	30.2	145.3	5.7	30.1	231.0	5.0
75	Pellet Plant	PP - Central - Dedusting	-	-	-	-	-	-	-	-	-
76	Pellet Plant	PP - Drying Section	-	-	-	7.0	-	-	-	-	-
77	Pellet Plant	PP - Gas - Hood	7.6	-	-	6.0	11.3	-	<5	-	-
78	Pellet Plant	PP - Gas - Wind Box	22.0	-	-	-	-	-	15.9	261.5	5.2
79	Pellet Plant	PP Grinding Section 01	8.0	-	-	-	-	-	-	-	-
80	Pellet Plant	PP Grinding Section 02	-	-	-	-	-	-	<5	-	-
81	Power House	PH - 3 - Boiler - 07&08	-	-	-	13.2	-	-	14.5	66.6	9.6
82	Power House	PH - 3 - Boiler 5	11.9	24.5	<5	12.8	17.5	<5	16.2	-	-
83	Power House	PH - 3 - Boiler 6	12.0	-	-	13.4	-	-	9.8	181.0	9.2
84	Power House	PH - 4 - Boiler - 4	20.0	125.5	<5	-	-	-	-	-	-
85	Power House	PH - 4 - Boiler - 5	18.4	-	-	-	-	-	-	-	-
86	Power House	PH - 4 - Boiler 1&2	-	-	-	11.6	24.5	-	11.5	22.6	-
87	Power House	PH - 5 - Boiler - B&C	10.7	-	-	13.9	41.2	6.1	12.5	16.9	-
88	Power House	PH - 5 - Boiler A	24.7	-	-	8.1	9.4	9.8	15.2	-	-
89	Sinter Plant 1	SP - 1 Dedusting	<5	-	-	-	-	-	<5	-	-
90	Sinter Plant 1	SP - 1 Waste Gas	-	-	-	-	-	-	-	-	-
91	Sinter Plant 2	SP - 2 Dedusting	5.3	-	-	-	-	-	-	-	-
92	Sinter Plant 2	SP - 2 High Line	-	-	-	-	-	-	-	-	-
93	Sinter Plant 2	SP - 2 Waste Gas	35.9	181.1	52.4	-	-	-	56.0	151.3	469.0
94	Sinter Plant 3	SP - 3 Combined (WG & DD)	-	-	-	32.2	197.5	49.8	42.5	361.0	54.0
95	Sinter Plant 3	SP - 3 Dedusting	-	-	-	-	-	-	-	-	-
96	Sinter Plant 4	SP - 4 Combined (WG & DD)	61.3	300.7	12.4	31.6	-	-	-	-	-

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.
*MSD-Major Shutdown

Manager-Environment
Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Oct-22			Nov-22			Dec-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
1	Blast Furnace	C - Stove	<5	-	<5	<5	83.8	24.6	6.9	-	-
2	Blast Furnace	E - Stock & Cast House	-	-	-	-	-	-	-	-	-
3	Blast Furnace	E - Stove	-	-	-	-	-	-	-	-	-
4	Blast Furnace	F - Cast House	5.7	-	-	-	-	-	<5	<5	<5
5	Blast Furnace	F - PCI	18.0	-	-	-	-	-	10.5	-	-
6	Blast Furnace	F - Stock House-DE	-	-	-	-	-	-	-	-	-
7	Blast Furnace	F - Stove	9.2	<5	<5	<5	NA	NA	<5	-	-
8	Blast Furnace	G - Cast House	-	-	-	-	-	-	-	-	-
9	Blast Furnace	G - PCI-01	-	-	-	-	-	-	6.5	-	-
10	Blast Furnace	G - PCI-02	-	-	-	-	-	-	8.6	-	-
11	Blast Furnace	G - PCI-03	-	-	-	-	-	-	11.8	-	-
12	Blast Furnace	G - Stock House	8.3	-	-	<5	<5	5.8	<5	-	-
13	Blast Furnace	G - Stove	-	-	-	-	-	-	-	-	-
14	Blast Furnace	H - Cast House	-	-	-	-	-	-	-	-	-
15	Blast Furnace	H - PCI-01	-	-	-	10.6	5.2	<5	6.7	-	-
16	Blast Furnace	H - PCI-02	-	-	-	6.5	7.9	5.6	7.8	-	-
17	Blast Furnace	H - Stock House	-	-	-	-	-	-	-	-	-
18	Blast Furnace	H - Stock House - DE	-	-	-	-	-	-	-	-	-
19	Blast Furnace	H - Stove	18.5	<5	64.0	-	-	-	5.7	-	-
20	Blast Furnace	HMPP	-	-	-	-	-	-	-	-	-
21	Blast Furnace	I - Cast House	<5	<5	<5	-	-	-	-	-	-
22	Blast Furnace	I - PCI	<5	-	-	<5	<5	28.2	<5	-	32.0
23	Blast Furnace	I - Stock House	-	-	-	-	-	-	-	-	-
24	Blast Furnace	I - Stove	15.2	<5	15.1	7.7	<5	28.2	8.1	<5	39.0
25	Coke Plant	Battery 07	29.5	53.8	398.9	-	-	-	11.8	68.0	180.0
26	Coke Plant	Battery 08	20.1	-	-	-	-	-	14.5	-	-
27	Coke Plant	Battery 09	12.2	<5	-	-	-	-	5.2	-	-
28	Coke Plant	Battery 10	31.7	<5	-	-	-	-	22.0	16.0	345.0
29	Coke Plant	Battery 10 Pushing Dedusting	-	-	-	-	-	-	5.6	-	-
30	Coke Plant	Battery 11	29.9	-	-	-	-	-	13.9	-	-
31	Coke Plant	Battery 11 Pushing Dedusting	-	-	-	-	-	-	-	-	-
32	LD 1	LD 01 - Ladle Furnace 01	-	-	-	-	-	-	-	-	-
33	LD 1	LD 01 - Ladle Furnace 02	-	-	-	-	-	-	17.8	-	-
34	LD 1	LD 01 - Ladle Furnace 03	-	-	-	-	-	-	-	-	-
35	LD 1	LD 01 - Secondary Emission	-	-	-	-	-	-	-	-	-
36	LD 2	LD 02 - DE 01	<5	27.0	56.8	-	-	-	5.1	-	-
37	LD 2	LD 02 - DE 02	-	-	-	-	-	-	-	-	-
38	LD 2	LD 02 - DE 03	<5	<5	<5	-	-	-	-	-	-
39	LD 2	LD 02 - DE 04	<5	<5	<5	-	-	-	<5	-	-
40	LD 2	LD 02 - DE 05	-	-	-	-	-	-	-	-	-
41	LD 2	LD 02 - DE 06	<5	<5	<5	-	-	-	<5	-	-
42	LD 2	LD 02 - DE 07	-	-	-	-	-	-	-	-	-
43	LD 2	LD 02 - DE 08	<5	<5	<5	-	-	-	<5	-	-
44	LD 2	LD 02 - DE 09	-	-	-	-	-	-	-	-	-
45	LD 2	LD 02 - Ladle Furnace 01	-	-	-	-	-	-	-	-	-
46	LD 2	LD 02 - Ladle Furnace 02	-	-	-	-	-	-	<5	-	-
47	LD 2	LD 02 - Secondary Emission - 01	-	-	-	-	-	-	-	-	-
48	LD 2	LD 02 - Secondary Emission - 02	-	-	-	-	-	-	-	-	-

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Oct-22			Nov-22			Dec-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
49	LD 2	LD 02 - Secondary Emission - 03	-	-	-	-	-	-	-	-	-
50	LD 3	LD 03 - Ladle Furnace 01	-	-	-	-	-	-	5.4	-	-
51	LD 3	LD 03 - Ladle Furnace 02	-	-	-	-	-	-	<5	22.0	160.0
52	LD 3	LD 03 - Secondary Emission	-	-	-	-	-	-	<5	28.0	168.0
53	Lime Plant	Merz Kiln 01	<5	<5	84.7	-	-	-	13.6	<5	51.0
54	Lime Plant	Merz Kiln 02	<5	<5	49.4	-	-	-	-	-	-
55	Lime Plant	Merz Kiln 03& 04	6.5	<5	58.3	<5	5.5	167.7	-	-	-
56	Lime Plant	Merz Kiln 05	-	-	-	-	-	-	-	-	-
57	Lime Plant	Merz Kiln 06	-	-	-	-	-	-	-	-	-
58	Lime Plant	Merz Kiln 06 - DE 12	-	-	-	-	-	-	<5	-	-
59	Lime Plant	Merz Kiln 07	-	-	-	-	-	-	-	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	-	-	-	-	-	-	-	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	-	-	-	-	-	-	-	-	-
62	Lime Plant	Merz Kiln 7 DE15	-	-	-	-	-	-	7.9	-	-
63	Lime Plant	Merz Kiln 8	-	-	-	-	-	-	<5	-	-
64	Lime Plant	Merz Kiln 9	5.3	<5	47.0	-	-	-	-	-	-
65	Mills	CRM BAF	-	-	-	-	-	-	-	-	-
66	Mills	CRM CGL - 1	-	-	-	-	-	-	-	-	-
67	Mills	CRM CGL - 2	-	-	-	-	-	-	-	-	-
68	Mills	CRM PLTCM	-	-	-	-	-	-	14.9	-	-
69	Mills	HSM RHF - 1	-	-	-	-	-	-	9.4	-	-
70	Mills	HSM RHF - 2	-	-	-	-	-	-	11.9	-	-
71	Mills	HSM RHF - 3	-	-	-	-	-	-	23.5	-	-
72	Mills	Merchant mill	20.8	<5	237.1	-	-	-	22.9	-	-
73	Mills	New Bar Mill	-	-	-	-	-	-	23.6	-	-
74	Mills	Wire Rod Mill	-	-	-	26.8	<5	90.3	-	-	-
75	Pellet Plant	PP - Central - Dedusting	14.0	<5	<5	-	-	-	22.0	-	-
76	Pellet Plant	PP - Drying Section	9.5	5.5	16.2	-	-	-	19.9	<5	<5
77	Pellet Plant	PP - Gas - Hood	7.9	<5	11.3	21.5	NA	NA	27.7	-	-
78	Pellet Plant	PP - Gas - Wind Box	73.9	83.9	323.0	38.6	10.5	<5	<5	-	-
79	Pellet Plant	PP Grinding Section 01	-	-	-	-	-	-	17.0	-	-
80	Pellet Plant	PP Grinding Section 02	-	-	-	-	-	-	-	-	-
81	Power House	PH - 3 - Boiler - 07&08	12.5	11.9	58.3	15.9	<5	43.3	21.4	-	-
82	Power House	PH - 3 - Boiler 5	13.2	<5	52.7	-	-	-	10.0	-	-
83	Power House	PH - 3 - Boiler 6	-	-	-	-	-	-	24.5	-	-
84	Power House	PH - 4 - Boiler - 4	-	-	-	-	-	-	24.1	36.0	70.0
85	Power House	PH - 4 - Boiler - 5	10.9	-	-	14.2	27.5	18.3	13.4	-	-
86	Power House	PH - 4 - Boiler 1&2	14.9	5.2	82.6	20.5	18.3	58.7	10.2	<5	17.0
87	Power House	PH - 5 - Boiler - B&C	12.6	-	-	21.7	<5	28.2	-	-	-
88	Power House	PH - 5 - Boiler A	11.5	<5	20.7	-	-	-	-	-	-
89	Sinter Plant 1	SP - 1 Dedusting	-	-	-	-	-	-	-	-	-
90	Sinter Plant 1	SP - 1 Waste Gas	50.6	-	-	-	-	-	-	-	-
91	Sinter Plant 2	SP - 2 Dedusting	-	-	-	-	-	-	-	-	-
92	Sinter Plant 2	SP - 2 High Line	-	-	-	-	-	-	-	-	-
93	Sinter Plant 2	SP - 2 Waste Gas	31.7	149.3	205.1	-	-	-	<5	-	-
94	Sinter Plant 3	SP - 3 Combined (WG & DD)	-	-	-	-	-	-	-	-	-
95	Sinter Plant 3	SP - 3 Dedusting	-	-	-	-	-	-			
96	Sinter Plant 4	SP - 4 Combined (WG & DD)	54.7	19.5	315.1	46.7	17.0	244.0			

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.
*MSD-Major Shutdown

Manager-Environment
Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Jan-23			Feb-23			Mar-23		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
1	Blast Furnace	C - Stove	-	-	-	3.58	-	24.5	9.7	<5	26.3
2	Blast Furnace	E - Stock & Cast House	-	-	-	-	-	-	-	-	-
3	Blast Furnace	E - Stove	-	-	-	-	-	-	-	-	-
4	Blast Furnace	F - Cast House	-	-	-	-	-	-	-	-	-
5	Blast Furnace	F - PCI	-	-	-	3.04	-	22.6	6.7	<5	18.8
6	Blast Furnace	F - Stock House-DE	-	-	-	-	-	-	-	-	-
7	Blast Furnace	F - Stove	-	-	-	3.04	-	16.9	<5	<5	30.1
8	Blast Furnace	G - Cast House	-	-	-	-	-	-	-	-	-
9	Blast Furnace	G - PCI-01	-	-	-	1.60	-	15.1	-	-	-
10	Blast Furnace	G - PCI-02	-	-	-	7.70	-	22.6	-	-	-
11	Blast Furnace	G - PCI-03	-	-	-	8.26	-	19	-	-	-
12	Blast Furnace	G - Stock House	6.8	18.3	45.0	-	-	-	<5	<5	77.1
13	Blast Furnace	G - Stove	-	-	-	-	-	-	-	-	-
14	Blast Furnace	H - Cast House	-	-	-	6.20	-	-	-	-	-
15	Blast Furnace	H - PCI-01	5.5	<5	<5	5.98	-	-	9.1	<5	<5
16	Blast Furnace	H - PCI-02	12.7	<5	<5	5.45	32	172.3	-	-	-
17	Blast Furnace	H - Stock House	-	-	-	12.35	-	-	-	-	-
18	Blast Furnace	H - Stock House - DE	-	-	-		-	-	-	-	-
19	Blast Furnace	H - Stove	<5	<5	18.8	2.98	-	26.3	<5	<5	10.0
20	Blast Furnace	HMPP	-	-	-	-	-	-	-	-	-
21	Blast Furnace	I - Cast House	-	-	-	6.77	-	-	-	-	-
22	Blast Furnace	I - PCI	<5	<5	9.4	3.06	-	9.4	<5	<5	<5
23	Blast Furnace	I - Stock House	-	-	-	-	-	-	-	-	-
24	Blast Furnace	I - Stove	<5	<5	<5	8.14	-	18.5	10.1	<5	80.9
25	Coke Plant	Battery 07	-	-	-	33.61	-	-	-	-	-
26	Coke Plant	Battery 08	19.1	NA	NA	26.96	-	-	34.7	<5	<5
27	Coke Plant	Battery 09	-	-	-	17.77	-	427.1	28.2	10.5	400.7
28	Coke Plant	Battery 10	22.3	40.0	319.0	-	-	-	-	-	-
29	Coke Plant	Battery 10 Pushing Dedusting	-	-	-	6.65	-	-	-	-	-
30	Coke Plant	Battery 11	-	-	-	-	-	-	-	-	-
31	Coke Plant	Battery 11 Pushing Dedusting	-	-	-	-	-	-	-	-	-
32	LD 1	LD 01 - Ladle Furnace 01	-	-	-	-	-	-	-	-	-
33	LD 1	LD 01 - Ladle Furnace 02	-	-	-	-	-	-	-	-	-
34	LD 1	LD 01 - Ladle Furnace 03	-	-	-	-	-	-	-	-	-
35	LD 1	LD 01 - Secondary Emission	-	-	-	-	-	-	-	-	-
36	LD 2	LD 02 - DE 01	-	-	-	-	-	-	-	-	-
37	LD 2	LD 02 - DE 02	-	-	-	-	-	-	-	-	-
38	LD 2	LD 02 - DE 03	-	-	-	-	-	-	-	-	-
39	LD 2	LD 02 - DE 04	-	-	-	-	-	-	-	-	-
40	LD 2	LD 02 - DE 05	-	-	-	1.55	-	-	-	-	-
41	LD 2	LD 02 - DE 06	-	-	-	-	-	-	-	-	-
42	LD 2	LD 02 - DE 07	-	-	-	-	-	-	-	-	-
43	LD 2	LD 02 - DE 08	-	-	-	-	-	-	-	-	-
44	LD 2	LD 02 - DE 09	-	-	-	-	-	-	-	-	-
45	LD 2	LD 02 - Ladle Furnace 01	-	-	-	4.30	-	-	-	-	-
46	LD 2	LD 02 - Ladle Furnace 02	-	-	-	-	-	-	-	-	-
47	LD 2	LD 02 - Secondary Emission - 01	-	-	-	-	-	-	-	-	-
48	LD 2	LD 02 - Secondary Emission - 02	-	-	-	3.83	-	-	-	-	-

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

MANUAL STACK MONITORING REPORT FOR FY'23

			Jan-23			Feb-23			Mar-23		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
49	LD 2	LD 02 - Secondary Emission - 03	-	-	-	8.94	2	1	-	-	-
50	LD 3	LD 03 - Ladle Furnace 01	<5	NA	NA	-	-	-	-	-	-
51	LD 3	LD 03 - Ladle Furnace 02	-	-	-	-	-	-	-	-	-
52	LD 3	LD 03 - Secondary Emission	-	-	-	-	-	-	-	-	-
53	Lime Plant	Merz Kiln 01	<5	<5	64.3	3.45	7.9	47	<5	6.0	58.0
54	Lime Plant	Merz Kiln 02	5.4	NA	NA	4.10	-	3.8	<5	<5	22.6
55	Lime Plant	Merz Kiln 03& 04	<5	7.9	77.1	2.76	-	67.9	5.3	<5	41.0
56	Lime Plant	Merz Kiln 05	-	-	-	-	-	-	-	-	-
57	Lime Plant	Merz Kiln 06	-	-	-	0.62	2.6	67.7	-	-	-
58	Lime Plant	Merz Kiln 06 - DE 12	-	-	-	-	-	-	-	-	-
59	Lime Plant	Merz Kiln 07	-	-	-	4.09	-	17.1	-	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	-	-	-	1.39	-	-	-	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	-	-	-	-	-	-	-	-	-
62	Lime Plant	Merz Kiln 7 DE15	-	-	-	1.53	-	-	-	-	-
63	Lime Plant	Merz Kiln 8	-	-	-	5.68	5.2	41.4	-	-	-
64	Lime Plant	Merz Kiln 9	5.9	5.2	41.4	3.11	-	41.4	11.8	<5	61.0
65	Mills	CRM BAF	-	-	-	4.76	-	-	-	-	-
66	Mills	CRM CGL - 1	-	-	-	-	-	-	-	-	-
67	Mills	CRM CGL - 2	-	-	-	-	-	-	-	-	-
68	Mills	CRM PLTCM	-	-	-	13.72	-	-	-	-	-
69	Mills	HSM RHF - 1	-	-	-	-	-	-	-	-	-
70	Mills	HSM RHF - 2	-	-	-	-	-	-	-	-	-
71	Mills	HSM RHF - 3	-	-	-	-	-	-	-	-	-
72	Mills	Merchant mill	46.0	18.3	111.0	21.77	-	460.9	20.1	<5	262.3
73	Mills	New Bar Mill	44.0	43.0	110.0		408.75	304.8	45.8	<5	192.0
74	Mills	Wire Rod Mill	13.3	23.6	272.8	20.52	10.8	114.8	35.7	23.0	193.0
75	Pellet Plant	PP - Central - Dedusting	-	-	-	-	-	-	-	-	-
76	Pellet Plant	PP - Drying Section	-	-	-	-	-	-	-	-	-
77	Pellet Plant	PP - Gas - Hood	6.6	<5	11.3	11.56	-	-	8.4	<5	<5
78	Pellet Plant	PP - Gas - Wind Box	-	-	-	35.30	-	430	35.2	71.0	347.0
79	Pellet Plant	PP Grinding Section 01	-	-	-	-	-	-	-	-	-
80	Pellet Plant	PP Grinding Section 02	-	-	-	-	-	-	50.8	<5	<5
81	Power House	PH - 3 - Boiler - 07&08	-	-	-	23.23	15.7	58.3	-	-	-
82	Power House	PH - 3 - Boiler 5	-	-	-	16.43	-	80.9	-	-	-
83	Power House	PH - 3 - Boiler 6	-	-	-	12.04	6	41	-	-	-
84	Power House	PH - 4 - Boiler - 4	-	-	-	34.94	505	353	-	-	-
85	Power House	PH - 4 - Boiler - 5	11.9	26.0	193.0	21.34	-	-	-	-	-
86	Power House	PH - 4 - Boiler 1&2	18.5	<5	45.2	12.33	-	-	28.9	<5	57.0
87	Power House	PH - 5 - Boiler - B&C	15.5	<5	28.2	13.80	24.76	86.16	12.8	<5	16.0
88	Power House	PH - 5 - Boiler A	17.1	<5	7.5	11.19	16.5	81	22.1	<5	<5
89	Sinter Plant 1	SP - 1 Dedusting	-	-	-	-	-	-	-	-	-
90	Sinter Plant 1	SP - 1 Waste Gas	-	-	-	38.34	52.83	110.8	61.7	<5	212.6
91	Sinter Plant 2	SP - 2 Dedusting	-	-	-	-	-	-	-	-	-
92	Sinter Plant 2	SP - 2 High Line	-	-	-	-	-	-	-	-	-
93	Sinter Plant 2	SP - 2 Waste Gas	-	-	-	37.25	-	214	-	-	-
94	Sinter Plant 3	SP - 3 Combined (WG & DD)	-	-	-	46.31	-	-	-	-	-
95	Sinter Plant 3	SP - 3 Dedusting	-	-	-	5.07	-	1.9	-	-	-
96	Sinter Plant 4	SP - 4 Combined (WG & DD)	74.3	<5	146.7		-	173.1	-	-	-

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.
*MSD-Major Shutdown

Manager-Environment
Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

ANNEXURE-I

TATA STEEL

TATA STEEL LIMITED
ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR
ONLINE STACK MONITORING REPORT FOR FY'23

			Apr-22			May-22			Jun-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
1	Blast Furnace	C - Stove	<5	31.5	6.7	<5	31.5	6.7	<5	29.4	5.6
2	Blast Furnace	E - Stock & Cast House	11.0	-	-	11.0	-	-	13.5	-	-
3	Blast Furnace	E - Stove	<5	59.6	28.2	<5	59.6	28.2	<5	84.5	27.4
4	Blast Furnace	F - Cast House	<5	-	-	<5	-	-	<5	-	-
5	Blast Furnace	F - PCI	12.8	-	-	12.8	-	-	8.1	-	-
6	Blast Furnace	F - Stock House-DE	<5	-	-	<5	-	-	<5	-	-
7	Blast Furnace	F - Stove	<5	66.9	10.4	<5	66.9	10.4	<5	51.0	<5
8	Blast Furnace	G - Cast House	16.8	-	-	16.8	-	-	19.3	-	-
9	Blast Furnace	G - PCI-01	8.4	-	-	8.4	-	-	15.2	-	-
10	Blast Furnace	G - PCI-02	<5	-	-	<5	-	-	<5	-	-
11	Blast Furnace	G - PCI-03	7.4	-	-	7.4	-	-	8.4	-	-
12	Blast Furnace	G - Stock House	6.9	-	-	6.9	-	-	<5	-	-
13	Blast Furnace	G - Stove	<5	27.4	24.7	<5	27.4	24.7	<5	29.2	8.8
14	Blast Furnace	H - Cast House	5.8	-	-	5.8	-	-	<5	-	-
15	Blast Furnace	H - PCI-01	<5	-	-	<5	-	-	<5	-	-
16	Blast Furnace	H - PCI-02	5.1	-	-	5.1	-	-	5.1	-	-
17	Blast Furnace	H - Stock House	7.4	-	-	7.4	-	-	10.9	-	-
18	Blast Furnace	H - Stock House - DE	<5	-	-	<5	-	-	<5	-	-
19	Blast Furnace	H - Stove	<5	30.1	<5	<5	30.1	<5	<5	40.2	<5
20	Blast Furnace	HMPP	<5	-	-	<5	-	-	<5	-	-
21	Blast Furnace	I - Cast House	<5	-	-	<5	-	-	5.6	-	-
22	Blast Furnace	I - PCI	6.7	-	-	6.7	-	-	6.0	-	-
23	Blast Furnace	I - Stock House	5.9	-	-	5.9	-	-	<5	-	-
24	Blast Furnace	I - Stove	7.5	36.1	25.7	7.5	36.1	25.7	8.8	42.0	45.2
25	Coke Plant	Battery 07	36.6	-	-	36.6	-	-	32.5	-	-
26	Coke Plant	Battery 08	23.0	126.7	252.4	23.0	126.7	252.4	13.6	89.2	220.9
27	Coke Plant	Battery 09	8.8	113.9	250.7	8.8	113.9	250.7	7.6	63.6	154.6
28	Coke Plant	Battery 10	15.1	103.3	141.2	15.1	103.3	141.2	15.6	55.5	108.2
29	Coke Plant	Battery 10 Pushing Dedusting	9.1	-	-	9.1	-	-	9.1	-	-
30	Coke Plant	Battery 11	29.6	135.7	224.7	29.6	135.7	224.7	33.3	149.8	213.0
31	Coke Plant	Battery 11 Pushing Dedusting	<5	-	-	<5	-	-	5.2	-	-
32	LD 1	LD 01 - Ladle Furnace 01	<5	-	-	<5	-	-	6.6	-	-
33	LD 1	LD 01 - Ladle Furnace 02	<5	-	-	<5	-	-	7.0	-	-
34	LD 1	LD 01 - Ladle Furnace 03	<5	-	-	<5	-	-	5.3	-	-
35	LD 1	LD 01 - Secondary Emission	<5	-	-	<5	-	-	5.6	-	-
36	LD 2	LD 02 - DE 01	<5	-	-	<5	-	-	<5	-	-
37	LD 2	LD 02 - DE 02	6.1	-	-	6.1	-	-	6.1	-	-
38	LD 2	LD 02 - DE 03	<5	-	-	<5	-	-	<5	-	-
39	LD 2	LD 02 - DE 04	<5	-	-	<5	-	-	<5	-	-
40	LD 2	LD 02 - DE 05	<5	-	-	<5	-	-	<5	-	-
41	LD 2	LD 02 - DE 06	<5	-	-	<5	-	-	<5	-	-
42	LD 2	LD 02 - DE 07	<5	-	-	<5	-	-	<5	-	-
43	LD 2	LD 02 - DE 08	5.7	-	-	5.7	-	-	<5	-	-
44	LD 2	LD 02 - DE 09	<5	-	-	<5	-	-	<5	-	-
45	LD 2	LD 02 - Ladle Furnace 01	12.5	-	-	12.5	-	-	7.2	-	-
46	LD 2	LD 02 - Ladle Furnace 02	7.6	-	-	7.6	-	-	<5	-	-
47	LD 2	LD 02 - Secondary Emission - 01	7.6	-	-	7.6	-	-	11.5	-	-
48	LD 2	LD 02 - Secondary Emission - 02	MSD	-	-	MSD	-	-	6.9	-	-

ANNEXURE-I

TATA STEEL LIMITED
ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR
ONLINE STACK MONITORING REPORT FOR FY'23

			Apr-22			May-22			Jun-22		
SL. No.	Department	Stack	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)	PM (mg/Nm3)	SO2 (mg/Nm3)	NOx (mg/Nm3)
49	LD 2	LD 02 - Secondary Emission - 03	16.4	-	-	16.4	-	-	10.1	-	-
50	LD 3	LD 03 - Ladle Furnace 01	<5	-	-	<5	-	-	<5	-	-
51	LD 3	LD 03 - Ladle Furnace 02	5.4	-	-	5.4	-	-	5.9	-	-
52	LD 3	LD 03 - Secondary Emission	<5	-	-	<5	-	-	<5	-	-
53	Lime Plant	Merz Kiln 01	7.3	-	-	7.3	-	-	<5	-	-
54	Lime Plant	Merz Kiln 02	<5	-	-	<5	-	-	5.3	-	-
55	Lime Plant	Merz Kiln 03& 04	<5	-	-	<5	-	-	<5	-	-
56	Lime Plant	Merz Kiln 05	<5	-	-	<5	-	-	<5	-	-
57	Lime Plant	Merz Kiln 06	<5	-	-	<5	-	-	<5	-	-
58	Lime Plant	Merz Kiln 06 - DE 12	<5	-	-	<5	-	-	<5	-	-
59	Lime Plant	Merz Kiln 07	<5	-	-	<5	-	-	<5	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	<5	-	-	<5	-	-	<5	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	7.0	-	-	7.0	-	-	5.7	-	-
62	Lime Plant	Merz Kiln 7 DE15	MSD	-	-	MSD	-	-	MSD	-	-
63	Lime Plant	Merz Kiln 8	9.5	-	-	9.5	-	-	9.6	-	-
64	Lime Plant	Merz Kiln 9	<5	-	-	<5	-	-	<5	-	-
65	Mills	CRM BAF	<5	-	-	<5	-	-	<5	-	-
66	Mills	CRM CGL - 1	<5	-	-	<5	-	-	<5	-	-
67	Mills	CRM CGL - 2	<5	-	-	<5	-	-	<5	-	-
68	Mills	CRM PLTCM	<5	-	-	<5	-	-	<5	-	-
69	Mills	HSM RHF - 1	16.6	-	-	16.6	-	-	24.7	-	-
70	Mills	HSM RHF - 2	9.3	-	-	9.3	-	-	10.5	-	-
71	Mills	HSM RHF - 3	9.6	-	-	9.6	-	-	15.2	-	-
72	Mills	Merchant mill	11.6	-	-	11.6	-	-	19.0	-	-
73	Mills	New Bar Mill	9.1	-	-	9.1	-	-	6.2	-	-
74	Mills	Wire Rod Mill	10.1	-	-	10.1	-	-	7.6	-	-
75	Pellet Plant	PP - Central - Dedusting	6.3	-	-	6.3	-	-	6.0	-	-
76	Pellet Plant	PP - Drying Section	12.5	-	-	12.5	-	-	6.5	-	-
77	Pellet Plant	PP - Gas - Hood	8.9	-	-	8.9	-	-	7.1	-	-
78	Pellet Plant	PP - Gas - Wind Box	16.3	-	-	16.3	-	-	16.2	-	-
79	Pellet Plant	PP Grinding Section 01	5.9	-	-	5.9	-	-	6.3	-	-
80	Pellet Plant	PP Grinding Section 02	9.4	-	-	9.4	-	-	<5	-	-
81	Power House	PH - 3 - Boiler 5	12.7	-	-	12.7	24.3	20.4	12.1	23.4	21.4
82	Power House	PH - 3 - Boiler 6	29.9	-	-	29.9	27.4	17.9	11.3	23.4	24.3
83	Power House	PH - 3 - Boiler - 07&08	29.8	-	-	29.8	21.9	15.4	24.5	31.0	28.1
84	Power House	PH - 4 - Boiler - 4	10.6	-	-	10.6	249.0	183.0	8.2	280.3	182.4
85	Power House	PH - 4 - Boiler - 5	11.4	-	-	11.4	61.9	43.1	12.3	21.6	44.3
86	Power House	PH - 4 - Boiler 1&2	22.0	-	-	22.0	70.5	41.6	19.7	67.3	48.8
87	Power House	PH - 5 - Boiler - B&C	24.8	-	-	24.8	29.0	16.5	21.4	-	-
88	Power House	PH - 5 - Boiler A	21.9	-	-	21.9	47.9	29.2	20.5	33.3	18.4
89	Sinter Plant 1	SP - 1 Dedusting	<5	-	-	<5	-	-	<5	-	-
90	Sinter Plant 1	SP - 1 Waste Gas	71.1	-	-	71.1	107.9	47.1	47.7	112.1	56.5
91	Sinter Plant 2	SP - 2 Dedusting	6.3	-	-	6.3	-	-	<5	-	-
92	Sinter Plant 2	SP - 2 High Line	<5	-	-	<5	-	-	<5	-	-
93	Sinter Plant 2	SP - 2 Waste Gas	22.3	-	-	22.3	143.1	88.2	17.9	186.9	101.7
94	Sinter Plant 3	SP - 3 Combined (WG & DD)	42.2	-	-	42.2	110.0	100.3	36.8	122.7	88.3
95	Sinter Plant 3	SP - 3 Dedusting	<5	-	-	<5	-	-	<5	-	-
96	Sinter Plant 4	SP - 4 Combined (WG & DD)	75.7	-	-	75.7	131.3	66.9	79.2	193.0	120.7

MSD - Major Shutdown

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.

Manager-Environment
Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

ONLINE STACK MONITORING REPORT FOR FY'23

			Jul-22			Aug-22			Sep-22		
SL. No.	Department	Stack	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm
1	Blast Furnace	C - Stove	<5	28.7	-	<5	29.0	5.3	<5	31.3	7.4
2	Blast Furnace	E - Stock & Cast House	5.6	-	-	5.2	-	-	5.4	-	-
3	Blast Furnace	E - Stove	<5	75.4	17.5	<5	72.6	9.3	<5	55.1	22.4
4	Blast Furnace	F - Cast House	<5	-	-	<5	-	-	<5	-	-
5	Blast Furnace	F - PCI	9.3	-	-	6.4	-	-	9.3	-	-
6	Blast Furnace	F - Stock House-DE	<5	-	-	<5	-	-	<5	-	-
7	Blast Furnace	F - Stove	<5	55.3	-	<5	58.5	6.9	6.0	64.1	10.2
8	Blast Furnace	G - Cast House	19.8	-	-	22.9	-	-	31.1	-	-
9	Blast Furnace	G - PCI-01	16.2	-	-	25.2	-	-	27.5	-	-
10	Blast Furnace	G - PCI-02	<5	-	-	<5	-	-	<5	-	-
11	Blast Furnace	G - PCI-03	5.7	-	-	6.0	-	-	5.9	-	-
12	Blast Furnace	G - Stock House	<5	-	-	5.4	-	-	5.8	-	-
13	Blast Furnace	G - Stove	<5	36.5	21.1	<5	43.9	52.1	<5	38.6	55.6
14	Blast Furnace	H - Cast House	<5	-	-	<5	-	-	<5	-	-
15	Blast Furnace	H - PCI-01	<5	-	-	<5	-	-	<5	-	-
16	Blast Furnace	H - PCI-02	5.6	-	-	7.8	-	-	<5	-	-
17	Blast Furnace	H - Stock House	8.3	-	-	7.8	-	-	6.6	-	-
18	Blast Furnace	H - Stock House - DE	<5	-	-	<5	-	-	<5	-	-
19	Blast Furnace	H - Stove	<5	44.0	-	<5	50.0	<5	<5	39.4	<5
20	Blast Furnace	HMPP	<5	-	-	7.9	-	-	<5	-	-
21	Blast Furnace	I - Cast House	5.4	-	-	5.8	-	-	5.5	-	-
22	Blast Furnace	I - PCI	8.5	-	-	9.7	-	-	8.2	-	-
23	Blast Furnace	I - Stock House	5.1	-	-	<5	-	-	<5	-	-
24	Blast Furnace	I - Stove	7.6	29.3	54.2	8.4	30.3	54.0	8.5	29.7	52.3
25	Coke Plant	Battery 07	30.4	-	-	23.5	271.3	115.4	31.2	383.7	88.9
26	Coke Plant	Battery 08	15.3	76.0	224.6	19.3	78.7	190.3	19.6	82.9	196.1
27	Coke Plant	Battery 09	7.8	82.2	179.6	8.3	81.7	249.4	6.7	81.6	228.0
28	Coke Plant	Battery 10	10.8	53.7	113.6	13.6	87.3	122.1	16.3	70.0	186.9
29	Coke Plant	Battery 10 Pushing Dedus	9.2	-	-	<5	-	-	<5	-	-
30	Coke Plant	Battery 11	33.3	193.5	329.8	31.8	173.8	335.4	30.6	188.6	379.8
31	Coke Plant	Battery 11 Pushing Dedus	6.5	-	-	14.3	-	-	5.9	-	-
32	LD 1	LD 01 - Ladle Furnace 01	<5	-	-	<5	-	-	<5	-	-
33	LD 1	LD 01 - Ladle Furnace 02	6.8	-	-	8.3	-	-	8.3	-	-
34	LD 1	LD 01 - Ladle Furnace 03	5.6	-	-	5.7	-	-	5.5	-	-
35	LD 1	LD 01 - Secondary Emissi	5.2	-	-	5.9	-	-	5.9	-	-
36	LD 2	LD 02 - DE 01	6.5	-	-	6.5	-	-	9.7	-	-
37	LD 2	LD 02 - DE 02	6.1	-	-	6.2	-	-	6.2	-	-
38	LD 2	LD 02 - DE 03	<5	-	-	<5	-	-	<5	-	-
39	LD 2	LD 02 - DE 04	<5	-	-	<5	-	-	<5	-	-
40	LD 2	LD 02 - DE 05	<5	-	-	<5	-	-	<5	-	-
41	LD 2	LD 02 - DE 06	<5	-	-	5.4	-	-	<5	-	-
42	LD 2	LD 02 - DE 07	<5	-	-	<5	-	-	<5	-	-
43	LD 2	LD 02 - DE 08	<5	-	-	<5	-	-	<5	-	-
44	LD 2	LD 02 - DE 09	<5	-	-	<5	-	-	<5	-	-
45	LD 2	LD 02 - Ladle Furnace 01	6.7	-	-	8.4	-	-	8.1	-	-
46	LD 2	LD 02 - Ladle Furnace 02	<5	-	-	7.2	-	-	5.9	-	-
47	LD 2	LD 02 - Secondary Emissi	11.8	-	-	12.0	-	-	7.5	-	-
48	LD 2	LD 02 - Secondary Emissi	7.0	-	-	8.8	-	-	10.3	-	-

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED
ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR
ONLINE STACK MONITORING REPORT FOR FY'23

			Jul-22			Aug-22			Sep-22		
SL. No.	Department	Stack	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm
49	LD 2	LD 02 - Secondary Emissi	7.4	-	-	6.5	-	-	<5	-	-
50	LD 3	LD 03 - Ladle Furnace 01	<5	-	-	<5	-	-	<5	-	-
51	LD 3	LD 03 - Ladle Furnace 02	5.7	-	-	6.2	-	-	7.1	-	-
52	LD 3	LD 03 - Secondary Emissi	<5	-	-	<5	-	-	<5	-	-
53	Lime Plant	Merz Kiln 01	<5	-	-	<5	-	-	<5	-	-
54	Lime Plant	Merz Kiln 02	<5	-	-	<5	-	-	<5	-	-
55	Lime Plant	Merz Kiln 03& 04	<5	-	-	<5	-	-	<5	-	-
56	Lime Plant	Merz Kiln 05	<5	-	-	<5	-	-	5.6	-	-
57	Lime Plant	Merz Kiln 06	<5	-	-	<5	-	-	<5	-	-
58	Lime Plant	Merz Kiln 06 - DE 12	<5	-	-	<5	-	-	<5	-	-
59	Lime Plant	Merz Kiln 07	9.0	-	-	10.9	-	-	8.2	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	<5	-	-	<5	-	-	<5	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	5.4	-	-	5.3	-	-	5.1	-	-
62	Lime Plant	Merz Kiln 7 DE15	-	-	-	7.2	-	-	<5	-	-
63	Lime Plant	Merz Kiln 8	9.6	-	-	8.1	-	-	<5	-	-
64	Lime Plant	Merz Kiln 9	<5	-	-	<5	-	-	5.2	-	-
65	Mills	CRM BAF	<5	-	-	<5	-	-	<5	-	-
66	Mills	CRM CGL - 1	<5	-	-	<5	-	-	-	-	-
67	Mills	CRM CGL - 2	<5	-	-	<5	-	-	<5	-	-
68	Mills	CRM PLTCM	<5	-	-	<5	-	-	<5	-	-
69	Mills	HSM RHF - 1	12.7	-	-	16.5	-	-	16.4	-	-
70	Mills	HSM RHF - 2	8.8	-	-	11.0	-	-	11.4	-	-
71	Mills	HSM RHF - 3	9.1	-	-	9.6	-	-	9.6	-	-
72	Mills	Merchant mill	21.5	-	-	10.9	-	-	7.5	-	-
73	Mills	New Bar Mill	5.4	-	-	5.5	-	-	12.1	-	-
74	Mills	Wire Rod Mill	13.2	-	-	10.2	-	-	13.7	-	-
75	Pellet Plant	PP - Central - Dedusting	-	-	-	5.4	-	-	6.8	-	-
76	Pellet Plant	PP - Drying Section	-	-	-	8.1	-	-	5.0	-	-
77	Pellet Plant	PP - Gas - Hood	-	-	-	8.6	-	-	6.4	-	-
78	Pellet Plant	PP - Gas - Wind Box	-	-	-	16.0	-	-	18.2	-	-
79	Pellet Plant	PP Grinding Section 01	-	-	-	6.3	-	-	5.7	-	-
80	Pellet Plant	PP Grinding Section 02	-	-	-	<5	-	-	5.2	-	-
81	Power House	PH - 3 - Boiler - 07&08	8.5	23.7	15.9	9.9	16.9	58.6	9.4	16.9	68.1
82	Power House	PH - 3 - Boiler 5	9.8	27.0	16.7	10.3	66.3	16.1	12.8	51.1	19.6
83	Power House	PH - 3 - Boiler 6	25.3	31.0	20.8	26.3	29.8	19.3	15.5	29.8	21.6
84	Power House	PH - 4 - Boiler - 4	9.4	349.6	168.2	9.2	408.9	163.9	9.9	373.7	174.2
85	Power House	PH - 4 - Boiler - 5	14.7	19.9	33.0	14.4	28.6	28.5	13.3	-	-
86	Power House	PH - 4 - Boiler 1&2	20.8	71.1	38.6	22.4	77.7	41.7	18.6	95.4	71.4
87	Power House	PH - 5 - Boiler - B&C	20.7	24.0	7.4	18.3	37.2	11.2	11.3	40.2	17.3
88	Power House	PH - 5 - Boiler A	22.9	31.4	12.8	26.7	33.8	12.0	23.5	35.0	17.4
89	Sinter Plant 1	SP - 1 Dedusting	<5	-	-	<5	-	-	<5	-	-
90	Sinter Plant 1	SP - 1 Waste Gas	42.7	40.6	23.3	45.3	116.3	81.1	46.8	122.1	106.3
91	Sinter Plant 2	SP - 2 Dedusting	<5	-	-	6.1	-	-	8.0	-	-
92	Sinter Plant 2	SP - 2 High Line	<5	-	-	<5	-	-	<5	-	-
93	Sinter Plant 2	SP - 2 Waste Gas	20.4	148.9	79.8	22.9	180.8	107.2	22.3	141.1	79.0
94	Sinter Plant 3	SP - 3 Combined (WG & D	26.2	167.5	77.4	30.4	102.6	66.4	28.7	100.0	43.6
95	Sinter Plant 3	SP - 3 Dedusting	<5	-	-	<5	-	-	<5	-	-
96	Sinter Plant 4	SP - 4 Combined (WG & D	45.7	145.6	116.5	42.7	118.6	109.6	36.4	113.0	104.9

MSD - Major Shutdown

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.

Manager-Environment
Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

ONLINE STACK MONITORING REPORT FOR FY'23

			Oct-22			Nov-22			Dec-22		
SL. No.	Department	Stack	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm
1	Blast Furnace	C - Stove	<5	23.4	<5	d	26.1	6.4	<5	25.7	10.0
2	Blast Furnace	E - Stock & Cast House	5.6	-	-	6.3	-	-	7.6	-	-
3	Blast Furnace	E - Stove	<5	38.7	5.2	<5	56.3	10.3	<5	63.3	15.4
4	Blast Furnace	F - Cast House	<5	-	-	<5	-	-	<5	-	-
5	Blast Furnace	F - PCI	11.1	-	-	<5	-	-	<5	-	-
6	Blast Furnace	F - Stock House-DE	<5	-	-	<5	-	-	<5	-	-
7	Blast Furnace	F - Stove	5.7	61.6	<5	5.5	56.9	8.1	12.1	47.3	11.3
8	Blast Furnace	G - Cast House	36.5	-	-	32.6	-	-	14.7	-	-
9	Blast Furnace	G - PCI-01	12.3	-	-	6.0	-	-	<5	-	-
10	Blast Furnace	G - PCI-02	<5	-	-	<5	-	-	<5	-	-
11	Blast Furnace	G - PCI-03	<5	-	-	<5	-	-	5.6	-	-
12	Blast Furnace	G - Stock House	7.0	-	-	9.1	-	-	8.6	-	-
13	Blast Furnace	G - Stove	<5	35.5	55.1	<5	34.1	34.3	<5	33.4	66.1
14	Blast Furnace	H - Cast House	<5	-	-	<5	-	-	<5	-	-
15	Blast Furnace	H - PCI-01	<5	-	-	<5	-	-	5.2	-	-
16	Blast Furnace	H - PCI-02	<5	-	-	<5	-	-	<5	-	-
17	Blast Furnace	H - Stock House	6.7	-	-	8.7	-	-	8.3	-	-
18	Blast Furnace	H - Stock House - DE	<5	-	-	<5	-	-	<5	-	-
19	Blast Furnace	H - Stove	<5	40.4	<5	<5	33.7	<5	<5	26.9	<5
20	Blast Furnace	HMPP	5.7	-	-	5.3	-	-	6.0	-	-
21	Blast Furnace	I - Cast House	<5	-	-	<5	-	-	<5	-	-
22	Blast Furnace	I - PCI	<5	-	-	9.3	-	-	<5	-	-
23	Blast Furnace	I - Stock House	<5	-	-	<5	-	-	<5	-	-
24	Blast Furnace	I - Stove	8.3	32.5	44.6	9.3	36.1	43.7	12.4	23.0	61.5
25	Coke Plant	Battery 07	24.2	216.4	76.3	23.7	165.3	54.3	25.7	320.1	414.6
26	Coke Plant	Battery 08	20.6	168.0	263.4	18.7	285.5	270.3	14.7	250.8	317.5
27	Coke Plant	Battery 09	7.7	88.4	296.4	8.1	99.5	291.6	7.0	80.4	338.6
28	Coke Plant	Battery 10	11.8	92.9	209.4	9.4	103.1	171.2	5.6	62.2	150.1
29	Coke Plant	Battery 10 Pushing Dedus	<5	-	-	<5	-	-	<5	-	-
30	Coke Plant	Battery 11	30.3	169.4	381.6	33.2	183.1	364.0	36.8	174.0	353.6
31	Coke Plant	Battery 11 Pushing Dedus	5.5	-	-	5.8	-	-	7.0	-	-
32	LD 1	LD 01 - Ladle Furnace 01	<5	-	-	<5	-	-	<5	-	-
33	LD 1	LD 01 - Ladle Furnace 02	10.4	-	-	9.3	-	-	14.8	-	-
34	LD 1	LD 01 - Ladle Furnace 03	<5	-	-	<5	-	-	6.6	-	-
35	LD 1	LD 01 - Secondary Emissi	6.3	-	-	<5	-	-	<5	-	-
36	LD 2	LD 02 - DE 01	5.9	-	-	<5	-	-	<5	-	-
37	LD 2	LD 02 - DE 02	7.2	-	-	7.3	-	-	7.3	-	-
38	LD 2	LD 02 - DE 03	<5	-	-	<5	-	-	<5	-	-
39	LD 2	LD 02 - DE 04	<5	-	-	<5	-	-	<5	-	-
40	LD 2	LD 02 - DE 05	<5	-	-	<5	-	-	<5	-	-
41	LD 2	LD 02 - DE 06	<5	-	-	<5	-	-	<5	-	-
42	LD 2	LD 02 - DE 07	<5	-	-	<5	-	-	<5	-	-
43	LD 2	LD 02 - DE 08	<5	-	-	<5	-	-	<5	-	-
44	LD 2	LD 02 - DE 09	<5	-	-	<5	-	-	<5	-	-
45	LD 2	LD 02 - Ladle Furnace 01	6.4	-	-	6.8	-	-	8.3	-	-
46	LD 2	LD 02 - Ladle Furnace 02	8.8	-	-	<5	-	-	<5	-	-
47	LD 2	LD 02 - Secondary Emissi	24.2	-	-	17.3	-	-	<5	-	-
48	LD 2	LD 02 - Secondary Emissi	9.5	-	-	9.8	-	-	10.1	-	-

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED
ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR
ONLINE STACK MONITORING REPORT FOR FY'23

			Oct-22			Nov-22			Dec-22		
SL. No.	Department	Stack	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm
49	LD 2	LD 02 - Secondary Emissi	<5	-	-	<5	-	-	<5	-	-
50	LD 3	LD 03 - Ladle Furnace 01	<5	-	-	<5	-	-	5.1	-	-
51	LD 3	LD 03 - Ladle Furnace 02	7.5	-	-	<5	-	-	5.8	-	-
52	LD 3	LD 03 - Secondary Emissi	<5	-	-	<5	-	-	<5	-	-
53	Lime Plant	Merz Kiln 01	<5	-	-	5.8	-	-	5.5	-	-
54	Lime Plant	Merz Kiln 02	<5	-	-	7.6	-	-	10.0	-	-
55	Lime Plant	Merz Kiln 03& 04	<5	-	-	<5	-	-	<5	-	-
56	Lime Plant	Merz Kiln 05	12.9	-	-	20.3	-	-	14.4	-	-
57	Lime Plant	Merz Kiln 06	<5	-	-	<5	-	-	<5	-	-
58	Lime Plant	Merz Kiln 06 - DE 12	<5	-	-	<5	-	-	<5	-	-
59	Lime Plant	Merz Kiln 07	<5	-	-	<5	-	-	<5	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	<5	-	-	<5	-	-	<5	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	5.1	-	-	<5	-	-	<5	-	-
62	Lime Plant	Merz Kiln 7 DE15	<5	-	-	<5	-	-	<5	-	-
63	Lime Plant	Merz Kiln 8	6.0	-	-	7.0	-	-	6.4	-	-
64	Lime Plant	Merz Kiln 9	5.2	-	-	19.0	-	-	6.9	-	-
65	Mills	CRM BAF	<5	-	-	5.4	-	-	6.1	-	-
66	Mills	CRM CGL - 1	-	-	-	-	-	-	-	-	-
67	Mills	CRM CGL - 2	<5	-	-	<5	-	-	<5	-	-
68	Mills	CRM PLTCM	<5	-	-	<5	-	-	<5	-	-
69	Mills	HSM RHF - 1	17.2	-	-	18.5	-	-	18.7	-	-
70	Mills	HSM RHF - 2	7.9	-	-	8.3	-	-	8.3	-	-
71	Mills	HSM RHF - 3	10.2	-	-	11.4	-	-	10.3	-	-
72	Mills	Merchant mill	8.1	-	-	12.9	-	-	17.6	-	-
73	Mills	New Bar Mill	17.5	-	-	21.0	-	-	19.8	-	-
74	Mills	Wire Rod Mill	11.4	-	-	11.9	-	-	19.9	-	-
75	Power House	PH - 3 - Boiler - 07&08	10.5	20.4	42.6	9.9	31.5	25.5	11.4	28.5	25.3
76	Power House	PH - 3 - Boiler 5	12.5	25.2	21.3	11.9	114.6	24.1	12.2	27.0	26.7
77	Power House	PH - 3 - Boiler 6	25.3	27.9	19.1	29.3	38.9	23.8	23.9	29.6	24.3
78	Power House	PH - 4 - Boiler - 4	9.2	270.5	141.8	9.1	443.8	164.2	9.7	537.3	146.4
79	Power House	PH - 4 - Boiler - 5	13.0	-	-	12.7	<5	8.0	12.1	6.4	10.3
80	Power House	PH - 4 - Boiler 1&2	19.7	76.2	35.0	21.5	93.1	45.1	23.2	82.3	34.7
81	Power House	PH - 5 - Boiler - B&C	10.4	35.0	16.6	10.8	38.6	20.5	12.0	29.0	24.7
82	Power House	PH - 5 - Boiler A	11.3	32.6	17.3	10.9	34.3	18.2	17.7	29.7	30.9
83	Sinter Plant 1	SP - 1 Dedusting	<5	-	-	<5	-	-	<5	-	-
84	Sinter Plant 1	SP - 1 Waste Gas	48.9	144.6	94.7	46.7	174.7	76.4	54.8	192.0	55.7
85	Sinter Plant 2	SP - 2 Dedusting	12.5	-	-	13.6	-	-	13.8	-	-
86	Sinter Plant 2	SP - 2 High Line	<5	-	-	<5	-	-	<5	-	-
87	Sinter Plant 2	SP - 2 Waste Gas	20.3	142.6	70.9	20.9	148.0	75.9	21.2	146.7	57.9
88	Sinter Plant 3	SP - 3 Combined (WG & D	29.6	90.5	44.2	42.0	140.9	60.5	34.2	140.9	63.1
89	Sinter Plant 3	SP - 3 Dedusting	6.9	-	-	<5	-	-	<5	-	-
90	Sinter Plant 4	SP - 4 Combined (WG & D	39.9	117.6	94.3	47.1	149.8	94.9	43.9	158.2	117.0

MSD - Major Shutdown

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.

Manager
Env. Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED

ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR

ONLINE STACK MONITORING REPORT FOR FY'23

			Jan-23			Feb-23			Mar-23		
SL. No.	Department	Stack	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm
1	Blast Furnace	C - Stove	<5	22.6	9.5	5.41	25.74	8.39	<5	25.9	<5
2	Blast Furnace	E - Stock & Cast House	7.3	-	-	5.44	-	-	6.6	-	-
3	Blast Furnace	E - Stove	<5	64.5	17.2	1.28	67.56	17.82	<5	71.7	23.4
4	Blast Furnace	F - Cast House	<5	-	-	4.61	-	-	6.3	-	-
5	Blast Furnace	F - PCI	<5	-	-	2.44	-	-	<5	-	-
6	Blast Furnace	F - Stock House-DE	<5	-	-	2.9	-	-	<5	-	-
7	Blast Furnace	F - Stove	7.7	31.6	48.9	2.93	27.06	46.29	5.8	36.9	48.1
8	Blast Furnace	G - Cast House	11.4	-	-	7.85	-	-	7.7	-	-
9	Blast Furnace	G - PCI-01	8.2	-	-	7.57	-	-	6.4	-	-
10	Blast Furnace	G - PCI-02	<5	-	-	3.58	-	-	<5	-	-
11	Blast Furnace	G - PCI-03	7.0	-	-	6.11	-	-	5.9	-	-
12	Blast Furnace	G - Stock House	<5	-	-	3.97	-	-	<5	-	-
13	Blast Furnace	G - Stove	<5	38.2	45.8	1.34	89.73	48.08	<5	22.4	18.7
14	Blast Furnace	H - Cast House	<5	-	-	3.47	-	-	<5	-	-
15	Blast Furnace	H - PCI-01	5.6	-	-	5.18	-	-	5.7	-	-
16	Blast Furnace	H - PCI-02	<5	-	-	4.16	-	-	5.3	-	-
17	Blast Furnace	H - Stock House	9.1	-	-	9.04	-	-	8.7	-	-
18	Blast Furnace	H - Stock House - DE	<5	-	-	3.59	-	-	<5	-	-
19	Blast Furnace	H - Stove	<5	31.7	<5	3.77	10.64	0.4	<5	36.7	<5
20	Blast Furnace	HMPP	6.9	-	-	2.31	-	-	<5	-	-
21	Blast Furnace	I - Cast House	<5	-	-	4.35	-	-	<5	-	-
22	Blast Furnace	I - PCI	<5	-	-	2.22	-	-	<5	-	-
23	Blast Furnace	I - Stock House	<5	-	-	1.33	-	-	<5	-	-
24	Blast Furnace	I - Stove	11.3	23.2	38.2	9.89	10.64	38.62	10.3	22.4	7.2
25	Coke Plant	Battery 07	15.1	211.1	47.4	12.65	10.64	41	17.3	390.4	118.5
26	Coke Plant	Battery 08	20.0	157.7	254.3	23.45	89.73	218.24	25.7	61.6	195.3
27	Coke Plant	Battery 09	15.6	120.4	345.9	17.1	90.18	260.99	19.2	80.5	263.4
28	Coke Plant	Battery 10	8.8	70.3	168.4	8.73	89.73	137.66	12.9	139.6	312.3
29	Coke Plant	Battery 10 Pushing Dedus	<5	-	-	3.49	-	-	<5	-	-
30	Coke Plant	Battery 11	37.6	157.2	291.1	28.45	10.64	331.36	28.7	172.5	331.7
31	Coke Plant	Battery 11 Pushing Dedus	5.2	-	-	4.9	-	-	6.3	-	-
32	LD 1	LD 01 - Ladle Furnace 01	<5	-	-	4.22	-	-	<5	-	-
33	LD 1	LD 01 - Ladle Furnace 02	9.2	-	-	16.97	-	-	7.4	-	-
34	LD 1	LD 01 - Ladle Furnace 03	27.8	-	-	5.37	-	-	5.9	-	-
35	LD 1	LD 01 - Secondary Emissi	<5	-	-	1.59	-	-	<5	-	-
36	LD 2	LD 02 - DE 01	<5	-	-	1.89	-	-	<5	-	-
37	LD 2	LD 02 - DE 02	7.3	-	-	7.21	-	-	7.2	-	-
38	LD 2	LD 02 - DE 03	<5	-	-	0.71	-	-	<5	-	-
39	LD 2	LD 02 - DE 04	<5	-	-	2.42	-	-	<5	-	-
40	LD 2	LD 02 - DE 05	<5	-	-	2.29	-	-	<5	-	-
41	LD 2	LD 02 - DE 06	<5	-	-	3.44	-	-	<5	-	-
42	LD 2	LD 02 - DE 07	<5	-	-	2.2	-	-	<5	-	-
43	LD 2	LD 02 - DE 08	<5	-	-	1.26	-	-	<5	-	-
44	LD 2	LD 02 - DE 09	<5	-	-	4.47	-	-	<5	-	-
45	LD 2	LD 02 - Ladle Furnace 01	7.6	-	-	7.92	-	-	5.5	-	-
46	LD 2	LD 02 - Ladle Furnace 02	6.5	-	-	8.65	-	-	10.0	-	-
47	LD 2	LD 02 - Secondary Emissi	<5	-	-	5.76	-	-	6.6	-	-
48	LD 2	LD 02 - Secondary Emissi	9.8	-	-	7.97	-	-	<5	-	-

TATA STEEL

ANNEXURE-I

TATA STEEL LIMITED
ENVIRONMENTAL MONITORING REPORT OF MAIN WORKS JAMSHEDPUR
ONLINE STACK MONITORING REPORT FOR FY'23

			Jan-23			Feb-23			Mar-23		
SL. No.	Department	Stack	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm	PM (mg/Nm	SO2 (mg/Nm	NOx (mg/Nm
49	LD 2	LD 02 - Secondary Emissi	<5	-	-	5.37	-	-	5.4	-	-
50	LD 3	LD 03 - Ladle Furnace 01	<5	-	-	4.25	-	-	<5	-	-
51	LD 3	LD 03 - Ladle Furnace 02	5.2	-	-	4.94	-	-	6.0	-	-
52	LD 3	LD 03 - Secondary Emissi	<5	-	-	3.73	-	-	<5	-	-
53	Lime Plant	Merz Kiln 01	<5	-	-	7.41	-	-	6.4	-	-
54	Lime Plant	Merz Kiln 02	5.4	-	-	7.41	-	-	6.2	-	-
55	Lime Plant	Merz Kiln 03& 04	<5	-	-	4	-	-	<5	-	-
56	Lime Plant	Merz Kiln 05	-	-	-	0	-	-	<5	-	-
57	Lime Plant	Merz Kiln 06	<5	-	-	1.92	-	-	<5	-	-
58	Lime Plant	Merz Kiln 06 - DE 12	<5	-	-	3.36	-	-	<5	-	-
59	Lime Plant	Merz Kiln 07	<5	-	-	3.23	-	-	<5	-	-
60	Lime Plant	Merz Kiln 08 - DE 01B	<5	-	-	6.05	-	-	5.7	-	-
61	Lime Plant	Merz Kiln 09 - DE 09	<5	-	-	4.05	-	-	<5	-	-
62	Lime Plant	Merz Kiln 7 DE15	<5	-	-	1.65	-	-	<5	-	-
63	Lime Plant	Merz Kiln 8	6.5	-	-	6.07	-	-	6.2	-	-
64	Lime Plant	Merz Kiln 9	5.4	-	-	6.31	-	-	6.4	-	-
65	Mills	CRM BAF	<5	-	-	5	-	-	5.9	-	-
66	Mills	CRM CGL - 1	-	-	-	0	-	-	-	-	-
67	Mills	CRM CGL - 2	<5	-	-	2.45	-	-	<5	-	-
68	Mills	CRM PLTCM	<5	-	-	2.7	-	-	<5	-	-
69	Mills	HSM RHF - 1	16.1	-	-	13.41	-	-	13.9	-	-
70	Mills	HSM RHF - 2	9.3	-	-	10.4	-	-	10.6	-	-
71	Mills	HSM RHF - 3	9.4	-	-	5.37	-	-	8.4	-	-
72	Mills	Merchant mill	14.6	-	-	14.41	-	-	15.8	-	-
73	Mills	New Bar Mill	20.9	-	-	21.12	-	-	17.4	-	-
74	Mills	Wire Rod Mill	20.8	-	-	12.45	-	-	10.9	-	-
75	Power House	PH - 3 - Boiler - 07&08	10.5	35.5	27.6	11.4	32.81	19.99	10.5	28.5	19.9
76	Power House	PH - 3 - Boiler 5	11.5	20.9	19.2	10.95	108.55	15.63	10.7	112.7	12.9
77	Power House	PH - 3 - Boiler 6	14.1	27.5	25.9	15.09	10.64	19.61	14.8	30.1	20.0
78	Power House	PH - 4 - Boiler - 4	8.4	158.6	50.7	7.02	60.31	24.12	9.2	79.3	36.9
79	Power House	PH - 4 - Boiler - 5	11.9	10.5	25.2	12.63	5.29	10.35	11.7	6.6	27.3
80	Power House	PH - 4 - Boiler 1&2	23.0	93.2	44.0	23.15	78.72	37.18	23.2	79.2	37.4
81	Power House	PH - 5 - Boiler - B&C	9.8	24.1	22.0	10.2	30.12	19.48	10.4	29.4	15.8
82	Power House	PH - 5 - Boiler A	13.5	23.1	23.0	5.69	5.53	13.2	7.4	5.8	28.2
83	Sinter Plant 1	SP - 1 Dedusting	<5	-	-	0.75	-	-	<5	-	-
84	Sinter Plant 1	SP - 1 Waste Gas	40.9	149.7	42.8	34.11	72.59	38.95	33.9	74.1	38.5
85	Sinter Plant 2	SP - 2 Dedusting	12.0	-	-	16.88	-	-	10.7	-	-
86	Sinter Plant 2	SP - 2 High Line	<5	-	-	1.12	-	-	<5	-	-
87	Sinter Plant 2	SP - 2 Waste Gas	15.7	165.7	58.3	20.96	128.66	-	26.9	143.5	104.4
88	Sinter Plant 3	SP - 3 Combined (WG & D	29.7	140.9	64.2	31.22	145.12	68.18	25.1	174.8	67.9
89	Sinter Plant 3	SP - 3 Dedusting	6.6	-	-	14.26	-	-	12.8	-	-
90	Sinter Plant 4	SP - 4 Combined (WG & D	42.1	174.7	115.8	42.89	185.77	112.22	48.3	84.9	122.6

MSD - Major Shutdown

Note-
Standards applicable as per CTO, Ref No. JSPCB/HO/RNC/CTO-9834149/2021/1532 dated 17/12/2021.

Manager-Environment
Calibration & Validation

Head - Environment
Monitoring, Testing and Analysis (TSJ)

ANNEXURE-I

TATA STEEL

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
AMBIENT AIR QUALITY REPORT FOR JSR TOWN

Location	Parameter	UoM	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
River Pump House	Particulate Matter, PM10	µg/m3	107.1	100.9	120.4	153.9	136.0	45.4	31.7	107.7	158.0	110.0	122.7	144.1
	Particulate Matter, PM2.5	µg/m3	30.2	29.6	37.9	53.1	40.9	21.1	12.1	39.5	56.0	40.0	31.5	42.6
	Sulphur Dioxide (SO2)	µg/m3	6.8	15.4	15.3	25.9	13.6	13.4	19.1	13.1	26.0	17.0	17.6	28.6
	Nitrogen Dioxide, (NO2)	µg/m3	31.2	42.3	40.9	50.4	34.0	26.0	24.9	25.0	54.0	42.0	42.8	40.6
	Carbon Monoxide(CO)	mg/m3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
	Ammonia (NH3)	µg/m3	53.3	47.1	63.7	67.2	16.0	57.5	83.5	68.1	96.0	54.0	81.8	62.0
	Ozone (O3)	µg/m3	25.1	8.1	7.5	12.8	14.7	9.1	6.1	6.3	9.0	18.0	12.0	14.7
	Nickel (Ni)	ng/m3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Arsenic (As)	ng/m3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Lead (Pb)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzene (C6H6)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo alpha Pyrene (BaP)	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Southern Sewage Treatment Plant	**Parameter**	**UoM**	**Apr-22**	**May-22**	**Jun-22**	**Jul-22**	**Aug-22**	**Sep-22**	**Oct-22**	**Nov-22**	**Dec-22**	**Jan-23**	**Feb-23**	**Mar-23**
	Particulate Matter, PM10	µg/m3	144.6	148.7	112.4	91.1	121.9	50.7	44.4	167.7	219.0	178.0	179.0	213.9
	Particulate Matter, PM2.5	µg/m3	45.3	44.6	32.6	23.2	36.5	17.8	18.3	47.0	64.0	54.0	49.1	57.1
	Sulphur Dioxide (SO2)	µg/m3	7.6	24.3	13.3	24.8	13.3	11.7	19.1	11.9	28.0	12.0	13.9	21.4
	Nitrogen Dioxide, (NO2)	µg/m3	38.8	29.1	34.2	56.7	38.0	39.5	26.6	21.4	51.0	36.0	42.8	30.8
	Carbon Monoxide(CO)	mg/m3	0.3	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.4	0.2	0.2
	Ammonia (NH3)	µg/m3	70.8	52.5	68.6	83.4	21.3	94.8	62.2	74.1	96.0	52.0	75.0	52.1
	Ozone (O3)	µg/m3	16.7	7.8	4.3	8.3	8.1	6.0	11.5	5.2	15.0	8.0	12.7	17.3
	Nickel (Ni)	ng/m3	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
	Arsenic (As)	ng/m3	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Lead (Pb)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzene (C6H6)	µg/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo alpha Pyrene (BaP)	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

Note:
Standards applicable as per National Ambient Air Quality Standards vide Notification No.: B-29016/20/90/PCI-L dated 18th November 2009.
UoM - Unit of Measurement
IS – Indian Standard
RPH - River Pump House
SSTP - Southern Sewage Treatment Plant
NT - Not Traced

*** This test report is generated by NABL Accredited TATA STEEL LIMITED JSR EMD LAB having accreditation No.TC-8363 dated 21-02-2022 having validity till 20-02-2024**

Sr Manager
Environment Monitoring & Analysis

Head
Environment Monitoring, Testing & Analysis (TSJ)

ANNEXURE-1

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
NOISE LEVEL MONITORING REPORT SUMMARY

SN	Area	UoM	Apr-22		May-22		Jun-22		Jul-22		Aug-22		Sep-22	
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
A)	**SILENCE ZONE**													
1	TMH (Near Statue)		61.4	60.2	60.1	60.5	59.0	55.2	58.4	56.2	59.2	58.1	62.7	59.0
2	JUSCO School Kadma	dB(A)	64.3	58.1	69.4	65.1	67.3	60.1	63.7	59.1	62.6	60.0	62.2	59.8
3	Narbheram School Bistupur	Leq	70.2	64.3	72.6	66.0	70.1	66.4	71.5	65.7	72.2	64.3	70.8	64.8
4	South Park School Bistupur		62.1	66.8	67.2	63.1	65.2	64.0	67.2	60.1	68.1	62.2	65.0	58.7
5	Old Court Area (Jubilee Park Side)		69.7	74.6	75.2	68.3	68.8	67.1	68.6	64.6	70.2	64.0	71.5	54.2
B)	**RESIDENTIAL ZONE**													
1	Circuit House Area (North)		60.4	59.9	69.4	62.4	62.2	61.4	64.8	58.7	62.6	59.4	60.4	55.0
2	B.H. Area		64.1	60.4	67.2	63.0	60.1	59.5	62.1	56.4	60.0	57.6	58.6	60.1
3	Farm Area	dB(A)	66.3	58.8	63.6	59.2	65.4	62.2	59.6	58.2	58.7	59.8	56.7	63.2
4	Baridih Basti	Leq	68.1	60.9	66.5	58.6	63.0	58.7	63.8	60	64.6	61.2	62.1	55.4
5	Carriage Colony Burma Mines		61.0	60.7	67.3	59.4	64.8	59.5	64.1	59.6	62.7	60.4	61.7	56.0
6	Agrico Colony		69.8	62.4	68.7	60.1	62.1	61.5	65.2	57.2	64.1	59.1	63.4	59.1
7	South Park		72.3	69.6	69.4	61.6	64.4	64.2	68.7	61.3	67.6	63.1	67.4	63.1
C)	**COMMERCIAL ZONE**													
1	Sakchi Market		72.7	78.5	74.2	64.6	70.3	63.2	72.8	64.8	72.1	63.7	72.2	61.2
2	Golmuri Market	dB(A)	73.2	70.8	71.6	62.1	71.2	63.7	69.7	59.0	67.9	58.7	66.0	62.5
3	Burma Mines Market	Leq	70.7	61.9	72.1	60.3	68.7	61.4	70.1	60.7	69.2	61.4	67.8	57.5
4	Apna Bazar Bistupur		74.6	70.6	71.0	61.6	69.2	64.0	70.2	63.2	69.7	62.3	69.8	64.2
5	'R' Road Bistupur (behind Nalanda		78.2	71.4	79.2	64.2	61.1	59.2	65.0	64.1	65.8	63.7	64.1	57.1
D)	**INDUSTRIAL ZONE**													
1	EAST SIDE/ near HSM Drain		64.7	66.6	66.0	65.1	67.4	64.6	68.2	65.1	73.3	68.1	64.2	62.0
2	WEST SIDE /Near Ramm Mandir		67.2	68.1	68.1	63.4	68.0	61.1	69.4	64.6	78.8	69.6	66.1	63.1
3	NORTH/ Garam Nalla drain	dB(A)	65.5	60.9	69.0	64.2	67.6	65.0	67.5	63.8	81.2	76.8	65.4	62.6
4	NORTH EAST slag road gate	Leq	66.1	70.4	65.2	64.5	70.0	64.2	65.5	64.2	74.0	68.6	67.0	61.8
5	NORTH WEST/General Office		61.2	59.8	60.1	58.2	61.4	58.1	63.2	58.6	68.5	60.2	61.1	57.4
6	SOUTH EAST/Burmamines Gate		69.6	71.6	69.2	67.2	69.7	61.4	70.1	64.9	71.5	67.4	69.4	60.5
7	SOUTH WEST/Jugsali Drain		68.0	69.3	67.8	64.4	68.8	65.0	68.2	66.0	72.6	68.6	68.1	62.4

Note:

Standards applicable as per Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S. O. 1046 (E), dated 22-11-2000

$ This test report was generated by TATA STEEL LIMITED JSR EMD LAB having NABL Accreditation No.TC-8363.

Note: Due to covid-19 lockdown night monitoring was not done (ND).

J. Nagarjuna Reddy
Sr. Manager
Monitoring and Analysis

for
Head
Environment Monitoring, Testing & Analysis (TSJ)

ANNEXURE-1

TATA STEEL

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
NOISE LEVEL MONITORING REPORT SUMMARY

S.no	Area	UoM	Oct-22		Nov-22		Dec-22		Jan-23		Feb-23		Mar-23	
			Day	Night	Day	Night	Day	Night	Day	Night	Day	Night	Day	Night
A)	**SILENCE ZONE**													
1	TMH (Near Statue)		60.1	58.2	63.1	59.2	61.7	58.6	64.6	60.5	63.2	62.3	59.4	58.2
2	JUSCO School Kadma	dB(A)	63.0	60.4	63.9	57.6	64.8	58.0	63.1	62.6	53.5	52.2	61.1	60.5
3	Narbheram School Bistupur	Leq	74.6	66.2	72.7	62.8	73.1	66.3	71.6	66.8	72.8	68.7	70.8	64.1
4	South Park School Bistupur		69.2	65.1	64.7	59.3	65.1	60.8	60.9	60.2	61.6	58.4	63.7	62.4
5	Old Court Area (Jubilee Park Side)		68.7	61.5	70.9	56.0	72.2	66.8	73.7	68.9	72.1	66.0	66.1	61.5
B)	**RESIDENTIAL ZONE**													
1	Circuit House Area (North)		63.8	59.0	61.7	58.6	62.8	57.6	63.6	59.1	63.8	57.4	62.0	60.2
2	B.H. Area		61.6	59.7	62.8	60.2	61.3	56.4	60.1	58.6	59.7	56.3	62.6	57.1
3	Farm Area	dB(A)	59.2	60.3	59.4	63.6	58.2	55.0	58.4	59.9	56.3	55.0	56.3	55.3
4	Baridih Basti	Leq	65.2	61.1	61.6	56.8	60.2	58.1	58.7	60.1	60.2	57.2	61.3	60.4
5	Carriage Colony Burma Mines		64.8	58.7	60.7	57.2	61.4	57.6	60.6	61.5	58.7	56.4	60.2	57.8
6	Agrico Colony		66.5	57.5	60.4	60.0	57.3	56.0	59.3	58.5	57.6	55.8	64.7	62.5
7	South Park		67.9	60.8	66.1	62.1	67.7	61.2	64.5	60.3	54.5	54.1	63.6	60.5
C)	**COMMERCIAL ZONE**													
1	Sakchi Market		71.4	61.4	69.2	63.4	67.6	60.1	69.3	66.4	67.3	60.9	67.9	63.0
2	Golmuri Market	dB(A)	70.7	60.8	67.3	62.8	67.1	61.7	66.8	68.2	63.3	59.7	66.7	61.5
3	Burma Mines Market	Leq	69.5	62.1	69.9	63.7	64.2	58.6	67.2	65.0	61.2	58.2	66.0	62.7
4	Apna Bazar Bistupur		68.2	61.2	67.6	60.8	69.7	61.3	68.0	66.3	65.5	61.3	67.1	63.5
5	'R' Road Bistupur (behind Nalanda Hotel)		67.7	59.5	68.0	63.0	69.9	62.8	67.9	64.1	68.1	62.8	70.0	65.2
D)	**INDUSTRIAL ZONE**													
1	EAST SIDE/ near HSM Drain		71.6	64.2	68.1	64.2	69.7	67.6	67.4	60.0	63.1	60.2	66.8	62.6
2	WEST SIDE /Near Ramm Mandir		76.8	67.3	67.0	60.1	68.2	64.4	59.6	62.2	61.4	59.7	62.3	60.2
3	NORTH/ Garam Nalla drain	dB(A)	79.2	64.1	69.4	66.4	71.2	69.1	66.2	64.4	66.2	65.0	68.5	64.1
4	NORTH EAST slag road gate	Leq	75.3	65.3	71.3	69.2	73.0	71.6	71.3	66.6	69.5	67.8	70.1	63.6
5	NORTH WEST/General Office		66.2	61.2	62.8	58.4	59.7	57.2	59.1	58.0	59.6	57.3	59.3	57.1
6	SOUTH EAST/Burmamines Gate		70.6	68.0	72.8	63.0	70.3	68.5	60.4	62.6	66.2	60.1	61.7	59.8
7	SOUTH WEST/Jugsali Drain		72.1	66.1	70.2	65.8	71.6	67.7	66.8	59.4	68.7	66.4	67.4	62.2

Note:
Standards applicable as per Noise Pollution (Regulation and Control)
This test report is generated by NABL Accredited TATA STEEL LIMITED JSR EMD LAB having

Naagarjuna

Sr Manager

Environment Monitoring & Analysis

Head
Environment Monitoring, Testing & Analysis (TSJ)

TATA STEEL

TATA STEEL LIMITED

GROUNDWATER MONITORING - Done by NABL/ MoEF Certified Lab (APR-22 to SEP-22)

Month	Sampling Locations	pH	Temperature	Conductivity	Total Dissolved Solids	Total Suspended Solids	Alkalinity as $CaCO_3$	Total Hardness as $CaCO_3$	Calcium as Ca	Chlorides as Cl^-	Sulphates as SO_4^{-2}	Nitrate Nitrogen as N	Nitrite Nitrogen as N	Fluorides as F^-
		--	oC	µMho/Cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-22	Jugsalai Bore Water	7.1	30.0	1592.0	796.0	29.0	226.0	530.4	157.4	67.5	48.4	1.20	0.15	0.85
	Parvati GhatBore water	7.0	30.3	1920.0	960.0	25.0	254.0	546.6	162.3	81.4	70.0	1.30	0.18	0.69
	SonariBore water	7.2	30.1	1021.0	510.5	< 10	254.0	398.8	117.6	80.4	58.6	12.10	0.02	0.25
	Baganhattu Bore water	7.7	30.9	770.0	385.0	< 10	222.0	268.3	79.0	57.6	77.5	4.30	0.04	0.24
	Jemco Bore Water	7.7	30.9	540.0	270.0	20.0	112.0	115.8	33.4	49.6	75.6	0.90	0.02	0.22
May-22	SonariBore water	7.0	29.6	783.0	383.7	< 10	240.0	246.0	-	73.5	88.8	1.80	0.08	0.22
	Baganhattu Bore water	7.0	30.1	788.0	386.1	< 10	240.0	273.8	-	70.5	28.8	1.60	0.07	0.73
	Jemco Bore Water	7.3	25.4	740.0	362.6	39.0	136.0	182.5	-	54.6	57.7	2.60	0.07	0.51
	Jugsalai Bore Water	7.0	31.4	1349.0	661.0	< 10	202.0	369.0	-	153.9	39.6	BDL	0.07	0.41
	Parvati GhatBore water	6.9	32.0	1681.0	823.7	44.0	234.0	521.8	-	168.8	61.4	0.60	0.28	0.68
Jun-22	Jugsalai Bore Water	7.2	28.6	1005.0	492.5	< 10	370.0	246.0	73.1	78.4	54.0	2.60	0.06	0.58
	Parvati GhatBore water	7.3	27.9	1140.0	558.6	< 10	412.0	313.5	93.0	94.3	66.4	4.10	0.07	0.57
	Baganhattu Bore water	6.8	29.8	795.0	389.6	< 10	232.0	214.3	64.4	65.0	26.1	1.50	0.02	0.35
	Jemco Bore Water	8.0	30.1	463.0	226.9	13.0	96.0	69.4	20.7	54.0	51.6	2.40	0.04	0.43
	SonariBore water	6.9	29.2	954.0	467.5	< 10	264.0	317.4	94.6	84.0	105.2	11.90	0.09	0.58
Jul-22	Jugsalai Bore Water	7.1	27.7	1203.0	589.5	< 10	412.0	323.4	97.0	91.0	95.1	2.60	0.08	0.57
	Parvati GhatBore water	7.1	27.7	1071.0	524.8	< 10	400.0	252.0	73.9	83.0	66.3	1.70	0.05	0.53
	Jemco Bore Water	7.3	27.9	761.0	372.9	44.0	130.0	186.5	54.9	53.0	205.1	BDL	0.07	0.63
	SonariBore water	7.2	25.4	991.0	485.6	< 10	260.0	265.7	77.9	79.0	115.9	BDL	0.10	0.44
	Baganhattu Bore water	7.5	26.4	325.0	159.3	< 10	102.0	89.9	25.4	24.0	24.2	BDL	0.06	0.52
Aug-22	SonariBore water	7.1	27.9	1034.0	506.7	< 10	260.0	343.4	119.9	86.0	101.5	7.85	0.09	0.30
	Baganhattu Bore water	6.9	27.6	842.0	412.6	< 10	228.0	309.2	92.6	61.0	95.0	4.36	0.09	0.46
	Jemco Bore Water	7.3	28.5	708.0	346.9	48.0	114.0	216.9	64.4	55.0	159.6	0.49	0.09	0.31
	Jugsalai Bore Water	7.4	28.5	946.0	463.5	42.0	248.0	307.2	92.6	50.0	193.6	0.79	0.09	0.27
	Parvati GhatBore water	7.3	28.6	1302.0	638.0	40.0	290.0	387.5	114.3	68.0	172.8	0.75	0.09	0.36
Sep-22	Parvati GhatBore water	7.4	28.4	1217.0	596.3	< 10	356.0	236.9	69.2	110.0	182.3	3.70	0.06	0.40
	Jugsalai Bore Water	7.5	28.4	876.0	429.2	< 10	272.0	281.1	83.7	90.0	126.0	2.80	0.05	0.31
	Jemco Bore Water	7.0	27.9	678.0	332.2	56.0	130.0	198.8	58.8	52.0	277.1	3.00	0.05	0.32
	SonariBore water	7.0	27.6	889.0	435.6	< 10	240.0	291.2	86.1	69.0	70.1	11.20	0.07	0.22
	Baganhattu Bore water	7.0	27.0	768.0	376.3	< 10	242.0	281.1	83.7	59.0	98.1	4.10	0.06	0.45

Naagarjuna

Sr. Manager
Monitoring and Analysis

Head
Environment Monitoring, Testing & Analysis (TSJ)

TATA STEEL

TATA STEEL LIMITED

GROUNDWATER MONITORING - Done by NABL/ MoEF Certified Lab (OCT-22 to MAR-23)

Month	Sampling Locations	pH	Temperature	Conductivity	Total Dissolved Solids	Total Suspended Solids	Alkalinity as $CaCO_3$	Total Hardness as $CaCO_3$	Calcium as Ca	Chlorides as Cl^-	Sulphates as SO_4^{-2}	Nitrate Nitrogen as N	Nitrite Nitrogen as N	Fluorides as F^-
		--	oC	µMho/Cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Oct-22	Jugsalai Bore Water	7.2	27.7	1106.0	541.9	< 10	266.0	231.9	68.4	55.0	139.1	6.22	< 0.02	0.27
	Parvati GhatBore water	7.5	27.9	916.0	448.8	< 10	348.0	282.3	84.5	47.0	191.4	5.89	< 0.02	0.36
	SonariBore water	7.0	27.0	1027.0	503.2	< 10	276.0	339.4	100.6	87.0	77.7	6.6	< 0.02	0.24
	Baganhattu Bore water	6.8	26.9	737.0	361.1	< 10	196.0	267.1	78.9	32.0	89.9	5.22	< 0.02	0.51
	Jemco Bore Water	7.9	27.7	450.0	220.5	< 10	100.0	69.1	20.4	49.6	244.6	<0.05	< 0.02	0.34
Nov-22	SonariBore water	7.3	27.1	1030.0	504.7	< 10	336.0	284.5	83.9	57.0	-	2.8	< 0.02	0.32
	Baganhattu Bore water	8.1	28.2	692.0	339.1	< 10	182.0	250.0	74.1	61.0	-	4.6	< 0.02	0.37
	Jemco Bore Water	7.2	27.4	726.0	355.7	< 10	102.0	69.6	19.6	82.0	-	0.02	0.05	0.27
	Jugsalai Bore Water	7.9	27.6	606.0	296.9	< 10	160.0	231.7	67.6	47.0	-	5.12	0.01	0.37
	Parvati GhatBore water	7.8	27.3	872.0	427.3	< 10	248.0	182.9	73.3	60.0	-	4.23	< 0.02	0.33
Dec-22	SonariBore water	7.2	25.8	1003.0	491.5	< 10	244.0	337.3	101.4	97.0	108.2	-	0.10	-
	Baganhattu Bore water	8.3	28.0	719.0	352.3	< 10	140.0	297.2	91.1	55.0	126.1	-	0.09	-
	Jemco Bore Water	7.8	25.2	662.0	324.4	34.0	114.0	212.2	62.8	53.0	221.9	2.1	0.07	-
	Parvati GhatBore water	7.1	25.4	1549.0	759.0	< 10	312.0	626.5	188.3	79.0	250.3	1.8	0.06	0.783
	Jugsalai Bore Water	7.2	25.4	1265.0	619.9	< 10	258.0	465.9	138.4	65.0	180.9	< 0.05	0.08	0.479
Jan-23	Jugsalai Bore Water	7.4	27.1	1052.0	515.5	< 10	106.0	239.0	70.8	67.0	-	< 0.05	0.06	-
	Parvati GhatBore water	7.1	26.9	1808.0	885.9	< 10	110.0	301.2	89.3	75.0	-	1.2	0.09	-
	Baganhattu Bore water	7.2	24.9	712.0	348.9	< 10	148.0	158.6	46.7	56.0	-	-	0.05	-
	Jemco Bore Water	8.2	26.5	429.0	210.2	38.0	118.0	216.9	64.4	50.0	-	-	< 0.02	-
	SonariBore water	7.5	25.0	699.0	342.5	< 10	254.0	156.6	45.9	99.0	-	8.02	< 0.02	-
Feb-23	Jugsalai Bore Water	7.0	26.0	1914.0	937.9	16.0	104.0	224.9	66.0	64.0	192.0	-	-	0.43
	Parvati GhatBore water	7.0	26.0	1592.0	780.1	18.0	112.0	287.1	84.5	71.0	161.0	-	-	0.4
	Jemco Bore Water	7.8	26.1	716.0	350.8	12.0	122.0	202.8	57.9	49.0	151.0	-	-	0.41
	Baganhattu Bore water	7.4	27.5	720.0	352.8	<10	152.0	158.6	46.7	58.0	-	5.1	0.07	-
	SonariBore water	7.1	27.5	901.0	441.5	<10	212.0	156.6	44.3	97.0	-	8.18	0.07	-
Mar-23	SonariBore water	7.1	27.5	984.0	482.2	<10	252.0	108.4	32.1	82.0	216.5	0.89	0.03	0.269
	Baganhattu Bore water	6.8	27.1	737.0	361.1	<0.10	156.0	160.6	48.3	55.0	33.9	6.2	0.01	0.536
	Jemco Bore Water	8.4	26.6	357.0	174.9	28.0	128.0	50.2	14.5	56.0	20.9	<0.05	0.02	0.573
	Jugsalai Bore Water	6.9	27.0	1706.0	835.9	26.0	108.0	574.3	171.4	85.0	57.0	<0.05	<0.02	0.97
	Parvati GhatBore water	7.0	26.6	1925.0	943.3	30.0	116.0	622.5	185.9	92.0	33.0	<0.05	<0.02	0.87

Naagaarjuna

Sr. Manager
Monitoring and Analysis

Head
Environment Monitoring, Testing & Analysis (TSJ)

TATA STEEL

TATA STEEL LIMITED

GROUNDWATER MONITORING - Done by NABL/ MoEF Certified Lab (APR-22 to SEP-22)

Month	Sampling Locations	Silica as SiO_2	Iron as Fe	Hexavalent Chromium as Cr+6	Copper as Cu	Nickel as Ni	Zinc as Zn	Nitrogen (Ammonia) as N	Residual Chlorine as Cl	Sulphide as S^{-2}	Phenolic Compounds as Phenols	Free Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-22	Jugsalai Bore Water	10.80	0.19	< 0.01	0.02	0.14	-	0.05	-	< 0.02	0.06	0.02
	Parvati GhatBore water	14.80	0.48	< 0.01	0.03	0.11	-	0.02	-	< 0.02	0.04	0.03
	SonariBore water	22.60	0.02	< 0.01	0.02	0.11	-	0.03	0.7	< 0.02	0.04	0.02
	Baganhattu Bore water	36.50	0.19	< 0.01	0.03	0.12	-	0.05	0.7	< 0.02	0.09	0.03
	Jemco Bore Water	9.95	0.19	< 0.01	0.04	0.09	-	0.05	1.06	< 0.02	0.10	0.03
May-22	SonariBore water	46.65	0.04	0.05	0.020	0.03	0.1	-	< 1.0	< 0.02	0.01	0.02
	Baganhattu Bore water	16.45	0.06	0.07	0.010	0.04	0.12	-	< 1.0	< 0.02	0.02	0.02
	Jemco Bore Water	28.50	0.62	0.06	0.010	0.20	0.12	0.01	< 1.0	< 0.02	0.03	0.03
	Jugsalai Bore Water	32.15	0.28	< 0.01	0.010	0.07	0.16	0.11	< 1.0	< 0.02	< 0.01	0.04
	Parvati GhatBore water	40.10	0.29	< 0.01	0.020	0.06	0.15	0.06	< 1.0	< 0.02	< 0.01	0.04
Jun-22	Jugsalai Bore Water	15.50	0.21	0.02	0.020	< 0.10	0.48	0.04	< 1.0	< 0.02	0.04	0.03
	Parvati GhatBore water	17.15	0.26	< 0.02	0.020	< 0.10	0.07	0.19	< 1.0	< 0.02	0.03	0.04
	Baganhattu Bore water	47.25	0.05	0.03	0.020	< 0.10	0.49	0.05	< 1.0	< 0.02	0.02	0.007
	Jemco Bore Water	7.40	0.56	0.03	0.020	< 0.10	0.51	0.03	< 1.0	< 0.02	0.02	0.006
	SonariBore water	3.00	0.03	0.03	0.040	< 0.10	-	0.02	< 1.0	< 0.02	0.02	0.01
Jul-22	Jugsalai Bore Water	39.75	0.04	0.02	0.010	0.54	0.56	0.33	< 1.0	BDL	0.02	0.03
	Parvati GhatBore water	34.75	0.05	0.03	BDL	0.52	0.6	0.19	< 1.0	BDL	0.01	0.02
	Jemco Bore Water	26.20	0.01	0.03	BDL	0.11	0.52	1.24	< 1.0	BDL	0.01	0.02
	SonariBore water	36.20	0.02	0.02	0.020	0.36	0.13	0.11	< 1.0	BDL	0.02	0.02
	Baganhattu Bore water	47.05	0.01	0.02	0.010	0.03	0.14	-	< 1.0	BDL	0.03	-
Aug-22	SonariBore water	30.60	0.03	0.03	0.020	< 0.10	0.11	0.05	< 1.0	0.01	0.02	0.03
	Baganhattu Bore water	46.10	0.04	0.02	0.060	< 0.10	0.05	0.02	< 1.0	0.01	0.02	0.01
	Jemco Bore Water	6.95	0.05	0.02	0.050	0.02	0.06	0.05	< 1.0	0.01	0.04	0.03
	Jugsalai Bore Water	3.01	0.06	0.03	0.010	0.01	0.07	0.06	< 1.0	0.01	0.02	0.02
	Parvati GhatBore water	3.38	0.02	0.02	0.020	< 0.10	0.05	0.07	< 1.0	0.00	0.03	0.02
Sep-22	Parvati GhatBore water	14.9	0.01	0.03	0.020	0.010	0.05	0.04	< 1.0	< 0.02	0.03	0.005
	Jugsalai Bore Water	16.9	0.04	0.02	0.010	0.020	0.07	0.07	< 1.0	< 0.02	0.02	0.002
	Jemco Bore Water	41.1	0.27	0.022	0.010	< 0.10	0.54	0.05	< 1.0	0.01	0.02	0.006
	SonariBore water	31.8	BDL	0.01	BDL	< 0.10	0.12	0.07	< 1.0	0.00	0.04	0.007
	Baganhattu Bore water	53.2	0.01	0.021	BDL	< 0.10	0.06	0.06	< 1.0	0.01	0.01	0.03

Naagaarjuna

Sr. Manager
Monitoring and Analysis

Head
Environment Monitoring, Testing & Analysis (TSJ)

TATA STEEL LIMITED

GROUNDWATER MONITORING - Done by NABL/ MoEF Certified Lab (OCT-22 to MAR-23)

Month	Sampling Locations	Silica as SiO_2	Iron as Fe	Hexavalent Chromium as Cr+6	Copper as Cu	Nickel as Ni	Zinc as Zn	Nitrogen (Ammonia) as N	Residual Chlorine as Cl	Sulphide as S^{-2}	Phenolic Compounds as Phenols	Free Cyanide
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Oct-22	Jugsalai Bore Water	17.6	0.03	< 0.05	0.02	0.76	0.03	0.05	< 1.0	< 0.10	< 0.02	0.01
	Parvati GhatBore water	14.7	0.02	< 0.05	0.02	< 0.10	0.02	0.03	< 1.0	< 0.10	< 0.02	0.01
	SonariBore water	16.28	<0.05	< 0.05	< 0.10	< 0.10	0.08	0.02	< 1.0	< 0.10	< 0.02	0.01
	Baganhattu Bore water	15.53	<0.05	< 0.05	< 0.10	< 0.10	0.08	0.02	< 1.0	< 0.10	< 0.02	0.01
	Jemco Bore Water	17.85	<0.05	< 0.05	< 0.10	< 0.10	0.46	0.01	< 1.0	< 0.10	< 0.02	0.01
Nov-22	SonariBore water	24.5	0.05	0.04	0.02	0.02	0.06	0.01	< 1.0	< 0.10	0.03	0.02
	Baganhattu Bore water	23.1	0.04	0.02	0.02	0.02	0.06	0.27	< 1.0	0.07	0.02	0.02
	Jemco Bore Water	17.1	0.96	0.03	0.04	0.02	0.41	0.03	< 1.0	0.06	0.02	0.02
	Jugsalai Bore Water	25.35	0.04	< 0.05	0.03	0.65	0.02	0.12	< 1.0	< 0.10	0.03	0.06
	Parvati GhatBore water	19	0.03	< 0.05	0.02	0.42	0.02					
Dec-22	SonariBore water	20.9	0.02	< 0.01	< 0.05	0.25	< 0.05	< 1.0	< 1.0	< 0.10	< 0.10	< 0.1
	Baganhattu Bore water	23.75	0.01	< 0.01	< 0.05	0.11	0.06	< 1.0	< 1.0	< 0.10	< 0.10	< 0.1
	Jemco Bore Water	18.6	0.4	< 0.01	< 0.05	0.18	0.07	< 1.0	< 1.0	< 0.10	< 0.10	< 0.1
	Parvati GhatBore water	17.6	0.07	< 0.01	< 0.05	0.12	< 0.05	< 1.0	< 1.0	< 0.10	< 0.10	< 0.1
	Jugsalai Bore Water	16.45	0.05	< 0.01	< 0.05	0.18	0.06	< 1.0	< 1.0	< 0.10	< 0.10	< 0.1
Jan-23	Jugsalai Bore Water	22.2	0.3	< 0.05	< 0.05	< 0.10	< 0.05	< 1.0	< 1.0	< 0.10	< 0.10	< 0.1
	Parvati GhatBore water	24.8	0.21	< 0.05	< 0.05	< 0.10	< 0.05	< 1.0	< 1.0	< 0.10	< 0.10	< 0.1
	Baganhattu Bore water	23.1	< 0.05	< 0.05	< 0.05	< 0.10	< 0.05	< 1.0	< 1.0	-	< 0.10	< 0.1
	Jemco Bore Water	-	< 0.05	< 0.05	< 0.05	< 0.10	< 0.05	< 1.0	< 1.0	< 0.10	-	< 0.1
	SonariBore water	23.9	< 0.05	< 0.05	< 0.05	< 0.10	< 0.05	< 1.0	< 1.0	-	< 0.10	< 0.1
Feb-23	Jugsalai Bore Water	-	-	-	-	-	-	< 1.0	<1.0	<0.10	<0.10	< 0.1
	Parvati GhatBore water	-	-	-	-	-	-	< 1.0	<1.0	<0.10	<0.10	< 0.1
	Jemco Bore Water	-	-	-	-	-	-	< 1.0	<1.0	<0.10	<0.10	< 0.1
	Baganhattu Bore water	-	-	-	-	-	-	< 1.0	<1.0	<0.10	<0.10	< 0.1
	SonariBore water	-	-	-	-	-	-	< 1.0	<1.0	<0.10	<0.10	< 0.1
Mar-23	SonariBore water	0.06	0.034	<0.05	0.015	0.022	0.092	<1.0	<1.0	<0.10	<0.10	< 0.1
	Baganhattu Bore water	0.51	0.036	<0.05	0.012	0.001	0.075	<1.0	<1.0	<0.10	<0.10	< 0.1
	Jemco Bore Water	0.19	0.663	<0.05	0.011	0.000	0.030	<1.0	<1.0	<0.10	<0.10	< 0.1
	Jugsalai Bore Water	0.13	0.555	<0.05	0.011	0.004	0.097	<1.0	<1.0	<0.10	<0.10	< 0.1
	Parvati GhatBore water	0.11	0.388	<0.05	0.017	0.005	0.121	1.07	<1.0	<0.10	<0.10	< 0.1

Sr. Manager
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Head
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TATA STEEL

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY
RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR 22 to SEP-22)

Month	Locations	pH	Temperature	Conductivity	Turbidity	Total Dissolved Solids	TSS	Alkalinity	Total Hardness	Calcium	Fe
		--	oC	µMho/Cm	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.57	30.00	595	5.78	297.5	< 10.0	176.0	172.1	-	-
	KHARKHAI RIVER (NEAR DUMUHANI)	7.34	30.10	375	10.04	187.5	< 10.0	134.0	123.5	34.9	0.08
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	7.63	31.90	256	8.19	128.0	< 10.0	102.0	91.5	25.3	0.11
	SWARNA REKHA RIVER BAGUN HATU	7.55	31.70	374	6.73	187.0	< 10.0	110.0	103.7	29.3	0.09
May-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.69	29.40	651	3.02	319.0	< 10.0	140.0	186.5	52.5	0.05
	KHARKHAI RIVER (NEAR DUMUHANI)	7.86	29.00	750	3.37	367.5	< 10.0	154.0	194.4	50.9	0.04
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	7.79	29.70	373	8.24	182.8	< 10.0	126.0	97.2	-	0.05
	SWARNA REKHA RIVER BAGUN HATU	7.29	30.10	501		245.5	< 10.0	150.0	127.0	-	0.01
Jun-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.77	29.20	1145	35.50	561.1	40.0	384.0	179.8	53.6	BDL
	KHARKHAI RIVER (NEAR DUMUHANI)	8.25	28.40	246	6.18	120.5	< 10.0	92.0	69.9	19.9	BDL
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.14	29.90	234	1.83	114.7	< 10.0	94.0	59.5	17.5	BDL
	SWARNA REKHA RIVER BAGUN HATU	7.63	29.80	435	63.20	213.2	61.0	142.0	115.1	34.2	BDL
Jul-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.98	25.60	258	4.34	126.4	< 10.0	98.0	71.9	20.7	0.03
	KHARKHAI RIVER (NEAR DUMUHANI)	7.66	25.40	284	11.06	139.2	< 10.0	106.0	75.9	21.5	0.02
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	7.56	26.50	304	3.91	149.0	< 10.0	100.0	81.3	23.1	BDL
	SWARNA REKHA RIVER BAGUN HATU	7.60	26.40	462	15.35	226.4	< 10.0	106.0	69.9	19.9	BDL
Aug-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.88	27.10	154	91.40	75.5	43.0	72.0	56.2	16.1	0.02
	KHARKHAI RIVER (NEAR DUMUHANI)	7.73	27.90	179	82.70	87.7	45.0	56.0	62.3	16.9	0.03
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.46	27.80	177	80.60	86.7	33.0	76.0	62.3	17.7	0.01
	SWARNA REKHA RIVER BAGUN HATU	7.84	28.00	218	88.80	106.8	60.0	72.0	68.3	19.3	0.01
Sep-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.14	28.00	235	14.92	115.2	< 10.0	112.0	90.4	25.8	BDL
	KHARKHAI RIVER (NEAR DUMUHANI)	8.14	27.70	235	14.91	115.2	< 10.0	118.0	94.4	27.4	BDL
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.11	27.00	216	7.14	105.8	< 10.0	102.0	76.3	21.7	BDL
	SWARNA REKHA RIVER BAGUN HATU	8.15	27.10	292	8.02	143.1	< 10.0	108.0	90.4	25.0	BDL

Note:- BDL-Below Detection Limit

Naagarjuna

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TATA STEEL

TATA STEEL LIMITED

ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY

RIVER WATER MONITORING DONE BY NABL/MoEF LAB (OCT-22 to MAR-23)

Month	Locations	pH	Temperature	Conductivity	Turbidity	Total Dissolved Solids	TSS	Alkalinity	Total Hardness	Calcium	Fe
		--	oC	µMho/Cm	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Oct-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.33	27.70	225	7.85	110	< 10.0	108.0	94.38	28.16	0.04
	KHARKHAI RIVER (NEAR DUMUHANI)	8.03	26.4	248	6.57	122	< 10.0	120	91.36	26.56	0.14
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.21	26.4	236	7.84	116	< 10.0	118	92.37	26.56	0.09
	SWARNA REKHA RIVER BAGUN HATU	8.36	26.6	361	8.14	177	< 10.0	122	114.46	33.8	0.18
Nov-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.41	27.30	326	14.10	159.7	< 10.0	130	119.91	34.21	0.03
	KHARKHAI RIVER (NEAR DUMUHANI)	7.85	27.00	371	6.91	181.8	< 10.0	142	138.2	40.73	0.10
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.19	28.10	255	2.73	125.0	< 10.0	96	103.65	30.14	0.04
	SWARNA REKHA RIVER BAGUN HATU	8.29	28.30	310	11.60	151.9	< 10.0	94	99.59	29.33	0.03
Dec-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.99	24.9	399	6.75	195.51	< 10.0	142	157.14	45.8	0.08
	KHARKHAI RIVER (NEAR DUMUHANI)	7.92	25.1	438	7.40	214.62	< 10.0	154	161.22	48.26	0.02
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.3	27.2	300	6.41	147.00	< 10.0	108	110.2	32.72	0.01
	SWARNA REKHA RIVER BAGUN HATU	8.02	27.1	476	5.28	233.24	< 10.0	122	140.81	42.53	0.08
Jan-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.91	24.3	521	8.12	-	< 10.0	-	-	-	-
	KHARKHAI RIVER (NEAR DUMUHANI)	7.80	24.7	467	7.29	-	< 10.0	160	170.7	50.7	< 0.05
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.61	24.4	253	7.79	-	< 10.0	88	100.4	30.58	< 0.05
	SWARNA REKHA RIVER BAGUN HATU	7.89	24.5	394	7.56	-	< 10.0	116	120.5	35.41	< 0.05
Feb-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.31	28.2	372	2.69	182.28	< 10.0	136	134.5	40.24	-
	KHARKHAI RIVER (NEAR DUMUHANI)	7.89	26	351	2.43	171.99	< 10.0	130	126.5	35.41	-
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	8.33	25.6	283	3.94	138.67	< 10.0	138	104.4	29.78	-
	SWARNA REKHA RIVER BAGUN HATU	7.69	24.4	353	7.29	172.97	< 10.0	116	138.6	40.24	-
Mar-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.7	27.9	631	2.28	309.19	< 10.0	144	138.6	40.24	0.24
	KHARKHAI RIVER (NEAR DUMUHANI)	7.8	27.4	406	2.15	198.94	< 10.0	114	128.5	38.63	0.076
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	7.97	26.8	292	3.12	143.08	< 10.0	134	108.4	32.19	0.031
	SWARNA REKHA RIVER BAGUN HATU	7.7	27.1	433	19.15	212.17	24.0	142	100.4	29.78	0.038

Note:- BDL-Below Detection Limit

Naagarjuna

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TATA STEEL LIMITED

ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY

RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR 22 to SEP-22)

Month	Locations	Magnesium	Chloride	$SO4^{-2}$	Nitrate Nitrogen as N	Nitrite Nitrogen as N	F^-	Cr (VI)	SiO2	Cu
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	-	42.7	-	-	-	-	-	-	-
	KHARKHAI RIVER (NEAR DUMUHANI)	8.9	30.8	25.3	0.80	0.02	0.18	<0.01	11.80	0.02
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	6.9	19.9	15.9	0.06	0.13	0.38	<0.01	11.70	0.02
	SWARNA REKHA RIVER BAGUN HATU	7.4	35.7	27.1	1.00	0.14	0.53	<0.01	12.20	0.03
May-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	11.6	60.6	98.7	2.90	0.02	0.46	<0.01	24.05	0.03
	KHARKHAI RIVER (NEAR DUMUHANI)	12.1	77.2	93.6	BDL	0.27	0.50	<0.01	24.05	0.01
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	4.3	43.7	23.4	1.50	0.21	0.41	0.02	22.25	0.04
	SWARNA REKHA RIVER BAGUN HATU	7.2	65.5	30.6	BDL	0.19	0.76	0.01	22.00	0.01
Jun-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	11.4	83.0	79.9	-	0.76	0.59	0.02	24.80	0.03
	KHARKHAI RIVER (NEAR DUMUHANI)	4.9	20.0	10.8	-	0.06	0.60	0.01	5.75	0.02
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	3.9	21.0	21.4	1.70	0.12	0.40	0.02	12.95	0.02
	SWARNA REKHA RIVER BAGUN HATU	7.2	49.0	29.1	BDL	0.24	0.99	0.02	15.35	0.02
Jul-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	4.9	15.0	21.8	BDL	0.09	0.25	0.03	24.90	0.02
	KHARKHAI RIVER (NEAR DUMUHANI)	5.3	9.0	34.8	BDL	0.24	0.33	0.02	5.80	0.03
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	5.7	24.0	19.3	BDL	0.25	0.54	0.02	12.85	0.01
	SWARNA REKHA RIVER BAGUN HATU	4.9	55.0	26.2	2.20	0.41	0.52	0.02	14.90	0.01
Aug-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	3.9	7.0	24.7	0.70	0.10	0.27	0.05	23.35	0.01
	KHARKHAI RIVER (NEAR DUMUHANI)	4.9	9.0	20.1	0.56	0.08	0.22	0.04	5.60	0.01
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	4.4	15.0	16.1	0.48	0.09	0.36	0.04	12.65	0.02
	SWARNA REKHA RIVER BAGUN HATU	4.9	19.0	9.1	0.63	0.08	0.55	0.08	14.75	0.03
Sep-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	6.3	9.0	27.5	0.80	0.06	0.21	0.012	12.1	BDL
	KHARKHAI RIVER (NEAR DUMUHANI)	6.3	9.0	20.7	1.50	0.05	0.19	0.008	13.0	0.02
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	5.4	12.0	19.3	0.49	0.06	0.34	BDL	16.6	0.01
	SWARNA REKHA RIVER BAGUN HATU	6.8	10.0	13.9	0.64	0.09	0.58	BDL	12.4	BDL

Note:- BDL-Below Detection Limit

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TATA STEEL

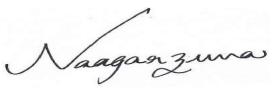
TATA STEEL LIMITED

ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY

RIVER WATER MONITORING DONE BY NABL/MoEF LAB (OCT-22 to MAR-23)

Month	Locations	Magnesium	Chloride	$SO4^{-2}$	Nitrate Nitrogen as N	Nitrite Nitrogen as N	F^-	Cr (VI)	SiO2	Cu
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Oct-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	5.86	10.99	22.6	0.42	0.01	0.27	< 0.05	11.9	0.02
	KHARKHAI RIVER (NEAR DUMUHANI)	5.86	11.99	17.13	1.90	0.02	0.43	< 0.05	12.8	<0.10
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	6.34	11.99	24.84	0.52	<0.02	0.29	< 0.05	16.2	<0.10
	SWARNA REKHA RIVER BAGUN HATU	7.32	27.99	23.71	0.75	0.08	0.54	0.07	11.9	<0.10
Nov-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.4	13.99	-	0.90	0.02	0.33	0.03	19.80	0.03
	KHARKHAI RIVER (NEAR DUMUHANI)	8.89	23.99	-	0.70	0.04	0.35	0.04	18.60	0.03
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	6.91	16.99	24.31	0.19	0.02	0.33	0.02	16.15	0.02
	SWARNA REKHA RIVER BAGUN HATU	6.42	28.99	23.1	0.27	0.05	0.32	0.02	11.65	0.03
Dec-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	10.4	21.83	24.64	0.27	0.1	0.47	< 0.01	12.2	< 0.05
	KHARKHAI RIVER (NEAR DUMUHANI)	9.91	27.79	21.59	0.45	0.19	0.19	< 0.01	12.0	< 0.05
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	6.94	17.86	16.84	0.24	0.11	0.62	< 0.01	10.60	< 0.05
	SWARNA REKHA RIVER BAGUN HATU	8.42	51.61	19.12	0.27	0.23	0.59	< 0.01	12.95	< 0.05
Jan-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	-	-	-	-	-	-	-	-	-
	KHARKHAI RIVER (NEAR DUMUHANI)	10.73	37.98	35.55	0.48	0.05	0.34	< 0.05	14.9	< 0.05
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	5.86	15.99	21.49	0.2	0.39	0.73	< 0.05	13.05	< 0.05
	SWARNA REKHA RIVER BAGUN HATU	7.81	44.98	22.84	0.21	0.73	0.71	< 0.05	12.40	< 0.05
Feb-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.29	20.99	25.27	0.3	0.3	0.32	-	12	-
	KHARKHAI RIVER (NEAR DUMUHANI)	9.27	21.99	20.44	0.6	0.19	0.28	-	16.8	-
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	7.32	20.99	14.25	0.2	0.02	0.31	-	15.4	-
	SWARNA REKHA RIVER BAGUN HATU	9.27	25.99	21.89	0.3	0.09	0.57	-	10.8	-
Mar-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	9.27	54.98	68.19	0.1	0.01	0.53	<0.05	13.3	0.014
	KHARKHAI RIVER (NEAR DUMUHANI)	7.81	37.98	34.195	0.4	0.05	0.36	<0.05	14.7	0.013
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	6.83	22.99	19.739	0.7	0.41	0.49	<0.05	19	0.013
	SWARNA REKHA RIVER BAGUN HATU	6.34	42.98	32.246	1	0.08	1.15	<0.05	19.5	0.014

Note:- BDL-Below Detection Limit



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RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR 22 to SEP-22)

Month	Locations	Ni	Zn	Nitrogen (Ammonia) as N	O & G	COD	BOD (3days at 270C)	Residual Chlorine as Cl	Sulphide as S^{-2}	Phenolic Compounds as Phenols	Cyanide as CN
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	-	-	-	-	-	-	-	-	-	-
	KHARKHAI RIVER (NEAR DUMUHANI)	0.12	-	0.74	0.2	147	8.5	0.35	< 0.02	0.08	0.03
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.1	-	0.04	0.2	109	6.5	0.7	< 0.02	0.09	0.03
	SWARNA REKHA RIVER BAGUN HATU	0.07	-	0.17	0.4	180	9.8	0.7	< 0.02	0.05	0.02
May-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	0.03	0.03	0.05	0.8	88	8.5	< 1.0	< 0.02	0.03	0.03
	KHARKHAI RIVER (NEAR DUMUHANI)	0.02	0.02	0.03	0.8	122	9.6	< 1.0	< 0.02	0.02	0.03
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.1	0.05	0.05	0.2	180	8.1	< 1.0	0.1	0.03	0.02
	SWARNA REKHA RIVER BAGUN HATU	0.15	0.01	0.03	0.8	115	109.0	< 1.0	< 0.02	0.03	0.03
Jun-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	<0.10	0.52	1.28	1.2	8	6.4	< 1.0	< 0.02	0.03	0.01
	KHARKHAI RIVER (NEAR DUMUHANI)	<0.10	0.54	0.04	0.8	14	9.7	< 1.0	< 0.02	0.02	0.01
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	<0.10	0.28	0.33	0.8	6	4.8	< 1.0	< 0.02	0.04	0.03
	SWARNA REKHA RIVER BAGUN HATU	0.12	0.28	1.35	1.6	17	8.6	< 1.0	< 0.02	0.03	0.03
Jul-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	0.02	0.15	0.32	0.8	12	5.8	< 1.0	BDL	0.02	0.01
	KHARKHAI RIVER (NEAR DUMUHANI)	0.03	0.1	0.58	1.2	14	6.4	< 1.0	BDL	0.03	0.02
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.02	0.13	0.73	0.8	58	5.8	< 1.0	BDL	0.02	0.02
	SWARNA REKHA RIVER BAGUN HATU	0.04	0.2	0.42	0.8	57	5.8	< 1.0	BDL	0.02	0.03
Aug-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	0.02	0.09	0.15	1.2	18	5.8	< 1.0	0.05	0.03	0.04
	KHARKHAI RIVER (NEAR DUMUHANI)	0.04	0.05	0.06	0.8	22	6.4	< 1.0	0.04	0.04	0.03
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.02	0.05	0.12	1	18	5.6	< 1.0	0.04	0.08	0.03
	SWARNA REKHA RIVER BAGUN HATU	0.1	0.03	0.12	1	21	5.5	< 1.0	0.02	0.05	0.05
Sep-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	0.02	0.03	0.07	0.8	32	7.3	< 1.0	0.01	BDL	0.01
	KHARKHAI RIVER (NEAR DUMUHANI)	0.04	2.17	0.09	0.8	33	8.6	< 1.0	0.01	BDL	0.00
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.03	0.05	0.05	1	22	6.2	< 1.0	0.01	BDL	0.01
	SWARNA REKHA RIVER BAGUN HATU	0.12	0.24	0.27	1.2	35	7.3	< 1.0	0.01	BDL	0.01

Note:- BDL-Below Detection Limit

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RIVER WATER MONITORING DONE BY NABL/MoEF LAB (OCT-22 to MAR-23)

Month	Locations	Ni	Zn	Nitrogen (Ammonia) as N	O & G	COD	BOD (3days at 270C)	Residual Chlorine as Cl	Sulphide as S^{-2}	Phenolic Compounds as Phenols	Cyanide as CN
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Oct-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	< 0.10	0.02	0.02	1.2	30	7.4	< 1.0	< 0.10	0.01	0.009
	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.10	2.24	0.12	0.8	36	8.5	< 1.0	< 0.10	0.02	0.005
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	< 0.10	0.07	0.11	0.8	25	6.1	< 1.0	< 0.10	< 0.02	0.01
	SWARNA REKHA RIVER BAGUN HATU	0.11	0.22	0.34	1.6	40	9.7	< 1.0	< 0.10	0.01	0.02
Nov-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	0.04	0.03	0.44	1.2	8.5	28	< 1.0	0.02	0.03	0.01
	KHARKHAI RIVER (NEAR DUMUHANI)	0.03	0.02	0.86	1.6	10.7	37	< 1.0	0.12	0.04	0.02
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.02	0.03	0.03	1.2	8.2	44	< 1.0	< 0.10	0.03	0.02
	SWARNA REKHA RIVER BAGUN HATU	0.1	0.26	0.37	2.0	10	52	< 1.0	< 0.10	0.04	0.02
Dec-22	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	0.08	0.05	< 1.0	1.2	8	35	< 1.0	< 0.10	< 0.10	< 0.10
	KHARKHAI RIVER (NEAR DUMUHANI)	-	0.07	< 1.0	0.8	9	42	< 1.0	< 0.10	< 0.10	< 0.10
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.05	< 0.05	< 1.0	1.2	8.5	26	< 1.0	< 0.10	< 0.10	< 0.10
	SWARNA REKHA RIVER BAGUN HATU	0.1	0.05	< 1.0	1.2	8	24	< 1.0	< 0.10	< 0.10	< 0.10
Jan-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	-	-	-	-	-	-	-	-	-	-
	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.10	< 0.05	< 1.0	1.2	40	9.5	< 1.0	< 0.10	< 0.10	< 0.10
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	< 0.10	< 0.05	< 1.0	1.6	28	8	< 1.0	< 0.10	< 0.10	< 0.10
	SWARNA REKHA RIVER BAGUN HATU	< 0.10	< 0.05	< 1.0	1.2	26	7.5	< 1.0	< 0.10	< 0.10	< 0.10
Feb-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	-	-	< 1.0	2.4	28	8	< 1.0	< 0.10	< 0.10	< 0.10
	KHARKHAI RIVER (NEAR DUMUHANI)	-	-	< 1.0	2.4	26	7.5	< 1.0	< 0.10	< 0.10	< 0.10
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	-	-	< 1.0	1.2	25	7	< 1.0	< 0.10	< 0.10	< 0.10
	SWARNA REKHA RIVER BAGUN HATU	-	-	< 1.0	1.2	40	9	< 1.0	< 0.10	< 0.10	< 0.10
Mar-23	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	0.002	0.144	<1.0	2.4	21	8	< 1.0	< 0.10	<0.10	< 0.10
	KHARKHAI RIVER (NEAR DUMUHANI)	0.002	0.032	<1.0	1.6	15	6.5	< 1.0	< 0.10	<0.10	< 0.10
	SWARNA REKHA RIVER NEAR MANGO BRIDGE	0.003	0.036	<1.0	1.6	26	8	< 1.0	< 0.10	<0.10	< 0.10
	SWARNA REKHA RIVER BAGUN HATU	0.001	0.066	<1.0	1.6	30	9	< 1.0	< 0.10	<0.10	< 0.10

Note:- BDL-Below Detection Limit

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Annexure-II

Details of Air/Water Pollution Control Equipment and Stacks with sampling arrangement

1. Unit wise Air/Water Pollution Control Equipment

Sl. No.	Area/Location	Air/Water Pollution Control Measures
1	**Raw Material Handling Section**	Covered storage under shed Covered conveyor Cold Fogging dust suppression system Dry Fogging dust suppression system Water sprinkling Catchpit for storage of storm water
2	**Coke Ovens**	
	Battery # 7	Charging Gas Cleaning Cars (CGC) Dry Fogging Dust suppression Dust Extraction system for screen house Coke Dry Quenching
	Battery # 8 & 9	Coke Transfer Car (CTC) Charging Gas Transfer (CGT)
	Battery # 10 & 11	Main Charging by High Pressure LA Land based coke side dust extraction Hydro jet door cleaning Pushing and dedusting Bag filter Coke Dry Quenching
	Coke Oven By Product Plant	De-Sulphuration BOD Plant (Advent Integral System)
3	**Pellet Plant**	Bag Filters Dust Suppression Wet Scrubber Electrostatic Precipitators
4	**Sinter Plants**	
	Sinter Plant# 1	Bag Filters Dust Suppression Foam Spray System Electrostatic Precipitators
	Sinter Plant# 2	Bag Filters Dust Suppression Foam Spray System Electrostatic Precipitators
	Sinter Plant# 3	Bag Filters Dust Suppression Foam Spray System Electrostatic Precipitators
	Sinter Plant# 4	Bag Filters Dust Suppression Foam Spray System Electrostatic Precipitators
5	**Lime Plant**	
	Process and dedusting	Bag Filters
	Stockpile	DS System
	Track Hopper	DS System
	Wagon Tippler	DS System
6	**Blast Furnaces**	
	C-F Blast Furnaces	Bag Filters Scrubbers DS System

		Gas Cleaning Plant with Press filter Effluent Treatment Plant
	G Blast Furnace	Bag Filters Scrubbers DS System Gas Cleaning Plant with Press filter Effluent Treatment Plant
	H Blast Furnace	Bag Filters Scrubbers DS System Gas Cleaning Plant with Press filter Effluent Treatment Plant
	I Blast Furnace	Bag Filters Scrubbers DS System Gas Cleaning Plant with Press filter Effluent Treatment Plant
7	**Steel Melting Shops**	
	LD 1	Bag Filters Electrostatic Precipitators Gas Cleaning Plant Effluent Treatment Plant
	LD 2	Bag Filters Electrostatic Precipitators Gas Cleaning Plant Effluent Treatment Plant
	LD 3	Bag Filters Electrostatic Precipitators Gas Cleaning Plant Effluent Treatment Plant
8	**Power Plants**	
	PH# 3	Effluent Treatment Plant
	PH# 4	Electrostatic Precipitators Effluent Treatment Plant
	PH# 5	Effluent Treatment Plant
9	**Finishing Mills**	
	Cold Rolling Mill	Scrubbers Effluent Treatment Plant
	Hot Strip Mill	Effluent Treatment Plant
	Merchant Mill	Effluent Treatment Plant
	CAPL	Scrubbers Mist Separators Effluent Treatment Plant
	Wire Rod Mill	Effluent Treatment Plant
	New Bar Mill	Effluent Treatment Plant
9	**Steel Works – Common**	Industrial Vacuum Cleaning System Mechanized Road sweeping system Water sprinklers Tyre Washing facilities Catch-pits at all drains for recycling Central Effluent Treatment Plant

Annexure-III

Present Status of Environmental Upgradation Project

1. Stack Emission Reduction - Progress Status

SL	Projects	Status	Completion date
1	F Blast furnace APC Systems	Completed	Jul'18
2	LD#1 DE System	Completed	Apr'18
3	LD#2 Dust Extraction System	Completed	Sep'16
4	SP# 1 Waste Gas ESP	Completed	May'14
5	SP# 2 De-dusting System (1 ESP and 1 Bag-filter)	Completed	Aug'17
6	SP# 3 De-dusting System	Completed	Dec'14
7	SP# 3 Waste Gas ESP	Completed	Oct'13
8	SP#2 Waste gas ESP ph.-I	Completed	Feb'13
9	CEMS	Completed	Oct'18
10	Lime Plant Process Bag-Filter (waste gas system)	Completed	Jun'18
11	SP#1&2 De-dusting System (DD ESP, Cold Region Bag filter & Hi-line Bag filter)	Completed	May'19
12	SP# 4 Waste Gas ESP	Completed	Jul'19
13	G-BF DD System - Stock House Bagfilter	Completed	Jun'19
14	G-BF DD System – Cast House Tap-B Bagfilter	Completed	Sep'19
15	CEMS (Phase-4) 13 analyzers installed & commissioned	Completed	Sep'19
16	Lime Plant De-Dusting System	Completed	Apr'22
17	Upgradation of Waste Gas ESP at SP#4	Completed	Jun'22
18	LD#1 Secondary Emissions	Under progress	Sept'23
19	LD#2 Secondary Emissions	Completed	Dec'22
20	G-BF DD System – Cast House Tap-A Bagfilter	Under progress	July'23
21	CDQ 10&11 to I-BF coke connectivity DE System	Under progress	Jun'23

2. Fugitive Dust Control – Progress Status

SL	Projects	Status	Completion date
1	a) Tyre Washing at Various Locations – 05 m/c (LD#1,2, RMBB#1 and sludge dewatering) b) Tyre Washing at Various Locations – 05 m/c (LD#1, 2, HSM, Slag gate etc.)	Completed	Oct'16
2	DE System at RMM (Ventilation system)	Completed	Mar'16
3	Dust Extraction (DE) System at H Blast Furnace Stock House	Completed	Nov'17
4	Dust Suppression (DS) System at Coke Plant	Completed	Mar'17
5	Dust Suppression (DS) System at Lime Plant	Completed	Jun'15
6	Dust Suppression (DS) system at Ore circuit and Yard sprinkler	Completed	Mar'17
7	Dust Suppression (DS) System at RMBB#1	Completed	Jan'16
8	Dust Suppression (DS) System at RMBB#2	Completed	May'16
9	Dust Suppression (DS) System at Stock House C&F BF	Completed	Jun'15
10	Dust Suppression (DS) system at various locations (Fogging m/c)	Completed	Jun'15
11	Fabrication and Erection of ducting at H-BF Cast House	Completed	Apr'16
12	Fume Extraction System-HMP	Completed	Feb'15
13	Industrial Vacuum Cleaning (IVC) for Conveyor no. 149	Completed	Jun'13
14	Industrial Vacuum Cleaning (IVC) System at RMBB#1, 2 & SP#1, 2 & 3 (17 machines)	Completed	Sep'14
15	Industrial Vacuum Cleaning (IVC) System for H#BF	Completed	Mar'15
16	IVC at Locations I#BF, Coke Plant, SP#1 & SP#4, RMM & Pellet Plant	Completed	Jun'17
17	New Silo for Pneumatic Conveying System at G-BF	Completed	Apr'15
18	Tyre Washing Facility Inside Works (Phase -1)	Completed	Dec'12
19	Yard Sprinkler System at RMBB#1 & 2	Completed	May'16
20	Dust Extraction (DE) System at Coke Plant DE-#3&4	Completed	July'19
21	Dust Extraction (DE) System at Misc. area (RMBB#1 & G BF surroundings and Diamond crossing area)	Completed	June'19
22	Dust Extraction (DE) System at RMBB#1 (7 Bag filters)	Completed	June'19
23	Dust Extraction (DE) System at RMBB#2 DE#7	Completed	Mar'20

Annexure-III

Present Status of Environmental Upgradation Project

SL	Projects	Status	Completion date
24	Tyre Wash System – Systems at BF Sludge area and LD#2 area	Completed	July'19
25	Lime Plant DE System – DE#12 Bagfilter	Completed	July'19
26	Tyre Wash System – Systems at LD#2 area	Completed	Aug'19
27	Misc Area DE System – DE#1,2,9,10 &11 Bag filter	Completed	Mar'20
28	Mist Beam at LD Shops LD#2 (10 nos.)	Completed	Mar'20
29	DFDS at LD Services LD#3	Completed	Mar'20
30	DFDS at LD Services LD#2	Completed	Apr'20
31	Dust Extraction (DE) System at RMBB#2 DE#6&8	Completed	Apr'21
32	Mist Beam at LD Shops LD#1 (11 nos.), MRSPP (4 nos.)	Completed	Oct'21
33	Misc Area DE System – DE#12 Bag filter	Completed	Oct'21
34	CFDS at Lime Plant	Completed	Feb'22
35	Fume Extraction System at HMPP (Pit#6)	Completed	Mar'22
36	Fume Extraction System at LD#1 LF	Under Progress	Dec'23
37	DE system at RMBB#1 for I-BF return fines	Under Progress	Nov'23
38	A-F BF – DE System for Sinter unloading	Under Progress	Oct'23
39	Pellet Plant – DE System	Under Progress	Mar'24
40	LD#2 Secondary Emission APC system	Completed	Dec'22

3. Solid Waste Utilization - Progress Status

SL	Facility description in Mar'17 CEC	Status	Completion date
1	Composting Plant & Trash Incinerator	Completed	Aug'12
2	De-oiling Plant for Mill Scale and Sludge	Completed	May'14
3	Infrastructure Development at Galudih Phase – I	Completed	Jun'14
4	Infrastructure for LD slag processing - Galudih Ph – II	Completed	Mar'17
5	Magnetic Drums – MRSPP	Completed	Jan'14
6	Blast furnace Sludge Drying	Completed	Jul'19
7	Infrastructure development at Bhatkunda Site (LD Slag)	Completed	Mar'22
8	Slag road for KSMS	Completed	Dec'21
9	300 TPH Ferroshot Plant at TSJ	Completed	Jan'23
10	BREX (Briquette extruding) Plant	Under Progress	Oct'23

4. Effluent Treatment Projects - Progress Status

SL	Facility description	Status	Completion date
1	a) HSM Catch Pit b) Tuiladungri (Increase in Pumping Capacity)	Completed	May'13
2	Blast Furnace Cyanide Treatment	Completed	
3	Damp Pump House	Completed	Jan'16
4	Garam Nallah and Jugsalai-I Catch Pit	Completed	Dec'14
5	Greenery Development	Completed	Mar'15
6	Rainwater Harvesting	Completed	Feb'14
7	Distribution of recycled water for low end use	Completed	Jan'15
8	Susungharia Catch Pit (Pump No-1)	Completed	Jan'14
9	Wastewater Re-cycling from Ram Mandir Nallah	Completed	Jun'15
10	BF Sludge Drying System	Completed	Jul'19
11	Clarified Water Pipeline from CETP to PH#3	Completed	Dec'20
12	Tuiladungri Catch Pit Revamping	Completed	Dec'20
12	BOT Tertiary Treatment Plant	Under Progress	Jun'24
13	Water system upgradation at LD#1 & LD#2	Under Progress	May'23
14	Upgradation of CETP from 4 MGD to 9 MGD	Completed	Dec'22
15	New Trunk Drain in Catchment area of Susungharia	Under Progress	June'24

Annexure-IV

CHARTER FOR CORPORATE RESPONSIBILITY FOR ENVIRONMENT PROTECTION (CREP)
INTEGRATED IRON AND STEEL PLANT, TATA STEEL LIMITED, JAMSHEDPUR
STATUS OF COMPLIANCE FOR VARIOUS ACTION POINTS
(Apr'22 – March'23)

Action point 1: Coke Oven Plants

- 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)

Compliance Status: Complied

Apr'22 to March'23:

No. of Batteries	Parameters											
	PLD (%)			PLO (%)			PLL (%)			Charging Emissions (Sec.)		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Battery#7	6.33	2.47	3.85	3.96	0.98	1.69	1.47	0.51	0.89	66	52	58
Battery#8	6.51	2.96	4.54	2.99	0.00	0.69	0.75	0.00	0.29	73	20	42
Battery#9	6.49	1.52	3.57	1.49	0.00	0.44	0.75	0.00	0.22	85	20	43
Battery#10	4.73	2.07	3.32	0.75	0.00	0.26	0.39	0.00	0.12	54	17	36
Battery#11	3.87	2.04	2.77	1.21	0.00	0.35	0.40	0.00	0.12	59	19	32

- To rebuild at least 40% of the coke oven batteries in next 10 years (December 2012).

Compliance Status: Complied

Battery No. *	Date of Commissioning	
	Initial	After Rebuilding
Battery # 7 (SC)	1988	Converted to Stamp charged-1989*
Battery # 8 (SC)	1998	
Battery # 9 (SC)	2000	
Battery # 10 (SC)	2012	
Battery # 11 (SC)	2014	

*Battery 5 & 6 (Stamp charge) closed permanently.

SC=Stamp Charged

Several rounds of hot repairs have taken place for rebuilding the damaged oven walls.

Action point 2: Steel Melting Shop

- Fugitive emissions - To reduce 30% by March 2004 and 100% compliance with norms by March 2008 (including installation of secondary de-dusting facilities)

Compliance Status: Complied

- All the Steel Melting Shops (LD#1, LD#2, and LD#3) have been provided with secondary emission control system.
- Average Fugitive Dust Emission in SMS is well within the standard norms.

Action point 3: Blast Furnace

- Direct inject of reducing agents- by June 2013

Compliance Status: Complied

- Coal/Coal Tar and Oil injection facilities are provided in all the Blast Furnaces.

Action point 4: Solid Waste / Hazardous Waste Management

- Utilization of Steel Melting Shop (SMS)/ Blast Furnace (BF) Slag as per the following schedule:
  By 2004- 70%
  By 2006- 80%
  By 2008- 100%

Compliance Status: Present level

- All the Blast Furnaces which are in regular operation are fitted with On-line Slag Granulation Facility.

Period: Apr'22 to March'23

KPI	**BF Slag**	**LD Slag**
Percentage utilized (%)	101 %	111 %
Type of utilization	Cement Making	Reuse in Sinter Plant, In-house construction etc.
Actions to be taken for ensuring 100% utilization	-	-

- Charge of tar sludge/ ETP sludge to Coke Oven by June 2003.

Compliance Status: Complied

100% of Tar sludge and ETP sludge from Coke Ovens is being recycled/ reused.

- Authorization of the Hazardous Waste as per Hazardous Waste (M&H) Rules, 1989 as amended from time to time and implementation of the Rules by December 2003.
  (Tar sludge, acid sludge, waste Lubricating oil and type fuel falls in the category of Hazardous waste).

Compliance Status: Complied

Hazardous Waste	**Quantity generated Apr'22 to March'23 (Tonnes)**	**Method of transport**
Coal Tar Sludge	2093	Transported by trucks and utilized in-house.

BOT Plant Sludge	392	Transported by trucks and charged by conveyors; Mixing with Coal and used in coke making in battery
Waste Oil & Grease	1866	Sold to authorized recyclers
Waste Oil sludge	2367	Sold to authorized recyclers and disposed through authorized TSDF.
Used Empty Batteries	93.78	Sold to authorized recyclers

Action point 5: Water conservation / Water Pollution

- Reducing specific water consumption to 5 m^3/t for long products and 8 m^3/t for flat products by December 2005

Compliance Status: Complied

Specific water consumption details for Apr'22 to March'23:

Specific water consumption (m^3/tcs)	
Long Products (m^3/tcs $_{LP}$)	**Flat Products (m^3/tcs $_{FP}$)**
1.30	2.29

- To operate CO-BP effluent treatment plant efficiently to achieve the notified effluent discharge standards- By June 2003.

Compliance Status: Complied

Effluent Treatment Plant is meeting the statutory norms.

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
TREATED EFFLUENT QUALITY REPORT OF BOTP

Sample Location	Parameter	UoM	Apr-22			May-22			Jun-22			Jul-22			Aug-22			Sep-22		
	Parameter	**UoM**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**
BOT TREATED	pH	-	8.2	6.9	7.4	8.4	6.9	7.4	7.9	6.8	7.5	8.5	6.9	7.6	8.4	6.9	7.6	8.0	6.9	7.6
	Total Suspended solids	mg/L	86.0	31.0	71.5	90.0	45.0	70.3	79.0	50.0	69.3	96.0	33.0	64.7	98.0	20.0	60.5	94.0	38.0	74.8
	Oil & Grease	mg/L	2.4	0.8	1.4	2.0	1.0	1.4	2.0	0.8	1.4	2.0	1.2	1.6	2.8	1.2	1.9	2.4	1.2	1.9
	Ammonical Nitrogen (as N)	mg/L	32.7	3.4	11.8	29.1	1.5	9.6	39.0	2.6	13.7	25.6	1.3	9.1	33.5	1.5	15.9	29.5	1.7	12.6
	Cyanide (as CN-)	mg/L	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2
	Biological Oxygen Demand, BOD	mg/L	19.6	9.7	16.3	28.8	25.2	25.8	25.9	19.1	24.5	24.6	12.8	18.2	18.7	12.2	17.9	24.8	12.3	19.5
	Chemical Oxygen Demand, COD	mg/L	245.0	122.0	200.2	244.0	143.0	227.6	238.0	110.0	187.2	240.0	104.0	150.5	242.0	138.0	189.9	235.0	145.0	198.1
	Phenol	mg/L	0.3	0.2	0.2	0.2	0.0	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.3	0.1	0.2
Sample Location	**Parameter**	**UoM**	**Oct-22**			**Nov-22**			**Dec-22**			**Jan-23**			**Feb-23**			**Mar-23**		
	Parameter	**UoM**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**
BOT TREATED	pH	-	8.1	7.2	7.6	8.1	7.0	7.7	8.8	6.8	7.7	9.9	6.9	8.7	10.0	7.5	9.4	10.1	6.7	8.6
	Total Suspended solids	mg/L	92.0	50.0	72.4	88.0	42.0	69.3	82.0	34.0	56.0	98.0	46.0	77.2	78.0	26.0	45.8	98.0	22.0	54.0
	Oil & Grease	mg/L	2.8	1.6	2.1	2.8	1.2	2.2	3.2	1.6	2.4	3.2	1.6	2.3	3.2	2.0	2.6	4.0	2.0	2.8
	Ammonical Nitrogen (as N)	mg/L	18.4	2.0	7.9	44.8	2.8	25.3	76.3	16.6	38.1	99.9	8.5	59.2	128.4	20.8	66.0	94.1	15.1	47.2
	Cyanide (as CN-)	mg/L	0.2	0.2	0.2	0.2	0.1	0.2	3.1	0.1	0.5	6.5	0.1	1.0	0.4	0.1	0.2	0.9	0.1	0.2
	Biological Oxygen Demand, BOD	mg/L	24.3	18.2	18.9	25.0	13.3	19.9	20.0	12.0	16.2	20.0	10.0	16.0	20.0	13.3	16.1	25.3	15.0	19.4
	Chemical Oxygen Demand, COD	mg/L	240.0	185.0	212.1	232.0	162.0	206.0	238.0	151.0	196.7	241.0	160.0	213.0	242.0	182.0	219.2	242.0	120.0	216.2
	Phenol	mg/L	0.3	0.1	0.2	0.3	0.2	0.2	0.4	0.2	0.3	0.4	0.2	0.3	0.4	0.2	0.3	0.5	0.1	0.3

Note

Standards applicable as per Environment (Protection) (Third Amendment) Rules, 2012 issued in Gazette of India Notification vide No.: G. S. R. 277 (E) dated March 31,

This test report is generated by NABL Accredited TATA STEEL LIMITED JSR EMD LAB having accreditation No.TC-8363 dated 21-02-2022 having validity till 20-02-2024

Sr.Manager Environment Monitoring & Analysis
Environment Management Department

Head Envt.Monitoring Testing & Analysis (TSJ)
Environment Management Department

Action point 6: Installation of Continuous stack monitoring system & its calibration in major stacks and setting up of the online ambient air quality monitoring stations by June 2005.

Compliance Status: Complied

- 4 CAAQMS stations have been commissioned.
- Online stack monitoring system have been installed at major stacks.

Locations/ Area	No. of Stacks connected to CPCB, New Delhi for OCEMS	No. of Stacks to be connected to CPCB, New Delhi for OCEMS	Remarks
Blast Furnace	24	-	-
Coke Oven	7	-	-
LD Shop	21	-	-
Lime Plant	12	-	-
Mills	10	-	-
Power Plant	8	-	-
Sinter Plant	8	-	-
Total	90	-	-

Action Point 7: Operation of Pollution Control Equipment

To operate the existing pollution control equipment efficiently and to have proper record of run hours, failure time and efficiency with immediate effect. Compliance report in this regard to be submitted to CPCB/SPCB every three months/Six months.

Compliance Status: Complied

Status of Air Pollution Control Equipment (Apr'22 - March'23)

- We have implemented online system to track the availability of all Bag filters. Overall availability is maintained at >95% inside works including maintenance period.

- Differential pressure of the Bag filters is being monitored regularly to ensure the efficiency.

Status of Wastewater Pollution Control Equipment (Apr'22 – March'23)

Area/Location	Water Pollution Control System	Availability (%)
Coke Plant	BOT Plant	100%
A-F Blast Furnace	Wastewater treatment plant	100%
G Blast Furnace	Wastewater treatment plant	100%
H Blast Furnace	Wastewater treatment plant	100%
I Blast Furnace	Wastewater treatment plant	100%
LD1 and BC	Wastewater treatment plant	100%
LD2 and SC	Wastewater treatment plant	100%
LD3 and TSCR	Wastewater treatment plant	100%
Wire Rod Mill	Wastewater treatment plant	100%
Hot Strip Mill	Wastewater treatment plant	100%
Cold Rolling Mill	Wastewater treatment plant	100%
New Bar Mill	Wastewater treatment plant	100%
Merchant Mill	Wastewater treatment plant	100%
CETP	Wastewater treatment plant	100%

Action point 8: Implementation of LCA study
To implement the recommendations of Life Cycle Assessment (LCA) study sponsored by MoEF&CC by December 2003.

Compliance Status: Complied

- Reduction of Green House Gases by:
  - ❖ Reduction in power consumption - **Yes**/ ~~No~~
  - ❖ Use of by-products gases for power generation- **Yes**/ ~~No~~
  - ❖ Promotion of Energy Optimisation technology, including energy audit- **Yes**/ ~~No~~

To set targets for Resource Conservation such as Raw material, energy, and water consumption to match International Standards

	FY23	Target for FY24
Specific Water Consumption (m^3/TCS)	1.97	1.58
Energy consumption (GCal/ TCS)	5.31	5.29
Steps taken for Resource Conservation	Yes	Yes
Environmental monitoring laboratory provided (Y/N)	Yes	Yes

- Up-gradation in the monitoring analysis facilities for air and water pollutants. Also, to impart elaborate training to the manpower in the environmental monitoring laboratories, so as realistic data can be obtained
- Monitoring facilities upgraded : **Yes**/~~No~~
- Training provided to laboratory personnel : **Yes**/~~No~~
- To improve housekeeping : **Being Done**

Action point 9: Clean Technologies

The industry will initiate steps to adopt the following clean technologies / measures to improve the performance of the industry towards production, energy, and environment.

- Energy recovery of top Blast Furnace (BF) gas.
- Use of Tar-free runner linings.
- De-dusting of Cast House at tap holes, runners, skimmers, ladle and charging points
- Suppression of fugitive emissions using nitrogen gas or any other inert gas.
- To study the possibility of slag and fly ash Transportation back to the abandoned mines to fill up the cavities through empty railway wagons when they return to the mines and its implementation.
- Processing of the waste containing flux & ferrous wastes through waste recycling plant.
- To implement rainwater harvesting.

Clean technologies to be implemented	**Status, Provided Yes/ No**
Energy recovery of top Blast Furnace (BF) gas	TRT has been commissioned in G, H & I Blast Furnace.
Use of Tar-free runner linings.	Tar lining in the runner is not used.
De-dusting of Cast House at tap holes, runners, skimmers, ladle and	De-dusting facility in the cast house has been provided in F, G, H & I Blast
Suppression of fugitive emissions using nitrogen gas or any other inert gas	is system in detail and found the same ve decided to not to go for it. Instead, dust extraction facilities have been installed wherever required.

Clean technologies to be implemented	Status, Provided Yes/ No
To study the possibility of slag and fly ash transportation back to the abandoned mines, to fill up the cavities through empty railway wagons while they return to the mines and its implementation.	None of our mines are abandoned so far. However, all the coal-fired boilers in Steel Works have been converted to gas firing. Coal will be fired only in emergency in one Boiler from where limited quantity of ash is being disposed in slurry form in captive ash pond.
Processing of the waste containing flux & ferrous wastes through waste recycling plant.	We have a metal recovery and slag processing plant for the same and such material is used in iron and steel making processes.
Implement rainwater harvesting	Rainwater harvesting is in practice inside the Steel Works. Surface run-off is collected in cooling ponds/ catchments and pick up of fresh water from river is reduced during rainy seasons. Rainwater Harvesting has been installed in 38 locations (Steelenium Hall, SHE, MPDS, LD 3, rebar mill ECR, R&D and ITS Building) within Works.

EMD/C-23/168/22
September 22, 2022

The Member Secretary
Jharkhand State Pollution Control Board
T.A. Division Building, HEC Campus, Dhurwa
RANCHI – 834004

Subject: Environmental Statement 2021-2022 for Tata Steel Limited - Main Works, Jamshedpur

Dear Sir,

This has reference to the captioned subject. Please find enclosed the **"Environmental Statement"** for Tata Steel Limited - Main Works, Jamshedpur for the year 2021-2022 duly filled in the prescribed format is enclosed for your kind consideration.

Thanking you

Yours faithfully,
For Tata Steel Limited

Anoop Srivastava

Anoop Srivastava
Head, Environment Monitoring Testing & Analysis (TSJ)

Encl: As Above

Copy to: Regional Officer, Jharkhand State Pollution Control Board, Adityapur, Jamshedpur – 831013

TATA STEEL LIMITED
Environment Management Jamshedpur 831 001 India
Tel 91 657 6640415 8092094575 (M) e-mail anoop.srivastava@tatasteel.com
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

ENVIRONMENTAL STATEMENT
FOR THE YEAR 2021-2022

Main Steel Works
TATA STEEL LIMITED

Submitted by:
ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR-831001
JHARKHAND

[Form V]

Environmental Statement for the Financial Year ending 31st March 2022

PART-A

(i)	**Name & address of the owner/occupier of the industry operation or process:**	Mr. T.V. Narendran Managing Director- Tata Steel India & Southeast Asia Tata Steel Limited Jamshedpur-831001 Jharkhand
(ii)	**Industry Code**	3312
	Primary STC Code:	Metallurgical industry
	Secondary SIC Code	Integrated Iron & Steel Industry
(iii)	**Production Capacity**	Production Capacity-11 MTPA Crude Steel 10.24 million Tons Crude Steel Production during 2021-22 (Major units are: RMM, Blast Furnaces, Coke ovens, Sinter Plants, Pellet Plant, LD Shops, HSM, CRM, WRM, MM, NBM, CAPL*, Captive Power Plants, JAMIPOL** and Utilities) **CAPL is being owned and operated by M/s Jamshedpur Continuous Annealing and Processing Company (JCAPCPL), a joint venture formed by Tata Steel and Nippon Steel and Sumitomo Metal Corporation (NSSMC) to manufacture and market high-quality, automotive- grade continuous annealed products inside premises of Jamshedpur steel works.* ***Lime Grinding Plant and Bentonite Grinding Plant of JAMIPOL is a joint venture of Tata Steel inside premises of Jamshedpur steel works.*
(iv)	**Year of Establishment**	1907
(v)	**Date of last Environment Statement submitted**	September 22, 2021 vide letter no. EMD/C-23/249/21

PART-B

WATER & RAW MATERIAL CONSUMPTION

i) Water Consumption (m^3/day)

Water Consumption	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
Industrial Consumption (inside Works as Makeup water)	54,497	61,214
Domestic Consumption (Inside Works as drinking water)	10,586	10,071

Name of the product	**Process water consumption/unit of product output (m^3/tcs)**	
Crude Steel	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
Specific Water Consumption	2.25	2.18

ii) Raw Material Consumption (Works):

Name of raw material	**Name of products**	**Consumption of raw material per unit of output (kg/ton of crude steel)**	
		During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
Iron Ore	Crude Steel	1682.9	1644.0
Coking Coal		599.8	621.2
Limestone		316.2	318.7
Non-Coking Coal		208.7	3171.9
Dolomite & Pyroxenite		82.2	129.6
Purchase Pellet		1.0	1.4
Quartzite and Other materials		6.3	6.9
Zinc & Zinc Alloys		0.7	0.7
Ferro Manganese - High Carbon Lumps		0.8	0.7
Ferro Manganese - Medium Carbon		1.6	1.6

PART-C

Pollution Discharged to Environment/Unit of Output
(Parameter As Specified in the Consent Issued)

(i) Works:

Pollutants	**Quantity of pollutants discharged (mass/day)**		**Concentrations of pollutants discharged (mass / volume)**		**% of variation from prescribed standards**
	(Tons/day)		**(mg/L)**		**In %age (referring CTO)**
(a) Water	**2020-21**	**2021-22**	**2020-21**	**2021-22**	**2021-22**
TSS	0.858	0.949	43.7	72	-28%
COD	1.779	2.070	91.4	128	-49%
Ammonia as N	0.103	0.087	6.0	6.0	-88%
BOD	0.189	0.179	9.8	10	-67%
Oil & grease	0.067	0.029	3.3	1.5	-85%
Phenols	0.004	0.003	0.2	0.3	-70%
Cyanide as CN^-	0.003	0.003	0.1	0.17	-15%
(b) Air	**2020-21**	**2021-22**	**2020-21**	**2021-22**	**2021-22**
	(Tons/day)		**(mg/Nm^3)**		
PM	7.39	7.253	12.91	15.2	-90%
SO_2	15.76	16.769	67.63	72.6	-
NOx	14.99	16.351	80.40	84.70	-

Effluent Quality (2021-22)

Parameter	**UoM**	**Norms**	**Susungaria Drain**		
			Max	**Min**	**Avg**
pH	-	6.0-8.5	8.4	7.2	7.9
Total Suspended solids	mg/L	100	97	17	54.3
Oil & Grease	mg/L	10	3.6	0.1	1.6
Ammonical Nitrogen (as N)	mg/L	50	28.2	0.2	5
Free Cyanide (as CN^-)	mg/L	0.2	0.19	0.04	0.16
Biological Oxygen Demand, BOD	mg/L	30	16.2	4.5	10.1
Chemical Oxygen Demand, COD	mg/L	250	230	42	118.4
Phenol	mg/L	1	0.9	0.01	0.2

Ambient Air Quality (2021-22)

Parameter	UoM	Norm	Near west plant first aid station (WPFA)			Near Cold roll mill (CRM)			Near Power House # 3 Gate			Near Power House # 6 Gate		
			Max.	Min.	Avg	Max.	Min.	Avg	Max.	Min.	Avg	Max.	Min.	Avg
Particulate Matter, PM_{10}	µg/m³	100	268.4	74.8	163.3	368	81	237.4	386.6	63.4	246.3	339.9	52.2	194.1
Particulate Matter, $PM_{2.5}$	µg/m³	60	83.9	28.1	53	95.3	33.4	66.1	97.4	22.9	69.3	85.3	19.2	59.6
Sulphur Dioxide (SO_2)	µg/m³	80	15.3	2.9	9.1	20.3	4	10.7	15.3	4.5	8.8	21.8	3.8	11.7
Nitrogen Dioxide, (NO_x)	µg/m³	80	60.5	24.5	42.8	66.2	25	39.8	67.1	14.1	38.2	65.5	12.7	35
Carbon Monoxide (CO)	µg/m³	2000	0.5	0.4	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.4	0.3	0.4
Ammonia (NH_3)	µg/m³	400	102.2	48.4	66.6	88	37.7	58.3	102.9	0	48.7	111	7.1	61.8
Ozone (O_3)	µg/m³	100	18.3	3.8	9.7	20.5	1.6	9.5	21	0	8.7	25.8	1.5	9.1
Nickel (Ni)	µg/m³	1.0	4.3	3.6	4	4.6	4.1	4.4	3.7	3.3	3.5	4.1	3.7	3.9
Arsenic (As)	ng/m³	6.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
Lead (Pb)	ng/m3	20.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1
Benzene (C6H6)	µg/m3	5.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo alpha Pyrene (BaP)	ng/m3	1.0	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1

PART-D

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

Hazardous Waste	Total Quantity (Tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
(a) From Process		
Kiln Dust	17,196	18,862
GCP Sludge*	5,10,322	5,65,567
Mill Scale	91,208	99,412
Mill Sludge	2,147	2,499
Waste Oil	2099	2,325
Waste Grease	160.7	185
Fe bearing Muck	14,397	13,531
Muck Waste	9406	5,846
Tar Sludge	2858	1,946
Zinc dust Ash	197	158
Iron Oxide	8482	10,948
Iron Hydroxide Sludge	309.3	357
Chrome Sludge	0.125	73.5
(b) From Pollution Control Facilities		
APCE Dust	1,46,292	163,051
BOD Sludge	567	396
*GCP Sludge includes Sludges from LD Shops and Blast Furnaces		

PART-E

Solid Waste

Total Quantity Generated

Name of the Waste	**Total Quantity Generated (tonnes)**	
(a) From Process	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
BF Slag	38,93,580	43,51,309
LD Slag	15,04,717	16,14,344
Lime Fines	1,99,282	2,14,666
(b) From Pollution Control Facilities- Nil		

(c)(1). Total Quantity Recycled/ Reutilized within the unit

Name of the Waste	Total Quantity Recycled/ Re utilized within the unit (tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
BF Slag	288	14,018
LD Slag	5,64,728	3,39,308
Lime Fines	1,79,804	1,96,088

(c)(2). Total Quantity Sold

Name of the Waste	Total Quantity Sold (tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2021-22)
BF Slag	40,56,484	43,05,189
LD Slag	10,42,293	15,33,948
Lime Fines	15,993	17,772

(c)(3). Total Quantity Disposed

Name of the Waste	Total Quantity Disposed (tonnes)	
	During the previous Financial Year (2020-21)	During the current Financial year (2020-21)
BF Slag	0	0
LD Slag	0	0

PART-F

Chemical Composition of majority of waste as produced in process of Tata Steel's operation is given below:

Name of Wastes	Chemical Composition (%)	Disposal Method
Coal Tar Sludge	C – 90-95; Moisture – 1.3 S – 0.3-0.7; CV – 8800 KCal/kg Sp. Gr. – 1.2; Ash – 0.04-0.05	Mixed with coal & used in Coke Plant
BOD Sludge	VM – 50; Ash – 26 Moist. – 20; CV – 5800 KCal/kg	Mixed with coal & used in Coke Plant
B F Slag	CaO – 32; MgO – 9 SiO_2 – 34.5; MnO – 0.25 P_2O_3 – Nil; Al_2O_3 – 1.2 S – 1.4; TiO_2 – 1.2; FeO – 0.33	• Sold to cement plant • Used in construction

Name of Wastes	Chemical Composition (%)	Disposal Method
GCP Sludge from Blast Furnace	Fe(T) – 33.65; MnO – 0.14 CaO – 3.45; Al_2O_3 – 3.64 SiO_2 – 6.40; S – 0.230; P_2O_5 – 0.307 TiO_2 – 0.30; MgO – 1.40 Alkali – 0.5 to 0.7; C – 21-24	• Used in Sinter Plant • Used in Pellet Plant
L D Slag	Fe(T) – 18-25; MgO – 1-2 CaO – 45-55; MnO – 0.5-1.0 SiO_2 – 10-12; Al_2O_3 – 0.8-1.0 P_2O_5 – 3.5-4.0; S – 0.2 TiO_2 – 0.8-1; Alkali – 0.18	• Used in construction • Used in Sinter Plant
GCP Sludge from LD Shops	Fe(T) – 55 to 60; MgO - <1.0 CaO – 10-15; MnO - <0.5 SiO_2 – 1.5-2.0; Al_2O_3 - <0.5 P_2O_5 – 0.29; TiO_2 - <0.1	• Used in Sinter Plant
Mill Scale	Fe(T) – 72-75; MnO - <0.5 SiO_2 - <0.5; Al_2O_3 - <0.5 MgO – 0.1; Oil – 10-12	• Used in Sinter Plant
Mill Sludge	Fe(T) – 42.76; MgO – 0.35 CaO – 0.65; MnO – 0.27 SiO_2 – 1.12; Al_2O_3 – 0.50 P_2O_5 – 0.089; TiO_2 – 0.03 Cr_2O_3 – 0.03; Oil – 10-12	• Used in Sinter Plant
Lime Fines	CaO – 66.5; Al_2O_3 – 0.26 SiO_2 – 1.53; MgO – 5.68	• Sold • Used in Sinter Plant

PART-G

Sl. No.	Pollution abatement Measures taken in 2021-22	Impact on conservation of natural resources & others
1	Effluent recycling facility	Reduction of specific water consumption to be continued
2	Installation of APCE	Reduction in specific PM emission and to be continued
3	Green Belt Development	We have planted approx. 1,34,738 nos. saplings during April 2021 to March 2022 inside the works, Township and JMD area. Every year plantation done in available space. The following plant species are being planted: *Ficus, karanj, Cicilipinia, Palm, Ashoka, Mahogany, Caesalpinia Arjun, Sita Ashok, Bakul, Spathodia, Kanchan, Jural, Tabulia, Sissam, Termanelia Sp., Arica palm, foxtail palm, Tecoma, Kannel, Tababia, Ghandhraj, calendra, Tagar, Hemelia, Kamani, Karbi, Calendra* etc.

Details of Plantation (nos.) done during April 2021 – March 2022

Month	Plantation in Town and JMD	Plantation in Works	Species
Apr-21	125	270	-
May-21	250	580	-
Jun-21	11144	560	*Kadam,Arjun, Bixa, Bakul, Cesselpiniya , Tecoma, Neem, Karanj, Simarouba glauca, Lakshmi taru, Amaltas*
Jul-21	17046	730	*Neem, Cesselpiniya Bakul, Champa, Arjun, Karanj, Ashoka, Karam*
Aug-21	30384	1305	*Neem, Cesselpiniya, Bakul, Champa, Arjun, Karanj, Ashoka, Karam Peltaform, Tababia*
Sep-21	30142	897	*Tababia, palida, Neem, Cesselpiniya, Bakul, Champa, Arjun, Karanj, Ashoka, Karam, Peltaform, Kanchan*
Oct-21	30160	347	*Bakul, Karnaj, Tababiya*
Nov-21	2874	470	*Bakul, Arjun, Karanj, Baken, Sirish, Gulmohar, Arjun, Jacaranda, Peltaform, Tababia*
Dec-21	133	3737	*Bottel brush, Cesselpiniya, Bakul, Champa, Arjun, Karanj, Ashoka, Peltaform, Tababia, Tababiya*
Jan-22	150	676	*Sita Ashok, Bakul, ficus, Bottelbrush, Ashok, Simarobuagloca, foxtail palm,Syzyiem, Phonex palm, juniperious*
Feb-22	1534	732	*Hara, Behra, Ashoka, foxtail palm, Syzygium, Phonex palm, juniperious, Arjun, Tejpata*
Mar-22	134	358	*Arica Palm, Foxtail Palm, Harsingra, Jatropha, Arjun, Hara, Bahara, Sita Ashok, Ashoka, Acacia biflora, Tacoma*
Total	**1,24,076**	**10,662**	**Total= 1,34,738**

PART-H

Additional Measures Investment Proposal of Environmental Protection Including Abatement of Pollution

- Upgradation of the existing pollution control equipment to bring down dust level
- New pollution control equipment is with more stringent design emission value
- Improvement in water recycling facility for reducing the wastewater discharge
- Upgradation of Central Effluent Treatment Plant for effluent treatment from 4 MGD to 9 MGD is under progress.

PART-I

Any other particulars for improving the quality of environment

- All the boilers of Captive power plants have been converted from coal fired to gas fired, thus there is no generation of fly ash in the power plant.
- LD Slag after metal recovery is being used internally in the manufacturing process as well as externally in brick and road making works.
- BF Slag is being granulated through online slag granulation facilities available at BFs and made available to the Cement plants for cement making.
- Zero effluent discharge (ZED) has been achieved in 4 out of 5 designated outlets. Action plan to achieve ZED in remaining one is under progress.
- Energy efficiency improvement in operations of TSJ Works by installing Variable Frequency Drive and Back Pressure Turbo Generator.

Annexure -VI

Status of solid and Other Waste Generation and Utilization

(April 2022 to March 2023)

(All data in tons)

Sl.	Particulars	Generation	Internal Cons	External Cons. & Sales	Total Utilization	Utilization
1	Flue Dust	1,13,951	1,12,651	-	1,12,651	99%
2	GCP Sludge	1,02,683	1,01,817	-	1,01,817	99%
3	Lime Fines	2,20,114	2,06,357	15,559	2,21,916	101%
4	LD Sludge	4,91,004	5,01,047	-	5,01,047	102%
5	Kiln Dust	19,465	19,465	-	19,465	100%
6	Mill Scale	1,05,523	1,05,368	-	1,05,368	100%
7	Mill Sludge	2,949	2,842	-	2,842	96%
8	Iron Oxide	9,920	219	10,228	10,447	105%
9	Fe bearing muck	12,654	12,618	-	12,618	100%
10	ESP/DE Dust	75,333	75,333	-	75,333	100%
A	**Process Solid Waste**	11,53,597	11,37,716	25,788	11,63,504	101%
1	LD Slag Metallic	16,40,534	1,59,015	1,60,530	3,19,545	111%
2	LD Slag Non-Metallic	-	31,102	14,71,197	15,02,298	
B	**LD Slag**	16,40,534	1,90,117	16,31,726	18,21,843	111%
1	Granulated BF Slag	41,50,930	-	42,14,406	42,14,406	102%
2	Air Cooled BF Slag	2,18,015	10,106	2,08,852	2,18,958	100%
C	**Blast Furnace Slag**	43,68,945	10,106	44,23,258	44,33,364	101%
D	**Total**	**71,63,076**	**13,37,939**	**60,80,772**	**74,18,711**	**104%**

Annexure-VII

LETTER NO.- 615

OFFICE OF THE CHIEF INSPECTOR OF FACTORIES, JHARKHAND

SHRAM BHAWAN, DORANDA, RANCHI-2

(Tel:- 0651-2480454 E-mail Id- cifoffice123@gmail.com)

From,

Chief Inspector of Factories, Jharkhand,
Ranchi.

To,

The Occupier,
M/s Tata Steel Limited,
Jamshedpur.

Ranchi Dated: 29-05-2020

Subject: Recommendation of On Site Emergency Plan & Disaster Control of M/s Tata Steel Limited, Jamshedpur.

Sir,

The On Site Emergency Plan & Disaster Control submitted by you has been examined and the same is recommended subject to the following conditions: -

1. Regular Mock- drill shall be carried out in the factory as per the provisions and a detailed report should be made available to the Inspector of Factories and Chief Inspector of Factories.
2. A detailed safety audit report conducted by an experienced outside agency shall be submitted along with details of health & safety policy of your factory.
3. The Emergency Reponses plan will be up-dated and revised if there is any modification in the plant, process or industrial activity.
4. Adequate arrangement of medical/ relief facilities (first aid equipments etc.) should be provided and maintained in the emergency control room.
5. Telephone number of key persons to be noted and displayed in the central control room.

A copy of the recommended plan is enclosed herewith.

Yours faithfully,

29/5/2020

Chief Inspector of Factories, Jharkhand,
Ranchi.