



Shubhanand Mukesh
Head Environment Management

EMD/C-41/ 429 /18
November 28, 2018

Additional Principal Chief Conservator of Forests
(Eastern-Central) Regional Office (ECZ)
Ministry of Environment, Forests & Climate Change
Bungalow No. A-2, Shyamali Colony
RANCHI - 834 002

Subject: Submission of Six Monthly (April to September 2018) EC Compliance and monitoring reports of expansion of Steel plant (4 MTPA to 5 MTPA Crude Steel Production), (5 MTPA to 6.8 MTPA Crude Steel Production), (6.8 MTPA to 9.7 MTPA Crude Steel Production) and (9.7 MTPA to 11 MTPA Crude Steel Production)

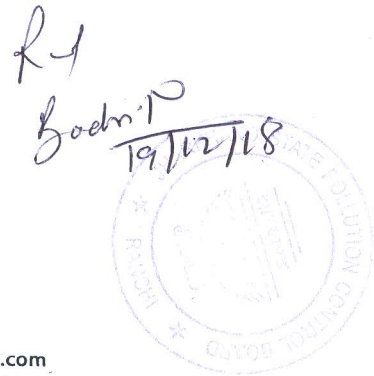
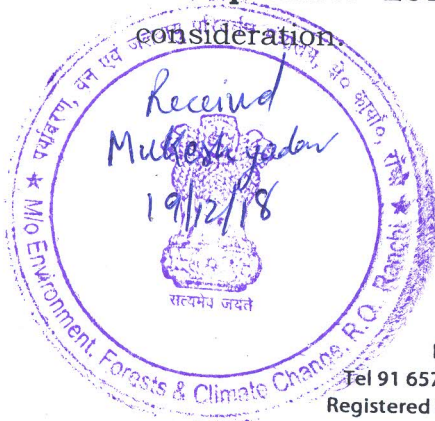
Reference:

1. MoEF EC letter no. J-11011/221/2003-IA.II (I) dated May 24, 2005
2. MoEF EC letter no. J-11011/317/2006-IA.II (I) dated April 16, 2007
3. MoEF EC letter no. J-11011/691/2007-IA.II (I) dated May 11, 2010
4. MoEFCC EC letter no. J-11011/691/2007-IA.II (I) dated March 1, 2016

Dear Sir,

This has reference to the captioned subject and cited references. It is to inform that we are herewith submitting six monthly Compliance reports for the conditions stipulated in the Environment Clearance of expansion of Steel plant (4 MTPA to 5 MTPA Crude Steel Production), (5 MTPA to 6.8 MTPA Crude Steel Production), (6.8 MTPA to 9.7 MTPA Crude Steel Production) and (9.7 MTPA to 11 MTPA Crude Steel Production) for the period from **April to September 2018** along with monitoring data report for your kind

consideration.



TATA STEEL LIMITED

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Shubhanand Mukesh
Head Environment Management

The copy of above compliance report is also being sent in soft format through email (ro.ranchi-mef@gov.in) for your kind perusal. Also copy of 11 MTPA EC Compliance has been uploaded on MoEFCC website on portal <http://environmentclearance.nic.in/>.

Hope the above are in line with the statutory requirements.

Thanking you

Yours Faithfully

For Tata Steel Limited

Shubhanand Mukesh

Head, Environment Management

Encl:

1. Six Monthly Compliance Status report of Environmental Clearance from expansion of 4 to 5 MTPA Crude Steel Production
2. Six Monthly Compliance Status report of Environmental Clearance from expansion of 5 to 6.8 MTPA Crude Steel Production
3. Six Monthly Compliance Status report of Environmental Clearance from expansion of 6.8 to 9.7 MTPA Crude Steel Production
4. Six Monthly Compliance Status report of Environmental Clearance from expansion of 9.7 to 11 MTPA Crude Steel Production
5. Monitoring and analysis reports for April 2018 to September 2018

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

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Compliance to Conditions stipulated in Environment Clearance for Expansion of steel manufacturing capacity at Jamshedpur Steel works from 4.0 MTPA to 5.0 MTPA, No. J-11011/221/2003 - IA II (I) dated 24.05.2005

No.	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 19 th 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.	All the existing and new units are provided with adequate pollution control equipment (PCEs) to ensure the emission levels within specific legal requirement. Please refer Annexure - I for monitoring reports for April 2018 to September 2018 .
ii.	As reflected in the EIA/EMP report, the waste water 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 Subaranarekha river. The treated waste water to be discharged into the Kharkai river should remain at the existing level of 1364m ³ /d. The domestic waste water after treatment in STP should be used for green belt development	<ul style="list-style-type: none"> • Waste water treatment plants have been provided in all the operating units. The treated water is recycled and reused for various processes within the plant. • The discharge quantity from the works drain is kept within the prescribed standard. • Waste water recovery system has been provided at all the process drains. • Discharges to Subarnarekha River & Kharkai River are confirming to prescribe standards. Please refer Annexure - I for monitoring reports for April 2018 to September 2018 .
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.	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

Compliance to Conditions stipulated in Environment Clearance for Expansion of steel manufacturing capacity at Jamshedpur Steel works from 4.0 MTPA to 5.0 MTPA, No. J-11011/221/2003 - IA II (I) dated 24.05.2005

	Particulate emissions shall not exceed 100mg/Nm ³ . Further de-dusting facilities at new lime kiln, sinter plant and wet suppression system at raw material bedding and blending plant shall be provided.	Fume Extraction System. Lime Kilns have been provided with Bag House. The emissions from the stacks are within specified limits. Please refer Annexure - I for monitoring reports for April 2018 to September 2018 .
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 CO ₂ greenhouse gas emission.	<ul style="list-style-type: none"> • The conversion of all the coal-fired boilers to gas firing in PH # 3, PH#4 & PH # 5 has been completed. • Coke dry quenching facility has been commissioned at battery no. 5, 6 & 7.
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 filling 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.	<ul style="list-style-type: none"> • Tata Steel has been successful in achieving almost complete utilization of most of the solid wastes except LD Slag. Tata Steel has taken a number of initiatives to find increasing usage of LD Slag in construction, road making, soil conditioning and cement making. The initiatives include among others: <ul style="list-style-type: none"> ○ Approvals from BIS for use of LD slag in cement making. ○ Commercial trials for use of LD slag as soil conditioner. <p>Three of four power houses within the Steel Works do not have even provision for firing coal. Only one boiler located at Power House 4 has provision for coal firing in addition to by-product gas firing. Normally this boiler also runs on by-product gas. Only in case of emergency conditions and shortage by-product gas due to disturbance in plant operations, coal firing is done as per the need. The quantity of fly ash generated has reduced drastically which is handled appropriately.</p>
vi.	<p>a. The chrome sludge (251kg/d) generated from the colour coating shall be disposed off in the lined pit within the plant premises and oily sludge (25TPD) shall be incinerated.</p> <p>b. The company shall undertake ground water quality monitoring around the chrome sludge disposal</p>	<ul style="list-style-type: none"> • Chrome sludge is being disposed off in land filling facility in steel works. • The analysis of ground water is done for chromium content; the values are within prescribed limits. <p>Please refer Annexure - I for monitoring reports for April 2018 to</p>

Compliance to Conditions stipulated in Environment Clearance for Expansion of steel manufacturing capacity at Jamshedpur Steel works from 4.0 MTPA to 5.0 MTPA, No. J-11011/221/2003 - IA II (I) dated 24.05.2005

	site and data submitted to the Ministry.	September 2018.
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.	<ul style="list-style-type: none"> We have planted 9364 nos. saplings during April 2018 to October 2018 inside the works, Jugsalai Muck Dump area and in Township in the same period. Every year plantation done in available space. The following plant species are being planted: <i>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.</i>
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.	<ul style="list-style-type: none"> Rainwater collected from various facilities within the Steel Plant is channelled through surface drains into Cooling Pond. The rainwater thus collected is recycled in the plant. Rainwater harvesting has been planned and being implemented at suitable locations within the plant.
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 are conducted regularly.
x.	Recommendations made in the CREP shall be implemented.	Tata Steel has implemented the recommendations of CREP.
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.	All the relevant stipulations made by JSPCB and State Government are being complied.

Compliance to Conditions stipulated in Environment Clearance for Expansion of steel manufacturing capacity at Jamshedpur Steel works from 4.0 MTPA to 5.0 MTPA, No. J-11011/221/2003 - IA II (I) dated 24.05.2005

ii.	No further expansion or modifications in the plant should be carried out without prior approval of the Ministry of Environment and Forests.	<p>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.</p> <p>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.</p> <p>Necessary Environment Clearance will be taken before any further expansion or modification.</p>
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, SO ₂ and NO _x 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.	<p>Four Ambient Air Quality Monitoring Stations have been installed. Monitoring data on ambient air quality and stack emission is being submitted regularly to JSPCB.</p> <p>Please refer Annexure - I for monitoring reports for April 2018 to September 2018.</p>
iv.	Industrial wastewater should be properly collected, treated so as to conform to the standards prescribed under GSR 422(E) dated 19 th May, 1993 and 31 st December 1993 or as amended form time to time. The treated wastewater should be utilized be for plantation purpose.	<ul style="list-style-type: none"> • All wastewater discharges from Steel Works are let out after treating them suitably. The discharge water quality is monitored at all the discharge points <p>Please refer Annexure - I for monitoring reports for April 2018 to September 2018.</p>
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 (night time).	<ul style="list-style-type: none"> • The noise control measures such as; silencers, enclosures, hoods, rubber pads, have been provided at the required places in the existing plant. The work areas where noise levels are high, earplugs and earmuffs have been provided to the people to minimize noise exposure. • The high noise area within the plant have been identified and demarcated. Adequate caution boards are displayed and anyone who enters the area is required to

Compliance to Conditions stipulated in Environment Clearance for Expansion of steel manufacturing capacity at Jamshedpur Steel works from 4.0 MTPA to 5.0 MTPA, No. J-11011/221/2003 - IA II (I) dated 24.05.2005

		wear ear-plugs/ear-muffs. The noise monitoring is done regularly.
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.	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 conditions stipulated herein. The funds so provided should not be diverted for any other purposes.	The funds for capital investment on pollution control equipment were not diverted. The 5 MTPA project has been completed. All the pollution control equipment have been commissioned and are being operated and maintained regularly.
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. Please refer Annexure - I for monitoring reports for April 2018 to September 2018 .
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	The Notice has been advertised in two local newspapers viz. Chamkta Aaina (Hindi) and The Avenue Mail (English) on June 04, 2005 and communication to this effect was also sent to the MoEF.

Compliance to Conditions stipulated in Environment Clearance for Expansion of steel manufacturing capacity at Jamshedpur Steel works from 4.0 MTPA to 5.0 MTPA, No. J-11011/221/2003 - IA II (I) dated 24.05.2005

	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.	
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.

Compliance Status of Environmental Clearance of Expansion of Crude Steel Plant (5.0 MTPA to 6.8 MTPA) at Tata Steel Works, Jamshedpur, District East Shinghbhum, Jharkhand vide MoEF Letter no J-11011/317/2006.IA.II (I) dated April 16, 2007

Sl.No.	Condition	Compliance Status
i.	<p>Specific Conditions</p> <p>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.</p>	<p>All the existing and new units are provided with adequate pollution control equipment (PCEs) to ensure the emission levels within specific legal requirement.</p> <p>Please refer Annexure - I for monitoring reports for April to September 2018. Alarms and interlocking wherever possible have been provided in the units to indicate emission level.</p>
ii.	<p>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 power house and sufficient air pollution control devices shall be provided to keep the emission levels below 50 mg/Nm³ and reports submitted to the Jharkhand SPCB and CPCB.</p>	<ul style="list-style-type: none"> • We have submitted Action Plan and status update on reduction of RSPM Level in Ambient Air vide our letter no. EMD/C-33/124/13 dated June 22, 2013. • Online stacks monitoring systems in the major stacks have been installed. • All the new Air Pollution Control devices have been commissioned with design emission levels of below 50 mg/Nm³ of particulate matter from stacks within Works. • Monitoring reports are being submitted regularly.
iii.	<p>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/Nm³ 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 sprinkling</p>	<p>The status of control measures in the units are as follows.</p> <ul style="list-style-type: none"> • 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. <p>The following control measures are in place to check the fugitive emissions.</p> <ul style="list-style-type: none"> • Bag Houses, water-spraying arrangements are provided at all potential dust generating points.

Compliance Status of Environmental Clearance of Expansion of Crude Steel Plant (5.0 MTPA to 6.8 MTPA) at Tata Steel Works, Jamshedpur, District East Shinghbhum, Jharkhand vide MoEF Letter no J-11011/317/2006.IA.II (I) dated April 16, 2007

	shall be carried out and fugitive emissions shall be controlled, regularly monitored and records maintained.	<ul style="list-style-type: none"> The boilers at Power House#3 have been converted to gas firing from coal. This has contributed significantly in the reduction of the fugitive emissions. 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. <p>Please refer Annexure - I for monitoring reports for April to September 2018.</p>
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.	All the Steel Melting Shops (LD#1, LD#2 and LD#3) have been provided with Electrostatic Precipitators (ESP) as secondary emission control system.
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 tower 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).	<ul style="list-style-type: none"> Water taken from Subarnarekha River for steelmaking as make-up water is within the recommended capacity by State Government. Installations of closed loop system for the new units have been commissioned. The treated water is recycled for various processes within the plant. The discharge quantity from the works drain is kept within the prescribed standard. Sewage from the Jamshedpur Town is treated in Sewage Treatment Plants (2 nos.). BOD and Suspended Solids are within the prescribed limits.
vi.	Continuous monitoring of Total Organic Compounds (TOC) shall be done at the outlet of ETP (BOD plant).	Online TOC analyzer has been installed for continuous monitoring at BOD Plant Outlet.
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	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

Compliance Status of Environmental Clearance of Expansion of Crude Steel Plant (5.0 MTPA to 6.8 MTPA) at Tata Steel Works, Jamshedpur, District East Shinghbhum, Jharkhand vide MoEF Letter no J-11011/317/2006.IA.II (I) dated April 16, 2007

	Office at Bhubaneswar, CPCB and OPCB.	meals is well within the prescribed limits. Please refer Annexure - I for monitoring reports for April to September 2018.
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.	<ul style="list-style-type: none"> • BF slag from H Blast Furnace is granulated in cast house and is used for cement making. • LD slag is processed at the modernized Waste Recycling Plant to recover the metallic portion and reuse at Sinter Plants. • The chrome sludge from CRM Plant is stored in secured land fill within the Works. • Oily sludge is burnt in the Incinerator.
ix.	Fly ash shall be used in cement plants. Bottom ash shall be disposed off in a suitably designed landfill as per CPCB guidelines to prevent leaching to the sub-soil and underground aquifer.	All boilers at Tata Steel are capable to fire gas. This has resulted in considerable reduction in generation of fly ash.
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.	No disposal of solid waste along the river bank 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.	<p>An action plan for Solid waste management has been submitted to JSPCB vide our letter no. EMD/C-02/460/11 dated December 16, 2011.</p> <p>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.</p> <p>Tata Steel has taken a number of steps to improve the solid waste utilization. For the period during April to October 2018, the solid waste utilization was 93% excluding storage of LD slag at Galudih for processing. Various actions have been already planned to improve the solid waste utilization further.</p>

Compliance Status of Environmental Clearance of Expansion of Crude Steel Plant (5.0 MTPA to 6.8 MTPA) at Tata Steel Works, Jamshedpur, District East Shinghbhum, Jharkhand vide MoEF Letter no J-11011/317/2006.IA.II (I) dated April 16, 2007

		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.	<ul style="list-style-type: none"> • Rainwater is collected from the new facilities through surface drain into Cooling Pond. The rainwater thus collected is recycled in the plant for reuse. • The rainwater harvesting structures at four buildings within and outside the plant have been completed.
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.	<ul style="list-style-type: none"> • We have planted 9364 nos. saplings during April 2018 to October 2018 inside the works, Jugsalai Muck Dump area and in Township in the same period. Every year plantation done in available space. • The following plant species are being planted: <i>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.</i>
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.
xv.	Recommendations made in the Corporate Responsibility for Environment Conservation (CREP) issued for the steel plants shall be implemented.	CREP recommendations have been implemented.
General Conditions		
i.	The project authorities must strictly adhere to the stipulations made by the Jharkhand Pollution Control Board (Jharkhand SPCB) and the	All the relevant stipulations made by JSPCB and State Government are being complied.

Compliance Status of Environmental Clearance of Expansion of Crude Steel Plant (5.0 MTPA to 6.8 MTPA) at Tata Steel Works, Jamshedpur, District East Shinghbhum, Jharkhand vide MoEF Letter no J-11011/317/2006.IA.II (I) dated April 16, 2007

	State Government	
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.	Four Ambient Air Quality Monitoring Stations have been installed. We submit monitoring data on ambient air quality and stack emission regularly to JSPCB/MoEF/CPCB. Please refer Annexure - I for monitoring reports for April to September 2018.
iv.	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 11 th May, 1993 and 31 st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	Wastewater is being treated in the Effluent treatment plants of respective units for meeting the standards. Treated wastewater is used for plantations and road dust suppression. Most of treated wastewater is recycled back to the system.
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).	The control measures such as silencers, enclosures, hoods, rubber pads, have been provided at the appropriate places on all sources of noise generation in the plant. The ambient noise level is being monitored. Please refer Annexure - I for monitoring reports for April to September 2018.
vi.	The project proponent shall also comply with all the environmental protection measures and	<ul style="list-style-type: none"> Implementation of protection measures as indicated in the EIA for 6.8 MTPA plant units have

Compliance Status of Environmental Clearance of Expansion of Crude Steel Plant (5.0 MTPA to 6.8 MTPA) at Tata Steel Works, Jamshedpur, District East Shinghbhum, Jharkhand vide MoEF Letter no J-11011/317/2006.IA.II (I) dated April 16, 2007

	<p>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.</p>	<p>been complied which includes ESPs, bag filters, on-line slag granulation system for blast furnaces and waste water treatment plants etc.</p> <ul style="list-style-type: none"> • 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.	<p>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.</p>	<p>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 have been commissioned and are being operated and maintained regularly.</p>
viii.	<p>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.</p>	<p>Six monthly compliance reports and the monitored data are being submitted regularly. Please refer Annexure – I for monitoring reports for April to September 2018.</p>
ix.	<p>The Project Proponent shall inform the public that the project has been accorded environmental clearance</p>	<p>The Notice has been advertised in two local newspapers viz. Uditvani (Hindi) and Avenue Mail (English) on</p>

Compliance Status of Environmental Clearance of Expansion of Crude Steel Plant (5.0 MTPA to 6.8 MTPA) at Tata Steel Works, Jamshedpur, District East Shinghbhum, Jharkhand vide MoEF Letter no J-11011/317/2006.IA.II (I) dated April 16, 2007

	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.	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.

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

No	Conditions	Compliance Status																								
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.	<p>The six-monthly compliance reports are being submitted to the regional office regularly. The report for last 5 years submitted to Regional office at Ranchi/Bhubaneswar is as follows:</p> <table border="1" data-bbox="699 416 1393 1032"> <thead> <tr> <th data-bbox="699 416 906 465">Six Monthly report</th> <th data-bbox="906 416 1393 465">Submitted on</th> </tr> </thead> <tbody> <tr> <td data-bbox="699 465 906 517">June 2018</td> <td data-bbox="906 465 1393 517">May 28, 2018 vide letter no. EMD/C-41/280/18.</td> </tr> <tr> <td data-bbox="699 517 906 568">December 2017</td> <td data-bbox="906 517 1393 568">November 28, 2017 vide letter no. EMD/C41/178/17</td> </tr> <tr> <td data-bbox="699 568 906 620">June 2017</td> <td data-bbox="906 568 1393 620">May 25, 2017 vide letter no. EMD/C41/77/17</td> </tr> <tr> <td data-bbox="699 620 906 672">December 2016</td> <td data-bbox="906 620 1393 672">November 25, 2016 vide letter no. EMD/C41/183/16</td> </tr> <tr> <td data-bbox="699 672 906 723">June 2016</td> <td data-bbox="906 672 1393 723">June 01, 2016 vide letter no. EMD/C-41/78/16</td> </tr> <tr> <td data-bbox="699 723 906 775">December 2015</td> <td data-bbox="906 723 1393 775">December 05, 2015 vide letter no. EMD/C-33/215/15</td> </tr> <tr> <td data-bbox="699 775 906 826">June 2015</td> <td data-bbox="906 775 1393 826">May 19, 2015 vide letter no. EMD/C-33/58/15</td> </tr> <tr> <td data-bbox="699 826 906 878">December 2014</td> <td data-bbox="906 826 1393 878">November 18, 2014 vide letter no. EMD/C-33/175/14</td> </tr> <tr> <td data-bbox="699 878 906 929">June 2014</td> <td data-bbox="906 878 1393 929">June 24, 2014 vide letter no. EMD/C-33/116/14</td> </tr> <tr> <td data-bbox="699 929 906 981">December, 2013</td> <td data-bbox="906 929 1393 981">December 16, 2013 vide letter no. EMD/C-33/237/13</td> </tr> <tr> <td data-bbox="699 981 906 1032">June, 2013</td> <td data-bbox="906 981 1393 1032">June 22, 2013 vide letter no. EMD/C-33/124/13</td> </tr> </tbody> </table> <p>The six monthly compliance reports along the monitored data is also uploaded in the website(http://www.tatasteelindia.com/corporate-citizen/environment-compliance-reports.asp)</p>	Six Monthly report	Submitted on	June 2018	May 28, 2018 vide letter no. EMD/C-41/280/18.	December 2017	November 28, 2017 vide letter no. EMD/C41/178/17	June 2017	May 25, 2017 vide letter no. EMD/C41/77/17	December 2016	November 25, 2016 vide letter no. EMD/C41/183/16	June 2016	June 01, 2016 vide letter no. EMD/C-41/78/16	December 2015	December 05, 2015 vide letter no. EMD/C-33/215/15	June 2015	May 19, 2015 vide letter no. EMD/C-33/58/15	December 2014	November 18, 2014 vide letter no. EMD/C-33/175/14	June 2014	June 24, 2014 vide letter no. EMD/C-33/116/14	December, 2013	December 16, 2013 vide letter no. EMD/C-33/237/13	June, 2013	June 22, 2013 vide letter no. EMD/C-33/124/13
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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/Nm ³ 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.	<ul style="list-style-type: none"> • 4 online AAQMS have been commissioned to monitor PM₁₀, PM_{2.5}, SO₂, NO₂, CO, NH₃ continuously. • Low NOx burners have been provided in all the new units. • Similarly in almost all the units 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. 																								

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

iii.	Existing electrostatic precipitator (ESP) shall be upgraded and provided to new units to control gaseous emissions within 50 mg/Nm ³ . 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.	<ul style="list-style-type: none"> • There is a proposal to upgrade all the ESP of Sinter Plant (SP), F & G Blast Furnace & LD1 & LD2 steel melting shops. Among these 6 ESP at Sinter Plant have already been upgraded by the agency. The agreed emission for their upgraded emission has been guaranteed to be 50 mg/Nm³ with an efficiency of 99.9%. • Bag Filters are provided in the Cast House and Stock House of all the Blast Furnaces. • 3 nos. of bag filters have been provided in the Pellet Plant to control waste gas from the drying and grinding unit. • 12 nos. of Bag House have been provided in Lime Plant in process and dedusting units. • A total of 6 nos. of schemes to upgrade Existing Electrostatic Precipitator (ESP) have been commissioned at SP 1, 2 & 3. Additional 10 nos. of schemes to upgrade APCE including ESP and Bag Filters are being commissioned at various locations inside Works which shall be completed by FY 19.
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 desulphurized by reduction of H ₂ S 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.	<ul style="list-style-type: none"> • 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 were in place in both coke ovens battery 10 & 11 to minimize leaks from doors CAPs, etc and also to meet the CREP recommendations. • Coke oven gas is being desulphurised in Battery 10&11. The monitoring reports shows that H₂S content is below 500 mg/Nm³.
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	<ul style="list-style-type: none"> • 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 8.4 in Battery#6, max % of PLL found to be 0.9 in battery#6 and % of maximum PLO is found to be 1.5 in Battery#8 and maximum charging emission

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	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.	is found to be 50 sec in Battery#7. <ul style="list-style-type: none"> Byproduct gas is recovered and used for power generation captive Power House # 3, 4 & 5 and heating purpose in all the mills. Power is also being generated in TRT at G, H & I Blast Furnace. Sulphur is recovered from coke oven gas and sold to authorized buyers.
vi.	Only dry quenching method in the coke oven in new battery # 10 & 11 shall be adopted.	Coke Dry quenching (CDQ) facility is under commissioning in the new Coke Oven Battery # 10 and 11. The project likely to be completed by year 2018-19.
vii.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16 th November, 2009 shall be followed.	<ul style="list-style-type: none"> 4 online AAQMS have been commissioned to monitor PM₁₀, PM_{2.5}, SO₂, NO_x, CO, NH₃ continuously. There is one mobile monitoring facility & about 20 manual AAQMS located both inside the plant and also outside the plant area. All other AAQ parameters being analysed by approved environment laboratory are also 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. Please refer Annexure – I for monitoring reports for April to September 2018.
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 asphaltting of the roads within premises shall be carried out to control fugitive emissions. Fugitive emissions shall be controlled, regularly monitored and records maintained.	<ul style="list-style-type: none"> 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 1. All the areas of dedusting operation as junction house, transfer tower, conveyors are connected with bag filters and/or dry fog dust suppression system. All these locations are being monitored once in month. 8 nos. of unit for dust extraction system (DE) have been commissioned at G Blast Furnaces, RMBB and RMM. Additional units for dust extraction system (DE) are being commissioned at various locations inside Works. A total of 350 nos. of points for dust suppression system (DS) have been commissioned at Lime Plant, RMBB 1& 2, and C & F Blast Furnaces. A total of 51 nos. Industrial vacuum cleaners (IVC) have been commissioned at MPSPP, RMBB 1&2, SP 1, 2 & 3 and HBF. Additional Industrial vacuum cleaners (IVC) are being commissioned at various locations inside Works.
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.	<ul style="list-style-type: none"> Secondary dust emission inside the plant in different critical areas is being monitored in about 150 locations monthly. The average work area dust monitoring during April to September 2018 is 5.8 mg/m³.

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	Guidelines / Code of Practice issued by the CPCB shall be followed. New standards issued by the Ministry vide G.S.R. 414(E) dated 30 th May, 2008 shall be followed.	
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 inbound 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 dust emissions.	<p>Under the traffic decongestion plan in Jamshedpur city :</p> <ul style="list-style-type: none"> • Strengthening of marine drive (Western corridor) has been implemented • Proposal of Eastern Corridor is in discussion with Govt. of Jharkhand and key issues settled <p>Inside the plant:</p> <ul style="list-style-type: none"> • Automatic traffic control system is in place to control the traffic density as well as the safely including secondary emission inside the plant. • 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 sweepers are deployed within Works for regular cleaning and dust evacuation of roads. • Approx. 400 tonnes/month of dust from road being collected by these mechanized sweepers which are being reused in sinter making through RMBB. • 2 nos. of mechanized 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.	<ul style="list-style-type: none"> • 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. • Tyre washing facility has also been provided in 8 strategic locations to keep tyres clean to reduce dust emission on roads and being installed in 5 additional locations.
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	<ul style="list-style-type: none"> • 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). • New BOD plant has been commissioned and existing BOD has been upgraded to treat the additional effluent generated from Coke Oven Batteries including Battery 10 & 11. • Closed circuit cooling systems have been installed. Catch pits at all the five designated drains have

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	<p>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 clariflocculation 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.</p>	<p>been constructed to recycle the treated effluent within plant.</p> <ul style="list-style-type: none"> All the mills are equipped with respective effluent treatment plants with settling tanks and oil skimming facility.
xiii.	<p>Efforts shall be made to make use of rain water 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.</p>	<ul style="list-style-type: none"> 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. 38 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.	<p>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 wastewater shall be monitored for pH, BOD, COD, oil & grease, cyanide, phenolic compounds, Chromium+6 etc. besides other relevant parameters.</p>	<ul style="list-style-type: none"> 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 data is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEFCC at Ranchi and CPCB. Please refer Annexure – I for monitoring reports for April to September 2018.
xv.	<p>Regular monitoring of influent and effluent surface, sub-surface and ground water shall be ensured and treated wastewater shall meet the norms prescribed by the State Pollution Control Board or described under the E(P) Act</p>	<ul style="list-style-type: none"> All the effluent viz. catch pits, service water etc are being monitored regularly. The treated effluents such as all ETP outlets and drains are being analyzed regularly. Online effluent monitoring system has been commissioned in all the drains to monitor effluent quality on a real-time basis.

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	<p>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.</p>	<ul style="list-style-type: none"> • Online effluent monitoring data is connected with CPCB/JSPCB. • River Water quality of Subarnarekha and kharkai is also being monitored as a part of regular monitoring of surface water quality. • There are two cooling water pond whose water quality is also regularly monitored as part of sub surface water quality. • Ground water quality is also being monitored at 7 locations both inside and outside plant premises. • Monthly monitoring data is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEFCC at Ranchi and CPCB. 														
xvi.	<p>'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.</p>	<p>As per the water balance and plan of zero effluent discharge, all the plant effluent is being recycled in to different process units for various uses. The rain water which is being discharged into the nearby nallah is being collected and in low lying area and settled water is let out thereafter. Maximum effort is being taken to minimize the discharge of rain water.</p>														
xvii.	<p>As proposed, the water consumption shall not exceed 5.7 m³/Ton of steel at 9.7 MTPHY stage.</p>	<p>The specific water consumption has been reduced to 3.43 m³/tcs during year 2018-19 as compared to 5.58 m³/tcs for the year 2013-14.</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Specific Water Consumption (m³/tcs)</th> </tr> </thead> <tbody> <tr> <td>FY 14</td> <td>5.58</td> </tr> <tr> <td>FY 15</td> <td>5.54</td> </tr> <tr> <td>FY 16</td> <td>4.39</td> </tr> <tr> <td>FY 17</td> <td>3.83</td> </tr> <tr> <td>FY 18</td> <td>3.68</td> </tr> <tr> <td>FY19 (Till Oct'18)</td> <td>3.43</td> </tr> </tbody> </table>	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	FY19 (Till Oct'18)	3.43
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xviii.	<p>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.</p>	<ul style="list-style-type: none"> • Online slag granulation facilities have been implemented in the all Blast Furnaces. • All the BF Slag is being granulated and made available to the Cement plants for cement making. • Blast Furnace gas cleaning plant (GCP) sludge is re-utilised in the process as well as being used for manufacturing briquettes. • Additional initiatives undertaken for improving the utilization of LD Slag: <ul style="list-style-type: none"> ○ Co-processing of LD Slag at Cement Kilns. ○ Open & Closed Steam Ageing inside Works ○ Use of LD Slag in Road Making & railway Ballast • Collaboration with expert external agency for processing and subsequent use of LD Slag as aggregates and ballast. 														

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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 landfill 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/reprocessors.	<ul style="list-style-type: none"> • BOD Sludge and Coal Tar sludge generated from By Product Plant is being recycled in coke plant by mixing with raw materials. • All other kind of process wastes are being reutilised in sinter plant. • In house secured landfill with HDPE liner has been constructed to dispose chrome sludge generated from Cold Rolling Mill.
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.	<ul style="list-style-type: none"> • LD Slag is being 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 in the secured landfill inside Works.
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 alongwith localized water harvesting.	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.	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. We have taken many steps to improve the solid waste utilization. For the period during April to October 2018, the solid waste utilization was 93% excluding storage of LD slag at Galudih for processing. Various actions have been already planned to improve the solid waste utilization further.
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	<ul style="list-style-type: none"> • Most of the solid waste is being reutilized. • Information regarding solid waste and hazardous waste is being submitted in Environment Statement to the Board every year.

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

	Bhubaneswar, Jharkhand SPCB and CPCB.																	
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 the Ministry's Regional Office at Bhubaneswar.	<p>Ash generation from the captive power plants has been stopped due to no coal firing at Power Plants. Generation for last four years is as follows:</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Quantity generated in tonnes</th> <th>Quantity utilized</th> </tr> </thead> <tbody> <tr> <td>2012-13</td> <td>31,246</td> <td rowspan="6">Disposed in ash pond through HCSD system</td> </tr> <tr> <td>2013-14</td> <td>20,951</td> </tr> <tr> <td>2014-15</td> <td>22,474</td> </tr> <tr> <td>2015-16</td> <td>15,348</td> </tr> <tr> <td>2016-17</td> <td>5,012</td> </tr> <tr> <td>2017-18</td> <td>2291</td> </tr> </tbody> </table> <p>All the boilers have been converted from coal fired to gas fired. Thus, there is no additional generation of fly ash in the power plant.</p>	Year	Quantity generated in tonnes	Quantity utilized	2012-13	31,246	Disposed in ash pond through HCSD system	2013-14	20,951	2014-15	22,474	2015-16	15,348	2016-17	5,012	2017-18	2291
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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 Bhubaneswar, Jharkhand SPCB and CPCB within 3 months of issue of environment clearance letter.	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.																
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.	<p>We have planted 9364 nos. saplings during April 2018 to October 2018 inside the works, Jugsalai Muck Dump area and in Township in the same period. Every year plantation done in available space.</p> <p>The following plant species are being planted:</p> <p><i>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.</i></p>																
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	<ul style="list-style-type: none"> • Prior Permission from State Forest Department has been obtained vide their memo. No. 2605 dated October 29, 2010. • Wildlife Conservation Plan has been submitted to PCCF, Jharkhand vide our letter no. EMD/C-33/368/11 dated October 07, 2011. • A revised Wildlife Conservation Plan for Tata Steel has been prepared with the help of approved external agency recommended by State Forest Department and submitted for approval vide our letter no. EMD/C-41/128/16 dated August 22, 2016. • Wildlife Conservation Plan has been approved by Principal Chief Conservator of Forests – Wildlife (PCCF-WL) GoJ on Nov 13, 2017. PCCF-WL has informed MoEFCC for the above approval. 																

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

	project. Further, Conservation Plan for the conservation of wild fauna in consultation with the State Forest Department shall be prepared and implemented.	
xviii.	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Steel Plants shall be implemented	CREP recommendations have been implemented. Please find enclosed the same as Annexure – II .
xxix.	All the commitments made to the public during the Public Hearing / Public Consultation meeting held on 18 th 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.	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.	It is being complied as per the requirement under the Companies Act. The amount spent by the Company on Corporate Social Responsibility (CSR) activities during 2016-17 was ₹ 194 Crores while during 2015-16, it was ₹ 150.36 crore and during 2014-15, it was ₹168.26 crore. 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 http://www.tatasteel.com/investors/performance/109th-annual-report-related-documents.asp
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.	As the project is already commissioned. Compliance to this condition is not applicable.
General Conditions:		
i.	The project authorities must strictly adhere to the stipulations made by the Jharkhand Pollution Control Board (JSPCB) and the State Government.	We are regularly obtaining the CTO and authorization under Hazardous Waste.
ii.	No further expansion or modifications in the plant should be carried out without	The Project informed that there shall be prior permission obtained for the concerned authorities in case of any medications, augmentation, and product

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

	prior approval of the Ministry of Environment and Forests.	<p>mix change. The detail of production of various products for last three years is as follows:</p> <table border="1" data-bbox="707 253 1385 459"> <thead> <tr> <th>Product</th> <th>Unit</th> <th>Capacity granted in EC</th> <th>2014-15</th> <th>2015-16</th> <th>2016-17</th> <th>2017-18</th> </tr> </thead> <tbody> <tr> <td>Hot Metal</td> <td rowspan="3">MTPA</td> <td>12.5</td> <td>10.163</td> <td>10.655</td> <td>10.826</td> <td>10.9</td> </tr> <tr> <td>Crude Steel</td> <td>11</td> <td>9.331</td> <td>9.959</td> <td>10.005</td> <td>10.0</td> </tr> <tr> <td>Saleable Steel</td> <td>10.8</td> <td>9.073</td> <td>9.697</td> <td>9.714</td> <td>9.8</td> </tr> </tbody> </table>	Product	Unit	Capacity granted in EC	2014-15	2015-16	2016-17	2017-18	Hot Metal	MTPA	12.5	10.163	10.655	10.826	10.9	Crude Steel	11	9.331	9.959	10.005	10.0	Saleable Steel	10.8	9.073	9.697	9.714	9.8
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iii.	The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19 th 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.	<p>There is a proposal to upgrade all the ESP of Sinter Plant (SP), F& G Blast Furnace & LD1 & LD2 steel melting shops. Among these 6 ESP of Sinter Plant have already been upgraded by the agency. The agreed emission for their upgraded emission has been guaranteed to be 50 mg/Nm³ with an efficiency of 99.9%.</p> <p>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.</p> <p>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.</p>																										
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 SPM, SO ₂ and NO _x are anticipated in consultation with the Jharkhand PCB. Data on ambient air quality and stack emission should be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the Jharkhand PCB/CPCB once in six months.	<p>4 online AAQMS have been commissioned to monitor PM₁₀, PM_{2.5}, SO₂, NO_x, CO, NH₃ continuously inside the Works. There is one mobile monitoring facility & 20 manual AAQMS located both inside the plant and also outside the plant area. Monitoring report is being submitted to JSPCB, CPCB and Regional Office.</p> <p>The monitoring data for the period April to September 2018, indicates that all the parameters (except PM₁₀ and PM_{2.5} in few occasions) are within the prescribed limit of NAAQS. PAHs, Lead and Ammonia are being done by CPCB recognized environment laboratory.</p> <p>The ambient air quality represents the status of environment, which includes impact of several external factors such as other industrial activities, traffic movement, commercial and domestic activities etc.</p>																										
v.	Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.	Surface and ground water monitoring at various locations are being done and analysis reports also being sent to RO, MoEFCC and JSPCB.																										
vi.	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	Personal Protective Equipment (PPE) have been provided to all the workers/officers to avoid any accompanied noise hazards. Facilities like silencers, enclosers, 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 dBA																										

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

	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).	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.
vii.	Occupational Health Surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	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 under gone 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.	Rain Water Harvesting structure of 38 Nos. has 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.	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 Centers. 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.	Capital expenditure on environment is being spent on Air Pollution Control, Solid Waste Management, Zero Waste Water Discharge and Others including Greenery, Online Monitoring, etc. The total budget for the same as allocated by TSL Board is ₹ 2340 Crores. The funds for capital investment on pollution control equipment are not diverted.
xi.	The Regional Office of this Ministry at Bhubaneswar/CPCB/Jharkh	Six monthly compliance reports and the monitored data are being submitted regularly.

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

	and 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.	
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 JSPCB 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. 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.	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.
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, the respective Zonal Office of CPCB and the JPCB. The criteria pollutant levels namely; SPM, RSPM, SO ₂ , NO _x (ambient levels as well as stack emissions) or critical sectoral parameters, indicated	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.

Compliance Status of Environmental Clearance of Expansion of Steel Plant (6.8 MTPA to 9.7 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEF Letter no J-11011/691/2007-IA. II (I) dated May 11, 2010

	for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	
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 MOEF 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.	Six monthly compliance reports are being submitted regularly both in hard copy and by e-mail.
xvi.	The environmental statement for each financial year ending 31 st 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 by e-mail.	The environmental statement for each financial year in Form-V is regularly being submitted to the Jharkhand State Pollution Control Board.
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.	It has been complied as the project has already been completed and Consent to Operate has been issued by Jharkhand State Pollution Control Board.

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 online AAQMS have been commissioned to monitor PM₁₀, PM_{2.5}, SO₂, NO₂, CO, NH₃ continuously. All other AAQ parameters being analyzed by CPCB recognized environment laboratory are also found within prescribed limit except PM₁₀, PM_{2.5}.
- Real-time data of the monitoring stations are connected with the server at CPCB and JSPCB.
- The six-monthly compliance reports are being submitted to Ministry's Regional office, CPCB and JSPCB. Please refer **Annexure – I** for monitoring reports for April to September 2018.

- 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 all existing environment clearances granted by Ministry are being submitted to the regional office regularly. The report for last 5 years submitted to Ministry's Regional office, CPCB and JSPCB is as follows:

Six Monthly report	Submitted on
June 2018	May 28, 2018 vide letter no. EMD/C-41/280/18.
December 2017	November 28, 2017 vide letter no. EMD/C-41/178/17
June 2017	May 25, 2017 vide letter no. EMD/C-41/77/17
December 2016	November 25, 2016 vide letter no. EMD/C-41/183/16
June 2016	June 01, 2016 vide letter no. EMD/C-41/78/16
December 2015	December 05, 2015 vide letter no. EMD/C-33/215/15
June 2015	May 19, 2015 vide letter no. EMD/C-33/58/15
December 2014	November 18, 2014 vide letter no. EMD/C-33/175/14
June, 2014	June 24, 2014 vide letter no. EMD/C-33/116/14
December, 2013	December 16, 2013 vide letter no. EMD/C-33/237/13
June, 2013	June 22, 2013 vide letter no. EMD/C-33/124/13
December, 2012	December 29, 2012 vide letter no. EMD/C-33/330/12

- The six-monthly compliance reports along the monitored data is also uploaded on the following website
 - a. **MoEFCC:** <http://environmentclearance.nic.in/>
 - b. **Company:** (<http://www.tatasteelindia.com/corporate-citizen/environment-compliance-reports.asp>)

- 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 NO_x burners shall be installed to control NO_x 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 PM₁₀ and PM_{2.5} levels in the ambient air and a time bound action plan shall be submitted.**

Compliance Status:

- 4 online AAQMS have been commissioned to monitor PM₁₀, PM_{2.5}, SO₂, NO₂, CO, NH₃ continuously.
- Please find enclosed a list of air pollution control devices for each of production unit as **Annexure 1**.

- Low NOx burners have been provided in all the new units.
- Similarly, in almost all the units 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 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 2**.

- iv. Existing Electrostatic Precipitator (ESP) shall be upgraded and provided to new units to control gaseous emissions within 50 mg/Nm³. 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:

- There is a proposal to upgrade all the ESP of Sinter Plant (SP), F & G Blast Furnace & LD1 & LD2 steel melting shops. Among these 6 ESPs of Sinter Plant have already been upgraded. The agreed emission for their upgraded emission has been guaranteed to be 50 mg/Nm³ with an efficiency of 99.9%.
- Bag Filters are provided in the Cast House and Stock House of all the Blast Furnaces.
- 3 nos. of bag filters have been provided in the Pellet Plant to control waste gas from the drying and grinding unit.
- 12 nos. of Bag House have been provided in Lime Plant in process and dedusting units.
- A total of 6 nos. of schemes to upgrade Existing Electrostatic Precipitator (ESP) have been commissioned at SP 1, 2 & 3. Additional 10 nos. of schemes to upgrade APCE including ESP and Bag Filters are being commissioned at various locations inside Works which shall be completed by FY 20.

- 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 H₂S content of coke oven gas in the by-product recovery section to below 500 mg/Nm³. 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. were 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 desulphurised in Battery 10&11. The monitoring report shows that H₂S content is below 500 mg/Nm³.

- 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 8.4 in Battery#6, max % of PLL found to be 0.9 in battery#6 and % of maximum PLO is found to be 1.5 in Battery#8 and maximum charging emission is found to be 50 sec in Battery#7.
- Byproduct gas is recovered and used for power generation captive Power House # 3, 4 & 5 and heating purpose in all the mills. Power is also being generated in TRT at G, H & I Blast Furnace. Sulphur is recovered from coke oven gas 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 under commissioning in the new Coke Oven Battery # 10 and 11. CDQ for Battery 11 is already completed. The project of CDQ battery 10 is likely to be completed by year 2018-19.

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 online AAQMS have been commissioned to monitor PM₁₀, PM_{2.5}, SO₂, NO_x, CO, NH₃ continuously.
- There are about 20 manual AAQMS located both inside the plant and also outside the plant area.
- All other AAQ parameters being analysed by approved environment laboratory are also 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. Please refer **Annexure - I** for monitoring reports for April to September 2018.

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 asphaltting 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 1**.
- All the areas of dedusting operation as junction house, transfer tower, conveyors are connected with bag filters and/or dry fog dust suppression system.
- All these locations are being monitored once in month.

- 4 nos. of unit for dust extraction system (DE) have been commissioned at G Blast Furnaces, RMBB and RMM. Additional 20 nos. of units for dust extraction system (DE) are being commissioned at various locations inside Works.
- A total of 350 nos. of points for dust suppression system (DS) have been commissioned at Lime Plant, RMBB 1& 2, and C & F Blast Furnaces.
- A total of 51 nos. Industrial vacuum cleaners (IVC) have been commissioned at MPSP, RMBB 1&2, SP 1, 2 & 3 and HBF. Additional Industrial vacuum cleaners (IVC) are being commissioned at various locations inside Works.

- 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:

- Secondary dust emission inside the plant in different critical areas is being monitored in about 350 locations monthly.
- The average work area dust monitoring during April to September 2018 is 5.6 mg/m³.

- 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 dust emissions.**

Compliance Status:

Under the traffic decongestion plan in Jamshedpur city:

- Strengthening of marine drive (Western corridor) has been implemented
- Proposal of Eastern Corridor is in discussion with Govt. of Jharkhand and key issues settled

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.
- 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 sweepers are deployed within Works for regular cleaning and dust evacuation of roads.
- Approx. 400 tonnes/month of dust from road being collected by these mechanized sweepers which are being reused in sinter making through RMBB.
- 2 nos. of mechanized 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.
- Tyre washing facility has also been provided in 8 strategic locations to keep tyres clean to reduce dust emission on roads and being installed in 5 additional locations.

- 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 clariflocculation 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 recycling all the treated waste 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).
- New BOD plant has been commissioned and existing BOD has been upgraded to treat the additional effluent generated from Coke Oven Batteries including Battery 10 & 11.
- Closed circuit cooling systems have been installed. Catch pits at all the five designated drains have been constructed to recycle the treated effluent within plant.
- All the mills are equipped with respective effluent treatment plants with settling tanks and oil skimming facility.

- xiv. Efforts shall be made to make use of rain water 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.
- 38 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 wastewater 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 data is being submitted to JSPCB and six-monthly reports are being submitted to regional office of MoEFCC 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 effluent viz. catches pits, service water etc are being monitored regularly.
- The treated effluents such as all ETP outlets and drains are being analyzed regularly.
- Online effluent monitoring system has been commissioned in all the drains to monitor effluent quality on a real-time basis.
- Online effluent monitoring data is connected with CPCB/JSPCB.
- River Water quality of Subarnarekha and kharkai is also being monitored as a part of regular monitoring of surface water quality.
- There are two cooling water pond whose water quality is also regularly monitored as part of sub surface water quality.
- Ground water quality is also being monitored at 7 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 MoEFCC at Ranchi and CPCB.

- 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 the all Blast Furnaces.
- All the BF Slag is being granulated and made available to the Cement plants for cement making.
- Blast Furnace gas cleaning plant (GCP) sludge is re-utilised in the process as well as being used for manufacturing briquettes.

- Additional initiatives undertaken for improving the utilization of LD Slag:
 - Co-processing of LD Slag at Cement Kilns.
 - Open & closed Steam Ageing inside Works
 - Use of LD Slag in Road Making & railway Ballast
- Collaboration with expert external agency for processing and subsequent use of LD Slag as aggregates and ballast.
- Status of hazardous and other waste generation and utilization from April to September 2018 is enclosed as **Annexure – 3**.

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/reprocessors.

Compliance Status:

- BOD Sludge and Coal Tar sludge generated from By Product Plant is being recycled in coke plant by mixing with raw materials.
- All other kind of process wastes are being reutilized in sinter plant.
- In house secured landfill with HDPE liner has been constructed to dispose chrome sludge generated from Cold Rolling Mill.

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 is being 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 in the secured landfill inside Works.
- Status of hazardous and other waste generation and utilization from April to September 2018 is enclosed as **Annexure – 3**.

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 solid waste is being reutilized.
- Information regarding solid waste and hazardous waste is being submitted in Environment Statement to the Board every year.
- Status of hazardous and other waste generation and utilization from April to September 2018 is enclosed as **Annexure – 3**.

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:

- Ash generation from the captive power plants has been stopped due to no coal firing at Power Plants.
- Generation for last four years is as follows:

Year	Quantity in tonnes	Quantity utilized
2012-13	31,246	Disposed in ash pond through HCSD system
2013-14	20,951	
2014-15	22,474	
2015-16	15,348	
2016-17	5,012	
2017-18	2291	

- All the boilers have been converted from coal fired to gas fired. Thus there is no additional generation of fly ash in the power plant.

xxii. A Risk and Disaster Management Plan alongwith 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.

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:

- We have planted 9364 nos. saplings during April 2018 to October 2018 inside the works, Jugsalai Muck Dump area and in Township in the same period. 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.*

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 October 29, 2010.

- Wildlife Conservation Plan for Tata Steel has been prepared with the help of approved external agency recommended by State Forest Department and submitted for approval vide our letter no. EMD/C-41/128/16 dated August 22, 2016.
- Wildlife Conservation Plan has been approved by Principal Chief Conservator of Forests – Wildlife (PCCF-WL) GoJ on Nov 13, 2017. PCCF-WL has informed MoEFCC for the above approval.

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 – II.**

xxvi. At least 5 % of the total cost of the project shall be earmarked towards the corporate social responsibility and item-wise details alongwith 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 during 2017-18 was ₹ 232 Crores. In 2016-17 was ₹ 194 Crores while during 2015-16, it was ₹ 150.36 crore and during 2014-15, it was ₹168.26 crore. 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 <http://www.tatasteel.com/investors/performance/109th-annual-report-related-documents.asp>

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:

- Necessary amenities for contractors like canteen, toilets, rest rooms, drinking water have been provided for all workers/contractors.

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 regularly obtaining the Consent to Operate and authorization under Hazardous Waste from Jharkhand State Pollution Control Board.

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 (MoEFCC).

Compliance Status:

Compliance Status of Environmental Clearance of Expansion of Steel Plant (9.7 MTPA to 11 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEFCC Letter no J-11011/691/2007-IA. II (I) dated March 01, 2016

- The Project informed that there shall be prior permission obtained for the concerned authorities in case of any medications, augmentation, and product mix change. The detail of production of various products for last three years is as follows:

Product	Unit	Capacity granted in EC	2014-15	2015-16	2016-17	2017-18
Hot Metal	MTPA	12.5	10.16	10.65	10.83	10.9
Crude Steel		11	9.33	9.96	10.0	10.0
Saleable Steel		10.8	9.07	9.70	9.71	9.8

- 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, PM_{2.5}, SO₂ and NO_x 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 online AAQMS have been commissioned to monitor PM₁₀, PM_{2.5}, SO₂, NO_x, CO, NH₃ continuously inside the Works. There is one mobile monitoring facility & 20 manual AAQMS located both inside the plant and also outside the plant area. Monitoring report is being submitted to JSPCB, CPCB and Regional Office.
- The monitoring data for the period April to September 2018 indicates that all the parameters (except PM₁₀ and PM_{2.5} in few occasions) are within the prescribed limit of NAAQS. PAHs, Lead and Ammonia are being done by CPCB recognized environment laboratory.
- The ambient air quality represents the status of environment, which includes impact of several external factors such as other industrial activities, traffic movement, commercial and domestic activities etc.

- iv. **Industrial wastewater shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended form time to time. The treated wastewater shall be utilized for plantation purpose.**

Compliance Status:

- Surface and ground water monitoring at various locations are being done and analysis reports also being sent to RO, MoEFCC and JSPCB.

- 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 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.

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 to all the workers who have already attended more than 40 years of age. The workers having age less than 40 years are under gone 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:

- Rain Water Harvesting structure of 38 Nos. has 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:

- 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 Centers. 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 (MoEFCC) 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 Waste Water Discharge and Others including Greenery, Online Monitoring, etc. The total budget for the same as allocated by TSL Board is ₹ 2340 Crores.
- The funds for capital investment on pollution control equipment are not diverted.

- x. 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 District Commissioner, Block Development Officer and Jamshedpur Notified Area Committee vide our letter no. EMD/C-41/32-34/16 dated March 04, 2016.

- 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 MoEFCC 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.

- 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 both in hard copy and by e-mail.

- 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 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.

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 (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. Prabhat Khabar (Hindi) and The Telegraph (English) on March 08, 2016. The same has also been informed to the regional office of MoEFCC 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:

- The final approval Consent to Operate for Steel Plant issued from JSPCB having Ref No. JSPCB/HO/RNC/CTO-975929/2016/1078 dated 2016-12-27 of the project by the concerned authorities is enclosed as **Annexure-5**.

Annexure-1

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 Dry Fogging Water sprinkling Fabric filter based DE system Bag Filters Catchpit for storage of storm water
2	Coke Ovens	
	Battery # 5,6 & 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 (under construction)
	Coke Oven By Product Plant	De-Sulphurisation 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
4	Lime Plant	
	Process and dedusting	Bag Filters
	Stock Pile	DS System
	Track Hopper	DS System

Compliance Status of Environmental Clearance of Expansion of Steel Plant (9.7 MTPA to 11 MTPA, Crude Steel Production) at Tata Steel Works, Jamshedpur, District East Singhbhum, Jharkhand vide MoEFCC Letter no J-11011/691/2007-IA. II (I) dated March 01, 2016

	Wagon Tippler	DS System
5	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
6	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
7	Power Plants	
	PH# 3	Effluent Treatment Plant
	PH# 4	Electrostatic Precipitators Effluent Treatment Plant
	PH# 5	Effluent Treatment Plant
8	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 -2

Up to Date Status of Environmental Upgradation Project

1. Stack Emission Reduction Progress Status

SL	Facility description in Mar'17 CEC	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	G Blast Furnace APC System	Under progress	Feb'20
11	LD#1 Secondary Emissions	Under progress	Dec'21
12	LD#2 Secondary Emissions	Under progress	March'19
13	Lime Plant De-dusting System	Under progress	Nov'19
14	Lime Plant Process Bag-Filter (waste gas system)	Under progress	Dec'18
15	SP# 1 De-dusting System (1 ESP and 2 bag-filters)	Under progress	Jan'19
16	SP# 4 Waste Gas ESP	Under progress	Jun'19

2. Fugitive dust control – Progress Status

SL	Facility description in Mar'17 CEC	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	Under progress	Jan'19
21	Dust Extraction (DE) System at Misc. area (RMBB#1 & G BF surroundings and Diamond crossing area)	Under progress	March'19
22	Dust Extraction (DE) System at RMBB#1	Under progress	Dec'18
23	Dust Extraction (DE) System at RMBB#2	Under progress	Feb'19

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 - MRSP	Completed	Jan'14
6	Blast furnace Sludge Drying	Under progress	Dec'18
7	Revert Homogenization	Under progress	
8	Revert Mix Feeding System to RMBB #1 & 2	Under progress	
9	Infrastructure development for LD Slag Dumping at Bhatkunda	Under progress	May'19

4. Zero water discharge Progress Status

SL	Facility description in Mar'17 CEC	Status	Completion date
1	a) Tuiladungri (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	Rain Water Harvesting	Completed	Feb'14
7	Storage, pumping & distribution of recycled water for low end use	Completed	Jan'15
8	Susungariah Catch Pit (Pump No-1)	Completed	Jan'14
9	Waste Water Re-cycling from Ram Mandir Nallah	Completed	Jun'15
10	CETP Capacity Augmentation (Phase-II)	Concept under finalization.	Sept'21
11	Waste Water Recycling from BOD	Under Progress drawings under progress	Sept'21

Central Effluent Treatment Plant



Clarifier



Reverse Osmosis Building



Reverse Osmosis Plant



Side stream filter of CETP

Upgradation of ESPs



Sinter Plant 1 Waste Gas ESP



Sinter Plant 2 Waste Gas ESP



Sinter Plant 2 Refurbished ESP



Sinter Plant 3 Refurbished ESP



Sinter Plant 3 New Waste Gas ESP



Sinter Plant 2 New Waste Gas ESP

Annexure -3

**Status of Hazardous and Other Waste Generation and Utilization
(April to October 2018)**

Sl.	Particulars	Generation	Internal	External Cons. & Sales	Total Utilization	Utilization
A	Process Solid Waste	599,343	518,030	33,821	551,851	92%
1	Flue Dust	98,594	67,071		67,071	68%
2	GCP Sludge	89,197	53,509	23,202	76,711	86%
3	Lime Fines	120,815	109,451	7,893	117,343	97%
4	LD Sludge	190,589	190,209		190,209	100%
5	Kiln Dust	10,501	7,305		7,305	70%
6	Mill Scale	51,838	56,157		56,157	108%
7	Mill Sludge	1,505	1,680		1,680	112%
8	Iron Oxide	3,754	2,582	2,727	5,309	141%
9	Fe bearing muck	5,928	5,484		5,484	93%
10	ESP/DE Dust	26,221	24,182		24,182	92%
11	Coal Tar Sludge	400	400		400	
B	LD Slag	1,011,826	361,239	492,926	854,165	
1	LD Slag Metallic	1,011,826	214,152		214,152	84%
2	LD Slag Non Metallic		147,087	492,926	640,013	
C	Blast Furnace Slag	2,432,921	-	2,343,968	2,343,968	
1	Granulated BF Slag	2,283,717		2,343,968	2,343,968	103%
2	Air Cooled BF Slag	149,203	-		-	
D	Total	4,044,089	879,270	2,870,715	3,749,984	93%

MONITORING & ANALYSIS REPORT

April 2018 to September 2018

Tata Steel Limited, Jamshedpur
(MAIN WORKS & TOWN)

ENVIRONMENTAL MANAGEMENT DEPARTMENT
TATA STEEL LIMITED
JAMSHEDPUR

TATA STEEL LIMITED
WORKS, JAMSHEDPUR
LABORATORY - ENVIRONMENT MANAGEMENT DEPARTMENT
WORKS AMBIENT AIR QUALITY REPORT SUMMARY FROM APR-18 to SEPT-18

Sample Location	Parameter	UoM	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
PH#6 Gate	Particulate Matter, PM ₁₀	µg/m ³	151	124	125	113	106	111
	Particulate Matter, PM _{2.5}	µg/m ³	69	62	64	60	55	61
	Sulphur Dioxide (SO ₂)	µg/m ³	30	19	22	21	19	15
	Nitrogen Dioxide, (NO ₂)	µg/m ³	38	26	28	30	25	19
	Carbon Monoxide(CO)	µg/m ³	0.7	0.5	0.5	0.50	0.7	0.6
	Ammonia (NH ₃)	µg/m ³	57.7	26.7	53.0	43.67	44.7	43
	Ozone (O ₃)	µg/m ³	31.0	31.0	30.0	21.00	28.5	28
	Lead (Pb)	µg/m ³	0.31	0.21	0.28	0.37	0.33	0.36
	Arsenic (As)	ng/m ³	0.04	0.02	0.03	0.03	0.04	0.03
	Nickel (Ni)	ng/m ³	0.56	0.45	0.38	0.27	0.23	0.40
	Benzene (C ₆ H ₆)	µg/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo alpha Pyrene (BaP)	ng/m ³	<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.

ND - Not Done


 Sr. Manager
 Environment Management

TATA STEEL LIMITED, JAMSHEDPUR
LABORATORY - ENVIRONMENT MANAGEMENT DEPARTMENT
TOWNSHIP AMBIENT AIR QUALITY REPORT SUMMARY FROM APR-18 to SEPT-18

Sample Location	Parameter	UoM	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
River Pump House	Particulate Matter, PM ₁₀	µg/m ³	98.4	94.3	85.5	67	81	93.9
	Particulate Matter, PM _{2.5}	µg/m ³	56.9	57.2	50.9	39	41	55.8
	Sulphur Dioxide (SO ₂)	µg/m ³	16.3	20.0	16.0	11	13	10.4
	Nitrogen Dioxide, (NO ₂)	µg/m ³	22.4	25.4	21.6	16	19	13.8
	Carbon Monoxide(CO)	mg/m ³	0.2	0.5	0.5	0.41	0.29	0.57
	Ammonia (NH ₃)	µg/m ³	22.3	34.3	40.1	42	27	58.3
	Ozone (O ₃)	µg/m ³	26	29.0	29.0	24	17	22.5
	Lead (Pb)	µg/m ³	0.21	0.23	0.38	0.20	0.13	0.25
	Arsenic (As)	ng/m ³	0.02	0.02	0.02	0.01	0.01	0.010
	Nickel (Ni)	ng/m ³	0.33	0.38	0.24	0.51	0.21	0.34
	Benzene (C ₆ H ₆)	µg/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo alpha Pyrene (BaP)	ng/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Southern Sewage Treatment Plant	Particulate Matter, PM ₁₀	µg/m ³	113.8	98.7	107.3	89	78.6	78.6
	Particulate Matter, PM _{2.5}	µg/m ³	61.9	55.9	54.5	49	47.2	51.7
	Sulphur Dioxide (SO ₂)	µg/m ³	20.9	22.0	15.0	15	13.6	10.4
	Nitrogen Dioxide, (NO ₂)	µg/m ³	26.9	28.4	18.9	19	18.5	13.9
	Carbon Monoxide(CO)	mg/m ³	0.5	0.5	0.4	0.37	0.5	0.53
	Ammonia (NH ₃)	µg/m ³	46.0	25.0	44.7	47	31.0	51.7
	Ozone (O ₃)	µg/m ³	29.5	39.0	25.0	31	19.5	22.0
	Lead (Pb)	µg/m ³	0.22	0.35	0.34	0.20	0.3	0.28
	Arsenic (As)	ng/m ³	0.01	0.03	0.02	0.02	0.013	0.013
	Nickel (Ni)	ng/m ³	0.34	0.29	0.36	0.41	0.4	0.31
	Benzene (C ₆ H ₆)	µg/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo alpha Pyrene (BaP)	ng/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Golmuri	Particulate Matter, PM ₁₀	µg/m ³	94.9	99.9	93.1	66	82.7	86
	Particulate Matter, PM _{2.5}	µg/m ³	58.8	59.5	51.0	50	53.0	54
	Sulphur Dioxide (SO ₂)	µg/m ³	22.1	14.2	15.5	11	10.0	10
	Nitrogen Dioxide, (NO ₂)	µg/m ³	28.3	18.6	21.2	17	15.7	14
	Carbon Monoxide(CO)	mg/m ³	0.3	0.3	0.3	0.42	0.5	0.55
	Ammonia (NH ₃)	µg/m ³	21.7	23.3	44.7	52	40.7	55
	Ozone (O ₃)	µg/m ³	22	38.5	21.0	21	19.5	22
	Lead (Pb)	µg/m ³	0.30	0.23	0.22	0.21	0.5	0.27
	Arsenic (As)	ng/m ³	0.03	0.01	0.01	0.01	0.020	0.01
	Nickel (Ni)	ng/m ³	0.42	0.31	0.28	0.32	0.4	0.33
	Benzene (C ₆ H ₆)	µg/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo alpha Pyrene (BaP)	ng/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

TATA STEEL LIMITED, JAMSHEDPUR
LABORATORY - ENVIRONMENT MANAGEMENT DEPARTMENT
TOWNSHIP AMBIENT AIR QUALITY REPORT SUMMARY FROM APR-18 to SEPT-18

Sample Location	Parameter	UoM	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18
	Particulate Matter, PM ₁₀	µg/m ³	98.4	94.3	85.5	67	81	93.9
	Particulate Matter, PM ₁₀	µg/m ³	154.7	108.1	77.1	86	69.3	86
	Particulate Matter, PM _{2.5}	µg/m ³	66.7	58.6	49.1	44	49.3	54
	Sulphur Dioxide (SO ₂)	µg/m ³	21.6	17.9	17.3	11	10.3	10
	Nitrogen Dioxide, (NO ₂)	µg/m ³	38.7	23.4	23.1	18	16.8	14
	Carbon Monoxide(CO)	mg/m ³	0.7	0.5	0.3	0.43	0.4	0.55
Burmamines	Ammonia (NH ₃)	µg/m ³	26.7	25.3	32.3	56	50.7	55
	Ozone (O ₃)	µg/m ³	25.5	29.5	22.0	20	28.0	22
	Lead (Pb)	µg/m ³	0.27	0.41	0.22	0.19	0.3	0.27
	Arsenic (As)	ng/m ³	0.02	0.02	0.02	0.02	0.013	0.01
	Nickel (Ni)	ng/m ³	0.47	0.57	0.39	0.42	0.4	0.33
	Benzene (C ₆ H ₆)	µg/m ³	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo alpha Pyrene (BaP)	ng/m ³	<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.

ND - Not Done



Sr. Manager
 Environment Management

TATA STEEL LIMITED

WORKS, JAMSHEDPUR

ENVIRONMENTAL MANAGEMENT DEPARTMENT

MANUAL STACK PARTICULATE MATTER EMISSION MONITORING REPORT (mg/Nm³)

MANUAL STACK MONITORING REPORT SUMMARY FROM Apr-18 to Sep-18

Stack Location	Apr-18			May-18			Jun-18			Jul-18			Aug-18			Sep-18		
	SO ₂	Nox	PM	SO ₂	Nox	PM	SO ₂	Nox	PM	SO ₂	Nox	PM	SO ₂	Nox	PM	SO ₂	Nox	PM
Battery#5	--	--	--	--	--	--	--	--	35	--	--	37	--	--	--	--	--	--
Battery#6	--	--	--	--	--	--	--	--	49	--	--	25	--	--	--	--	--	--
Battery#10	--	--	22	--	--	35	--	--	--	--	--	54	313	17	--	--	--	--
Battery#11	--	--	--	194.4	142.2	24	--	--	29	--	--	--	28	332	22	--	--	--
SP#1 waste gas	--	--	27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	39
SP#2 waste gas	133	86	45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	40
SP#3 DD	--	--	--	--	--	13	--	--	2	--	--	--	--	--	--	--	--	--
F BF PCI	--	--	--	102	46	6	--	--	--	--	--	6	--	--	17	--	--	6
C BF STOVE	--	--	--	--	--	--	--	109	13	--	--	--	--	--	--	--	--	48
G BF PCI#1	--	--	25	26.3	64.2	25	--	--	--	--	--	--	--	--	33	--	--	28
G BF PCI#2	--	--	--	21.5	67.2	2	--	--	5	--	--	12	--	--	17	--	--	--
G BF PCI#3	--	--	25	24.5	78.1	32	--	--	31	--	--	30	--	--	15	--	115	18
G BF STOVE	--	--	34	--	--	--	--	--	--	--	--	24	--	28	32	--	17	29
H BF PCI-1 (OLD)	--	--	--	--	--	--	--	--	--	--	--	25	--	--	--	--	--	49
H BF PCI-2 (NEW)	--	--	--	--	--	--	--	--	13	--	--	22	--	--	--	--	--	25
H BI.Furce Cast House	--	--	--	--	--	5	--	--	4	--	--	--	--	--	--	--	--	11
H BI.Furce Stock House	--	--	10	--	--	--	--	--	1	--	--	--	--	--	--	--	--	23
I BI.Furce Cast House	--	--	--	--	--	8	--	--	5	--	--	--	2	5	--	--	--	6
I BI.Furce Stock House	--	--	13	--	--	8	--	--	--	--	--	15	--	2	8	--	--	7
LD #1 Sec. Emission	--	--	--	--	--	6	--	--	--	--	--	--	--	--	5	--	--	6
LD #1 LF #2	--	--	36	--	--	--	--	--	28	--	--	23	--	--	--	--	--	--
LD #1 LF #3	--	--	11	--	--	--	--	--	--	--	--	35	--	--	--	--	--	--
LD #2 Sec. Emission 1	--	18	6	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--
LD #2 Sec. Emission 2	--	15	3	--	--	--	--	--	--	--	--	--	--	--	3	--	--	7
LD#2 LF#1	--	--	7	--	--	--	--	--	--	--	--	--	--	--	13	--	--	8
LD #3 Sec. Emission	--	--	--	--	--	2	--	--	--	2	3	7	--	--	--	--	--	2
Pellet Pla ceral dedusting	--	--	--	--	--	--	--	--	4	--	--	3	--	--	--	--	--	--
Pellet Pla combined dryer	--	--	23	--	--	--	--	--	--	--	--	12	170.4	89.6	17	--	--	--
Pellet Pla WB Exahust ESP (Duct no 41)	--	--	39	--	--	31	--	--	24	11.8	39.2	30	--	--	22	--	--	29
Pellet Pla WB Exahust ESP (Duct no 51)	--	--	19	16	276	31	--	--	22	10.6	47.3	23	--	--	30	--	--	34
Pellet Pla WB Exahust ESP (Duct no 61)	--	--	15	--	--	--	--	--	21	--	--	13	2	3	20	--	--	27
Pellet Pla BALL MILL#1	--	--	--	--	--	21	--	--	--	--	--	32	--	--	--	--	--	--
Pellet Pla BALL MILL#2	--	5	21	--	--	19	--	--	--	--	--	34	--	--	--	--	--	37
Lime Pla MK# 1	--	--	--	--	--	--	--	--	--	--	254	4	18	40	5	--	--	--
Lime Pla MK# 2	--	--	--	--	212	11	--	--	4	--	--	5	--	--	--	--	--	3
Lime Pla MK# 3&4	--	--	--	--	--	--	--	--	--	--	--	8	29	126	5	18	58	5
Lime Pla MK# 6	--	--	8	--	--	--	42	116	7	--	318	8	--	--	--	--	--	5
Lime Pla MK# 7	--	--	4	--	28	18	--	--	--	--	--	7	255	144	1	--	--	6
Lime pla DE-15	--	--	6	--	--	14	--	--	--	--	--	42	--	--	4	--	--	3
Lime pla DE-1B	--	--	6	--	--	2	--	--	9	--	--	0	--	--	6	--	--	4
Lime Pla DE#12	--	--	7	--	--	7	--	--	11	--	--	8	--	--	6	--	--	2
Lime Pla MK# 8	--	--	--	--	32	8	--	--	17	9	--	7	--	--	--	--	100	9
Lime Pla MK# 9	--	33	14	--	--	--	--	--	15	7	--	8	8	19	5	--	355	9
Lime Pla DE# 9	--	--	9	--	--	8	--	--	8	--	--	2	--	--	--	--	--	5
Power House#3 Boiler 5	--	--	--	--	--	--	--	--	15	--	--	--	--	--	--	--	--	24
Power House#3 Boiler 7	--	--	--	--	--	--	--	--	24	--	--	--	--	--	23	--	--	26
Power House#3 Boiler 8	--	--	--	--	--	--	21	--	26	--	--	--	--	--	19	--	--	26
Power House#5 Boiler A	--	--	--	--	--	--	--	--	7	--	--	--	--	--	--	--	--	23
Power House#5 Boiler B&C	--	--	--	--	--	--	--	--	8	--	--	7	--	--	--	--	79	23
Power House#4 Boiler 1&2	--	5	44	--	--	--	--	--	--	--	--	28	--	--	--	--	--	5
Power House#4 Boiler 4	--	--	--	--	--	--	--	--	29	--	--	34	--	--	31	--	--	34
WRM RHF	--	--	--	--	--	--	--	--	--	87	36	--	--	--	--	--	60	40
NBM RHF	218	145	37	--	--	--	--	--	--	--	--	--	50	115	35	--	--	--
Merchant Mill RHF	--	--	--	--	--	--	--	--	24	--	--	33	--	--	25	--	--	31

Note - Standards applicable as per Environment (Protection) (Third Amendment) Rules, 2012 issued in Gazette of India Notification no. GSR 277 (E) - Dated March 31, 2012


Sr Manager
 Environment Management

TATA STEEL LIMITED

WORKS, JAMSHEDPUR

ENVIRONMENT MANAGEMENT DEPARTMENT

HOURLY AVERAGE OF ONLINE STACK PARTICULATE MATTER EMISSION MONITORING

ONLINE STACK MONITORING REPORT SUMMARY FROM Apr-18 to Sep-18

Stack Location	Apr-18			May-18			Jun-18			Jul-18			Aug-18			Sep-18		
	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM
Battery#5	141	136	15	144	136	15	141	136	9	139	136	17	140.6	135.6	16	-	-	-
Battery#6	108	180	35	108	183	31	108	180	27	108	178	22	107.7	179.3	22	-	-	-
Battery#7	151	223	33	150	200	30	151	169	27	-	-	-	-	-	-	-	-	-
Battery#8	174	216	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Battery#9	291	215	20	-	-	-	-	-	-	-	-	-	-	-	-	83.4	186	26
Battery#10	-	-	12	-	-	23	-	-	13	-	-	13	343.8	-	16	64.5	-	9
Battery#10 Pushing &De dusting	-	-	-	-	-	2	-	-	-	-	-	2	300.8	-	5	-	-	4
Battery#11	-	-	35	-	-	40	-	-	33	0.3	0.4	34	-	-	29	379	0.4	39
Battery#11 Pushing &De dusting	-	-	8	-	-	8	-	-	8	-	-	7	-	-	8	-	-	8
SP#2 waste gas	146	132	36	481	-	49	226	-	40	89	40	33	32.5	39.4	26	-	-	49
SP#2 Dedusting	-	-	13	-	-	9	-	-	14	-	-	18	-	-	6	-	-	19
SP#2 High Line	-	-	5	-	-	6	-	-	6	-	-	6	-	-	8	-	-	4
SP#3 DD	-	-	5	-	-	4	-	-	8	-	-	3	-	-	5	-	-	7
HMPP	-	-	-	-	-	6	-	-	-	-	-	-	-	-	10	-	-	14
E BF SH & CH	-	-	-	-	-	-	-	-	-	-	-	5	-	-	5	-	-	5
F Bl.Furnace cast House	-	-	10	-	-	10	-	-	8	-	-	7	-	-	6	-	-	6
F BF PCI	-	-	-	-	-	-	-	-	-	-	-	12	-	-	8	-	-	7
G Bl. Furnace stock House	-	-	40	-	-	40	-	-	43	-	-	44	-	-	-	-	-	49
G Bl.Furnace cast House	-	-	11	-	-	14	-	-	13	-	-	15	-	-	17	-	-	26
GBF PCI 1	-	-	20	-	-	18	-	-	15	-	-	18	-	-	23	-	-	26
GBF PCI 2	-	-	4	-	-	-	-	-	4	-	-	4	-	-	6	-	-	8
GBF PCI 3	-	-	19	-	-	23	-	-	21	-	-	19	-	-	13	-	-	13
H BF SH	-	-	16	-	-	12	-	-	9	-	-	11	-	-	11	-	-	13
H BF CH	-	-	13	-	-	15	-	-	-	-	-	4	-	-	4	-	-	4
H BF SH DE	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0
H BF PCI 1(OLD)	-	-	-	-	-	10	-	-	-	-	-	16	-	-	9	-	-	11
H BF PCI 2(NEW)	-	-	-	-	-	4	-	-	-	-	-	4	-	-	4	-	-	5
I BF SH	-	-	6	-	-	8	-	-	8	-	-	10	-	-	7	-	-	8
I BF CH	-	-	6	-	-	6	-	-	5	-	-	6	-	-	7	-	-	5
I BF PCI	-	-	5	-	-	15	-	-	12	-	-	17	-	-	10	-	-	9
LD#1 LF#1	-	-	-	-	-	6	-	-	8	-	-	17	-	-	16	-	-	21
LD#1 LF#2	-	-	14	-	-	11	-	-	24	-	-	15	-	-	37	-	-	37
LD#1 LF#3	-	-	9	-	-	11	-	-	10	-	-	16	-	-	23	-	-	36
LD#1 Sec. Emission	-	-	7	-	-	-	-	-	12	-	-	8	-	-	5	-	-	8
LD#2 LF#1	-	-	6	-	-	-	-	-	15	-	-	20	-	-	-	-	-	31
LD#2 LF#2	-	-	9	-	-	-	-	-	26	-	-	26	-	-	6	-	-	3
LD # 2 Sec. Emission 1	-	-	23	-	-	-	-	-	36	-	-	9	-	-	5	-	-	5
LD # 2 Sec. Emission 2	-	-	18	-	-	-	-	-	12	-	-	11	-	-	12	-	-	3
LD#02-DE #02	-	-	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	6
LD#02-DE #03	-	-	-	-	-	-	-	-	-	-	-	14	-	-	4	-	-	-
LD#02-DE #04	-	-	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	6
LD#02-DE #05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
LD#02-DE #06	-	-	-	-	-	-	-	-	-	-	-	6	-	-	6	-	-	5
LD#02-DE #07	-	-	-	-	-	-	-	-	-	-	-	4	-	-	5	-	-	5
LD#02-DE #09	-	-	-	-	-	-	-	-	-	-	-	3	-	-	6	-	-	9

TATA STEEL LIMITED

WORKS, JAMSHEDPUR

ENVIRONMENT MANAGEMENT DEPARTMENT

HOURLY AVERAGE OF ONLINE STACK PARTICULATE MATTER EMISSION MONITORING

ONLINE STACK MONITORING REPORT SUMMARY FROM Apr-18 to Sep-18

Stack Location	Apr-18			May-18			Jun-18			Jul-18			Aug-18			Sep-18		
	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM	SO2	Nox	PM
LD#3 LF#1	-	-	13	-	-	11	-	-	15	-	-	10	-	-	14	-	-	13
LD#3 LF#2	-	-	10	-	-	10	-	-	10	-	-	9	-	-	9	-	-	9
LD#3 Sec. Emission	-	-	13	-	-	14	-	-	15	-	-	14	-	-	7	-	-	8
Pellet Plant Wind Box	-	-	23	-	-	22	-	-	-	-	-	20	-	-	26	-	-	33
Pellet Plant Hood	-	-	14	-	-	14	-	-	10	-	-	8	-	-	21	-	-	33
Pellet Plant central dedusting	-	-	9	-	-	-	-	-	10	-	-	5	-	-	5	-	-	5
Pellet Plant combined dryer	-	-	14	-	-	-	-	-	14	-	-	16	-	-	-	-	-	16
Pellet Plant Grinding Mill 1	-	-	10	-	-	15	-	-	18	-	-	23	-	-	34	-	-	21
Pellet Plant Grinding Mill 2	-	-	14	-	-	14	-	-	15	-	-	16	-	-	26	-	-	25
Merz Klin#02	-	-	9	-	-	-	-	-	10	-	-	6	-	-	3	-	-	5
Merz Klin#03	-	-	4	-	-	-	-	-	-	-	-	9	-	-	5	-	-	5
Merz Klin#05	-	-	4	-	-	-	-	-	14	-	-	15	-	-	12	-	-	11
Merz Klin#06	-	-	-	-	-	-	-	-	-	-	-	7	-	-	5	-	-	5
Lime Plant MK# 7	-	-	7	-	-	6	-	-	6	-	-	8	-	-	7	-	-	7
Lime Plant MK# 7 DE 15	-	-	7	-	-	4	-	-	-	-	-	6	-	-	4	-	-	4
Lime Plant MK# 8	-	-	4	-	-	3	-	-	-	-	-	7	-	-	7	-	-	7
MK 8 DE#1B	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-	7
Lime Plant MK# 9	-	-	9	-	-	6	-	-	9	-	-	5	-	-	6	-	-	9
MK 9 DE#09	-	-	-	-	-	-	-	-	-	-	-	9	-	-	3	-	-	3
Power House#4 Boiler 4	135	143	27	-	-	-	-	-	-	-	-	-	38.5	140.6	23	18.7	24	34
PH#03-Boiler#07&08	11	-	32	-	-	-	-	-	-	-	-	-	-	-	-	50	11.4	23
PH#05-Boiler#A	-	-	-	-	-	-	-	-	17	99	89	19	87.3	5.2	17	83.1	5.1	20
PH#05-Boiler#B&C	-	-	-	-	-	-	-	-	-	87	-	13	98.0	-	12	92.6	5	10

Note - Standards applicable as per Environment (Protection) (Third Amendment) Rules, 2012 issued in Gazette of India Notification no. GSR 277 (E) -Dated March 31, 2012


Sr. Manager
Environment Management

**TATA STEEL LIMITED ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
 AMBIENT NOISE MONITORING REPORT - JAMSHEDPUR TOWN
 NOISE LEVEL MONITORING REPORT SUMMARY FROM APR-18 TO SEPT-18**

Sl. No.	Area	Apr-18		May-18		Jun-18		Jul-18		Aug-18		Sep-18	
		Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time	Day Time	Night Time
A) SILENCE ZONE													
1	TMH (Near Status)	67	63	65	63	65	59	67	52	63	50	60	54
2	JUSCO School Kadma	64	62	66	65	62	57	67	64	66	53	70	52
3	Kerala Public School Bistupur	68	65	68	65	66	52	70	65	61	51	60	51
4	South Park School Bistupur	61	60	62	59	61	56	65	53	59	52	60	49
5	Old Court Area (Jubilee Park)	72	59	73	59	70	57	80	57	69	58	66	59
B) RESIDENTIAL ZONE													
1	Circuit House Area (North)	67	65	64	60	67	55	59	52	70	54	70	51
2	B.H. Area	65	59	64	59	63	50	69	56	61	60	64	55
3	Farm Area	65	59	62	58	68	51	65	51	60	57	62	58
4	Baridih Basti	72	68	67	60	71	57	71	63	74	64	70	62
5	Carriage Colony Burma Mines	69	59	63	58	67	50	70	56	68	51	69	57
6	Agrico Colony	71	64	64	59	71	54	72	61	68	60	63	55
7	South Park	64	63	65	63	65	52	69	51	63	57	61	54
C. COMMERCIAL ZONE													
1	Sakchi Market	72	69	69	66	72	61	73	62	72	54	72	57
2	Golmuri Market	73	64	68	60	71	50	70	50	70	54	70	51
3	Burma Mines Market	74	66	70	60	69	56	63	52	73	53	71	52
4	Apna Bazar Bistupur	69	65	70	62	73	62	73	59	70	61	73	61
5	'R' Road Bistupur (behind Nalanda Hotel)	73	62	72	64	70	60	67	58	69	51	65	51
D) INDUSTRIAL ZONE													
1	EAST SIDE/ near HSM Drain	75	71	62	63	69	52	73	55	71	54	68	56
2	WEST SIDE /Near Ramm Mandir	79	68	71	64	70	57	66	53	62	58	65	57
3	NORTH/ Garam Nalla drain	74	70	69	66	73	61	73	63	69	54	70	57
4	NORTH EAST slag road gate	70	69	70	66	66	64	70	67	74	60	63	58
5	NORTH WEST/General Office	73	69	73	66	73	68	66	69	70	57	71	59
6	SOUTH EAST/Burmamines Gate	71	73	71	70	71	70	75	63	71	50	71	57
7	SOUTH WEST/Jugsali Drain	76	74	76	68	76	65	60	54	73	53	67	52

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


 Sr. Manager
 Environment Management

TATA STEEL LIMITED

ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY

WORKS DRAINS EFFLUENT QUALITY TEST REPORT SUMMARY FROM APR-18 to SEP- 18

Sample Location	Parameter	UoM	Apr-18			May-18			Jun-18			Jul-18			Aug-18			Sep-18		
			Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
Susun Charia Drain	Ammonical Nitrogen (as N)	mg/L	34.4	1.6	6.4	18.6	6.3	10.2	17.8	6.6	13.3	20.1	6.3	11.1	14.4	1.9	8.9	18.7	7.0	11.0
	Free Cyanide (as CN-)	mg/L	0.16	0.10	0.14	0.16	0.08	0.12	0.16	0.10	0.12	0.15	0.10	0.13	0.18	0.11	0.14	0.18	0.11	0.15
	Oil & Grease	mg/L	2.4	1.0	1.7	2.8	1.4	1.9	1.8	1.0	1.4	2.2	1.2	1.6	1.8	1.0	1.4	4.8	3.2	4.0
	Total Suspended solids	mg/L	89	24	47	60	15	38	81	16	50	84	26	51	63	26	44	79	7	41
	Chemical Oxygen Demand, COD	mg/L	78	35	57	229	70	111	179	83	122	192	51	104	123	18	61	95	16	69
	Biological Oxygen Demand, BOD	mg/L	19	13	16	19	10	13	22	9	15	22	8	14	16	3	6	13	9	11
	pH	-	8.32	7.52	7.94	8.32	7.95	8.14	8.36	7.39	8.02	8.28	7.25	7.96	8.17	7.40	7.92	8.40	7.99	8.10
	Phenol	mg/L	0.37	0.08	0.25	0.79	0.10	0.50	0.78	0.10	0.26	0.74	0.08	0.31	0.74	0.08	0.31	0.40	0.02	0.18
		Parameter	UoM	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min
Jugsalai Drain	Ammonical Nitrogen (as N)	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Free Cyanide (as CN-)	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Oil & Grease	mg/L	0.8	0.2	0.4	1.0	0.4	0.6	1.2	0.2	0.5	1.4	0.4	0.8	1.8	0.6	1.1	1.2	0.1	0.7
	Total Suspended solids	mg/L	44	11	22	47	10	21	42	10	20	59	10	18	18	10	14	16	9	13
	Chemical Oxygen Demand, COD	mg/L	25	13	20	192	67	112	127	40	73	77	30	55	58	15	33	43	14	24
	Biological Oxygen Demand, BOD	mg/L	15	7	11	18	6	12	22	7	15	20	12	17	17	6	10	16	6	10
	pH	-	8.28	7.05	7.54	8.31	7.42	7.78	8.18	7.16	7.66	8.42	7.08	7.87	7.97	7.15	7.66	7.97	7.15	7.66
	Phenol	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
		Parameter	UoM	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min
Garam Nala Drain	Ammonical Nitrogen (as N)	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Free Cyanide (as CN-)	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Oil, & Grease	mg/L	NT	NT	NT	0.8	0.2	0.5	1.0	0.2	0.6	1.2	0.2	0.8	1.4	0.4	0.8	6.4	0.4	1.6
	Total Suspended solids	mg/L	NT	NT	NT	25	6	11	18	10	11	42	10	14	12	6	10	10	3	6
	Chemical Oxygen Demand, COD	mg/L	25	12	18	210	76	113	94	29	48	57	15	38	37	15	29	37	15	29
	Biological Oxygen Demand, BOD	mg/L	16	6	10	16	6	11	18	13	15	23	6	15	11	6	8	29	24	26
	pH	-	8.34	7.84	8.19	8.34	7.52	8.14	8.30	8.03	8.21	8.40	7.72	8.17	8.38	7.90	8.19	8.23	7.36	8.05
	Phenol	mg/L	NT	NT	NT	0.71	0.08	0.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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.


 Sr. Manager
 Environment Management

TATA STEEL LIMITED
ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY
WORKS DRAINS EFFLUENT QUALITY TEST REPORT SUMMARY FROM APR-18 to SEP- 18

Sample Location	Parameter	UoM	Apr-18			May-18			Jun-18			Jul-18			Aug-18			Sep-18			
			Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	
HSM Drain	Ammonical Nitrogen (as N)	mg/L	19.2	3.2	9.9	14.2	1.5	9.5	16.6	2.9	7.3	17.4	3.3	7.9	17.1	2.6	9.0	43.5	1.5	12.7	
	Free Cyanide (as CN-)	mg/L	0.15	0.07	0.13	0.16	0.08	0.13	0.15	0.03	0.10	0.14	0.06	0.09	0.16	0.07	0.11	0.19	0.03	0.11	
	Oil & Grease	mg/L	1.8	0.2	1.1	1.6	0.2	1.1	1.6	0.6	1.3	1.8	0.8	1.4	1.6	0.1	0.6	7.2	1.6	4.4	
	Total Suspended solids	mg/L	85	11	35	87	12	43	71	11	34	71	11	34	96	10	32	93	14	49	
	Chemical Oxygen Demand, COD	mg/L	86	43	59	194	76	107	177	64	102	199	35	98	148	28	64	88	22	61	
	Biological Oxygen Demand, BOD	mg/L	19	6	11	17	6	12	23	6	16	20	13	16	27	3	19	13	6	11	
	pH	-	8.27	7.86	8.11	8.33	7.40	8.15	8.34	7.90	8.14	8.31	7.52	8.05	8.34	7.76	8.16	8.46	7.93	8.20	
	Phenol	mg/L	0.25	0.05	0.17	0.61	0.08	0.18	0.63	0.11	0.32	0.75	0.08	0.32	0.79	0.08	0.35	0.78	0.10	0.34	
	BOT TREATED	Parameter	UoM	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
		Ammonical Nitrogen (as N)	mg/L	4.6	1.0	2.3	44.6	25.9	38.0	42.1	32.1	37.7	45.1	24.3	34.4	45.6	29.3	39.6	47.0	27.8	41.5
Free Cyanide (as CN-)		mg/L	0.15	0.05	0.12	0.15	0.12	0.13	0.17	0.14	0.15	0.16	0.12	0.15	0.18	0.16	0.17	0.19	0.17	0.18	
Oil & Grease		mg/L	1.6	0.2	0.7	1.8	0.2	0.8	2.0	0.8	1.3	2.0	1.2	1.6	1.8	1.2	1.5	8.8	4.1	5.7	
Total Suspended solids		mg/L	86	34	72	89	25	61	88	48	69	90	44	69	88	32	59	78	15	41	
Chemical Oxygen Demand, COD		mg/L	75	64	70	215	203	208	228	166	210	238	223	229	235	180	213	238	192	216	
Biological Oxygen Demand, BOD		mg/L	21	11	18	22	10	19	21	11	18	21	10	14	21	6	15	21	10	14	
pH		-	8.23	7.17	7.56	8.30	7.22	7.86	8.13	7.43	7.80	8.06	7.28	7.70	8.15	7.23	7.63	8.30	7.00	7.72	
Phenol		mg/L	0.46	0.14	0.24	0.51	0.08	0.22	0.41	0.08	0.23	0.61	0.10	0.29	0.61	0.10	0.29	0.48	0.10	0.26	

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.


Sr. Manager
Environment Management

TATA STEEL LIMITED

GROUNDWATER MONITORING - Done by NABL/ MoEF Certified Lab (APR-18 to SEP-18)

Month	Sampling Locations	Chemical Oxygen Demand	Biological Oxygen Demand (5 Days at 20oC)	Residual Chlorine as Cl	Sulphide as S ²⁻	Phenolic Compounds as Phenols	Total Cyanide	Free Cyanide	Thio Cyanide	Arsenic as As	Mercury	Aluminum	Vanadium	PAH
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May-18	Baganhattu Bore water	3.6	< 2.0	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	SonariBore water	5.2	< 2.0	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Parvati GhatBore water	8	2.2	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jugsalai Bore Water	4	< 2.0	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jemco Bore Water	6	< 2.0	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Baganhattu Bore water	32	12	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
Jun-18	SonariBore water	4	< 2.0	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Parvati GhatBore water	6	3.2	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jugsalai Bore Water	16	4.8	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jemco Bore Water	12	4.2	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Baganhattu Bore water	32	12.4	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	SonariBore water	6	< 2.0	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
Jul-18	Parvati GhatBore water	8	3	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jugsalai Bore Water	10	4	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jemco Bore Water	16	6	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Baganhattu Bore water	24	9	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	SonariBore water	8	3.2	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Parvati GhatBore water	6	3	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
Aug-18	Jugsalai Bore Water	16	6.2	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jemco Bore Water	10	4	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Baganhattu Bore water	4	< 2.0	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	SonariBore water	8	2.1	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Parvati GhatBore water	12	4	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
	Jugsalai Bore Water	14	4.4	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent
Sep-18	Jemco Bore Water	6	2.4	< 1.0	Nil	< 0.001	< 0.01	< 0.01	< 0.01	< 0.005	< 0.001	< 0.03	< 0.01	Absent


 Sr. Manager
 Environment Management

TATA STEEL LIMITED

GROUNDWATER MONITORING - Done by NABL/ MoEF Certified Lab (APR-18 to SEP-18)


Month	Sampling Locations	Nitrate Nitrogen as N mg/L	Nitrite Nitrogen as N mg/L	Fluorides as F ⁻ mg/L	Silica as SiO ₂ mg/L	Iron as Fe mg/L	Manganese as Mn mg/L	Hexavalent Chromium as Cr+6 mg/L	Copper as Cu mg/L	Total Chromium as Cr mg/L	Cadmium as Cd mg/L	Nickel as Ni mg/L	Zinc as Zn mg/L	Lead as Pb mg/L	Nitrogen (Ammonia) as N mg/L	Total Nitrogen mg/L	Oil & Grease mg/L
May-18	Baganhattu Bore water	4.3	0.14	0.56	12	0.34	<0.05	<0.05	0.02	<0.05	<0.001	0.06	<0.5	<0.001	0.24	6.52	<1.0
	Sonari Bore water	4.2	0.04	0.04	13.52	0.28	<0.05	<0.05	0.028	<0.05	<0.001	0.09	<0.5	<0.001	0.2	7.24	<1.0
	Parvati Ghat Bore water	5.1	0.03	0.61	8.31	0.18	<0.05	<0.05	0.03	<0.05	<0.001	0.14	<0.5	<0.001	0.22	6.82	<1.0
	Jugsalai Bore Water	4.5	0.012	0.57	12.02	0.18	<0.05	<0.05	0.03	<0.05	<0.001	0.06	<0.5	<0.001	0.21	7.42	<1.0
	Jemco Bore Water	5.3	0.21	0.71	11.23	0.39	<0.05	<0.05	0.02	<0.05	<0.001	0.08	<0.5	<0.001	0.23	6.82	<1.0
Jun-18	Baganhattu Bore water	4.5	0.02	0.9	17.5	0.34	<0.05	<0.05	0.023	<0.05	<0.001	0.055	<0.5	<0.001	0.32	7.44	<1.0
	Sonari Bore water	5.6	0.04	0.92	8.6	0.28	<0.05	<0.05	0.03	<0.05	<0.001	0.08	<0.5	<0.001	0.25	6.95	<1.0
	Parvati Ghat Bore water	6.5	0.15	1.7	21.9	0.18	<0.05	<0.05	0.035	<0.05	<0.001	0.11	<0.5	<0.001	0.32	7.1	<1.0
	Jugsalai Bore Water	5.8	0.07	1.6	10.1	0.18	<0.05	<0.05	0.033	<0.05	<0.001	0.052	<0.5	<0.001	0.25	7.25	<1.0
	Jemco Bore Water	6.4	0.05	1.4	9.7	0.39	<0.05	<0.05	0.018	<0.05	<0.001	0.09	<0.5	<0.001	0.3	2.1	<1.0
Jul-18	Baganhattu Bore water	4.1	0.047	1.69	17.98	0.14	<0.05	<0.05	0.025	<0.05	<0.001	0.06	<0.5	<0.001	0.32	7.44	<1.0
	Sonari Bore water	5	0.5	1.54	9.2	0.15	<0.05	<0.05	0.032	<0.05	<0.001	0.081	<0.5	<0.001	0.25	6.95	<1.0
	Parvati Ghat Bore water	5.1	0.998	1.68	15.85	0.131	<0.05	<0.05	0.038	<0.05	<0.001	0.18	<0.5	<0.001	0.32	7.1	<1.0
	Jugsalai Bore Water	4.9	0.57	1.68	10.89	0.14	<0.05	<0.05	0.036	<0.05	<0.001	0.066	<0.5	<0.001	0.25	7.25	<1.0
	Jemco Bore Water	4.8	0.15	1.7	3.53	0.105	<0.05	<0.05	0.02	<0.05	<0.001	0.11	<0.5	<0.001	0.3	2.1	<1.0
Aug-18	Baganhattu Bore water	2.5	0.02	0.78	5.65	0.12	<0.05	<0.05	<0.01	<0.05	0.03	<0.5	<0.5	0.02	0.52	5.8	<1.0
	Sonari Bore water	2.2	0.03	0.31	5.12	0.13	<0.05	<0.05	<0.01	<0.05	0.16	<0.5	<0.5	0.04	0.58	6	<1.0
	Parvati Ghat Bore water	6	0.12	0.99	26.29	0.15	<0.05	<0.05	<0.01	<0.05	0.08	<0.5	<0.5	0.03	0.6	5.8	<1.0
	Jugsalai Bore Water	5	0.16	0.71	12.44	0.11	<0.05	<0.05	0.016	<0.05	0.14	0.024	<0.5	0.01	0.82	4.9	<1.0
	Jemco Bore Water	4	0.06	1.22	13.8	0.1	<0.05	<0.05	0.018	<0.05	0.157	<0.5	<0.5	0.016	0.66	3.8	<1.0
Sep-18	Baganhattu Bore water	4.6	0.18	1.1	13.4	0.101	<0.05	<0.05	<0.01	<0.05	0.03	<0.5	<0.5	0.02	NIH	NIH	<1.0
	Sonari Bore water	4.2	0.01	0.54	10	0.18	<0.05	<0.05	<0.01	<0.05	0.16	<0.5	<0.5	0.04	NIH	NIH	<1.0
	Parvati Ghat Bore water	5.2	0.04	1.2	9.3	0.15	<0.05	<0.05	<0.01	<0.05	0.08	<0.5	<0.5	0.03	NIH	NIH	<1.0
	Jugsalai Bore Water	3.2	0.02	0.77	10	0.1	<0.05	<0.05	0.016	<0.05	0.14	0.024	<0.5	0.01	NIH	NIH	<1.0
	Jemco Bore Water	5.2	0.05	1.18	11.6	0.2	<0.05	<0.05	0.018	<0.05	0.157	<0.5	<0.5	0.016	NIH	NIH	<1.0

(Signature)
 Sr. Manager
 Environment Management

TATA STEEL LIMITED

GROUNDWATER MONITORING - Done by NABL/ MoEF Certified Lab (APR-18 to SEP-18)

Month	Sampling Locations	pH	Temperature	Conductivity	Total Dissolved Solids	Total Suspended Solids	Color	Odor	Alkalinity as CaCO ₃	Total Hardness as CaCO ₃	Calcium as Ca	Sodium as Na	Potassium as K	Chlorides as Cl ⁻	Sulphates as SO ₄ ⁻²	Total Phosphorus as P
		--	oC	µMho/Cm	mg/L	mg/L	CU	--	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
May-18	Baganihattu Bore water	7.62	29.3	932	490	<10	<1.0	Agreeable	420.7	287	115.07	34	2.7	59.99	50.31	0.42
	Sonari Bore water	7.54	28.3	625	243	<10	<1.0	Agreeable	168.3	133.7	53.57	28.95	2.3	54.69	19.06	0.36
	Parvati Ghat Bore water	7.33	29.5	983	532	<10	<1.0	Agreeable	396.9	173.3	69.44	68.86	3.2	116	51.76	0.32
	Jugsalai Bore Water	7.25	25.5	820	405	<10	<1.0	Agreeable	267.3	138.5	55.5	36.09	2.5	55.9	51.07	0.24
	Jemco Bore Water	7.28	30.1	808	458	<10	<1.0	Agreeable	371.2	170.5	68.31	39.36	2.9	73.9	71.37	0.26
Jun-18	Baganihattu Bore water	7.41	30	681	440	<10	<1.0	Agreeable	206	361	105.15	34	2.5	19.26	33.4	0.86
	Sonari Bore water	7.63	28.4	378	232	<10	<1.0	Agreeable	95	168	53.57	18.95	2.05	63.15	29.7	0.31
	Parvati Ghat Bore water	7.1	29	1892	1220	<10	<1.0	Agreeable	415	702.9	150.7	115.7	1.79	199.5	93.9	0.4
	Jugsalai Bore Water	7.15	29.5	999	642	<10	<1.0	Agreeable	335	391.05	105.15	58.6	3.5	104.5	58.06	0.28
	Jemco Bore Water	7.27	29.8	952	601	<10	<1.0	Agreeable	275	396	101.18	45.54	1.07	84.41	45	0.41
Jul-18	Baganihattu Bore water	7.35	28	884	540	<10	<1.0	Agreeable	206	361	148	58	2.1	104	33.4	1.11
	Sonari Bore water	7.24	28	582	400	<10	<1.0	Agreeable	95	168	55.2	42	1.8	62	29.7	0.51
	Parvati Ghat Bore water	7.37	27.9	1450	912	<10	<1.0	Agreeable	415	702.9	184	132	2	180	93.9	0.44
	Jugsalai Bore Water	7.34	27.9	1080	688	<10	<1.0	Agreeable	335	391.05	113	68	4	99.79	58.06	0.38
	Jemco Bore Water	7.42	27.9	986	648	<10	<1.0	Agreeable	275	396	103	36	1.6	68.8	45	0.5
Aug-18	Baganihattu Bore water	7.04	25.9	667	579	<10	<1.0	Agreeable	155.78	245	32.06	43.15	1.44	53.8	21.9	0.12
	Sonari Bore water	7.18	25.9	1142	726	<10	<1.0	Agreeable	261.3	300.1	70.14	37.04	4.94	95	18.2	0.23
	Parvati Ghat Bore water	6.98	25.9	2700	1924	<10	<1.0	Agreeable	386.93	995	88	176.7	2	200.5	29.9	0.57
	Jugsalai Bore Water	7.45	25.9	1113	782.5	<10	<1.0	Agreeable	306.53	390	59.11	98	3.2	110.07	62	0.26
	Jemco Bore Water	7.09	25.9	1029	728	<10	<1.0	Agreeable	306	440	57.11	60.41	2.56	85.61	36.2	0.27
Sep-18	Baganihattu Bore water	7.32	29.3	2070	1320	<10	<1.0	Agreeable	215	295	68.25	106	3.49	165	49.6	0.16
	Sonari Bore water	7.69	30.7	484	312	<10	<1.0	Agreeable	200	172	51.58	25	3.1	62	7.77	0.15
	Parvati Ghat Bore water	6.95	29.1	665	432	<10	<1.0	Agreeable	130.67	212	72	51.26	5.63	58	32	0.05
	Jugsalai Bore Water	7.15	30.2	1114	710	<10	<1.0	Agreeable	215	272	82	88.54	4.15	102	48.11	0.23
	Jemco Bore Water	7.25	29.3	1109	684	<10	<1.0	Agreeable	195	257	71.42	80	2.69	92.63	42	0.19


 Sr. Manager
 Environment Management

ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY

RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR-18 to SEP- 18)

Month	Locations	pH	Temperature	Conductivity	Turbidity	Total Dissolved Solids	TSS	Color	Odor
		--	oC	µMho/Cm	NTU	mg/L	mg/L	CU	--
Apr-18	KHARKHAI RIVER (NEAR DUMUHANI)	7.05	29.5	320	< 0.05	210	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.4	30.4	1160	< 0.05	730	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR BAGUN HATU)	6.95	29.5	415	< 0.05	260	< 10	< 1.0	Agreeable
May-18	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	7.18	29.8	280	< 0.05	180	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR DUMUHANI)	8.24	33.6	215	< 0.05	124	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.79	34.8	445	< 0.05	257	< 10	< 1.0	Agreeable
Jun-18	SWARNREKHA RIVER(NEAR BAGUN HATU)	7.43	34.8	356	< 0.05	207	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	7.67	35.2	263	< 0.05	158	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR DUMUHANI)	7.8	34	260	< 0.05	160	< 10	< 1.0	Agreeable
Jul-18	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.03	34	300	< 0.05	190	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR BAGUN HATU)	8.11	32.8	286	< 0.05	185	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	7.81	31.7	214	< 0.05	136	< 10	< 1.0	Agreeable
Aug-18	KHARKHAI RIVER (NEAR DUMUHANI)	6.86	28	274	< 0.05	164	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.28	28	245	< 0.05	122	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR BAGUN HATU)	7.04	28.2	471	< 0.05	284	< 10	< 1.0	Agreeable
Sep-18	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	7.32	28	250	< 0.05	154	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR DUMUHANI)	7.76	26.1	256	< 0.05	160	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.55	26.2	207	< 0.05	132	< 10	< 1.0	Agreeable
Oct-18	SWARNREKHA RIVER(NEAR BAGUN HATU)	7.95	26.4	275	< 0.05	172	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	8.14	26.5	224	< 0.05	140	< 10	< 1.0	Agreeable
	KHARKHAI RIVER (NEAR DUMUHANI)	7.98	32.5	198.6	< 0.05	125	< 10	< 1.0	Agreeable
Nov-18	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.12	31.5	168	< 0.05	102	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR BAGUN HATU)	8.24	32.2	204	< 0.05	126	< 10	< 1.0	Agreeable
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	8.17	31.9	165.4	< 0.05	104	< 10	< 1.0	Agreeable

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 Sr. Manager
 Environment Management

ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY

RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR-18 to SEP- 18)

Month	Locations	BOD	Bariu mas Ba	Boron B	Residual Chlorine as Cl	Sulphide as S ₂	Phenolic Compounds as Phenols	Cyanide as CN	Arsenic as As	Selenium as Se	Mercury	Molybdenum as Mo	Aluminium	PAH
		mg/L (3days at 270C)	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-18	KHARKHAI RIVER (NEAR DUMUJHANI)	2.4	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	9.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR BAGUN HATU)	7.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR MANGO BRIDGE)	8.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
May-18	KHARKHAI RIVER (NEAR DUMUJHANI)	4.8	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	1	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR BAGUN HATU)	4.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR MANGO BRIDGE)	3.6	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
Jun-18	KHARKHAI RIVER (NEAR DUMUJHANI)	5.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	3	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR BAGUN HATU)	<2.0	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR MANGO BRIDGE)	3.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
Jul-18	KHARKHAI RIVER (NEAR DUMUJHANI)	<4.0	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	4.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR BAGUN HATU)	<2.0	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR MANGO BRIDGE)	<2.0	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
Aug-18	KHARKHAI RIVER (NEAR DUMUJHANI)	3.8	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	6	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR BAGUN HATU)	3.8	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR MANGO BRIDGE)	3	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
Sep-18	KHARKHAI RIVER (NEAR DUMUJHANI)	3.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	7.2	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR BAGUN HATU)	3.4	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent
	SWARNREKHA RIVER (NEAR MANGO BRIDGE)	3.8	< 1.0	< 1.0	< 1.0	Nil	< 0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.03	Absent

Sr. Manager
Environment Management

**ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY
RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR-18 to SEP- 18)**

Month	Locations	Cr(VI)	Cu	Cr	Cd	Ni	Zn	Pb	Nitrogen (Ammonia) as N	Total Nitrogen	O & G	COD
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-18	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.42	1.86	< 1.0	8
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.52	3.07	< 1.0	28
	SWARNREKHA RIVER(NEAR BAGUN HATU)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.85	1.41	< 1.0	22
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.56	1.56	< 1.0	25
May-18	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.05	0.027	< 0.05	< 0.01	0.095	< 0.5	< 0.05	0.36	6.5	< 1.0	20
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	< 0.05	0.021	< 0.05	< 0.01	0.068	< 0.5	< 0.05	0.42	11	< 1.0	4
	SWARNREKHA RIVER(NEAR BAGUN HATU)	< 0.05	0.024	< 0.05	< 0.01	0.067	< 0.5	< 0.05	0.3	13	< 1.0	16
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	< 0.05	0.03	< 0.05	< 0.01	0.107	< 0.5	< 0.05	0.36	8.4	< 1.0	10
Jun-18	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.39	6.8	< 1.0	14
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.52	12.5	< 1.0	6
	SWARNREKHA RIVER(NEAR BAGUN HATU)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.33	12	< 1.0	4
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	< 0.05	< 0.01	< 0.05	< 0.01	< 0.5	< 0.5	< 0.05	0.51	9.2	< 1.0	8
Jul-18	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.05	0.032	< 0.05	< 0.01	0.92	< 0.5	< 0.05	0.45	11.2	< 1.0	8
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	< 0.05	0.028	< 0.05	< 0.01	0.08	< 0.5	< 0.05	0.6	12.4	< 1.0	12
	SWARNREKHA RIVER(NEAR BAGUN HATU)	< 0.05	0.3	< 0.05	< 0.01	0.82	< 0.5	< 0.05	0.43	14.5	< 1.0	8
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	< 0.05	0.38	< 0.05	< 0.01	0.15	< 0.5	< 0.05	0.6	10.9	< 1.0	6
Aug-18	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.05	0.018	< 0.05	0.11	0.042	< 0.5	< 0.05	0.35	4.2	< 1.0	9.2
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	< 0.05	0.025	< 0.05	0.1	0.006	< 0.5	< 0.05	0.51	3.1	< 1.0	16
	SWARNREKHA RIVER(NEAR BAGUN HATU)	< 0.05	0.022	< 0.05	0.14	0.027	< 0.5	< 0.05	0.038	3.6	< 1.0	10
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	< 0.05	0.014	< 0.05	0.113	0.014	< 0.5	< 0.05	0.044	5.1	< 1.0	8
Sep-18	KHARKHAI RIVER (NEAR DUMUHANI)	< 0.05	0.018	< 0.05	0.11	0.042	< 0.5	< 0.05	0.35	4.2	< 1.0	6
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	< 0.05	0.025	< 0.05	0.1	0.006	< 0.5	< 0.05	0.51	3.1	< 1.0	20
	SWARNREKHA RIVER(NEAR BAGUN HATU)	< 0.05	0.022	< 0.05	0.14	0.027	< 0.5	< 0.05	0.038	3.6	< 1.0	8
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	< 0.05	0.014	< 0.05	0.113	0.014	< 0.5	< 0.05	0.044	5.1	< 1.0	10


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ENVIRONMENT MANAGEMENT DEPARTMENT- LABORATORY

RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR-18 to SEP-18)

Month	Locations	SO4 ⁻²	P	Nitrate Nitrogen as N	Nitrite Nitrogen as N	F ⁻	SiO2	Fe	Mn
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Apr-18	KHARKHAI RIVER (NEAR DUMUHANI)	16.33	0.37	1.24	0.2	0.26	5.03	0.84	<0.05
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	97.64	2.06	1.02	1.53	0.7	9.23	0.52	<0.05
	SWARNREKHA RIVER(NEAR BAGUN HATU)	23.72	0.45	0.11	<1.0	0.62	5.31	0.36	<0.05
May-18	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	18.24	1.22	0.14	0.86	0.22	3.91	0.32	<0.05
	KHARKHAI RIVER (NEAR DUMUHANI)	12.3	0.6	4.69	0.33	0.63	3.29	0.48	<0.05
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	46.8	0.61	9.1	0.041	0.63	6.53	0.68	<0.05
Jun-18	SWARNREKHA RIVER(NEAR BAGUN HATU)	34.8	0.82	7.26	0.44	1.19	3.51	0.23	<0.05
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	24.25	0.89	3.8	0.25	1.2	5.18	0.36	<0.05
	KHARKHAI RIVER (NEAR DUMUHANI)	10.61	0.4	6.2	0.2	0.63	4.7	4.38	<0.05
Jul-18	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	21.35	0.2	7.6	0.34	1.26	5.8	4.6	<0.05
	SWARNREKHA RIVER(NEAR BAGUN HATU)	19.69	0.66	2.6	0.21	1.77	3.9	4.5	<0.05
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	4.28	0.19	3.6	0.1	1.15	3.01	4.34	<0.05
Aug-18	KHARKHAI RIVER (NEAR DUMUHANI)	19.5	0.45	4.9	2.42	1.2	2.91	0.201	<0.05
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	8.9	0.24	5	0.97	0.64	2.61	0.144	<0.05
	SWARNREKHA RIVER(NEAR BAGUN HATU)	64.4	0.74	3.6	2.4	1.24	3.59	0.14	<0.05
Sep-18	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	15.7	0.28	4	0.31	1.16	1.02	0.17	<0.05
	KHARKHAI RIVER (NEAR DUMUHANI)	1.59	0.8	1.5	0.12	1.39	2.73	0.22	<0.05
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	2.93	0.88	1.2	0.32	0.49	3.29	0.45	<0.05
Oct-18	SWARNREKHA RIVER(NEAR BAGUN HATU)	8.2	0.73	0.82	0.02	1.29	2.32	0.3	<0.05
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	2.53	0.92	1.8	0.04	0.5	3.7	0.36	<0.05
	KHARKHAI RIVER (NEAR DUMUHANI)	10.49	0.44	1.65	0.03	0.43	3.5	0.28	<0.05
Nov-18	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	5.8	0.46	3.6	0.29	1.01	3.1	0.26	<0.05
	SWARNREKHA RIVER(NEAR BAGUN HATU)	4.5	0.43	2.25	0.05	0.48	3.36	0.19	<0.05
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	0.97	2.84	2.65	0.32	0.25	3.2	0.31	<0.05

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ENVIRONMENT MANAGEMENT DEPARTMENT - LABORATORY

RIVER WATER MONITORING DONE BY NABL/MoEF LAB (APR-18 to SEP- 18)

Month	Locations	Alkalinity		Total Hardness		Calcium		Magnesium		Sodium		Potassium		Chloride	
		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L		mg/L	
Apr-18	KHARKHAI RIVER (NEAR DUMUHANI)	85		120		28.06		12.15		18.27		3.68		22.49	
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	285		270		80.16		25.52		75.99		23.68		119.9	
	SWARNREKHA RIVER(NEAR BAGUN HATU)	100		115		30.06		12.15		28.38		6.25		49.98	
May-18	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	75		80		22.04		6.08		17.45		3.54		24.99	
	KHARKHAI RIVER (NEAR DUMUHANI)	70		89.8		20.79		9.2		12.67		2.95		19.57	
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	110		184.1		40.65		20.06		27.04		5.76		41.99	
Jun-18	SWARNREKHA RIVER(NEAR BAGUN HATU)	75		139.6		39.68		9.84		21.14		4.58		45.13	
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	85		118.8		29.76		10.83		12.31		2.4		23.99	
	KHARKHAI RIVER (NEAR DUMUHANI)	105		108.9		25.79		10.83		21		1.8		35.63	
Jul-18	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	130.6		188.1		42		5.9		22		2.9		30.88	
	SWARNREKHA RIVER(NEAR BAGUN HATU)	90		99		27.78		7.22		18.42		3.3		38	
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	100.5		94.05		33.81		8.42		12.15		2.2		28.5	
Aug-18	KHARKHAI RIVER (NEAR DUMUHANI)	110.5		129		33.73		11		26		2		28.5	
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	85.43		99.07		21.82		10.83		20		1.6		26.13	
	SWARNREKHA RIVER(NEAR BAGUN HATU)	140		203.1		47.62		20.45		52		4.8		97.38	
Sep-18	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	85		108.78		27.78		9.62		20		2.5		29	
	KHARKHAI RIVER (NEAR DUMUHANI)	85.43		57.2		15.03		4.8		18		2.42		19.5	
	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	80		105		13.02		9.7		6.12		2.11		9.7	
Sep-18	SWARNREKHA RIVER(NEAR BAGUN HATU)	87.5		110		22.04		Nil		26		4.06		29.3	
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	80		58.54		15.45		4.85		19.5		2.68		22.01	
	KHARKHAI RIVER (NEAR DUMUHANI)	90.45		79.2		24		5.2		11.42		1.93		38	
Sep-18	KHARKHAI RIVER (NEAR ADITYAPUR BRIDGE)	75.38		69.3		15.87		7.21		26.2		2.24		27.2	
	SWARNREKHA RIVER(NEAR BAGUN HATU)	85		74.2		21.82		3.28		31.6		2.07		35.62	
	SWARNREKHA RIVER(NEAR MANGO BRIDGE)	70.35		68.8		18.86		4.8		21		1.89		26.12	


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**Charter for Corporate Responsibility for Environment Protection (CREP)
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**Status of Compliance For Various Action Points
(Apr- Sep 2018)**

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'18 to Sep'18:

No. of batteries	No. of Observations	Parameters											
		PLD (%)			PLO (%)			PLL (%)			Charging Emissions (Sec.)		
		Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Battery#5	12	9.26	1.67	4.39	0.00	0.00	0.00	0.00	0.00	0.00	70.00	23.00	36.75
Battery#6	12	9.65	2.59	4.97	0.00	0.00	0.00	0.00	0.00	0.00	72.00	25.00	40.75
Battery#7	12	6.60	1.89	3.24	0.00	0.00	0.00	0.00	0.00	0.00	65.00	28.00	40.25
Battery#8	12	5.15	2.24	3.24	0.00	0.00	0.00	0.76	0.00	0.25	36.00	23.00	27.58
Battery#9	12	4.55	2.21	3.62	0.00	0.00	0.00	0.75	0.00	0.06	45.00	20.00	27.42
Battery#10	12	5.49	3.57	3.48	1.19	0.00	0.10	0.41	0.00	0.03	38.00	16.00	22.67
Battery#11	12	4.71	1.79	4.42	1.20	0.00	0.30	0.40	0.00	0.03	22.00	14.00	17.50

- 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 # 5 (SC)	1988	Converted to Stamp charged-1995*
Battery # 6 (SC)	1988	Converted to Stamp charged-1993*
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	

SC=Stamp Charged

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

Charter for Corporate Responsibility for Environment Protection (CREP)**Integrated Iron and Steel Plant, Tata Steel Limited, Jamshedpur****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)
- Secondary de- dusting facilities at SMS: **Yes**

Compliance Status: Complied

- All the Steel Melting Shops (LD#1, LD#2 and LD#3) have been provided with secondary emission control system.
- Fugitive emission in SMS (Apr'18- Sep'18):

Name of the Unit	No. of Observations	PM (mg/m3)		
		Max	Min	Avg
LD#1	115	9.24	0.35	2.78
LD#2	76	9.5	0.4	4.0
LD#3	10	4.6	2.3	3.6

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.
(Apr'18 to Aug'18)

Blast Furnace	Fuel Injected	Apr'18 to Aug'18 (kg/thm)
C BF	Coal Tar	53
D BF	Phase out	Down for relining
E BF	Coal Tar	28
F BF	Coal Dust	170
G BF	Coal Dust	203
H BF	Coal Dust	210
I BF	Coal Dust	211

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.

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	BF Slag	LD Slag
Percentage utilized (%)	100%	88%
Type of utilization	Cement Making	Reuse in Sinter Plant, In-house construction etc.
Actions to be taken for ensuring 100% utilization	-	<p>Various initiatives are undertaken for improving the utilization of LD Slag:</p> <ul style="list-style-type: none"> • Successfully implemented Co-processing of LD Slag at Cement Kilns. • Trial of Steam aging (Closed/ Open) • Collaboration with expert external agency for processing and subsequent use of LD Slag as aggregates and ballast. • LD slag is being utilized for making for pavement block • Flue dust and other wastes as indicated are being recycled in sinter plant. • BF sludge is used in sinter plant. • Accreditation from Indian Road Congress for 2 years trail for LD Slag in Jun'14 <p>Directive issued by Rural Works Department, Govt. of Jharkhand allowing TSL LD Slag to be used in construction of rural road in " Pradhan Mantri Gram Sadak Yojna" (PMGSY) within the periphery of 100 Kms of Jamshedpur Steel Works.</p>

- 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.
- Inventorization 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.

Compliance Status: Complied

Hazardous Waste	Quantity generated in Apr'18 to Sep'18 (Tonnes)	Quantity charged to Coke Oven in Apr'18 to Sep'18 (Tonnes)	Method of transport
Coal Tar Sludge	400	-	Transported by trucks and sold users.
BOT Plant Sludge	588	588	Transported by trucks and charged by conveyors; Mixing with Coal and used in coke making in battery

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Used Oil	1	-	Oil is reused after filtration and excess if any is sold to registered recyclers
Waste Oil Residue	0	-	Sold to authorized party and incinerated
Zinc Dust Ash	80	-	Sold to authorized recyclers

Action point 5: Water conservation / Water Pollution

- Reducing specific water consumption to 5 m³/t for long products and 8 m³/t for flat products by 2005

Compliance Status: Complied

Specific water consumption details for Apr'18 to Sep'18:

Specific water consumption (m³/tcs)	
Long Products (m³/tcs_{FP})	Flat Products (m³/tcs_{LP})
2.74	3.83

- To operate CO-BP effluent treatment plant efficiently to achieve the notified effluent discharge standards- By July 2004

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Compliance Status: Complied

Effluent Treatment Plant is meeting the statutory norms.

	Parameter	UoM	Apr-18			May-18			Jun-18			Jul-18			Aug-18			Sep-18		
			Max	Min	Avg.	Max	Min	Avg.	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
BOT TREATED	Ammonical Nitrogen (as N)	mg/L	4.6	1.0	2.3	44.6	25.9	38.0	42.1	32.1	37.7	45.1	24.3	34.4	45.6	29.3	39.6	47.0	27.8	41.5
	Free Cyanide (as CN-)	mg/L	0.15	0.05	0.12	0.15	0.12	0.13	0.17	0.14	0.15	0.16	0.12	0.15	0.18	0.16	0.17	0.19	0.17	0.18
	Oil & Grease	mg/L	1.6	0.2	0.7	1.8	0.2	0.8	2.0	0.8	1.3	2.0	1.2	1.6	1.8	1.2	1.5	8.8	4.1	5.7
	Total Suspended solids	mg/L	86	34	72	89	25	61	88	48	69	90	44	69	88	32	59	78	15	41
	Chemical Oxygen Demand, COD	mg/L	75	64	70	215	203	208	228	166	210	238	223	229	235	180	213	238	192	216
	Biological Oxygen Demand, BOD	mg/L	21	11	18	22	10	19	21	11	18	21	10	14	21	6	15	21	10	14
	pH	-	8.23	7.17	7.56	8.30	7.22	7.86	8.13	7.43	7.80	8.06	7.28	7.70	8.15	7.23	7.63	8.30	7.00	7.72
	Phenol	mg/L	0.46	0.14	0.24	0.51	0.08	0.22	0.41	0.08	0.23	0.61	0.10	0.29	0.61	0.10	0.29	0.48	0.10	0.26

**Charter for Corporate Responsibility for Environment Protection (CREP)
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Action point 6: Continuous stack monitoring system & its calibration, and installation of on-line ambient air quality monitoring station by June 2005.

Compliance Status: Complied

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

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	25	1	DBF Stove (Closed for relining)
Coke Oven	9		
LD Shop	20		
Lime Plant	11	1	Mearz kiln no.6 DE12
Pellet Plant	6		
Power Plant	8		
Sinter Plant	8		
Total	87	2	

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.

Compliance Status: Complied

Status of Air Pollution Control Equipment (Apr'18- Sep'18)

Departments	Bag Filter Availability %
A-F BF	96.15%
Coke Plant 5,6,7	56.25%
Coke Plant 10,11	86.66%
G BF	97.48%
H BF	85.56%
I BF	82.26%
Pellet Plant	100.00%

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RMBB # 1	100.00%
RMBB # 2	94.44%
SP # 1	96.77%
SP # 2	83.91%
SP # 3	99.90%
SP # 4	98.92%
RMM	92.64%
Lime Plant	89.36%
LD # 1	98.75%
LD # 2 & SC	79.29%
LD # 3 TSCR	94.98%

Status of Wastewater Pollution Control Equipment (Apr'18- Sep'18)

Area/Location	Water Pollution Control System	Availability (%)
Coke Plant	BOT Plant	100%
A-F Blast Furnace	Waste water treatment plant	100%
G Blast Furnace	Waste water treatment plant	100%
H Blast Furnace	Waste water treatment plant	100%
I Blast Furnace	Waste water treatment plant	100%
LD1 and BC	Waste water treatment plant	100%
LD2 and SC	Waste water treatment plant	100%
LD3 and TSCR	Waste water treatment plant	100%
Wire Rod Mill	Waste water treatment plant	100%
Hot Strip Mill	Waste water treatment plant	100%
Cold Rolling Mill	Waste water treatment plant	100%
New Bar Mill	Waste water treatment plant	100%
Merchant Mill	Waste water treatment plant	100%
CETP	Waste water 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
 - ❖ Use of by-products gases for power generation- **Yes/ No**
 - ❖ Promotion of Energy Optimisation technology, including energy audit- **Yes/ No**

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

	Actual of Apr'18 to Sep'18	Target for FY 19
Specific Water Consumption (m ³ /TCS)	3.48	3.09
Energy consumption (GCal/ TCS)	5.723	5.646
GHG (CO ₂) emission (Ton/ TCS)	2.30	2.29
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 back to the mines and its implementation.
- Processing of the waste containing flux & ferrous wastes through waste recycling plant.
- To implement rain water 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 charging points.	De-dusting facility in the cast house has been provided in F, G, H & I Blast Furnaces.
Suppression of fugitive emissions using nitrogen gas or any other inert gas	We have studied this system in detail and found the same very unsafe and have decided to not to go for it.

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	Instead, dust extraction facilities have been installed wherever required.
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 back 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 rain water 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 37 locations (Steelenium Hall, SHE, MPDS, LD 3, rebar mill ECR, R&D and ITS Building) within Works.



JHARKHAND STATE POLLUTION CONTROL BOARD

TOWNSHIP ADMINISTRATION BUILDING, HEC COMPLEX, DHURWA, RANCHI 834004

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Ref No. JSPCB/HO/RNC/CTO-975929/2016/1078

Dated : 2016-12-27

Consent to operate (CTO) under section 25 /26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981

1. Application (s) dated 2016-08-16 of Tata Steel Limited, Jamshedpur, Occupier Name :T V Narendran for consent under section 25 (1) (b)/25 (1) (c)/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21(1) of the Air (Prevention & Control of Pollution) Act,1981.

2. Documents Relied Upon:

(a)The content of Environmental Clearance (EC), Ref No. J-11011/221/2003.IA.II (I) Dated 24.05.2005 Ref. No. J-11011/317/2007-IA.(II) (J) dated 16.04.2007 & Ref. No. - J-11011/691/2007-IA.(II) (I) dated 11.05.2010 issued by MoEF, Govt. of India.

(b)The content of Consent-to-Establish (CTE), Ref No. N-388 Ranchi, Dated 21.08.2004, Ref. No. 1671 dated 01.04.2008 & Ref. No. 5046 Ranchi, dated 06.12.2010.

(c)The content of Consent-to-Operate (CTO), Ref No. B-5861 Ranchi, Dated 29.12.2015.

(d)The content of Inspection Report (I/R), Ref No. 2075 Regional Officer, Regional Office-Cum Laboratory, Jamshedpur, Dated 19.09.2016.

3. The consent is granted under section 25 / 26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 to operate the project in Mauza -Given in Land schedule , P S -Jamshedpur , District -EAST SINGHBUM , as follows:

Project	Site-Area		Investment (Rs)	Product & Capacity	Period of CTO	Total
	Plot Nos.	Area				
In Expansion	Jamshedpur, Dist. East Singhbhum	6400 Ha	25340 Cr.	Crude Steel - 11 MTPA	01.01.2017 to 31.12.2021	

(A) General Conditions :

- (1) That, the occupier shall comply with all conditions of EC, Ref No J-11011/691/2007-IA.II (I) , Dated 01/03/2016, CTE, Ref No G-758 , and dated 18/03/2016 , previous CTO, Ref No B-5861 dated 29/12/2015 and shall submit report to this effect with supporting documents.
- (2) That, the occupier shall maintain the ambient air quality within the standard given below:

S N	Parameter	Standard
1	Respirable Suspended Particulate Matter	100 µg/Nm ³
2	Sulphur Dioxide	80 µg/Nm ³
3	Oxides of Nitrogen	80 µg/Nm ³

(3) That, the occupier shall maintain the emission quality within the standard and the quantity, as follows:

S N	Parameter	Standard
1	Particulate Matter	150 mg/Nm ³

(4) That, the occupier shall keep process effluent in close-circuit and the quality of effluent from other sources in conformity with the standard (s) and the discharge quantity as below:

S N	Parameter	Standard
1	Total Suspended Solids	100 mg/L
2	BOD	30 mg/L
3	COD	250 mg/L
4	Oil & Grease	10 mg/L

(5) That, the occupier shall dispose of solid wastes as follows:

S N	Waste Type	Mode of Disposal
1	Hazardous Carbonaceous Wastes	In Co-processing in high temperature furnaces or kilns
2	Hazardous Non-Carbonaceous Wastes	In TSDF
3	Non-Carbonaceous Non-Hazardous solid wastes/ Mine Over Burden	As a substitute of Soil or Mineral

6. That, the occupier shall keep D G Set(s) within acoustic enclosure (s) and shall keep the height(s) of exhaust pipe(s) as per Central Pollution Control Board norm.
7. That, the occupier shall install and maintain Central Ground Water Board/ State Ground Water Directorate approved system of rain water harvesting-cum-ground water recharge.
8. That, the occupier shall create and maintain new water body (ies) / remove deposit(s) of existing water body(ies) and nearby stream(s) and pond(s) and shall maintain the wholesomeness of water.
9. That, the occupier shall grow and maintain greenery in the periphery and other available spaces and shall continue enhancing its plant density and biodiversity.
10. That, the occupier shall submit environmental statement with supporting stoichiometric calculations analyses reports, every year.
11. That, the occupier shall submit report(s) duly monitored and issued by an NABL/ISO 9001 with OHSAS 18001 accredited laboratory in compliance of sub-para (2), (3), (5) and (8) of paragraph 3 of this CTO Monthly.

(B) Specific Conditions:

1. That, the occupier shall install and operate systems for online monitoring of ambient air quality, stack emission for parameter PM, SO₂ and effluent quality for parameters pH, BOD, COD, TSS, cyanide with connectivity to Jharkhand State Pollution Control Board server.
2. That, the occupier shall establish and operate well equipped environmental laboratory with facilities to monitor at least all regulatory parameters and duly accredited by NABL.
3. That, the occupier shall operate and maintain air pollution control devices, ETP and STP regularly.
4. That, the occupier shall comply the direction/instructions issued by the State Board regarding disposal of municipal solid waste at Bara Site.
5. That, the occupier shall implement relocation plan effectively and shall submit progress report of their Re-location plan on every three months to the Board. If the Re-location plan is not implemented within the stipulated period as given in the plan to the Board, the Consent to Operate shall be revoked by the Board.
6. That, the occupier shall be solely responsible of any accident if it occurs in 'I' Blast Furnace and necessary safety measures and close monitoring of the furnace shall be ensured to stop incident, which took place on 12.08.2012.
7. That, if the Board realizes any adverse effect on the educational institutions or human settlements due to operation of expansion project, the consent may be revoked.
8. That, the occupier shall comply the conditions imposed in Environmental Clearance issued by MOEF, New Delhi for 9.7 MTPA vide letter no. J-11011/691/2007-IA (II) (I) dated 11.05.2010 and consent to establish conditions for 9.7 MTPA issued by the Board vide letter no. 5046 dated 06.12.2010.
9. That, the occupier shall comply the directions issued under section 5 of the Environment (Protection) Act, 1986 vide this office letter no. 4628 dated 28.10.2010 and shall submit its compliance report to the Board.
10. That, the occupier shall ensure the cleaning and wetting of ground regularly to improve house keeping.
11. That, he (they) shall maintain and operate separate energy meter for air pollution control equipment regularly.
12. That, he (they) shall implement action plan for implementation of zero discharge strictly in time bound manner so as to keep the waste water in closed circuit and shall not discharge effluent outside the premises and shall submit time bound programme within one month.
13. That, he (they) shall maintain and operate fixed type water sprinklers at all dusty places inside the plant.
14. That, the occupier shall develop green belt in more than 33% of the area within and around the plant premises.
15. That, the occupier shall dispose of all waste properly by following all environmental norms with due approval of the Board and implement it effectively.
16. That, the occupier shall submit a road map regarding future generation and the disposal of solid waste within one month.
17. That, the occupier shall not dump any Solid Waste or Slag or any pollutant in or on the bank of river Swarnrekha and Kharkai in view of Hon'ble High Court Order dated 19.02.12 in WP (PIL) No. 1325/11 and take appropriate action for identification of suitable land for disposal of municipal solid waste and inform the Board about the action taken at interval of every 3 months.
18. That, the occupier shall implement all the recommendations made in Charter on Corporate responsibility for Environment Protection (CREP),
19. That, the occupier shall maintain the quality and table of ground water.
20. That, the occupier shall utilize its solid waste as a resource or as a product.
21. That, the occupier shall maintain the reclamation programme of Jugsalai Muck Dump as per programme submitted vide letter no.EMD/CO7/391/09 dated 18.11.2009.

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22. That, the occupier shall implement the final report of carrying capacity of all stretches of Swarnrekha basin lying in Jharkhand with three months.

23. That, the occupier shall submit application for consent under the Water (Prevention & Control of Pollution) Act, 1974 & Air (Prevention & Control of Pollution) Act, 1981 for its township separately.

24. That, the occupier shall obtain authorization under the Municipal Solid Waste (Handling & Management) Rules, 2000 and also take steps for appointment as 'Operator of a facility' by the Municipal Authority under the provision of the aforesaid Rules and submit authentic documents to the Board Head Quarter within a month.

25. That, the occupier shall ensure proper utilization of fly ash and Bottom ash being generated from Power House No.4 as per CPCB guidelines, and submit quarterly report on the aspect of generation and disposal.

26. That, the occupier shall operate combined effluent treatment plant regularly.

27. That, the occupier shall submit proposal for construction of Working Shed in coal fines storage area within one month.

(28) That, the grant of this Consent-to-Operate is issued from the Environmental angle only and does not absolve the project proponent from the other statutory obligations prescribed under any other law or any other instrument in force. The sole and complete responsibility, to comply with the conditions laid down in all other laws for the time-being in force, rests with the industry /unit/project proponent.

(29) That, the grant of this Consent-to-Operate shall not, in any way, adversely affect or jeopardize the legal proceedings, if any, instituted in the past or that could be instituted against you by the State Board for violation of the provisions of the Act or the Rules made there under.

30. That, the occupier shall submit applications for renewal of consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 again 120 days prior to the date of expiry of this consent i.e. 31.12.2021, with requisite fee and documents showing compliance of all of the above conditions.

4. The Order shall be valid subject to compliance of all other legal requirements applicable to the unit.

This is issued with the approval of the Competent authority

Sanjay Kumar Suman
Member Secretary

Memo No. : JSPCB/HO/RNC/CTO-
975929/2016/1078

Dated : 2016-12-27

Copy to: M/s Tata Steel Limited, Jamshedpur, At- Main Steel Work, Bistupur, Jamshedpur - 831001/
Chief Inspector of Factory, Ranchi/Dept. of Industry, Ranchi/D.F.O., East Singhbhum/Deputy
Commissioner, East Singhbhum/ the Regional Office-cum-Laboratory, Jamshedpur for information &
necessary action.

Sanjay Kumar Suman
Member Secretary