

Your (**Half Yearly Compliance Report**) has been **Submitted** with following details

<b>Proposal No</b>	IA/OR/MIN/240369/2020
<b>Compliance ID</b>	729769778
<b>Compliance Number(For Tracking)</b>	EC/M/COMPLIANCE/729769778/2025
<b>Reporting Year</b>	2025
<b>Reporting Period</b>	01 Dec(01 Apr - 30 Sep)
<b>Submission Date</b>	01-12-2025
<b>RO/SRO Name</b>	Shri Senthil Kumar Sampath
<b>RO/SRO Email</b>	agmu156@ifs.nic.in
<b>State</b>	ODISHA
<b>RO/SRO Office Address</b>	Integrated Regional Offices, Bhubaneswar
<b>Note:-</b> SMS and E-Mail has been sent to Shri Senthil Kumar Sampath, ODISHA with Notification to Project Proponent.	



**Deputy Director General of Forests (C),  
Ministry of Env., Forest and Climate Change,  
Integrated Regional Office,  
A/3, Chandrasekharpur,  
Bhubaneswar – 751023  
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MD/ENV/ 182 /102 /2025  
Date: 20.11.2025

Ref: Environmental Clearance letter no. J-11015/215/2008-IA-II (M) dated: 13.04.2023.

**Sub: Submission of Half-yearly compliance status report of Environmental Clearance conditions for the period April- 2025 - September- 2025 in respect of Joda East Iron Mine, M/s Tata Steel Limited.**

Dear Sir,

Kindly find attached herewith the half-yearly compliance status report in respect of the stipulated Environmental Clearance conditions of Joda East Iron Mine, M/s Tata Steel Limited for the period from **April- 2025 - September- 2025**.

We trust that the measures taken towards environmental safeguards comply with the stipulated environmental conditions. We look forward to your further guidance which shall certainly help us in our endeavour for further improve upon our Environmental Management practices.

Thanking you,

Yours faithfully,  
f: M/s Tata Steel Limited

**Area Manager Environment, OMQ**

Encl. : As above

Copy to : The Chairman, Central Pollution Control Board, Southern Conclave, Block 502, 5<sup>th</sup> & 6<sup>th</sup> Floors, 1582 Rajdanga Main Road, Kolkata - 700107 (W. B.).  
: The Member Secretary, State Pollution Control Board, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII, Bhubaneswar – 751012 (Odisha).  
: The Regional Officer, SPCB, College Road, Baniapata, Keonjhar – 758001 (Odisha).

**TATA STEEL LIMITED**

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SI No.	CONDITIONS	COMPLIANCE STATUS
A.	<p><b>Specific conditions:</b></p> <p>i. The Environmental Clearance will be valid up to 31 March, 2030.</p>	Agreed.
	<p>ii. This Environmental Clearance will be restricted only to Joda East Iron Ore mine in the mine lease area of 612.700 ha [567.087 ha (Stage II FC available) + 45.613 ha (Non Forest land)] out of 654.743 ha [671.093 ha (Joda East Iron Ore mine) - 16.35 ha (Manmora Manganese mine)]. Mining activity will be restricted to non-forest land and the area for which Stage-II Forest Clearance (FC) available.</p>	Complied. Mining operation is restricted within 567.087 ha of forest area for which diversion approval has been obtained. Additionally, we have submitted fresh application for DRP of remaining area of 32.425 ha.
	<p>iii. The Project Proponent shall ensure that in any case total excavation should not be more than 22.94 MTPA</p>	We are abiding with the said condition. The total excavation during the period of FY 2024-25 is 12.68 MT.
	<p>iv. The ground induced blasting vibrations shall be monitored regularly for every blast performed and the values of "Peak Particle Velocity" and "Air Over Pressure" shall be maintained below the permissible values prescribed by the DGMS, from time to time.</p>	Monitoring of peak particle velocity is done during every blast and the reports are being maintained.
	<p>v. The Project Proponent should install the continuous ambient air quality monitoring stations in such numbers as per the scientific study and in consultation with CPCB</p>	2 nos. Continuous Ambient Air Quality monitoring system is installed inside Mining Lease area for monitoring PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> and CO in the core zone on daily basis.
	<p>vi. The Project Proponent shall get a study conducted to explore the feasibility of installation of sensor-based water sprinklers and based on the recommendations. the same shall be implemented.</p>	Installation of Sensor based water sprinklers is under progress length. The Dust Monitoring sensor is currently under trail and the integration of sensor with the water sprinkler line is under progress.
	<p>vii. The budget of Rs 62.21 Cr to address the concerns raised by the public including in the public hearing to be completed within 3 years from the date of start of mining operations. PP shall comply with all action plans made for public hearing concerns and make regular maintenance and record the progressive activity outcomes.</p>	Being complied. All the commitment made during PH are being implemented.
	<p>viii. The Project Proponent shall undertake the plantation by planting the seedling of 10 ft height with at least 90% survival rate and the entire peripheral plantation and the safety barrier plantation and gap plantation shall be completed within 6 months from the start of mining operations. The casualties of each year shall be replaced every year with new saplings and such number of saplings shall not be counted in the number of saplings proposed to plant in that year. The data for such saplings should be furnished during six monthly</p>	Complied. Adequate number of saplings have been planted in the safety zone. More than 3000 nos. of saplings were planted during the period April to September 2025 against the target of 1573 nos. of saplings. Gap filling plantation is also carried out to replace the casualties. Sal plantation is also carried out within the mining lease area.

	compliance report along with the progressive plantation. PP shall undertake the progressive bench plantation up to HFL for eco restoration of water bodies. PP shall ensure that the afforestation should be only of Sal which is a native species.	Photographs of Plantation is attached as <b>Annexure-1</b> .
	ix. The Project Proponent shall also organize employment-based apprenticeship/ internship training program every year with appropriate stipend for the youth and other programs to enhance the skill of the local people. The data should be maintained for the training imparted to the persons and the outcome of the training. for the assessment of the training program should be analyzed periodically and improved accordingly.	Tata Steel is conducting/ organizing apprenticeship/ internship program with stipend for local youth and other programs to enhance the skill of the local people.
	xi. The Project Proponent should periodically monitor and maintain the health records of the mine workers digitally prior to mining operations, at the time of operation of mine and post mining operations.	Initial Medical Examination & Periodic Medical Examinations are conducted for all employees at the TSL health facility periodically and records are maintained. This is being carried in compliance to Mines Act, 1952 & Rules 1956 and amendments thereto.
<b>B.</b>	<b><u>Recommendation of CSIR-NEERI Report on "Carrying Capacity Study for Environmentally Sustainable Iron and Manganese Ore Mining Activity in Keonjhar, Sundargarh and Mayurbhanj districts of Odisha State:</u></b> The Committee has also deliberated the various specific recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and/or manganese in the State of Odisha. There are recommendation which needs to be implemented by the State Govt. of Odisha and Project Proponent. Based on detailed deliberations on the recommendations of the carrying capacity study report, the Committee has also <b>recommended the following specific conditions viz.</b>	
1)	Project Proponent and Department of Steel & Mines, Govt. of Odisha shall ensure the implementation of recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and/or manganese in the State of Odisha.	Noted and shall be complied.
2)	Department of Steel & Mines, Govt. of Odisha should prepare 5 years regional plan for annual iron ore requirement from the state, which in turn shall be met from different mines/zones (e.g. Joda, Koira.) in the state. Accordingly, sustainable annual production (SAP) for each zone/mine may be followed adopting necessary environmental protection measures.	TSL will adopt the necessary environmental protection measures and abide by the sustainable annual production limit mentioned in regional plan prepared by Department of Steel & Mines, Govt. of Odisha.
3)	Project Proponent shall construct the cement concrete road from mine entrance and exit to the main road with proper drainage system and green belt development along the roads and also construction of road with minimum 300 m inside the mine. This should be done within one year for existing mines and new mine should have since beginning. The Department of Steel & Mines, Govt.	Construction of cement concrete road of length 400 meters within the mine is completed,

	of Odisha should ensure the compliance and should not issue the Mining Permits, if mine lease holder has not constructed proper cement concrete road as suggested. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.	
4)	The Committee observed that as per the recommendations of NEERI report the PP needs to do regular vacuum cleaning of all mineral carrying roads aiming at "zero dust re-suspension" within 3 months. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.	Work order for deployment of mechanical sweeper has been placed and the mechanical sweeper has been deployed. Photograph of vacuum sweeping machine is attached as <b>Annexure-2</b> .
5)	Project Proponent shall monitor the environmental quality parameters as per EC and CTE/CTO conditions, and implementation of suggested measures for control of road dust and air pollution. Odisha State Pollution Control Board has to ensure the compliance of CTE/CTO. Regional office of the MoEF&CC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional office of the Indian Bureau of Mines (IBM) shall monitor the compliance of mining plan and progressive mine closure plan. Any violation by mine lease holder may invite actions per the provisions of applicable Acts.	Mine is ensuring the strict compliance to monitoring of environmental quality parameters and implementation of air pollution control measures as per EC and CTE/CTO conditions. Joda East iron mine is regularly submitting the half-yearly EC and compliance reports to respective authorities. TSL will continue to furnish the required information and extend all support during the site visits by statutory agencies.
6)	Project Proponent shall ensure the compliance of Suggested Ore Transport Mode (SOTM) with association of the State Government of Odisha. All existing mines should ensure adoption of SOTM within next 5 years. New mines or mines seeking expansion should incorporate provision of SOTM in the beginning itself, and should have system in place within next 5 years.	Complied. As per the Suggested Ore Transport Mode (SOTM) 100 % mineral transportation is done through rails. And mineral transportation from mines to Railway wagon is done through closed conveyers.
7)	The State Govt. of Odisha shall ensure dust free roads in mining areas wherever the road transportation of mineral is involved. The road shoulders shall be paved with fence besides compliance with IRC guidelines. All the roads should have proper drainage system and apart from paving of entire carriage width the remaining right of way should have native plantation (dust capturing species). Further, regular maintenance should also be ensured by the Govt. of Odisha. Progress on development of dust free roads, implementation of SOTM, increased use of existing rail network, development of additional railway network/conveyor belt/ pipelines etc. shall be	Noted.

	submitted periodically to Regional office of the MoEF&CC.	
8)	Project Proponent shall develop the parking plazas for trucks with roper basic amenities/ facilities inside the mine. This should be done within one year for existing mines and new mines should have since beginning. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.	Not Applicable. As 100 % mineral transportation is done through rails. And mineral transportation from mines to Railway wagon is done through closed conveyers.
9)	Department of Steel & Mines shall ensure the construction of NH 215 as minimum 4 lane road with proper drainage system and plantation and subsequent regular maintenance of the road as per IRC guidelines. Construction of other mineral carrying roads with proper width and drainage system along with road side plantation to be carried out.This shall be completed within 2 Years.	TSL will extend any support if desired by the State Government.
10)	Regular vacuum cleaning of all mineral carrying roads aiming at "Zero Dust Re- suspension" shall be adopted by PWD/NHAI/ Mine Lease Holders within a time Period of 3 months for existing roads. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.	Work order for deployment of mechanical sweeper has been placed and the mechanical sweeper has been deployed.
11)	In case the total requirement of iron ore exceeds the suggested limit for that year, permission for annual production by an individual mine may be decided depending on approved EC capacity (for total actual dispatch) and actual production rate of individual mine during last year or any other criteria set by the State Govt., i.e. Dept. of Steel & Mines. Department of Steel and Mines in consultation with Indian Bureau of Mines-RO should prepare in advance mine-wise annual production scenario so that demand for iron ore can be anticipated, and actual production/dispatch does not exceed the suggested annual production.	TSL will abide by the guidelines issued by the Department of Steel & Mines, Govt of Odisha in this regard.
12)	R&D studies towards utilization of low-grade iron ore should be conducted through research/academic institutes like IMMT, Bhubaneswar, NML, Jamshedpur, and concerned metallurgical departments in IITs, NITs etc., targeting full utilization of low-grade iron ore (Fe content upto 45% by 2020 and upto 40% by 2025). In fact, life cycle assessment of whole process including environmental considerations should be done for techno-economic and environmental viability. R&D studies on utilization of mine wastewater having	The ROM including sub-grade ore shall be beneficiated in the proposed Iron-ore processing plant being installed to beneficiate low-grade ores. Further Tata Steel's R&D Department is currently researching the technology for briquetting of slimes/ tailings.

	high concentration of Fe content for different commercial applications in industries such as cosmetics, pharmaceutical, paint industry should also be explored. Responsibility: IBM, Dept. of Steel & Mines, Individual Mine Lease Holders.	
13)	The mining activity in Joda-Koira sector is expected to continue for another 100 years, therefore, it will be desirable to develop proper rail network in the region. Rail transport shall not only be pollution free mode but also will be much economical option for iron ore transport. The rail network and/or conveyor belt system upto public railway siding needs to be created. The total length of the conveyor belt system/ rail network to be developed from mines to nearest railway sidings by 11 mines in Joda region is estimated to be about 64 km. Similarly, in Koira region, total length of rail network conveyor system for 8 mines (under SOTM 1 & 2) is estimated to be around 95 km. Further, it is suggested to develop a rail network connecting Banspani (Joda region) and Rory railway sidings in Koira region. Responsibility: Dept. of Steel & Mines, Govt. of Odisha and Concerned Mines along with Indian Railways. Time Period: Maximum 7 years (by 2025). The Department of Steel & Mines, Govt. of Odisha should follow-up with the concerned Departments and railways so that proposed proper rail network is in place by 2025.	We will abide by the directions of Department of Steel & Mines, Govt of Odisha in this regard.
14)	State Govt. of Odisha shall make all efforts to ensure exhausting all the iron & manganese ore resources in the existing working mines and from disturbed mining leases/zones in Joda and Koira region. The criteria suggested shall be applicable while suggesting appropriate lease area and sustainable mining rate. Responsibility: Dept. of Steel & Mines, Govt. of Odisha.	We will work according to the instructions given by the Department of Steel & Mines, Govt of Odisha in this regard.
15)	<b>Mining Operations/Process Related:</b> Project Proponent shall implement the following mitigation measures: (i) Appropriate mining process and machinery (viz.right capacity, fuel efficient ) should be selected to carry out various mining operations that generate minimal dust/air pollution, noise, wastewater and solid waste. e.g. drills should either be operated with dust extractors or equipped with water injection system. (ii) After commencement of mining operation, a study should be conducted to assess and quantify emission load generation (in terms of air pollution, noise, waste water and solid waste) from each of the mining activity (including transportation) on annual basis. Efforts should be made to further eliminate/ minimize generation of	Being complied. (i) Mining activities are carried out as per IBM approved mining plan. Due diligence is exercised for machinery selection. All drilling machines are equipped with in-built dust extraction/ suppression system which has an interlock which prohibits drilling without water. (ii) The fleet of dumpers has been continually upgraded and currently we only have 100T L&T Komatsu make HD785 dumpers which are fuel-efficient, generate very less noise and contribute to less GHG

	<p>air pollution/dust, noise, wastewater, solid waste generation in successive years through use of better technology. This shall be ensured by the respective mine lease holders. (iii) Various machineries/equipment selected (viz. dumpers, excavators, crushers, screen plants etc.) and transport means should have optimum fuel/power consumption, and their fuel/power consumption should be recorded on monthly basis. Further, inspection and maintenance of all the machineries/equipment/ transport vehicles should be followed as per manufacturer's instructions/ recommended time schedule and record should be maintained by the respective mine lease holders. (iv) Digital processing of the entire lease area using remote sensing technique should be carried out regularly once in 3 years for monitoring land use pattern and mining activity taken place. Further, the extent of pit area excavated should also be demarcated based on remote sensing analysis. This should be done by ORSAC (Odisha Space Applications Centre, Bhubaneswar) or an agency of national repute or if done by a private agency, the report shall be vetted/ authenticated by ORSAC, Bhubaneswar. Expenses towards the same shall be borne by the respective mine lease holders. Responsibility: Individual Mine Lease Holders.</p>	<p>emissions. Timely maintenance schedule is maintained, and records are maintained.</p> <p>(iii) A state of the art Fleet Management System has been adopted which gives a real-time information of fuel consumption, productivity and health of the machinery (dumpers, excavators, drills, dozers, etc). This digitalization initiative contributes significantly to monitor and reduce fuel consumption and increase productivity. Further, inspection and maintenance of all the machineries/ equipment/ transport vehicles are being done as per manufacturer's instructions/ recommended time schedule and record is maintained.</p> <p>Digital processing of the entire lease area using remote sensing technique is being carried out annually with inputs from ORSAC for monitoring the land use pattern and the mining activity and also the area excavated in Pits is being demarcated based on the remote sensing analysis. TSL has engaged ORSAC for the same.</p>
16)	<p><b>Air Environment Related:</b> Project Proponent shall implement the following mitigation measures: (i) Fugitive dust emissions from all the sources should be controlled regularly on daily basis. Water spraying arrangement on haul roads, loading and unloading and at other transfer points should be provided and properly maintained. Further, it will be desirable to use water fogging system to minimize water consumption. It should be ensured that the ambient air quality parameters conform to the norms prescribed by the CPCB in this regard. (ii) The core zone of mining activity should be monitored on daily basis. Minimum four ambient air quality monitoring stations should be established in the core zone for SPM, PM10, PM2.5, SO2, NOx and CO monitoring. Location of air quality monitoring stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board (based on Emission Load Assessment Study). The number of monitoring locations may be more for larger capacity mines and working in larger area. Out of four stations, one should be online monitoring station in the mines having more than 3 MTPA EC Capacity. (iii) Monitoring in buffer zone</p>	<p>i) Fugitive dust emissions from all the sources are being controlled regularly on daily basis. The fugitive dust monitoring report is attached as <b>Annexure-3</b>. A network of fixed water sprinklers has been laid on permanent haul roads. Mobile water tankers of large capacity namely 50 KL which can cover the entire the entire width of the haul road has been commissioned.</p> <p>All feed hoppers where ore is unloaded, and all transfer chutes have been provided with dry-fog dust suppression system. The photographs of same are attached as <b>Annexure-4</b>.</p> <p>Mist cannons have placed at strategic points to prevent and control of fugitive dust emission.</p> <p>Ambient air quality conforms to the CPCB norms.</p> <p>ii) 2 nos. Continuous Ambient Air Quality monitoring system is installed inside Mining Lease area for monitoring PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> and CO in the core zone on daily basis.</p> <p>Four manual ambient air quality monitoring stations have been</p>

	<p>should be carried out by SPCB or through NABET accredited agency. In addition, air quality parameters (SPM, PM10, PM2.5, SO2, NOx and CO) shall be regularly monitored at locations of nearest human habitation including schools and other public amenities located nearest to source of the dust generation as applicable. (iv) Emissions from vehicles as well as heavy machinery should be kept under control and regularly monitored. Measures should be taken for regular maintenance of vehicles used in mining operations and in transportation of mineral. (v) The vehicles shall be covered with a tarpaulin and should not be overloaded. Further, possibility of closed container trucks should be explored for direct to destination movement of iron ore. Air quality monitoring at one location should also be carried out along the transport route within the mine (periodically, near truck entry and exit gate), Responsibility: Individual Mine Lease Holders and SPCB.</p>	<p>established in the core zone for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> and CO monitoring. Monitoring is done by NABL accredited lab and the reports are submitted to Board regularly. AAQ Monitoring report is attached as <b>Annexure-5</b>. (iii) We have one CAAQMS station in the buffer zone and the data is transmitted to SPCB server. (iv) Vehicular emission checks of all the wheel mounted HEMMs are done at regular intervals. Maintenance of mining equipment is done on regular basis. It is mandatory for any vehicle entering the mine premises to have a valid fitness certificate.</p>
17)	<p>Noise and Vibration Related: Project Proponent shall implement the following mitigation measures: (i) Blasting operation should be carried out only during daytime. Controlled blasting such as Nonel, should be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs. (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone. Further, date, time and distance of measurement should also be indicated with the noise levels in the report. The data should be used to map the noise generation from different activities and efforts should be made to maintain the noise levels with the acceptable limits of CPCB (CPCB, 2000) (iv) Similarly, vibration at various sensitive locations should be monitored atleast once in month, and mapped for any significant changes due to successive mining operations. Responsibility: Individual Mine Lease Holders.</p>	<p>i) Blasting operation are being carried out during daytime only. Blasting is done using the controlled blasting technique. In this regard, one study has been made by CIMFR (Central Mining &amp; Fuel Research Institute), Dhanbad and recommendations therein are being followed. Initiation system is through either NONEL/electronic detonation system so as to ensure minimal ground vibration. ii) Adequate measures are taken for control of work noise levels such as all HEMMs have acoustic cabins with air conditioners and the exhaust manifold have silencers. Noisy operations have been identified and persons engaged in such operations are provided with ear plugs/muffs. (iii) Monitoring of Noise level are being done regularly at the identified major sources of noise generation within core zone. Necessary efforts are made to maintain the noise level with in the acceptable limits of CPCB (CPCB, 2000). We will follow these instructions accordingly. iv) All efforts are taken to ensure that blast-induced ground vibrations remain within safe limits by using NONEL/ electronic detonation system. Vibration monitoring is done for every blast and records maintained thereof and their</p>

		<p>recommendations are strictly followed. CIMFR also studies the ground-vibration and suggests the mine management best blasting practices.</p>
<p>18)</p>	<p>Water/Wastewater Related: Project Proponent shall implement the following mitigation measures: (i) In general, the mining operations should be restricted to above ground water table and it should not intersect groundwater table. However, if enough resources are estimated below the ground water table, the same may be explored after conducting detailed geological studies by GSI and hydro-geological studies by CGWB or NIH or institute of national repute, and ensuring that no damage to the land stability/ water aquifer system shall happen. The details/ outcome of such study may be reflected/incorporated in the EIA/EMP report of the mine appropriately. (ii) Natural watercourse and/or water resources should not be outcome of such study may be reflected/incorporated in the EIA/EMP report of the mine appropriately. (ii) Natural watercourse and/or water resources should not be obstructed due to any mining operations. Regular monitoring of the flow rate of the springs and perennial nallas should be carried out and records should be maintained. Further, regular monitoring of water quality of nallas and river passing thorough the mine lease area (upstream and downstream locations) should be carried out on monthly basis.(iii) Regular monitoring of ground water level and its quality should be carried out within the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out on monthly basis. (iv) In order to optimize water requirement, suitable conservation measures to augment ground water resources in the area should be undertaken in consultation with Central Ground Water Board (CGWB). (v) Suitable rainwater harvesting measures on long term basis should be planned and implemented in consultation with CGWB, to recharge the ground water source. Further, CGWB can prepare a comprehensive plan for the whole region. (vi) Appropriate mitigation measures (viz. ETP, P, garland drains, retaining walls, collection of runoff etc.) should be taken to prevent pollution of nearby river/other water bodies. Water quality monitoring study should be conducted by State Pollution Control Board to ensure quality of surface and ground water sources on regular basis. The study can be conducted through NABL/ NABET approved water testing laboratory. However, the report should be vetted by SPCB. (vii) Industrial wastewater (workshop and wastewater</p>	<p>i) Based on observations from nearby wells and water bodies, the water table in the area is about 498.3 mRL. Whereas, the maximum depth at conceptual stage is considered to be 580 mRL. Hence, throughout the course of mining operations, the ground water table will remain undisturbed and the mining operation will not intersect ground water table.</p> <p>ii) No perennial nala / stream passes through the mining lease area.</p> <p>iii) Regular monitoring of ground water level on monthly basis and its quality on quarterly basis is being carried out within the mine lease area and surrounding areas. A network of dug wells and borewells with piezometers already exists for this purpose.</p> <p>iv) During monsoon, accumulated mine pit water is not discharged outside and is allowed to seep through to augment the ground water resources.</p> <p>v) Due to area constraint inside the mine lease area rain water harvesting ponds have been constructed in the buffer zone for ground water recharge. Further all the surface runoff generated is directed to mine pit where it is allowed to settle and augment ground water table.</p> <p>vi) Appropriate mitigation measures (viz. garland drains, retaining walls, collection of runoff etc.) are taken to prevent pollution of nearby river/other water bodies.</p> <p>The water quality monitoring is being carried out regularly by NABL accredited laboratory.</p> <p>vii) There is no industrial wastewater being generated at Joda East iron mine. Maintenance of HEMMs is done centrally at Workshop and treated water is reused for vehicle washing purpose.</p>

	<p>from the mine) should be properly collected, treated in ETP so as to conform to the discharge standards applicable. (viii) Oil and treated in ETP so as to conform to the discharge standards applicable. (viii) Oil and grease trap should be installed before discharge of workshop effluents. Further, sewage treatment plant should be installed for the employees/colony, wherever applicable. (ix) Mine lease holder should ensure that no silt originating due to mining activity is transported in the surface water course or any other water body. Appropriate measures for prevention and control of soil erosion and management of silt should be undertaken. Quantity of silt/soil generated should be measured on regular basis for its better utilization. (x) Erosion from dumps site should be protected by providing geo-textile matting or other suitable material, and thick plantation of native trees and shrubs should be carried out at the dump slopes. Further, dumps should be protected by retaining walls. (xi) Trenches/garland drain should be constructed at the foot of dumps to arrest silt from being carried to water bodies. Adequate number of check dams should be constructed across seasonal/perennial nallas (if any) flowing through the mine lease areas and silt be arrested. De-silting at regular intervals should be carried out and quantity should be recorded for its better utilization, after proper soil quality analysis. (xii) The water so collected in the reservoir within the mine should be utilized for the sprinkling on hauls roads, green belt development etc. (xiii) There should be zero waste water discharge from the mine. Based on actual water withdrawal and consumption/ utilization in different activities, water balance diagram should be prepared on monthly basis, and efforts should be made to optimize consumption of water per ton of ore production in successive years. Responsibility: Individual Mine Lease Holders, SPCB and CGWB.</p>	<p>viii) A 20 along with Oil and Grease trap is installed to treat all the effluent generated from washing of HEMM's in workshop.</p> <p>STPs have been installed in the township located outside Joda East iron mine lease areas.</p> <p>ix) Through a series of retention wall, garland drain, settling pits and check dams, it is ensured that no silt originating due to mining activity is transported in the surface water course or any other water body.</p> <p>x) Adequate measures to prevent soil erosion like grass plantation/ coir matting on dump slopes are practiced. Further plantation with native species is done on all dump slopes. Dumps are protected by retaining walls.</p> <p>xi) Garland drains are constructed at the foot of the dumps to arrest silt. Check dams have been constructed for retention of suspended solids and allowing flow of clear water. This prevents contamination of outside water bodies from the wash-offs of the lease area. The check dams are periodically de-silted to keep them efficient.</p> <p>xii) The mine pit water is utilized for water sprinkling on haul roads and for plantation activities.</p> <p>xiii) There is zero waste-water discharge by the mine and it will be maintained in the future as well. Optimization of the water consumption will be done to reduce the specific water consumption year-on-year.</p>
19)	<p><b>Land/ Soil/ Overburden Related:</b> Project Proponent shall implement the following mitigation measures: (i) The top soil should temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long (not more than 3 years or as per provisions mentioned in the mine plan/ scheme). The topsoil should be used for land reclamation and plantation appropriately. (ii) Fodder plots should be developed in the non-mineralized area in lieu of use of grazing land, if any. (iii) Over burden/ low grade ore should be stacked at earmarked dump site (s) only and should not be kept active for long period.</p>	<p>i) Preservation of topsoil: No topsoil generated during the reporting period. Previously generated topsoil has been utilized for the purpose of green belt development, dump stabilization &amp; horticulture activities.</p> <p>ii) Its being followed.</p> <p>iii) OB/ low grade Ore are stacked at earmarked dump sites as per the approved Mining Plan.</p>

	<p>The dump height should be decided on case to case basis, depending on the size of mine and quantity of waste material generated. However, slope stability study should be conducted for larger heights, as per IBM approved mine plan and DGMS guidelines. The OB dump should be scientifically vegetated with suitable native species to prevent erosion and surface runoff. In critical areas, use of geo textiles should be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Proper records should be maintained regarding species, their growth, area coverage etc. (iv) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine operation, soil, OB and mineral dumps. The water so collected can be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted, particularly after monsoon and should be maintained properly. Appropriate documents should be maintained. Garland drain of appropriate size, gradient and length should be constructed for mine pit, soil, OB and mineral dumps and sump capacity should be designed with appropriate safety margin based on long term rainfall data. Sump capacity should be provided for adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de-silted at regular intervals. (v) Backfilling should be done as per approved mining plan/scheme. There should be no OB dumps outside the mine lease area. The backfilled area should be afforested, aiming to restore the normal ground level. Monitoring and management of rehabilitated areas should continue till the vegetation is established and becomes self-generating. (vi) Hazardous waste such as, waste oil, lubricants, resin, and coal tar etc. should be disposed off as per provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual Mine Lease Holders.</p>	<p>Dump stability studies have been conducted by CIMFR, Dhanbad scientists and as per the recommendation of their experts, the height of the dump will be maintained. The measures for dump management as suggested are already being implemented to take care of any erosion and for its stabilization. The plantation is monitored and maintained till it becomes self-sustaining. The records pertaining to plantation – species name, growth, area coverage is maintained at the mine. (iv) Garland drains, Check dams and settling pits have been provided at appropriate places to arrest silt and sediment flows to ensure that only clear water will leave from lease boundary. The water collected is used for dust suppression and green belt development. The structures are regularly de-silted and maintained properly. Garland drains has been already constructed for the dumps as per the approved mine plan. Settling pits of adequate capacity has already been provided. (v) Back filling of the area will be done as per the approved mining Plan. The afforestation of the dumps will be done accordingly. (vi) Hazardous wastes management is being done as per the provisions of Hazardous Waste Management Rules, 2016.</p>
20)	<p>Ecology/Biodiversity (Flora-Fauna) Related: Project Proponent shall implement the following mitigation measures: (i) All precautionary measures should be taken during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. Action plan for conservation of flora and fauna should be prepared and implemented in consultation with the State Forest and Wildlife Department within the mine lease area, whereas outside the mine lease area, the same should be maintained by State Forest Department. (ii) Afforestation is to be done by using local and mixed species saplings within and</p>	<p>i) A detailed Site-Specific Wildlife Conservation Plan has been approved. (ii) We are taking all the suggested measures like selection of the correct local species mix, fruit-species plantation, etc. to enhance the biodiversity of the region. (iii) Green belt development done is monitored till it becomes self-sustaining. Relevant records as mentioned are being</p>

	<p>outside the mining lease area. The reclamation and afforestation is to be done in such a manner like exploring the growth of fruit bearing trees which will attract the fauna and thus maintaining the biodiversity of the area. As afforestation done so far is very less, forest department needs to identify adequate land and do afforestation by involving local people in a time bound manner. (iii) Green belt development carried out by mines should be monitored regularly in every season and parameters like area under vegetation/plantation, type of plantation, type of tree species/grass species/scrubs etc., distance between the plants and survival rate should be recorded. (iv) Greenbelt is an important sink of air pollutants including noise. Development of green cover in mining area will not only help reducing air and noise pollution but also will improve the ecological conditions and prevent soil erosion to a greater extent. Further, selection of tree species for green belt should constitute dust removal/dust capturing plants since plants can act as efficient biological filters removing significant amounts of particulate pollution. Thus, the identified native trees in the mine area may be encouraged for plantation. Tree species having small leaf area, dense hair on leaf surface (rough surface), deep channels on leaves should be included for plantation. (v) Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value. (vi) Details of compensatory afforestation done should be recorded and documented by respective forest divisions, and State Forest Department should present mine-wise annual status, along with expenditure details. Responsibility: Individual Mine Lease Holders and State Forest &amp; Wildlife Department.</p>	<p>maintained by the horticultural specialist.</p> <p>iv) We have a Biodiversity Management Plan prepared by IUCN experts. It contains the list of native species suited for plantation in all conditions including for dust removal/ dust capturing plants.</p> <p>v) In consultation with IIT Kharagpur, Tata Steel has undertaken vetiver plantation in order to stabilize OB dumps.</p> <p>vi) It is in the scope of State Forest Department.</p>
21)	<p>Socio-Economic Related: Project Proponent shall implement the following mitigation measures: (i) Public interaction should be done on regular basis and social welfare activities should be done to meet the requirements of the local communities. Further, basic amenities and infrastructure facilities like education, medical, roads, safe drinking water, sanitation, employment, skill development, training institute etc. should be developed to alleviate the quality of life of the people of the region. (ii) Land outeers and land losers/affected people, if art should be compensated and rehabilitated as per the national/state policy on Resettlement and Rehabilitation. (iii) The socio-economic development in the region should be focused and aligned with the guidelines/initiatives of Govt. of India/ NITI Aayog around prosperity, equality, justice, cleanliness, transparency, employment,</p>	<p>i) We have a separate wing named Tata Steel Foundation who take care of the social welfare activities and for the well-being and upliftment of the people residing near the project. They interact regularly with the local communities to identify their needs and requirement and accordingly plan the yearly activities in all the listed themes.</p> <p>ii) There is no case of displacement of people due to the project.</p> <p>iii) TSL is already supporting the State Government in facilitating the development of schools, conducting health camps, construction of medical facilities, provision of training and skill</p>

	<p>respect to women, hope etc. This can be achieved by providing adequate and quality facilities for education, medical and developing skills in the people of the region. District administration in association with mine lease holders should plan for "Samagra Vikas of these blocks well as other blocks of the district. While planning for different schemes in the region, the activities should be prioritized as per Pradhan Mantri Khanij Kshetra Kalyan Yojna (PMKKKY), notified by Ministry of Mines, Govt. of India, vide letter no. 16/7/<a href="#">2017-M.VI</a> (Part), dated September 16, 2015. Responsibility: District Administration and Individual Mine Lease Holders.</p>	<p>development programs, etc. and will continue to extend support in future too.</p>
22)	<p>Road Transport Related: Project Proponent shall implement the following mitigation measures: (i) All the mine lease holders should follow the suggested ore transport mode (SOTM), based on its EC capacity within next 5 years. (ii) The mine lease holders should ensure construction of cement road of appropriate width from and to the entry and exit gate of the mine. Further, maintenance of all the roads should be carried out as per the requirement to ensure dust free road transport. (iii) Transportation of ore should be done by covering the trucks with tarpaulin or other suitable mechanism so that no spillage of ore/dust takes place. Further, air quality in terms of dust, PM10 should be monitored near the roads towards entry &amp; exit gate on regular basis, and be maintained within the acceptable limits. Responsibility: Individual Mine Lease Holders and Dept. of Steel &amp; Mines.</p>	<p>i) Joda East Iron Mine is abiding by the SOTM system.</p> <p>ii) 400 meters of concrete road within the mine lease area is completed. Maintenance of all roads under TSL control is being done regularly to ensure dust-free road transport.</p> <p>iii) Transportation of final product is done through rail.</p>
23)	<p>Occupational Health Related: Project Proponent shall implement the following mitigation measures: (i) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects periodically. (ii) Occupational health surveillance program for all the employees/workers (including casual workers) should be undertaken periodically (on annual basis) to observe any changes due to exposure to dust, and corrective measures should be taken immediately, if needed. (iii) Occupational health and safety measures related awareness programs including identification of work related health hazard, training on malaria eradication, HIV and health effects on exposure to mineral dust etc., should be carried out for all the workers on regular basis. A full time qualified doctor should be engaged for the purpose. Periodic monitoring (on 6 monthly basis) for exposure to respirable minerals dust on the workers should be conducted, and record should be maintained including health record of all the workers. Review of impact of various health measures undertaken (at an interval of 3 years or</p>	<p>i) Personal Protective Equipment for working in dusty areas are provided to all personnel. Periodic training on safety and health aspects is carried out at the training center.</p> <p>ii) Initial Medical Examination &amp; Periodic Medical Examinations are conducted for all employees at the TSL health facility periodically and records are maintained. This is being carried in compliance to Mines Act, 1952 &amp; Rules 1956 and amendments thereto. The occupational health surveillance shows that there is no occurrence of any kind of occupational health diseases.</p> <p>iii) Awareness programs on Occupational Health and Safety are being done regularly by our central medical team located at Jamshedpur. Similar programs are arranged at site level to include all the contract workers as well.</p>

	less) should be conducted followed by follow-up of actions, wherever required. Occupational health centre should be established near mine site itself. Responsibility: Individual Mine Lease Holders and District Administration (District Medical Officer).	A Central Hospital located at Joda caters to Joda East iron mine. A full-time Occupational Health Specialist has been appointed in the hospital for periodic health check-up of employees and contractual workers. A program called Wellness-at-Workplace is being conducted at the mine and health of all mine workers is checked and monitored every month. All the health records are maintained. We will follow and implement the additional suggestions as provided.
<b>C.</b>	<b>Standard Conditions</b>	
<b>I.</b>	<b>Statutory Compliance</b>	
(1)	This Environmental Clearance (EC) is subject to orders/ judgment of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.	Noted.
(2)	The Project proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors before commencing the mining operations.	Noted and complied.
(3)	The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any. for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon'ble Supreme Court dated 2 August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus. Union of India & Ors.	Noted and complied.
(4)	The Project Proponent shall follow the mitigation measures provided in MoEFCC's Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".	All the conditions mentioned in the MoEFCC's Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29th October, 2014 are being followed.
(5)	A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any. from whom suggestion / representation has been received while processing the proposal.	A copy of EC was given to MS, OSPCB and Addl. PCCF was given vide letter MD/ENV/104/102/2013 and MD/ENV/105/102/2013 respectively. EC also given to President, ZP Keonjhar and Chairman, Joda.
(6)	State Pollution Control Board/Committee shall be responsible for display of this EC letter at its	Compiled from State Pollution Control Board, Odisha.

	Regional office, District Industries Centre and Collector's office/ Tehsildar's Office for 30 days.	
(7)	The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board/Committee and web site of the Ministry of Environment, Forest and Climate Change ( <a href="http://www.parivesh.nic.in">www.parivesh.nic.in</a> ). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record.	Details of Environmental Clearance about Joda East Iron Mine was published in local newspapers (English Daily, New Indian Express and in oriya (Dainik Jagran) on 16.03.2013.
(8)	The Project Proponent shall inform the MoEF&CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred. PP needs to apply for transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.	Noted.
<b>II.</b>	<b>Air quality monitoring and preservation</b>	
(9)	The Project Proponent shall install a minimum of 3 (three) online Ambient Air Quality Monitoring Stations with 1 (one) in upwind and 2 (two) in downwind direction based on long term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, NO2, CO and SO2 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I, dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.	Three continuous ambient air quality monitoring stations are installed in the core zone(two) and buffer zone(one) of mine lease area. Various parameters such as PM10, PM2.5, SOx, NOx & CO are being monitored as per guidelines. Four manual ambient air quality monitoring stations are installed at prominent places such as magazine, maingate etc. and monitoring is done on regular basis. The data is also been displayed using electronic display board in public domain.
(10)	Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from all sources shall be regularly controlled by installation of required equipments/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It	Fugitive dust emissions from all the sources are being controlled regularly on daily basis. A network of fixed water sprinklers has been laid on permanent haul roads. Mobile water tankers of large capacity namely 50 KL which can cover the entire width of the haul road has been commissioned. All feed hoppers where ore is unloaded, and all transfer chutes have been

	shall be ensured that air pollution level conform to the standards prescribed by the MoEFCC/ Central Pollution Control Board.	provided with dry-fog dust suppression system. HINCOL dust-a-side chemical is being used for better effectiveness of dust control by water sprinkling. Mist cannons have placed at strategic points to prevent and control of fugitive dust emission. Ambient air quality conforms to the CPCB norms.
<b>III.</b>	<b>Water quality monitoring and preservation</b>	
(11)	In case, immediate mining scheme envisages intersection of ground water table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEFCC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.	Based on observations from nearby wells and water bodies, the water table in the area is about 498.3 mRL. Whereas the maximum depth at conceptual stage is considered to be 580 mRL. Hence, throughout the course of mining operations, the ground water table will remain undisturbed, and the mining operation will not intersect ground water table. Currently, the mining operation is restricted above the ground water table and shall not intersect the ground water table, in case of working below prior approval from MoEF&CC & CGWA shall be obtained. For domestic use and other purposes, the mine has been granted renewal of CGWA NOC (460m <sup>3</sup> /day) issued vide no. CGWA/NOC/MIN/REN//2/2025/10891, dated 22.02.2025.
(12)	Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.	Ground water quality and Ground water level are being monitored periodically in and around the lease areas. All the monitoring results are being submitted to regulatory agencies.
(13)	The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease including upstream and downstream. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. The parameters to be monitored shall include their water quality vis-à-vis	No perennial nallah/stream present in the mine lease area. Water quality monitoring of nallahs present outside the mine lease area is done regularly and the reports are submitted to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water

	<p>suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/ or alteration be made to water bodies during mining operations without justification and prior approval of MoEFCC. The monitoring of water courses/ bodies existing in ease area shall be carried out four times in a year viz. pre- monsoon (April May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.</p>	<p>Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.</p>
(14)	<p>Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS). Dissolved Oxygen (DO), pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.</p>	<p>A workshop is present in the mine lease area, the waste water generate from washing ramp is treated through 10 KL capacity ETP and the treated water is reused for vehicle washing purpose and there is no generation of wastewater. All the surface runoff is allowed to pass through garland drains, check dams and then settling pit. The monitored data is displayed on an electric display board. The photograph of the display board is attached as <b>Annexure-6</b>.</p>
(15)	<p>Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.</p>	<p>Due to area constraint inside the mine lease area multiple ponds have been constructed in the buffer zone for ground water recharge. Further all the surface runoff generated is directed to mine pit where it is allowed to settle and augment ground water table</p>
(16)	<p>Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap.</p>	<p>A ETP is of 10 KLD capacity with Oil and grease trap facility is installed for treating the effluent generated from common workshop at Joda East iron mine.</p>
(17)	<p>The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF&amp;CC and State Pollution Control Board/Committee.</p>	<p>There is zero waste-water discharge by the mine, and it will be maintained in the future as well. Water audit is carried out by an accredited consultant from CGWA, and the improvements suggested are being</p>

		carried out to reduce consumption of water. Optimization of the water consumption will be done to reduce the specific water consumption year-on-year.
<b>IV.</b>	<b>Noise and vibration monitoring and prevention</b>	
(18)	The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.	Monitoring of peak particle velocity is done during every blast and the reports are being maintained.
(19)	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day/night hours.	The illumination & sound has been done in such a way that the villagers are not disturbed. In addition to this we are planning to install noise barriers around the crushing and screening plant to significantly reduce the noise.
(20)	The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.	Adequate measures are taken for control of work noise levels such as all HEMMs have acoustic cabins with air conditioners and the exhaust manifold have silencers. Noisy operations have been identified and persons engaged in such operations are provided with ear plugs/muffs.
<b>V.</b>	<b>Mining plan</b>	
(21)	The Project Proponent shall adhere to approved mining plan, inter alia, including, total excavation (quantum of mineral, waste, over burden, inter burden and top soil etc.); mining technology; lease area; scope of working (method of mining, overburden & dump management, O.B& dump mining, mineral transportation mode, ultimate depth of mining, concurrent reclamation and reclamation at mine closure; land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life; etc.	Total excavation (quantum of mineral, waste, over burden, inter burden and top soil etc.); mining technology; lease area; scope of working (method of mining, overburden & dump management, O.B& dump mining, mineral transportation mode, ultimate depth of mining, concurrent reclamation and reclamation at mine closure; land-use of the mine lease area at various stages of mining etc. shall be adhered to the Mine Plan.
(22)	The land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life shall be governed as per the approved Mining Plan. The excavation vis-à-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance	Noted. Land-use of the mine lease area shall be governed as per the approved mining plan. Excavation, backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area are governed as per approved mining plan. Report on plantation activities is being submitted regularly to the Board along with monthly reports.

	status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office.	
<b>VI.</b>	<b>Land reclamation</b>	
(23)	The Overburden (O.B.), waste and topsoil generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB/waste dumps/topsoil dump like height, width and angle of slope shall be governed as per the approved Mining Plan and the guidelines/circulars issued by D.G.M.S. The topsoil shall be used for land reclamation and plantation.	Over burden is stacked at the earmarked places only. The slopes of the OB dumps are terraced, and the overall slope angle is maintained. Generation of topsoil is very minimal because no fresh area is being broken for mining and the topsoil generated, is being kept at the earmarked site(s) only inside the mining lease area and is being used for plantation & other vegetation & grassing activities. The inactive dump slopes are covered with geo-textile coir-mat and vegetated with native species, grass seeds and vetiver grass for better slope stabilization.
(24)	The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ levelling of dump mass. In critical areas, use of geo textiles/geo-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.	Slope of the dumps are being stabilized by coir matting and vetiver grassing etc.
(25)	Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil/OB/Waste dumps to prevent run off of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.	There is no discharge of any industrial effluent outside the mine lease. All the garland drains, settling pits and check dams of appropriate size, gradient and length been constructed both around the mine pit and over burden dump(s) to prevent run off water and flow of sediments directly into water bodies. Photographs of toe wall, garland drain and settling pits are <b>attached as Annxure-7.</b>
(26)	Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The	All the garland drains, settling pits and check dams of appropriate size, gradient and length been constructed as per progressive mine closure plan both around the mine pit and over burden dump(s) to prevent run off water and flow of sediments directly into water bodies.

	sedimentation pits/sumps shall be constructed at the comers of the garland drains.	
<b>VII.</b>	<b>Transportation</b>	
(27)	No Transportation of the minerals shall be allowed in case of roads passing through villages/habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers. [If applicable in case of road transport]	Not applicable. As transportation is being carried out by railways.
(28)	The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.	A network of fixed water sprinklers has been laid on permanent haul roads. Mobile water tankers of large capacity namely 50 KL which can cover the entire the entire width of the haul road has been commissioned. All feed hoppers where ore is unloaded, and all transfer chutes have been provided with dry-fog dust suppression system. Mist cannons have placed at strategic points to prevent and control of fugitive dust emission. Ambient air quality conforms to the CPCB norms.
<b>VIII.</b>	<b>Green Belt</b>	
(29)	The Project Proponent shall develop greenbelt in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan.	The green belt has been developed with native species on all along the safety zone and other area.

(30)	The Project Proponent shall carryout plantation/afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/ Agriculture Department/ Rural development department/ Tribal Welfare Department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per Hectare. Adequate budgetary provision shall be made for protection and care of trees.	Saplings planted apart from local grass plantation on dumps with various species. The species include Calotropis gigantean, ficus species, <i>Pedilanthus</i> , <i>Cynodon dactylon</i> , <i>Saccharum spontaneum</i> , <i>Bougainvilleas</i> , <i>Yellow durenta</i> , etc. are planted. <i>Saccharum spontaneum</i> planted on slime pond, shown encouraging results, which control the erosion bind the material and adequately covers the ground vegetation.
(31)	The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/protected against felling and plantation of such trees should be promoted.	No grazing land has been acquired.
<b>IX.</b>	<b>Public hearing and human health issues</b>	
(32)	Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The domestic waste water should be treated with STP in order to avoid contamination of underground water.	Township has been developed at Joda West Mn Mines (adjacent to Joda East mine) for workers with all the adequate facilities such as hospital, schools, STP etc.
<b>X.</b>	<b>Corporate Environment Responsibility (CER)</b>	
(33)	The Project Proponent shall submit the time- bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the activities committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEF&CC Office Memorandum No.22-65/2017-IA.III dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.	Time bound action plan for undertaking the activities during Public Consultation has already been followed and submitted.
<b>XI.</b>	<b>Miscellaneous</b>	
(34)	The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once	The digital processing of entire lease area is being carried out regularly. The

	in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEF&CC.	current land use pattern is made by M/s Geo Consultants Pvt. Ltd. the authorized agency by ORSAC, Bhubaneswar.
(35)	The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Not applicable. Joda East iron mine is an operational Iron mine of Tata Steel Ltd from last several decades. Thus financial closure & it's approval is not applicable.
(36)	The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEFCC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.	Six monthly compliance reports are being submitted regularly on the status of implementation of the stipulated environmental safeguards to the MoEF&CC, its Regional Office Bhubaneswar, Central Pollution Control Board and State Pollution Control Board.
(37)	A separate 'Environmental Management Cell with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEF&CC.	A separate environmental management cell is in place with people having relevant qualification on environmental science. Organization has adequate environmental reporting system for adequate decision making.
(38)	The concerned Regional Office of the MoEF&CC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEF&CC officer(s) by furnishing the requisite data / information / monitoring reports.	Full cooperation shall be extended to the officers in furnishing the requisite data/ information/ monitoring reports.
(39)	In pursuant to Ministry's O.M No 22-34/2018-IA.III dated 16.01.2020 to comply with the direction made by Hon'ble Supreme Court on 8.01.2020 in W.P. (Civil) No 114/2014 in the matter Common Cause vs Union of India, the mining lease holder shall after ceasing mining operations, undertake regrassing the mining area and any other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.	Shall be complied after ceasing of mining operations. Although concurrent grassing of the area is undertaken which has been already explained earlier.
(40)	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.	Noted.
(41)	Concealing factual data failure to comply with any or submission of false/ fabricated data and of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Noted.
<b>D.</b>	<b>Standard EC Conditions for Mineral Beneficiation Plants:</b>	
<b>I.</b>	<b>Statutory compliance:</b>	

1)	The project proponent shall obtain forest clearance under the provisions of Forest (Conservation) Act, 1986, in case of the diversion of forest land for non-forest purpose involved in the project.	Complied. Mining operation is restricted within 567.087 ha of forest area for which diversion approval has been obtained. Additionally, we have submitted fresh application for DRP of remaining area of 32.425 ha.
2)	The project proponent shall obtain clearance from the National Board for Wildlife, if applicable.	Not applicable.
3)	The project proponent shall prepare a Site-Specific Conservation Plan & Wildlife Management Plan and approved by the Chief Wildlife Warden The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be Implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report. (in case presence of schedule-I species in the study area).	A detailed Site-Specific Wildlife Conservation Plan has been approved.
(4)	The project proponent shall obtain Consent to Establish / Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the concerned State pollution Control Board/ Committee.	Noted. We shall abide by the said condition.
(5)	The project proponent shall obtain the necessary permission from the Central Ground Water Authority, in case of drawl of ground water from the competent authority concerned in case of drawl of surface water required for the project.	For domestic use and other purposes, the mine has been granted renewal of CGWA NOC (460m <sup>3</sup> /day) issued vide no. CGWA/NOC/MIN/REN//3/2025/10891, dated 22.02.2025.
(6)	The project proponent shall obtain authorization under the Hazardous and other Waste Management Rules, 2016 as amended from time to time.	Hazardous wastes Authorization has been obtained as per the provisions of Hazardous Waste Management Rules, 2016.
<b>II.</b>	<b>Air quality monitoring and preservation</b>	
(7)	The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories. Monitor fugitive emissions in the plant premises	There is no stack emission from Joda East iron mine.
(8)	The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognised under Air Quality monitoring for common/criterion parameters relevant to the main pollutants released (e.g., PM10 and PM2.5 in reference to PM emission, and SO2 and NOx in reference to S02 and NOx emissions) within and outside the plant area at least at four	Fugitive dust emissions from all the sources are being controlled regularly on daily basis. The fugitive dust monitoring report is attached as <b>Annexure-8</b> .

	locations (one within and three outside the plant area at an angle of 120'each). covering upwind and downwind directions.	
(9)	The project proponent shall install system to carryout Continuous Ambient Air Quality monitoring for common/criterion parameters relevant to the main pollutants released (e.g., PM10 and PM2.5 in reference to PM emission, and SO2 and NOx in reference to S02 and NOx emissions) within and outside the plant area at least at four locations (one within and three outside the plant area at an angle of 120'each), covering upwind and downwind directions.	2 nos. Continuous Ambient Air Quality monitoring system is installed inside Mining Lease area for monitoring PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>x</sub> and CO in the core zone on daily basis.
(10)	The project proponent shall submit monthly summary report of continuous stack emission and air quality monitoring and results of manual stack monitoring and manual monitoring of air quality /fugitive emissions to Regional Office of MoEF&CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.	There are no stack emission from Joda East iron mine.
(11)	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed stack emission and fugitive emission standards.	A network of fixed water sprinklers has been laid on permanent haul roads. Mobile water tankers of large capacity namely 50 KL which can cover the entire the entire width of the haul road has been commissioned. All feed hoppers where ore is unloaded and all transfer chutes have been provided with dry-fog dust suppression system. Mist cannons have placed at strategic points to prevent and control of fugitive dust emission. Ambient air quality conforms to the CPCB norms
(12)	The project proponent use leak proof trucks/dumpers carrying ore and other raw materials and cover them with tarpaulin,	Not applicable. As transportation is carried out by railways.
(13)	Wind shelter fence and chemical spraying shall be provided on the raw material stock piles.	Mist cannon is being deployed for wetting of raw material stock piles.
(14)	Design the ventilation system for adequate air changes as per ACGIH document for all tunnels, motor houses, Oil Cellars.	Not applicable.
<b>III.</b>	<b>Water quality monitoring and preservation</b>	
(15)	The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognised under Environment (Protection) Act, 1986 or NABL accredited laboratories.	Not applicable. We are practicing ZLD from Joda East iron mine.

(16)	The project proponent shall monitor regularly ground water quality at least twice a year (pre and post monsoon) at sufficient numbers of piezometers/sampling wells in the plant and adjacent areas through labs recognised under Environment (Protection) Act, 1986 and NABL accredited laboratories.	Ground water quality and Ground water level are being monitored periodically in and around the lease areas. All the monitoring results are being submitted to regulatory agencies.
(17)	The project proponent shall submit monthly summary report of continuous effluent monitoring and results of manual effluent testing and manual monitoring of ground water quality to Regional Office of MoEF&CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.	Ground water quality and Ground water level are being monitored periodically in and around the lease areas. All the monitoring results are being submitted to regulatory agencies.
(18)	The project proponent shall provide the slime disposal facility with impervious lining and collection wells for seepage. The water collected from the slime pond shall be treated and recycled.	After mineral processing in wet plant, the slime slurry is thickened in the thickener and pumped to the slime pond, where slime settles down and decanted water is recycled back to circuit. All the slime slurry is sent only to mined-out voids which have been converted into in-pit slime ponds. The decanted water from the slime pond is completely recycled & reused in the beneficiation plant and generated slime is stored for future use like briquette making. Thus, no water is being discharged to outside mining lease area.
(19)	Adhere to 'Zero Liquid Discharge	There is zero waste-water discharge by the mine and it will be maintained in the future as well.
(20)	Sewage Treatment Plant shall be provided for treatment of domestic wastewater to meet the prescribed standards.	One STP of capacity 10 KLD has been established.
(21)	Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off.	Garland drains with settling pits have been constructed all along the OB dumps. Settling pits have also been provided to arrest the silt flow from mines area. The de-siltation of these check dams, settling pits are done regularly and properly maintained. Sedimentation pits have been constructed at the corners of the garland drains to take care of run-off of water even during peak rain fall and they are being de-silted regularly before and after the monsoon. Garland drains, settling tanks and Check dams had been constructed both around the mine pit and over burden dump(s).
(22)	The project proponent shall practice rainwater harvesting to maximum possible extent.	Due to area constraint inside the mine lease area 96 nos. of ponds have been constructed in the buffer zone for ground water recharge.

(23)	The project proponent shall make efforts to minimise water consumption in the steel plant complex by segregation of used water, practicing cascade use and by recycling treated water.	Not applicable.
<b>IV.</b>	<b>Noise monitoring and prevention</b>	
(24)	Noise level survey shall be carried as per the prescribed guidelines and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report.	Noise monitoring is carried out on monthly basis.
(25)	The ambient noise levels should conform to the standards prescribed under E(P)A Rules, 1986 viz. 75 dB(A) during day time and 70 dB(A) during night time.	Noise monitoring is carried out on monthly basis. And the noise results are well within the prescribed norms.
<b>V.</b>	<b>Energy Conservation measures</b>	
(26)	Provide solar power generation on roof tops of buildings, for solar light system for all common areas, street lights, parking around project area and maintain the same regularly:	Solar lights are provided for all common areas, street lights etc.
(27)	Provide LED lights in their offices and residential areas.	Complied. LED bulbs are provided at all office and residential areas.
<b>VI.</b>	<b>Waste management</b>	
(28)	The waste oil, grease and other hazardous waste shall be disposed of as per the Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016.	Hazardous wastes management is being done as per the provisions of Hazardous Waste Management Rules, 2016.
(29)	Kitchen waste shall be composted or converted to biogas for further use.(to be decided on case to case basis depending on type and size of plant)	Organic Waste converter has been installed to convert kitchen waste to compost which further gets used in plantation.
<b>VII.</b>	<b>Green Belt and EMP</b>	
(30)	Green belt shall be developed in an area equal to 33% of the plant area with a native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant	Green belt development done is monitored till it becomes self-sustaining. Relevant records as mentioned are being maintained by the horticultural specialist.
(31)	The project proponent shall prepare GHG emissions inventory for the plant and shall submit the programme for reduction of the same including carbon sequestration including plantation.	GHG emission inventory is being prepared and plan for reduction of the same including carbon sequestration including plantation
<b>VIII.</b>	<b>Public hearing and Human health issues</b>	
(32)	Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.	Being Complied The company's commitment in the area of Health & Safety is well supported by implementation of: Safety Principles & Occupational Health Policy Occupational Health & Safety Management System (ISO 45001:2018). Hazards in work place are identified as a part of occupational health policy and appropriate control measures are in place to protect the health and well-being of workers. Various awareness programs regarding health, sanitation etc. have been

		<p>conducted with the help of Tata Steel Foundation (TSF). The health-related initiatives in place are-</p> <ul style="list-style-type: none"> <li>• Megahealth camps, Malaria parasite control programme, Cataract surgery camp, Prenatal care.</li> <li>• MANSI project: Reducing infant and maternal mortality.</li> <li>• Providing financial assistance and waivers for needy patients, on a case-to-case basis.</li> </ul>
(33)	The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms of Factory Act.	All the personnel working in dusty areas are provided with protective respiratory devices such as masks and also provided adequate training and information on safety and health aspects.
(34)	Provision shall be made for the housing of 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, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Being Complied Township has been developed for workers with all the adequate facilities such as hospital, schools, STP etc.
(35)	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Pre-placement medical examination and periodical examination of the workers engaged is being conducted & record maintained. The schedule of Periodical Medical Examination is once in every 3 years for the employees of age more than 45 years and once in 5 years for the employees of age less than 45 years. Some of the best practices related to occupational health adopted in mine are: <ul style="list-style-type: none"> <li>• Employees' health check-up under Wellness @ workplace program</li> <li>• Health awareness classes on weekly basis for shop floor employees</li> <li>• Officers' health check-up on yearly basis for lifestyle disease</li> <li>• Counselling to high blood pressure, sugar cholesterol, hypertension employees through medical board</li> <li>• Observation of important health days like World No Tobacco day, AIDS day, Heart day, Diabetic day etc</li> <li>• Display of calorie chart in canteens alongside the menu</li> </ul>
<b>IX.</b>	<b>Corporate Environment Responsibility</b>	
(36)	The Project Proponent shall submit the time bound action plan to the concerned regional office of the Ministry within 6 months from the date of issuance of environmental clearance for undertaking the	Being Complied All the activities proposed during Public Consultation are being implemented.

	activities committed during public consultation by the project proponent and as discussed by the EAC, in terms of the provisions of the MoEF&CC Office Memorandum No.22-65/2017-IA.III dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.	
(37)	The company shall have a well laid down environmental policy duly approved by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental forest /wildlife norms/ conditions. The company shall have defined system of reporting infringements / deviation/violation of the environmental / forest I wildlife norms/conditions and/or shareholders/stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.	A well laid down environment policy has been approved by the Board of Directors
(38)	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.	Being Complied A separate environmental management cell is in place with people having relevant qualification on environmental science. Organization has adequate environmental reporting system for adequate decision making.
(39)	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and account and it not to be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.	Being Complied All the activities proposed in EMP are being implemented
(40)	Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.	Annual Self-environmental audit is being conducted. third party environmental audit shall be carried out by 3 <sup>rd</sup> party.
(41)	All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Mineral Beneficiation plants shall be implemented.	Shall be complied.
<b>X.</b>	<b>Miscellaneous</b>	
(42)	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular	Details of Environmental Clearance about Joda East Iron Mine was published in local newspapers (English Daily, New Indian Express and in Oriya (Dainik Jagran) on 16.03.2013.

	language within seven days and in addition this shall also be displayed in the project proponent's website permanently.	
(43)	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.	A copy of EC was given to MS, OSPCCB and Addl. PCCF was given vide letter MD/ENV/104/102/2013. and MD/ENV/105/102/2013 respectively. EC also given to President, ZP Keonjhar and Chairman, Joda.
(44)	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.	Six monthly compliance reports are being submitted regularly on the status of implementation of the stipulated environmental safeguards on the company website.
(45)	The project proponent shall monitor the criteria pollutants level namely; PM10, S02, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.	Four manual ambient air quality monitoring stations have been established in the core zone for PM10, PM2.5, SO2, NOx and CO monitoring. Monitoring is done by NABL accredited lab, and the reports are submitted to Board regularly.
(46)	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.	Six monthly compliance reports are being submitted regularly on the status of implementation of the stipulated environmental safeguards to the MoEF&CC, its Regional Office Bhubaneswar, Central Pollution Control Board and State Pollution Control Board and on PARIVESH portal.
(47)	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company.	Annual environment statement in Form-V is submitted to concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986 and the same is uploaded on company website.
(48)	The project proponent 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, commencing the land development work and start of production operation by the project.	Not applicable. Joda East is an operational Iron mine of Tata Steel Ltd from last several decades. Thus, financial closure & it's approval is not applicable.
(49)	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.	Noted.
(50)	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.	Being Complied All the activities proposed during Public Consultation are being implemented.
(51)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).	Noted.

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Plantation Photographs



Mechanical Sweeping Machine



Summarised Fugitive Dust Monitoring Report					
Joda East Iron Ore Mine of M/s Tata Steel Limited					
Period: April 2025 to September 2025					
Mine Location	Sampling Location	Month	Unit	Results	Norms
Joda East Iron Ore Mine	Crushing & Screening Plant	April 2025	µg/m3	503.63	1200
		May 2025	µg/m3	532.50	1200
		June 2025	µg/m3	557.00	1200
		July 2025	µg/m3	587.00	1200
		August 2025	µg/m3	446.00	1200
		September 2025	µg/m3	452.25	1200
	Loading & Stacking	April 2025	µg/m3	495.75	1200
		May 2025	µg/m3	657.80	1200
		June 2025	µg/m3	597.00	1200
		July 2025	µg/m3	515.00	1200
		August 2025	µg/m3	429.00	1200
		September 2025	µg/m3	430.50	1200
	Haul Road	April 2025	µg/m3	594.75	1200
		May 2025	µg/m3	541.30	1200
		June 2025	µg/m3	569.00	1200
		July 2025	µg/m3	566.00	1200
		August 2025	µg/m3	508.00	1200
		September 2025	µg/m3	452.12	1200
	Waste Dump Site	April 2025	µg/m3	476.38	1200
		May 2025	µg/m3	520.00	1200
		June 2025	µg/m3	533.00	1200
		July 2025	µg/m3	627.00	1200
		August 2025	µg/m3	366.00	1200
		September 2025	µg/m3	408.62	1200
Mining Face (Near Drill)	April 2025	µg/m3		1200	
	May 2025	µg/m3	591.60	1200	
	June 2025	µg/m3	637.00	1200	
	July 2025	µg/m3	669.00	1200	
	August 2025	µg/m3	521.00	1200	
	September 2025	µg/m3	410.75	1200	

## Air Quality Management: JEIM

Use of fixed watersprinklers at haul roads for dust suppression



Use of water Mist Canon for dust suppression



Use of Dry fog system at all transfer points in plants



Use of mobile tankers for water sprinkling on haul roads





**JODA EAST IRON MINE  
AVERAGE AIR QUALITY REPORT**

Month	Manmora Slime Dam					Near Rainwater Harvesting					Near Magazine					Near Equipment Maintenance				
	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO
Apr 25	66.2	23.8	12.2	23.8	BLQ	53.2	20.9	11.7	22.1	BLQ	64.1	28.0	11.4	24.3	BLQ	62.7	23.3	11.5	21.9	BLQ
May 25	67.1	24.4	13.1	23.2	BLQ	62.1	21.8	12.3	22.2	BLQ	62.0	22.0	12.6	24.0	BLQ	64.3	23.6	13.6	23.0	BLQ
Jun 25	65.3	24.0	13.4	23.2	BLQ	65.7	26.3	13.6	23.6	BLQ	63.8	23.8	13.4	23.4	BLQ	61.9	21.9	12.7	21.4	BLQ
Jul 25	62.7	25.8	12.5	22.3	BLQ	62.7	25.3	12.8	26.0	BLQ	59.5	25.0	11.5	23.4	BLQ	63.5	24.8	13.3	22.6	BLQ
Aug 25	60.8	23.2	13.9	23.1	BLQ	55.1	21.0	10.6	19.3	BLQ	55.2	20.7	11.1	20.4	BLQ	54.5	20.6	10.9	19.8	BLQ
Sept 25	60.3	25.9	11.5	30.3	BLQ	65.6	28.1	12.9	28.5	BLQ	54.4	22.6	8.7	26.7	BLQ	60.0	26.7	10.2	29.8	BLQ

BLQ (LOQ-0.5)

**AVERAGE AIR QUALITY REPORT**

Month	Baneikela					Lohanda					Khuntpani					Joda Hospital				
	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO
Apr 25	50.1	17.3	8.8	19.4	BLQ	50.4	17.3	12.0	19.8	BLQ	58.9	24.3	13.4	22.6	BLQ	49.0	19.5	13.2	22.1	BLQ
May 25	59.9	21.4	12.1	24.0	BLQ	57.7	20.5	10.8	21.7	BLQ	57.8	19.9	10.9	22.6	BLQ	55.2	18.0	8.4	19.4	BLQ
Jun 25	58.6	19.8	10.7	20.0	BLQ	59.4	21.3	11.8	20.4	BLQ	60.3	20.8	12.0	22.7	BLQ	53.3	20.5	11.1	18.6	BLQ
Jul 25	56.6	21.9	12.4	22.8	BLQ	63.5	24.2	13.0	24.6	BLQ	52.9	21.2	13.1	20.6	BLQ	53.8	20.5	12.5	21.0	BLQ
Aug 25	59.1	22.4	10.8	18.1	BLQ	52.4	20.9	11.3	20.9	BLQ	51.1	18.9	9.8	19.1	BLQ	58.5	21.0	10.5	20.3	BLQ
Sept 25	58.7	23.0	11.0	19.6	BLQ	58.6	20.5	11.5	18.9	BLQ	61.5	24.2	11.4	21.7	BLQ	59.9	28.9	12.6	23.5	BLQ

BLQ (LOQ-0.5)

Unit of measurement for all parameters except CO is µg/m<sup>3</sup>. Co is in mg/m<sup>3</sup>

## Digital Display Board



Garland Drains, Toe Walls, Settling Pits: JEIM

Garland Drains, Toe wall & Settling pits



**JODA EAST IRON MINE  
AVERAGE AIR QUALITY REPORT**

Month	Manmora Slime Dam					Near Rainwater Harvesting					Near Magazine					Near Equipment Maintenance				
	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO
Apr 25	66.2	23.8	12.2	23.8	BLQ	53.2	20.9	11.7	22.1	BLQ	64.1	28.0	11.4	24.3	BLQ	62.7	23.3	11.5	21.9	BLQ
May 25	67.1	24.4	13.1	23.2	BLQ	62.1	21.8	12.3	22.2	BLQ	62.0	22.0	12.6	24.0	BLQ	64.3	23.6	13.6	23.0	BLQ
Jun 25	65.3	24.0	13.4	23.2	BLQ	65.7	26.3	13.6	23.6	BLQ	63.8	23.8	13.4	23.4	BLQ	61.9	21.9	12.7	21.4	BLQ
Jul 25	62.7	25.8	12.5	22.3	BLQ	62.7	25.3	12.8	26.0	BLQ	59.5	25.0	11.5	23.4	BLQ	63.5	24.8	13.3	22.6	BLQ
Aug 25	60.8	23.2	13.9	23.1	BLQ	55.1	21.0	10.6	19.3	BLQ	55.2	20.7	11.1	20.4	BLQ	54.5	20.6	10.9	19.8	BLQ
Sept 25	60.3	25.9	11.5	30.3	BLQ	65.6	28.1	12.9	28.5	BLQ	54.4	22.6	8.7	26.7	BLQ	60.0	26.7	10.2	29.8	BLQ

BLQ (LOQ-0.5)

**AVERAGE AIR QUALITY REPORT**

Month	Baneikela					Lohanda					Khuntpani					Joda Hospital				
	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NOX	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO
Apr 25	50.1	17.3	8.8	19.4	BLQ	50.4	17.3	12.0	19.8	BLQ	58.9	24.3	13.4	22.6	BLQ	49.0	19.5	13.2	22.1	BLQ
May 25	59.9	21.4	12.1	24.0	BLQ	57.7	20.5	10.8	21.7	BLQ	57.8	19.9	10.9	22.6	BLQ	55.2	18.0	8.4	19.4	BLQ
Jun 25	58.6	19.8	10.7	20.0	BLQ	59.4	21.3	11.8	20.4	BLQ	60.3	20.8	12.0	22.7	BLQ	53.3	20.5	11.1	18.6	BLQ
Jul 25	56.6	21.9	12.4	22.8	BLQ	63.5	24.2	13.0	24.6	BLQ	52.9	21.2	13.1	20.6	BLQ	53.8	20.5	12.5	21.0	BLQ
Aug 25	59.1	22.4	10.8	18.1	BLQ	52.4	20.9	11.3	20.9	BLQ	51.1	18.9	9.8	19.1	BLQ	58.5	21.0	10.5	20.3	BLQ
Sept 25	58.7	23.0	11.0	19.6	BLQ	58.6	20.5	11.5	18.9	BLQ	61.5	24.2	11.4	21.7	BLQ	59.9	28.9	12.6	23.5	BLQ

BLQ (LOQ-0.5)

Unit of measurement for all parameters except CO is µg/m<sup>3</sup>. Co is in mg/m<sup>3</sup>