The Additional PCCF (C)
Eastern Regional Office
MoEF & CC, Govt. of India
A/3, Chandrasekharpur
Bhubaneswar–751 013 (Odisha)
Email: roez.bsr-mef@nic.in

MD/ENV/ 317 /104 / 2021
Date: 29.11.2021

Ref: Environmental Clearance letter no. IA-J-11015/63/2008.IA.II(M) dated: 05.08.2021.

Sub: Half-yearly compliance status report of Environmental Clearance conditions for the period April'21 - September'21 in respect of Katamati Iron Mine, M/s Tata Steel Limited.

Dear Sir,

Kindly find attached herewith submitting the six monthly compliance report as on date in respect of the stipulated Environmental Clearance conditions of Katamati Iron Mine, M/s Tata Steel Limited for the period from **April 2021 – September 2021** as per EIA Notification, 2006. Also for the same period vide office memorandum no. Z-11013/57/2014-IA.II (M), dated 29.10.2014, is also attached herewith as Annexure -1. The same has been mailed in soft copy of the report to your good office on email: roez.bsr-mef@nic.in for your ready reference.

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 endeavor for further improve upon our Environmental Management practices.

Thanking you,

Yours faithfully,
f: M/s Tata Steel Limited

Pankaj Kumar
Head (Planning), OMQ

Encl. : As above

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

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ENVIRONMENTAL CLEARANCE
OF
KATAMATI IRON MINE OF TATA STEEL LIMITED

(MoEF & CC Letter No. IA-J-11015/63/2018-IA-II(M) DATED: 05/08/2021)

	Specific Conditions	
i.	Environmental Clearance (EC) shall be valid up to the lease period only i.e. up to 31.03.2030.	Noted.
ii.	The budget of Rs. 7.36 Crores 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.	Noted and all the activities shall be complied within the timeline.
iii.	The Project Proponent shall undertake the adequate plantation in peripheral zone as well as gap plantation with the seedling of 6-8 ft height with at least 90% survival rate to control the dust at source and should be completed within 2 years from the date of commencement of mining operations. Causalities of the previous year should be replaced other than the saplings proposed to be planted every year	In FY 22 around 1693 saplings have been planted in the safety zone. 
iv.	The Project Proponent shall make efforts for Sal plantation for restoring the mine lease area. PP shall provide tree guard to maintain the early stages of plant growth.	Sal plantation is done along with plantation activities and tree guard are provided to maintain early stages of plant growth.
v.	Geomats to be used as erosion control blanket which should be biodegradable and accordingly validated through testing from a recognized institution/ laboratory.	Geo jute coir mat has been laid on the slope of sub grade dump along with grass seeding. 
vi.	The conservation plan in consultation with the Forest Department shall be implemented and	Noted and shall be complied.

	compliance of the same shall be submitted to IRO of MoEF&CC before 1st July of every year	
vii.	Project proponent shall furnish a certificate from DFO regarding satisfactory compliance of site specific wildlife conservation plan.	Noted and shall be complied.
viii.	The Project Proponent shall obtain the Renewal of NOC from CGWA for withdrawal of ground water before undertaking mining operations.	The mine has been granted for renewal of CGWA NOC (460m3/day) issued vide no. CGWA/NOC/MIN/REN/1/2021/6429, dated 12.11.2021 which is valid till 09.10.2022.
ix.	The Project Proponent should undertake the soil conservation/ restoration activity in a way that the habitats can be restored.	Efforts such as plantation of native species, creating herpetofaunal habitats on waste dumps etc. are being put in restoration activity so that habitats can be restored.
B. 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:		
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. 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.	Construction of road within the mine shall be done once clearance from all the regulatory authorities is received. TSL proposes to comply within one year as mentioned in the 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	TSL is in process of procuring a mechanical sweeping machine to achieve zero dust re-suspension and shall be completed within timeline.

	months. This Environmental Clearance for the expansion project shall be operated only after the compliance of the above mentioned specific condition.	
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. Katamati iron mine is regularly submitting the half-yearly EC and annual CTO 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.	It is proposed to enhance the production capacity (Run of Mine) from 8 MTPA to 13.5 MTPA. Out of this 13.5 MTPA, approximately 9.5 to 11.5 MTPA of ROM shall be processed in tandem with Noamundi ore in the processing plant located at Noamundi and conveyed through closed conveyor belts to the private railway siding at Noamundi. Final product is dispatched from the private railway siding and other public railway sidings. Approximately 4 MTPA ROM shall be processed at the beneficiation plant located at Katamati. The finished product shall be continued to be sent to the steel plants through railway siding either through Noamundi or through public siding at Deojhar or by road directly to the steel plants. Currently there is a proposal for dispatching around 2 MTPA processed ore (maximum) by trucks which will only be taken up when there is a shortage of racks and wagon availability from Railway. Road dispatch is proposed only till upgradation of logistics and dispatch facilities at Noamundi private railway siding. After adoption of SOTM, all material will be transported to Noamundi for onward dispatch by rail through the private rail siding.
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.	Noted.

	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 submitted periodically to Regional office of the MoEF&CC.	
8)	Project Proponent shall develop the parking plazas for trucks with proper 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.	Parking area for outside trucks with all amenities like drinking water facility, rest shelter with urinal facility, illumination etc has been provided.
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.	TSL is in process of procuring a mechanical sweeping machine to achieve zero dust re-suspension and shall be completed within timeline.
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	The ROM include sub-grade ore from Katamati mine shall be beneficiated in the proposed Iron-ore processing plant being installed to beneficiate low-grade ores at Noamundi. Further Tata Steel's R&D Department is currently researching the technology for briquetting of slimes/ tailings.

	environmental considerations should be done for techno-economic and environmental viability. R&D studies on utilization of mine wastewater having 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 Roxy 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)	Mining Operations/Process Related: 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 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.	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. 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 emissions. 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. 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.
16)	Air Environment Related: 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	i) 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 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.

	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, S02, 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 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.	Mist cannons have placed at strategic points to prevent and control of fugitive dust emission. Ambient air quality conforms to the CPCB norms. ii) 2 nos. Continuous Ambient Air Quality monitoring system is installed inside Mining Lease area for monitoring PM10, PM2.5, SO2, NOx and CO in the core zone on daily basis. Two manual ambient air quality monitoring stations have been established in the core zone for PM10, PM2.5, SO2, NOx and CO monitoring. (iii) We have one CAAQMS station in the buffer zone and the data is transmitted to SPCB server. (iv) Auto-emission checks of all the vehicles 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. (v) It is ensured that all the vehicles exiting the mine gate are checked for use of tarpaulin cover and are not overloaded.   *Vehicle covered with tarpaulin* *CAAQMS near pit office*
17)	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	i) Blasting operation are being carried out only during day time only. Blasting is done using the controlled blasting technique. In this regard, one study has been made by CIMFR (Central Mining & 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

	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.	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 recommendations are strictly followed. CIMFR also studies the ground-vibration and suggests the mine management best blasting practices.
18)	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 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	i) Based on observations from nearby wells and water bodies, the water table in the area is about 519 mRL. Whereas, the maximum depth at conceptual stage is considered to be 564 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. ii) No perennial nala / stream passes through the mining lease area. 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 dugwells and borewells with piezometers already exists for this purpose. iv) During monsoon, accumulated mine pit water is not discharged outside and is allowed to seep through to augment the ground water resources. v) Due to area constraint inside the mine lease area 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. vi) Appropriate mitigation measures (viz. garland drains, retaining walls, collection of runoff etc.) are taken to prevent pollution of nearby river/other water bodies. The water quality monitoring is being carried out regularly by NABL accredited laboratory.

	CGWB, to recharge the ground water source. Further, CGWB can prepare a comprehensive plan for the whole region. (vi) Appropriate mitigation measures (viz. ETP, STP, 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 from the mine) should be properly collected, 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.	vii) There is no industrial wastewater being generated at Katamati. Maintenance of HEMMs is done centrally at Noamundi Workshop. viii) Oil and Grease trap is provided for the workshop at Noamundi. This caters to Katamati mine as well. STPs have been installed in the township located in Noamundi mine lease areas. There is no separate colony in the Katamati mine lease area. 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. 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. xi) Garland drain 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. xii) The mine pit water is utilized for water sprinkling on haul roads and for plantation activities. 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.

19)	Land/ Soil/ Overburden Related: 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-mineralised 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. 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 run off. 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	i) Preservation of topsoil: During the developmental stage, it is likely that we may encounter some amount of topsoil. Topsoil will be stored temporarily and will be utilized in our afforestation and horticultural activities. ii) Fodder plots have been developed in the mine lease area for use as grazing land. iii) OB/ low grade Ore are stacked at earmarked dump sites as per the approved Mining Plan. 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 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.

	provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual Mine Lease Holders.	
20)	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 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) Green belt is an important sink of air pollutants including noise. Development of green cover in mining area will no 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	i) A detailed Site-Specific Wildlife Conservation Plan has been approved by Chief Wildlife Warden and contribution to Regional Wildlife Management Plan has been made. 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 maintained by the horticultural specialist. 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. v) In consultation with IIT Kharagpur, Tata Steel has undertaken vetiver plantation in order to stabilize OB dumps. In FY22 around 1 ha area has been stabilized by vetiver grass.   vi) It is in the scope of State Forest Department.

	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 & Wildlife Department.	
21)	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 outees and land losers/affected people, if any, 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, 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 Vojna (PMKKKY), notified by Ministry of Mines, Govt. of India, vide letter no. 16/7/2017-M.VI (Part), dated September 16, 2015. Responsibility: District Administration and Individual Mine Lease Holders.	i) We have a separate wing named Tata Steel Rural Development Society 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. ii) There is no case of displacement of people due to the project. 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 development programs, etc and will continue to extend support in future too.
22)	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)	i) Katamati mine will abide by the SOTM system as and when the guidelines are formed by the Department of Steel & Mines, Govt of Odisha in this regard. ii) Construction of road within the mine shall be done once clearance from all the regulatory authorities is received. Maintenance of all roads under TSL control is being done regularly to ensure dust-free road transport. iii) Transportation of final product by trucks, outside

	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 & exit gate on regular basis, and be maintained within the acceptable limits. Responsibility: Individual Mine Lease Holders and Dept. of Steel & Mines.	mine to the end-use steel plants, is being done by covering the trucks with tarpaulin so that no spillage takes place. Air quality monitoring (PM10) is being done near the exit point.
23)	1) 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 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).	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 centre. ii) 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 The occupational health surveillance shows that there is no occurrence of any kind of occupational health diseases. 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. A Central Hospital located at Noamundi caters to both Noamundi and Katamati 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.
C. STANDARD CONDITIONS		
I. Statutory Compliance		
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	A payment of Rs 82,70,48,782.00/- is made as per demand notice no. 4140/ mines dated 02.09.2017. The

	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.	Project Proponent is complying with all the statutory requirements and judgements of Hon. Supreme Court dated the 2nd August 2017 in writ petition (civil) no. 114 of 2014 in the matter of common cause vs union of India and Ors.
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 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors.	A payment of Rs 82,70,48,782.00/- is made as per demand notice no. 4140/ mines dated 02.09.2017. The Project Proponent is complying with all the statutory requirements and judgements of Hon. Supreme Court dated the 2nd August 2017 in writ petition (civil) no. 114 of 2014 in the matter of common cause vs union of India and Ors.
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 letter is sent to Deojhar panchayat and Anseikala panchayat with letter no. MD/ENV/173/110/2021 and MD/ENV/174/110/2021 dated 10.08.2021.
6	State Pollution Control Board/Committee shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector's office/ Tehsildar's Office for 30 days.	Noted.
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 (www.parivesh.nic.in). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record.	Details of Environment Clearance with regard to Katamati Iron Mine were published both in English(Orissa Post) and Odiya(Prameya) in local newspapers on 11.08.2021. The copy of the newspaper advertisement was sent to the Regional Office, MoEF&CC, Bhubaneswar with letter no: MD/ENV/187-A/98/2021 dated 16.08.2021. It is enclosed as Annexure 1.
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 need to apply for transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.	Noted.

II. Air quality monitoring and preservation		
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 stations are installed at prominent places such as pit office, canteen etc. and monitoring is done on regular basis. The data is also been displayed using electronic display board in public domain. Average air quality data is enclosed as Annexure 2.  *CAAQMS near pit office*  *Display board*
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 shall be ensured that air pollution level conform to the standards prescribed by the MoEFCC/ Central Pollution Control Board.	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 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.   *Mobile Water sprinkler at Katamati*   *Water jet with mist water spray in Katamati*

Ill. Water quality monitoring and preservation		
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 519 mRL. Whereas, the maximum depth at conceptual stage is considered to be 564 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 and other purposes, the mine has been granted for renewal of CGWA NOC (460m3/day) issued vide no. CGWA/NOC/MIN/REN/1/2021/6429, dated 12.11.2021 which is valid till 09.10.2022.
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 *I* 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. Latest report is enclosed as Annexure 3.  *Piezometric bore well at Katamati Iron Mine*
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-a-vis 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 lease 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	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 Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Latest report is enclosed as Annexure 4.

	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.	
14)	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.	As there is no workshop present in the mine lease area, 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 as shown in the figure below  *Env monitoring data display in public domain at Katamati*
15)	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.	Due to area constraint inside the mine lease area 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.
16)	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.	No industrial wastewater generated as there is no workshop present in Katamati Iron Mine. Oil and grease trap is provided for the common workshop present in Noamundi. A CETP is of 30KLD capacity is installed for treating the effluent generated from common workshop at Noamundi.
17)	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&CC and State Pollution Control Board/Committee.	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.

IV. Noise and vibration monitoring and prevention		
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 ppv is done after every blast and the reports are being maintained. Copy of latest report is enclosed as Annexure 5.
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 panels around the railway siding boundary 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.
V. Mining plan		
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-a-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	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. In FY 22 around 6634 saplings have planted in the mine lease area till date.

	compliance status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office.	
VI. Land Reclamation		
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 and not exceeding 27°. Generation of topsoil is very minimal because no fresh area is being broken for mining and the top soil generated, is being kept at the earmarked site(s) only inside the mining lease area and is being subsequently used for plantation & other vegetation & grassing activities. The inactive dump slopes are vegetated with native species and grass and vetiver grass for better slope stabilization.  *Vegetation & grassing on slime dumps*  *Vegetation & grassing on waste dumps*
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/ leveling of dump mass. In critical areas, use of geo textiles/ geo-membranes I clay liners/ Bentonite etc. shall be undertaken for stabilization of the dump.	Slope of the dumps are being stabilized by coir matting, vetiver grassing etc.,  *Coir matting and vetiver grassing on dumps*

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 outside discharge of any industrial effluent. 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 of water and flow of sediments directly into water bodies. Photographs of toe wall, garland drain and settling pits are attached.  *Settling pits at Katamati Iron Mine*  *Check dams & Garland drains at Katamati Iron Mine*
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 sedimentation pits/ sumps shall be constructed at the corners of the garland drains.	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 of water and flow of sediments directly into water bodies.
VII. Transportation		
27)	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	It is proposed to enhance the production capacity (Run of Mine) from 8 MTPA to 13.5 MTPA. Out of this 13.5 MTPA, approximately 9.5 to 11.5 MTPA of ROM shall be processed in tandem with Noamundi ore in the processing plant located at Noamundi and conveyed through closed conveyor belts to the private railway siding at Noamundi. Final product is dispatched from the private railway siding and other public railway sidings. Currently there is a proposal for dispatching around 2 MTPA processed ore (maximum) by trucks which will only be taken up when there is a shortage of racks and wagon availability from Railway. Road dispatch is proposed only till upgradation of logistics and dispatch

	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].	facilities at Noamundi private railway siding. After adoption of SOTM, all material will be transported to Noamundi for onward dispatch by rail through the private rail siding.
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.  *Mobile Water sprinkler at Katamati*  *Water jet with mist water spray in Katamati*
VIII. Green Belt		
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.	In FY 22 around 1693 saplings have been planted till date in safety zone of Katamati Iron Mine. 

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.	In the year 2021-22 year about 6634 no of sapling planted apart from local grass plantation on dumps with various species. The species include Calotropis gigantean, ficus species, *Pedilanthus, Cynodon dactylon*, *Saccharum spontaneum*, B*ougainvilleas, Yellow durenta, etc.* are planted. *Saccharum spontaneum* planted on slime pond, shown encouraging results, which control the erosion bind the material and adequately covers the ground vegetation.  *Plantation at Katamati Iron Mine*
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.
IX. Public hearing and human health issues		
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, creche 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 for workers with all the adequate facilities such as hospital, schools, STP etc.

X. Corporate Environment Responsibility (CER)		
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.11I dated 30 September, 2020. The action plan shall be implemented within three years of commencement of the project.	Shall be complied.
XI. Misecellaneous		
34)	The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEF&CC.	The digital processing of entire lease area is being carried out regularly. The current land use pattern is made by M/s Geo Consultants Pvt. Ltd. the authorized agency by ORSAC, Bhubaneshwar. Enclosed as Annexure 6.
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. Katamati 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, MoEFCC.	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 MoEFCC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEFCC 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	Shall be complied after ceasing of mining operations.

	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.	
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.

List of Annexures

Katamati Iron Mine
Tata Steel Limited

Sr. No.	Annexure Details
Annexure - I	EC Advertisement
Annexure - II	Air Quality Average
Annexure – III	Ground Water Level & Quality Report
Annexure – IV	Nallah Quality report
Annexure – V	Vibration Report
Annexure – VI	Digital Processing

Annexure-1

Regional Office
Ministry of Environment, Forest & Climate Change
Regional Office (EZ), A/3
Chandrasekharpur
Bhubaneswar - 751023

MD/ENV/ 187-A / 98 /2021
Date: 16.08.2021

Sub: Advertisement regarding grant of Environmental Clearance for expansion of Katamati Iron Mine of M/s Tata Steel Limited.

Ref: Environmental Clearance letter no. IA-J-11015/63/2018.IA.II (M) dated: 05.08.2021.

Dear Sir,

In compliance to the standard condition no. 7 in EC granted with vide letter no. IA-J-11015/63/2018.IA.II (M) dated: 05.08.2021 which states that *"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 clearance letter mentioning that the instant project has been accorded EC and copy of EC letter is available with the State Pollution Control Board/Committee and website of Ministry of Environment, Forest and Climate Change (www.parivesh.nic.in). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional office for compliance and record"* we hereby advertised in two newspapers i.e Orissa Post(English) and Prameya(Odiya) on 11.08.2021. A copy is enclosed as **Annexure**.

Thanking you,

Yours faithfully,
f: Tata Steel Limited

Chief (Mine Planning & Projects), OMQ

Encl: As above

TATA STEEL LIMITED
Mines Division Noamundi 833 217 India
Tel 91 9234301340 Fax 91 6596 290737
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001
Tel 91 22 66658282 Fax 91 22 66657724
Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

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ଓଭରଲୋଡିଂ ଯୋଗୁ ଓଲଟିଲା ୧୪ ଚକିଆ

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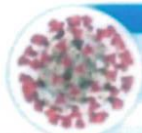
ବାଲି ବୋଝେଇ ହାଇୱା ଜବତ

NEW ENTRANTS

Over a hundred Congress and BJP workers from Kharda, Tangi and Jatni areas join Biju Janata Dal at the regional party's headquarters in Bhubaneswar, Tuesday



COVID-19 TRACKER

Project Tiger sees 50% cut in central funds

Over ₹40 crore has been sanctioned by Union govt for tiger and elephant projects in three years

WILDLIFE PROTECTION

Internal assessment system for Classes IX, X

Soumya Ranjan takes a dig at Naveen's style of functioning

₹374cr spl assistance for Odisha

POLITICKLE by MANJUL

Man held for firearms as wife tips off cops

Panchayat polls to be held on time: Law min

Mandaviya urged to implement Ayushman Bharat in Odisha

Per capita healthcare spending by Odisha govt is ₹1,580 as compared to national average of ₹1,944, said BJP MPs in the memo

Annexure-2

KATAMATI IRON MINE
AVERAGE AIR QUALITY REPORT (CORE ZONE)

Month	Near Pit Office					Near Metso Plant					Near View Point					Near Murga Gate				
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO
Apr 21	60.6	21.2	9.6	18.4	0.295	67.1	25.0	10.1	20.2	0.291	58.5	18.9	8.9	17.2	0.268	71.6	28.1	10.5	21.1	0.346
May21	53.1	18.9	9.4	18.1	0.273	58.9	21.5	8.8	19.0	0.288	54.7	18.7	7.8	16.6	0.271	66.0	25.6	10.1	22.4	0.333
Jun 21	52.9	18.1	8.6	17.7	0.261	53.1	22.2	7.8	16.6	0.215	51.3	17.2	7.6	16.8	0.213	54.4	27.2	8.2	17.7	0.220
Jul 21	50.4	16.3	7.2	15.1	0.210	47.7	15.6	6.6	15.2	0.184	49.8	15.1	6.5	15.3	0.203	49.9	17.7	6.2	15.2	0.186
Aug 21	51.7	17.7	7.8	17.0	0.205	50.2	17.6	6.8	17.2	0.192	48.5	16.1	6.4	16.7	0.206	50.1	18.7	7.3	17.8	0.199
Sep 21	51.9	18.9	9.1	17.4	0.197	52.5	18.0	7.7	16.9	0.183	51.4	18.3	7.8	18.4	0.217	51.6	18.9	8.2	18.6	0.205

AVERAGE AIR QUALITY REPORT (BUFFER ZONE)

Month	Tankura Village					Miralgara Village					Kitabeda Village					Balita Village				
	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO	PM_{10}	$PM_{2.5}$	SO_2	NOX	CO
Apr 21	58.7	18.4	8.7	13.1	0.228	52.3	17.4	8.3	15.9	0.223	54.4	18.0	10.5	17.9	0.287	49.3	17.5	8.7	16.9	0.210
May21	50.1	15.5	6.8	9.5	0.187	49.9	17.6	6.7	13.3	0.204	51.4	16.8	8.0	15.5	0.238	50.1	16.5	7.3	17.1	0.210
Jun 21	55.4	16.8	6.4	8.9	0.196	52.7	17.2	7.0	13.9	0.191	50.5	15.6	7.5	16.3	0.228	50.0	16.9	7.2	16.4	0.200
Jul 21	49.6	15.7	5.8	7.5	0.168	51.3	17.3	7.5	12.8	0.198	48.9	14.3	7.7	16.6	0.234	45.4	15.5	6.3	14.2	0.189
Aug 21	45.8	15.1	7.0	8.3	0.178	50.0	18.5	7.9	12.1	0.182	50.5	15.6	8.7	16.9	0.233	48.0	15.5	5.9	16.9	0.210
Sep 21	47.3	15.5	6.4	8.8	0.17	48.3	16.8	7.2	10.7	0.175	50.1	17.3	8.5	15.4	0.2	49.3	15.1	6.1	14.3	0.175

Unit of measurement for all parameters except CO is $\mu g/m^3$. Co is in mg/m^3

Manager (Environment)

Annexure-3

Ground Water level details for Pre–Monsoon (May) & Monsoon (August)

Katamati Iron Mine, M/s Tata Steel Limited

Standard condition clause no. III water quality monitoring & Preservation, sub-clause point no.12 of EC vide no. IA-J-11015/63/2018-IA-II (M), 05th August 2021.

(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.

Katamati Iron Mine of M/s Tata Steel Limited is an operational opencast captive iron mine. Regular monitoring of ground water level in and around the mine lease of existing well is regularly been done in desired frequency. The detailed quality report is attached herewith.

As per recent hydro-geological study & regulatory approval, few additional locations are also incorporated along with proposed piezometers in the area. Monitored water level for of area for the month of May 2021 and August 2021 are as follows:

Sl. No.	Location	Month	
		May 2021	August 2021
Existing Dug Well Locations:			
1.	Mahadevnasa Village, Near Pond	2. 62 m	2. 4 m
2.	Dalafiri Sahi (well-2) Near Road	2.0 m	1. 8 m
3.	Tata Sponge – Galuri Sahi	5. 95 m	5. 7 m
4.	Murga, Near Temple	1. 90 m	1. 8 m
5.	Dalagiri-1, Near Road	4. 75 m	4. 5 m
New Piezometer Locations:			
6	Murga Village, Near Security Gate	15. 80 m	12. 5 m
7	Near pit office, Katamati Iron Mine	46. 5 m	45. 10 m
8	Near METSO Office, Katamati Mine	47.89m	46 m

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• Accredited By Quality Council of India by - NABET and NABL
• Approved by : Food Safety & Standards Authority of India under FSS Act;
• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL26052021/ 3-5 dated 26/05/2021

Issued To :	**Sample Inward No.**	2021/MON-54/60-GW-3	**Analysis Start**	20/05/2021
M/s Katamati Iron Mines	**Inward Date**	19/05/2021	**Analysis End**	26/05/2021
(M/s TATA Steel Limited)	**Reference**	W.O.- 3000132460/962	**Report Issue Date**	26/05/2021
	Reference Date	15.05.2020	**Sample Category**	Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-3	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	10.30 am	Mahadev Nasha Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.10 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.5
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	268
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.18
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	26.32
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	144
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	174.24
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	48.31
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.02
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	7.77
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	7.02
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

ANACON LABS TEST REPORT

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TEST REPORT

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

Test Report No. : ALPL26052021/ 3-5 dated 26/05/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-3	**Analysis Start** 20/05/2021
	Inward Date	19/05/2021	**Analysis End** 26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 26/05/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-3	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	10.30 am	Mahadev Nasha Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing 2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.31
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'. ● **ANqr RES-30 & 40 : Inhouse validated method.**

Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

ANACON LABORATORIES PVT. LTD. ANACONLABS TEST REPORT

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Sample Name	**Sample Source**	**Sample Particulars**	**Sample Condition**	**Quantity Received**
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Anacon Representative Mr. K. Pandey	15/05/2021	10.30 am	Mahadev Nasha Village

TEST RESULTS

S.N.	**Test Parameter**	**Measurement Unit**	**Test Method**	**Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2**		**Test Result**
				Acceptable Limit	**Permissible Limit #**	
II	**Chemical Testing 2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'. ● ANqr RES-28, 29, 30 & 40 : **Inhouse validated method.**

REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL26052021/ 3-6 dated 26/05/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.** 2021/MON-54/60-GW-4 **Inward Date** 19/05/2021 **Reference** W.O.- 3000132460/962 **Reference Date** 15.05.2020		**Analysis Start** 20/05/2021 **Analysis End** 26/05/2021 **Report Issue Date** 26/05/2021 **Sample Category** Water	

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-4	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	10.55 am	Dalafiri-2 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.21 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	260
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.18
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	29.67
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	144
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	156.42
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	43.56
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	11.57
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	9.07
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	5.21
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

ANACON LABORATORIES PVT. LTD. ANACON LABS TEST REPORT

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• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL26052021/ 3-6 dated 26/05/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-4	**Analysis Start** 20/05/2021
	Inward Date	19/05/2021	**Analysis End** 26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 26/05/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-4	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	10.55 am	Dalafiri-2 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.18
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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TEST REPORT

Test Report No. : ALPL26052021/ 3-6 dated 26/05/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-4	**Analysis Start** 20/05/2021
	Inward Date	19/05/2021	**Analysis End** 26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 26/05/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-4	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	10.55 am	Dalafiri-2 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing 2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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

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TEST REPORT

Test Report No. : ALPL26052021/ 3-7 dated 26/05/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-5	**Analysis Start**	20/05/2021
	Inward Date	19/05/2021	**Analysis End**	26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date**	26/05/2021
	Reference Date	15.05.2020	**Sample Category**	Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-5	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	11.40 am	Dalafiri-1 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.19 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	282
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.14
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	32.06
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	154
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	182.16
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	49.10
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	14.46
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	8.03
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	6.03
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

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Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL26052021/ 3-7 dated 26/05/2021

Issued To :	**Sample Inward No.**	2021/MON-54/60-GW-5	**Analysis Start**	20/05/2021
M/s Katamati Iron Mines	**Inward Date**	19/05/2021	**Analysis End**	26/05/2021
(M/s TATA Steel Limited)	**Reference**	W.O.- 3000132460/962	**Report Issue Date**	26/05/2021
	Reference Date	15.05.2020	**Sample Category**	Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-5	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	11.40 am	Dalafiri-1 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.16
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

ANACON LABORATORIES PVT. LTD. ANACON LABS TEST REPORT

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

Test Report No. : ALPL26052021/ 3-7 dated 26/05/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-5	**Analysis Start** 20/05/2021
	Inward Date	19/05/2021	**Analysis End** 26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 26/05/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-5	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	11.40 am	Dalafiri-1 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing 2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'. ● **ANqr RES-28, 29, 30 & 40 : Inhouse validated method.**

REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By
Sonali Gharpure
Technical Manager

Authorized Signatory
Dr. (Mrs.) S.D. Garway
Quality Manager

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

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL26052021/ 3-8 dated 26/05/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-6	**Analysis Start** 20/05/2021
	Inward Date	19/05/2021	**Analysis End** 26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 26/05/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	**Sample Source**	**Sample Particulars**	**Sample Condition**	**Quantity Received**
Ground Water	Dugwell	Sample Code-GW-6	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	**Sampling Date**	**Sampling Time**	**Sampling Location**
Anacon Representative Mr. K. Pandey	15/05/2021	12.40 pm	Village Nr. Tata Sponge

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.92 at 25°C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.6
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	294
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.21
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	37.81
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	136
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	190.08
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	54.65
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.01
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	9.85
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	3.57
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

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Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-6	**Analysis Start** 20/05/2021
	Inward Date	19/05/2021	**Analysis End** 26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 26/05/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-6	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	12.40 pm	Village Nr. Tata Sponge

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.16
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL26052021/ 3-8 dated 26/05/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-54/60-GW-6	**Analysis Start** 20/05/2021
	Inward Date	19/05/2021	**Analysis End** 26/05/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 26/05/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-6	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	15/05/2021	12.40 pm	Village Nr. Tata Sponge

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By
Sonali Gharpure
Technical Manager

Authorized Signatory
Dr. (Mrs.) S.D. Garway
Quality Manager

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

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TEST REPORT

Test Report No. : ALPL/31082021/ 1-41 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-17	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-17	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	10.55 am	Mahadev Nasha Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.16 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	257
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.18
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	28.52
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	141.68
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	167.32
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	46.28
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.57
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	8.16
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	4.19
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

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Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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TEST REPORT

Test Report No. : ALPL/31082021/1-41 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-17	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-17	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	10.55 am	Mahadev Nasha Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.28
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122.
Email : support@anacon.in;
Please Visit us at : www.anaconlaboratories.com

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• Approved by : Food Safety & Standards Authority of India under FSS Act;
• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/1-41 dated 31/08/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-17	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-17	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	10.55 am	Mahadev Nasha Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing 2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'. ● **ANqr RES-28, 29, 30 & 40 : Inhouse validated method.**

REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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

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• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/ 1-42 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-18	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-18	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.20 am	Dalafiri-2 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.19 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.6
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	248
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.17
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	32.94
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	126
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	156.78
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	43.59
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	11.64
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	7.16
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	5.31
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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TEST REPORT

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-18	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-18	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.20 am	Dalafiri-2 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing 2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.17
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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TEST REPORT

Issued To :	Sample Inward No.	2021/MON-100/60-18	Analysis Start	23/08/2021
M/s Katamati Iron Mines	Inward Date	20/08/2021	Analysis End	28/08/2021
(M/s TATA Steel Limited)	Reference	W.O.- 3000132460/962	Report Issue Date	31/08/2021
	Reference Date	15.05.2020	Sample Category	Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-18	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.20 am	Dalafiri-2 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing 2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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

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• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/1-43 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-19	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-19	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.55 am	Dalafiri-1 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.17 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.6
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	264
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL(DL-0.1)
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	38.52
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	173
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	171.87
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	47.92
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.68
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	8.17
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	5.16
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-19	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-19	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.55 am	Dalafiri-1 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.17
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'. ● **ANqr RES-30 & 40 : Inhouse validated method.**

Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

Thanks for your faith and trust in our services. We at Anacon Laboratories cherish our relationship.
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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-19	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-19	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.55 am	Dalafiri-1 Village

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing 2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/1-44 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-20	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-20	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	12.25 pm	Village Nr. Tata Sponge

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.82 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.7
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	281
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.19
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	46.29
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	142.82
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	177.92
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	52.64
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	11.28
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	7.92
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	5.73
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

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Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122.
Email : support@anacon.in;
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TEST REPORT

Test Report No. : ALPL/31082021/1-44 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-20	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-20	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	12.25 pm	Village Nr. Tata Sponge

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.17
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/1-44 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-20	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Dugwell	Sample Code-GW-20	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	12.25 pm	Village Nr. Tata Sponge

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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

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• Agricultural & Processed Food Products Export Development Authority (APEDA);
• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/1-45 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-21	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Borewell	Sample Code-GW-21	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	1.20 pm	Nr. Metso Plant

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.38 at 25^{0}C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	273
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.24
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	56.17
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	162
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	160.03
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	52.81
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	6.82
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	7.16
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	3.51
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

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Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathale
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

TEST REPORT

Test Report No. : ALPL/31082021/1-45 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-21	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Borewell	Sample Code-GW-21	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	1.20 pm	Nr. Metso Plant

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.18
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

TC - 5458

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• Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/ 1-45 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-21	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Borewell	Sample Code-GW-21	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	1.20 pm	Nr. Metso Plant

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	De!ta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

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REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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

TC - 5458

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- Agricultural & Processed Food Products Export Development Authority (APEDA);
- Bureau of India Standards (BIS) • Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/1-46 dated 31/08/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-22	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Borewell	Sample Code-GW-22	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	2.40 pm	Nr. Pit Office

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
I	**Biological Testing 1.Water**					
1	*Escherichia coli*	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.46 at 25°C
3	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.7
4	Colour	Hazen units	IS 3025 (Part 4) : 1983	5	15	1
5	Odour	-	IS 3025 (Part 5) : 2018	Agreeable	Agreeable	Agreeable
6	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
7	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	Min. 0.2	1	BDL(DL-0.1)
8	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	271
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.17
10	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL(DL-0.005)
11	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	250	1000	58.19
12	Total Alkalinity (as $CaCO_3$)	mg/l	IS 3025 (Part 23) : 1986	200	600	146
13	Total hardness (as $CaCO_3$)	mg/l	IS 3025 (Part 21) : 2009	200	600	161.78
14	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	51.29
15	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	8.17
16	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	200	400	6.29
17	Nitrate (as NO_3)	mg/l	APHA Method 23rd Edition	45	No relaxation	11.27
18	Phenolic compounds (as C_6H_5OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL(DL-0.001)
19	Anionic detergents (as MBAS)	mg/l	IS 13428 : 2005 Annex K	0.2	1.0	BDL(DL-0.01)

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Verified By

Roshani Thakur
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

TC - 5458

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TEST REPORT

Test Report No. : ALPL/31082021/1-46 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-22	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Borewell	Sample Code-GW-22	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	2.40 pm	Nr. Pit Office

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
20	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.18
21	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL(DL-0.03)
22	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL(DL-0.05)
23	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.001	No relaxation	BDL(DL-0.0005)
24	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	0.003	No relaxation	BDL(DL-0.001)
25	Selenium (as Se)	mg/l	IS : 3025 (Part 56) : 2003	0.01	No relaxation	BDL(DL-0.001)
26	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.01	No relaxation	BDL(DL-0.01)
27	Aluminium (as Al)	mg/l	IS 15302 : 2003	0.03	0.2	BDL(DL-0.01)
28	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.01	No relaxation	BDL(DL-0.001)
29	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL(DL-0.1)
30	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL(DL-0.03)
31	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL(DL-0.1)
32	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)
33	Mineral Oil	mg/l	ANqr RES-40	0.5	No relaxation	BDL(DL-0.001)

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Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

TEST REPORT

Test Report No. : ALPL/31082021/1-46 dated 31/08/2021

Issued To : **M/s Katamati Iron Mines** (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-22	**Analysis Start** 23/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Sample Condition	Quantity Received
Ground Water	Borewell	Sample Code-GW-22	Sealed & Ice Preserved	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	2.40 pm	Nr. Pit Office

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 2		Test Result
				Acceptable Limit	Permissible Limit #	
II	**Chemical Testing** **2. Residues In Water**					
34	Pesticide Residues					
i	Alpha-HCH	µg/l	ANqr RES-28	0.01	No relaxation	BDL(DL-0.01)
ii	Beta HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iii	Delta- HCH	µg/l	ANqr RES-28	0.04	No relaxation	BDL(DL-0.03)
iv	Alachlor	µg/l	ANqr RES-28	20	No relaxation	BDL(DL-0.03)
v	Aldrin / Dieldrin	µg/l	ANqr RES-28	0.03	No relaxation	BDL(DL-0.03)
vi	Atrazine	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)
vii	Butachlor	µg/l	ANqr RES-29	125	No relaxation	BDL(DL-0.03)
viii	Chlorpyrifos	µg/l	ANqr RES-28	30	No relaxation	BDL(DL-0.03)
ix	DDT and its Isomers	µg/l	ANqr RES-28	1	No relaxation	BDL(DL-0.03)
x	Gamma - HCH (Lindane)	µg/l	ANqr RES-28	2	No relaxation	BDL(DL-0.03)
xi	2,4-Dichlorophenoxyacetic acid	µg/l	ANqr RES-29	30	No relaxation	BDL(DL-0.03)
xii	Endosulphan	µg/l	ANqr RES-28	0. 4	No relaxation	BDL(DL-0.03)
xiii	Ethion	µg/l	ANqr RES-29	3	No relaxation	BDL(DL-0.03)
xiv	Isoproturon	µg/l	ANqr RES-29	9	No relaxation	BDL(DL-0.03)
xv	Malathion	µg/l	ANqr RES-29	190	No relaxation	BDL(DL-0.03)
xvi	Methyl Parathion	µg/l	ANqr RES-29	0.3	No relaxation	BDL(DL-0.03)
xvii	Monocrotophos	µg/l	ANqr RES-29	1	No relaxation	BDL(DL-0.03)
xviii	Phorate	µg/l	ANqr RES-29	2	No relaxation	BDL(DL-0.03)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● Result for test no. 7 is not relevant. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'. ● ANqr RES-28, 29, 30 & 40 : **Inhouse validated method.**

REMARKS : As requested by the client, sample was tested for above parameters only. **Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.**

Verified By

Sonali Gharpure
Technical Manager

Authorized Signatory

Dr. (Mrs.) S.D. Garway
Quality Manager

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

Annexure-4

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- Bureau of Indian Standards (BIS); Agricultural & Processed Food Products Export Development Authority (APEDA);
- Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/ 1-35 dated 31/08/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-14&15	**Analysis Start** 21/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Location Co-ordinates	Quantity Received
Surface Water	Jojo Nallah	Sample Code-SW-14 & 15	SW-3; Lat: 22°7'40.96"N, Long: 85°28'07.81"E SW-4; Lat: 22°8'07.02"N, Long: 85°28'12.71"E	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.20 am to 2 pm	1. Jojo Nallah Upstream (SW-5) 2. Jojo Nallah Downstream (SW-6)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result SW-14	Test Result SW-15
I	**Biological Testing 1.Water**					
1	Total Coliform	MPN/100ml	IS 1622 : 1981	5000	<2	<2
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.0 to 9.0	7.36 at 25°C	7.40 at 25°C
3	Colour	Hazen units	IS 3025 (Part 4) : 1983	300	1	1
4	Dissolved Oxygen	mg/l	IS 3025 (Part 38) :1989	4.0	6.0	6.2
5	Total Suspended Solid (as TSS)	mg/l	IS 3025 (Part 17) :1984	--	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) :1993	3.0	BDL(DL-2)	BDL(DL-2)
7	Chemical oxygen demand	mg/l	IS 3025 (Part 58) :2006	--	BDL(DL-4)	BDL(DL-4)
8	Total Dissolved Solids (TDS)	mg/l	IS 3025 (Part 16) : 1984	1500	224	230
9	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	1.5	BDL(DL-0.05)	BDL(DL-0.05)
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	600	61.74	63.17
11	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	400	5.70	7.26
12	Nitrate (as NO_3)	mg/l	IS 3025 (Part 34) : 1988	50	3.32	4.79
13	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.5	BDL(DL-0.1)	BDL(DL-0.1)
14	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	mg/l	IS 3025 (Part 43) :1001	0.005	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	mg/l	IS 13428 : 2005 Annex K	1.0	BDL(DL-0.01)	BDL(DL-0.01)
III	**Chemical Testing 2. Residues In Water**					
17	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	0.5	0.14	0.18
18	Cadmium (as Cd)	mg/l	IS 3025 (Part 41) : 1992	0.01	BDL(DL-0.001)	BDL(DL-0.001)
19	Selenium (as Se)	mg/l	IS 3025 (Part 2) : 2019	0.05	BDL(DL-0.001)	BDL(DL-0.001)
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.2	BDL(DL-0.01)	BDL(DL-0.01)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.001)	BDL(DL-0.001)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	15	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	mg/l	IS 3025 (Part 2) :2019	0.05	BDL(DL-0.03)	BDL(DL-0.03)
24	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	--	BDL(DL-0.0005)	BDL(DL-0.0005)
25	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	--	BDL(DL-0.05)	BDL(DL-0.05)

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REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Roshani Thakur
Sr. Chemist

Shashikant Satdeve
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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----End of Report----

Thanks for your faith and trust in our services. We at Anacon Laboratories cherish our relationship.
We put in a lot of hard work to ensure that you have a seamless experience at every step of our relationship.
In order to ensure that your next experience will be significantly better, we welcome your feedback over email on feedback@anacon.in.

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- Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/ 1-34 dated 31/08/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-12&13	**Analysis Start** 21/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Location Co-ordinates	Quantity Received
Surface Water	Mahadev Nallah	Sample Code-12 & 13	SW-1; Lat: 22°6'42.61"N, Long: 85°28'8.97"E SW-2; Lat: 22°6'39.52"N, Long: 85°28'10.41"E	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.20 am to 2 pm	1.Mahadev Nallah (Murga Nallah) Upstream (SW-3) 2.Mahadev Nallah (Murga Nallah) Downstream (SW-4)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result SW-3	Test Result SW-4
I	**Biological Testing 1.Water**					
1	Total Coliform	MPN/100ml	IS 1622 : 1981	5000	<2	<2
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.0 to 9.0	7.42 at 25°C	7.34 at 25°C
3	Colour	Hazen units	IS 3025 (Part 4) : 1983	300	1	1
4	Dissolved Oxygen	mg/l	IS 3025 (Part 38) :1989	4.0	6.1	6.0
5	Total Suspended Solid (as TSS)	mg/l	IS 3025 (Part 17) :1984	--	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) :1993	3.0	BDL(DL-2)	BDL(DL-2)
7	Chemical oxygen demand	mg/l	IS 3025 (Part 58) :2006	--	BDL(DL-4)	BDL(DL-4)
8	Total Dissolved Solids (TDS)	mg/l	IS 3025 (Part 16) : 1984	1500	220	232
9	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	1.5	BDL(DL-0.05)	BDL(DL-0.05)
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	600	62.21	67.96
11	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	400	6.48	7.25
12	Nitrate (as NO_3)	mg/l	IS 3025 (Part 34) : 1988	50	5.36	4.64
13	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.5	BDL(DL-0.1)	BDL(DL-0.1)
14	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	mg/l	IS 3025 (Part 43) :1001	0.005	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	mg/l	IS 13428 : 2005 Annex K	1.0	BDL(DL-0.01)	BDL(DL-0.01)
III	**Chemical Testing 2. Residues In Water**					
17	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	0.5	0.21	0.18
18	Cadmium (as Cd)	mg/l	IS 3025 (Part 41) : 1992	0.01	BDL(DL-0.001)	BDL(DL-0.001)
19	Selenium (as Se)	mg/l	IS 3025 (Part 2) : 2019	0.05	BDL(DL-0.001)	BDL(DL-0.001)
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.2	BDL(DL-0.01)	BDL(DL-0.01)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.001)	BDL(DL-0.001)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	15	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	mg/l	IS 3025 (Part 2) :2019	0.05	BDL(DL-0.03)	BDL(DL-0.03)
24	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	--	BDL(DL-0.0005)	BDL(DL-0.0005)
25	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	--	BDL(DL-0.05)	BDL(DL-0.05)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Roshani Thakur
Sr. Chemist

Shashikant Satdeve
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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ANACON LABORATORIES PVT. LTD.
- ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified
- Recognized By Ministry of Environment & Forests (MoEF), New Delhi
- Approved by : Food Safety & Standards Authority of India under FSS Act;
- Bureau of Indian Standards (BIS); Agricultural & Processed Food Products Export Development Authority (APEDA);
- Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/ 1-35 dated 31/08/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-14&15	**Analysis Start** 21/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Location Co-ordinates	Quantity Received
Surface Water	Jojo Nallah	Sample Code-SW-14 & 15	SW-3; Lat: 22°7'40.96"N, Long: 85°28'07.81"E SW-4; Lat: 22°8'07.02"N, Long: 85°28'12.71"E	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.20 am to 2 pm	1. Jojo Nallah Upstream (SW-5) 2. Jojo Nallah Downstream (SW-6)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result SW-14	Test Result SW-15
I	**Biological Testing 1.Water**					
1	Total Coliform	MPN/100ml	IS 1622 : 1981	5000	<2	<2
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.0 to 9.0	7.36 at 25°C	7.40 at 25°C
3	Colour	Hazen units	IS 3025 (Part 4) : 1983	300	1	1
4	Dissolved Oxygen	mg/l	IS 3025 (Part 38) :1989	4.0	6.0	6.2
5	Total Suspended Solid (as TSS)	mg/l	IS 3025 (Part 17) :1984	--	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) :1993	3.0	BDL(DL-2)	BDL(DL-2)
7	Chemical oxygen demand	mg/l	IS 3025 (Part 58) :2006	--	BDL(DL-4)	BDL(DL-4)
8	Total Dissolved Solids (TDS)	mg/l	IS 3025 (Part 16) : 1984	1500	224	230
9	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	1.5	BDL(DL-0.05)	BDL(DL-0.05)
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	600	61.74	63.17
11	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	400	5.70	7.26
12	Nitrate (as NO_3)	mg/l	IS 3025 (Part 34) : 1988	50	3.32	4.79
13	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.5	BDL(DL-0.1)	BDL(DL-0.1)
14	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	mg/l	IS 3025 (Part 43) :1001	0.005	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	mg/l	IS 13428 : 2005 Annex K	1.0	BDL(DL-0.01)	BDL(DL-0.01)
III	**Chemical Testing 2. Residues In Water**					
17	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	0.5	0.14	0.18
18	Cadmium (as Cd)	mg/l	IS 3025 (Part 41) : 1992	0.01	BDL(DL-0.001)	BDL(DL-0.001)
19	Selenium (as Se)	mg/l	IS 3025 (Part 2) : 2019	0.05	BDL(DL-0.001)	BDL(DL-0.001)
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.2	BDL(DL-0.01)	BDL(DL-0.01)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.001)	BDL(DL-0.001)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	15	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	mg/l	IS 3025 (Part 2) :2019	0.05	BDL(DL-0.03)	BDL(DL-0.03)
24	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	--	BDL(DL-0.0005)	BDL(DL-0.0005)
25	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	--	BDL(DL-0.05)	BDL(DL-0.05)

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REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By

Roshani Thakur
Sr. Chemist

Shashikant Satdeve
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

----End of Report----

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Email : support@anacon.in;
Please Visit us at : www.anaconlaboratories.com

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- Export inspection council (EIC); AGMARK.

TEST REPORT

Test Report No. : ALPL/31082021/ 1-34 dated 31/08/2021

Issued To : M/s Katamati Iron Mines (M/s TATA Steel Limited)	**Sample Inward No.**	2021/MON-100/60-12&13	**Analysis Start** 21/08/2021
	Inward Date	20/08/2021	**Analysis End** 28/08/2021
	Reference	W.O.- 3000132460/962	**Report Issue Date** 31/08/2021
	Reference Date	15.05.2020	**Sample Category** Water

Sample Name	Sample Source	Sample Particulars	Location Co-ordinates	Quantity Received
Surface Water	Mahadev Nallah	Sample Code-12 & 13	SW-1; Lat: 22°6'42.61"N, Long: 85°28'8.97"E SW-2; Lat: 22°6'39.52"N, Long: 85°28'10.41"E	2.0 Ltr & 250 ml

Sample Collected By	Sampling Date	Sampling Time	Sampling Location
Anacon Representative Mr. K. Pandey	17/08/2021	11.20 am to 2 pm	1.Mahadev Nallah (Murga Nallah) Upstream (SW-3) 2.Mahadev Nallah (Murga Nallah) Downstream (SW-4)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result SW-3	Test Result SW-4
I	**Biological Testing 1.Water**					
1	Total Coliform	MPN/100ml	IS 1622 : 1981	5000	<2	<2
II	**Chemical Testing 1.Water**					
2	pH value	-	IS 3025 (Part 11) : 1983	6.0 to 9.0	7.42 at 25°C	7.34 at 25°C
3	Colour	Hazen units	IS 3025 (Part 4) : 1983	300	1	1
4	Dissolved Oxygen	mg/l	IS 3025 (Part 38) :1989	4.0	6.1	6.0
5	Total Suspended Solid (as TSS)	mg/l	IS 3025 (Part 17) :1984	--	BDL(DL-10)	BDL(DL-10)
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) :1993	3.0	BDL(DL-2)	BDL(DL-2)
7	Chemical oxygen demand	mg/l	IS 3025 (Part 58) :2006	--	BDL(DL-4)	BDL(DL-4)
8	Total Dissolved Solids (TDS)	mg/l	IS 3025 (Part 16) : 1984	1500	220	232
9	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	1.5	BDL(DL-0.05)	BDL(DL-0.05)
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32) :1988	600	62.21	67.96
11	Sulphate (as SO_4)	mg/l	IS 3025 (Part 24) : 1986	400	6.48	7.25
12	Nitrate (as NO_3)	mg/l	IS 3025 (Part 34) : 1988	50	5.36	4.64
13	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.5	BDL(DL-0.1)	BDL(DL-0.1)
14	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	BDL(DL-0.005)	BDL(DL-0.005)
15	Phenolic compounds (as C6H5OH)	mg/l	IS 3025 (Part 43) :1001	0.005	BDL(DL-0.001)	BDL(DL-0.001)
16	Anionic Detergent	mg/l	IS 13428 : 2005 Annex K	1.0	BDL(DL-0.01)	BDL(DL-0.01)
III	**Chemical Testing 2. Residues In Water**					
17	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	0.5	0.21	0.18
18	Cadmium (as Cd)	mg/l	IS 3025 (Part 41) : 1992	0.01	BDL(DL-0.001)	BDL(DL-0.001)
19	Selenium (as Se)	mg/l	IS 3025 (Part 2) : 2019	0.05	BDL(DL-0.001)	BDL(DL-0.001)
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.2	BDL(DL-0.01)	BDL(DL-0.01)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.001)	BDL(DL-0.001)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	15	BDL(DL-0.1)	BDL(DL-0.1)
23	Hexa Chromium (as Cr^{+6})	mg/l	IS 3025 (Part 2) :2019	0.05	BDL(DL-0.03)	BDL(DL-0.03)
24	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	--	BDL(DL-0.0005)	BDL(DL-0.0005)
25	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	--	BDL(DL-0.05)	BDL(DL-0.05)

NOTES: ● Please see watermark "Original Test Report" to confirm the authenticity of this report. ● Results shall be referred to tested sample(s) and applicable to tested parameters only. ● Test report shall not be reproduced except in full without prior written approval of Anacon Labs. ● Liability of Anacon Labs is limited to invoiced amount only. ● Non-perishable and perishable sample(s) shall be disposed off after 30 days and 15 days respectively from the date of issue of Test Report, unless specified otherwise. ● 'mg/l' is equivalent to 'ppm'. ● BDL- Below detection limit ● DL- Indicates detection limit of instrument/method and shall be considered as 'absent'.

REMARKS : As requested by the client, sample was tested for above parameters only.

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Roshani Thakur
Sr. Chemist

Shashikant Satdeve
Sr. Chemist

Authorized Signatories

Pooja Kathane
Technical Manager

Dr. (Mrs.) S.D. Garway
Quality Manager

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----End of Report----

Annexure-5

Instantel

Event Report KTM-11-696

Date/Time	Vert at 13:49:12 October 29, 2021
Trigger Source	Geo: 0.300 mm/s
Range	Geo: 254.0 mm/s
Record Time	3.0 sec at 1024 sps
Operator/Setup:	Operator/factory mmp

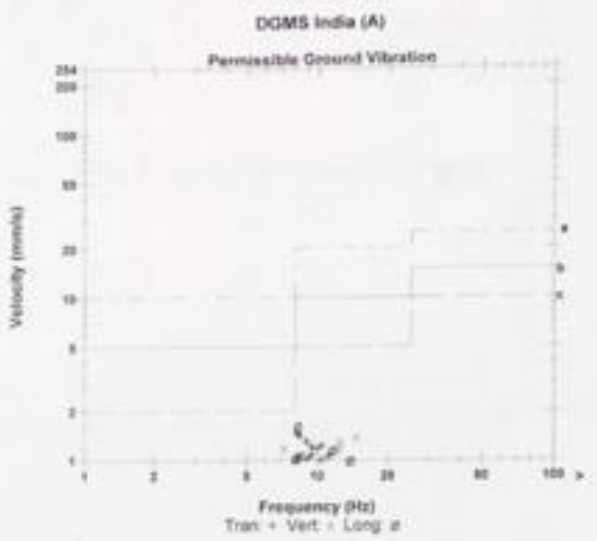
Serial Number	UM15576 V 10-80 Micromate ISEE
Battery Level	3.6 Volts
Unit Calibration	June 29, 2021 by CIMFR Dhanbad
File Name	UM15576_20211029134912.IDFW

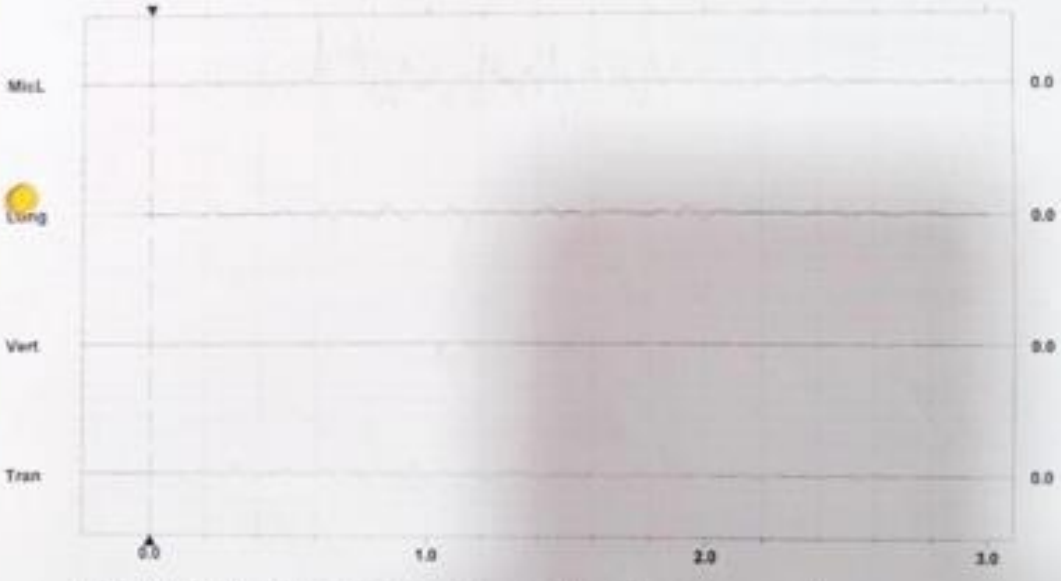
Notes
Location: NOAMUNDI/KATAMATI
Client: TATA STEEL LTD
User Name: IDL EXPLOSIVES LTD
General:

Microphone	Linear Weighting
PSPL	108.1 dB(L) 5.058 pa (L) at 0.607 sec
ZC Freq	13 Hz
Channel Test	Passed (Freq = 19.7 Hz Amp = 1209 mv)

	Tran	Vert	Long	
PPV	1.458	1.395	1.624	mm/s
PPV (Pondered)	1.461	1.304	1.623	mm/s
ZC Freq	8.3	15	8.3	Hz
Time (Rel. to Trig)	1.005	0.510	0.845	sec
Peak Acceleration	0.018	0.017	0.017	g
Peak Displacement	0.027	0.023	0.023	mm
Sensor Check	Passed	Passed	Passed	

Peak Vector Sum 1.889 mm/s at 1.007 sec





Time Scale: 0.20 sec/div Amplitude Scale: Geo: 2.000 mm/s/div Mic: 2.000 pa (L)/div
Trigger = ▶ ◀

Printed: October 29, 2021 (V 10.72 - 10.72 r)

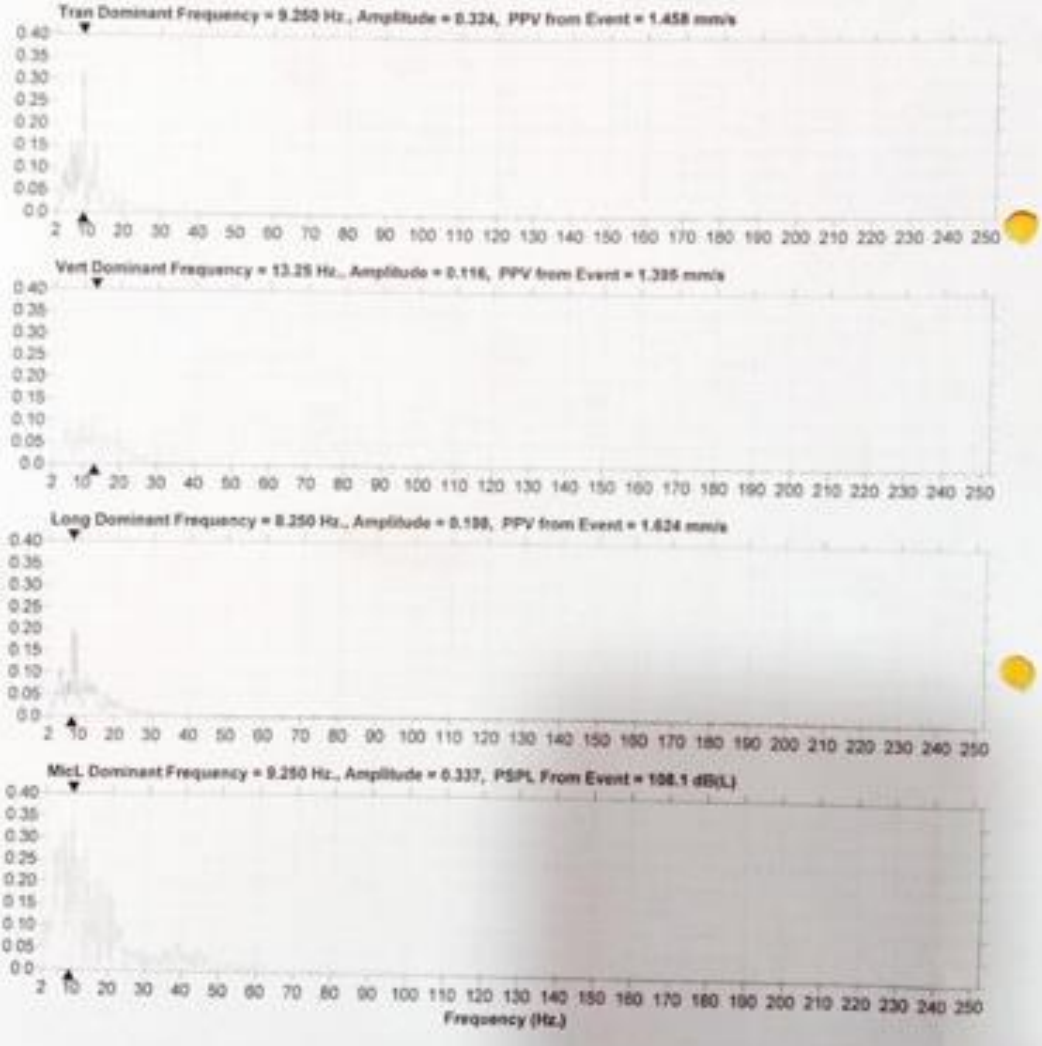
For IDL Explosives Limited

Instantel

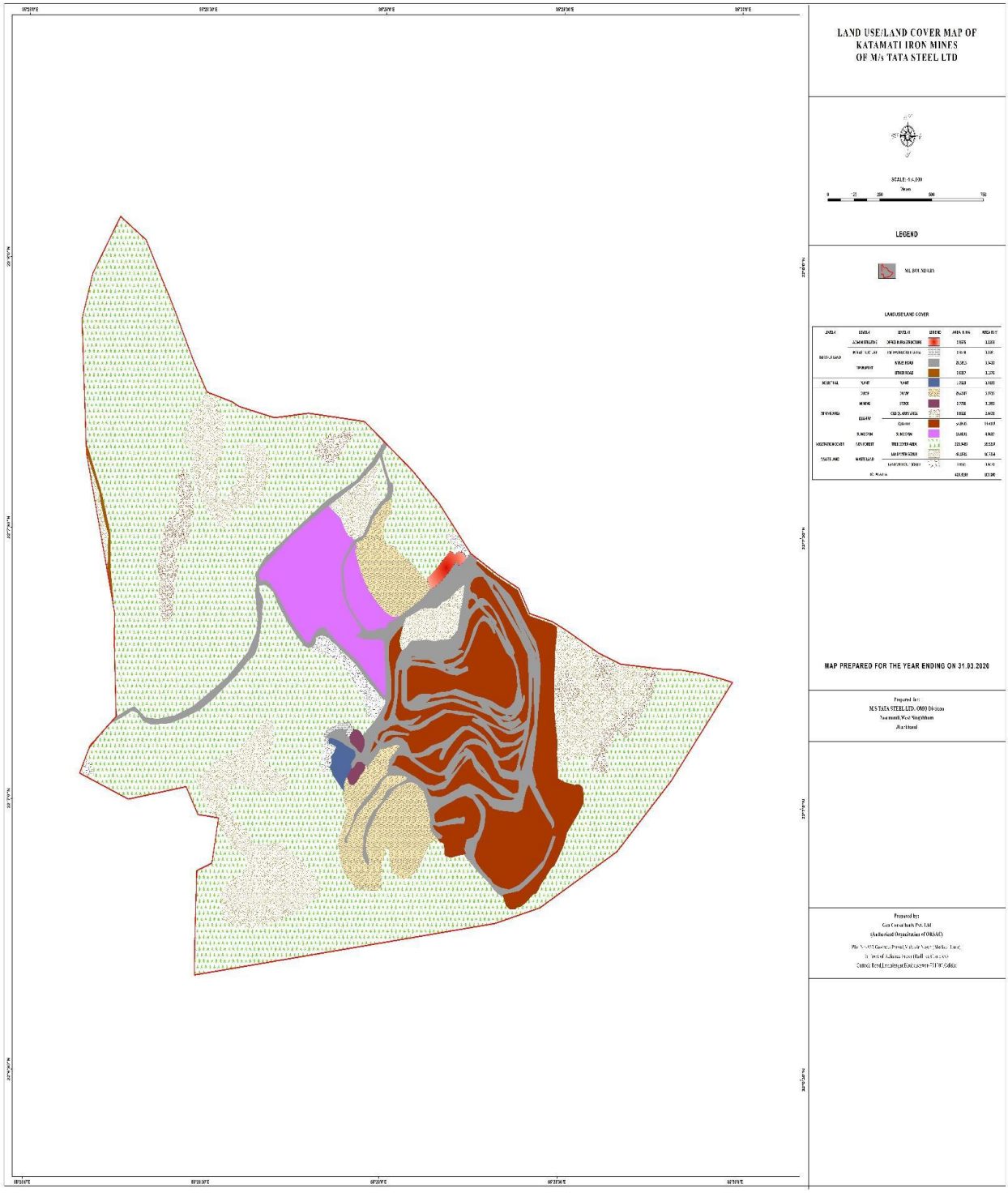
FFT Report

Date/Time	Vert at 13:49:12 October 29, 2021	**Serial Number**	UM15578 V 10-89 Micromate ISEE
Trigger Source	Geo: 0.300 mm/s	**Battery Level**	3.6 Volts
Range	Geo: 254.0 mm/s	**Unit Calibration**	June 29, 2021 by CIMFR Dhanbad
Record Time	3.0 sec at 1024 sps	**File Name**	UM15578_20211029134912.IDFW
Operator/Setup:	Operator/factory mmb		

Notes
Location: NOAMUNDI/KATAMATI
Client: TATA STEEL LTD
User Name: IDL EXPLOSIVES LTD
General:

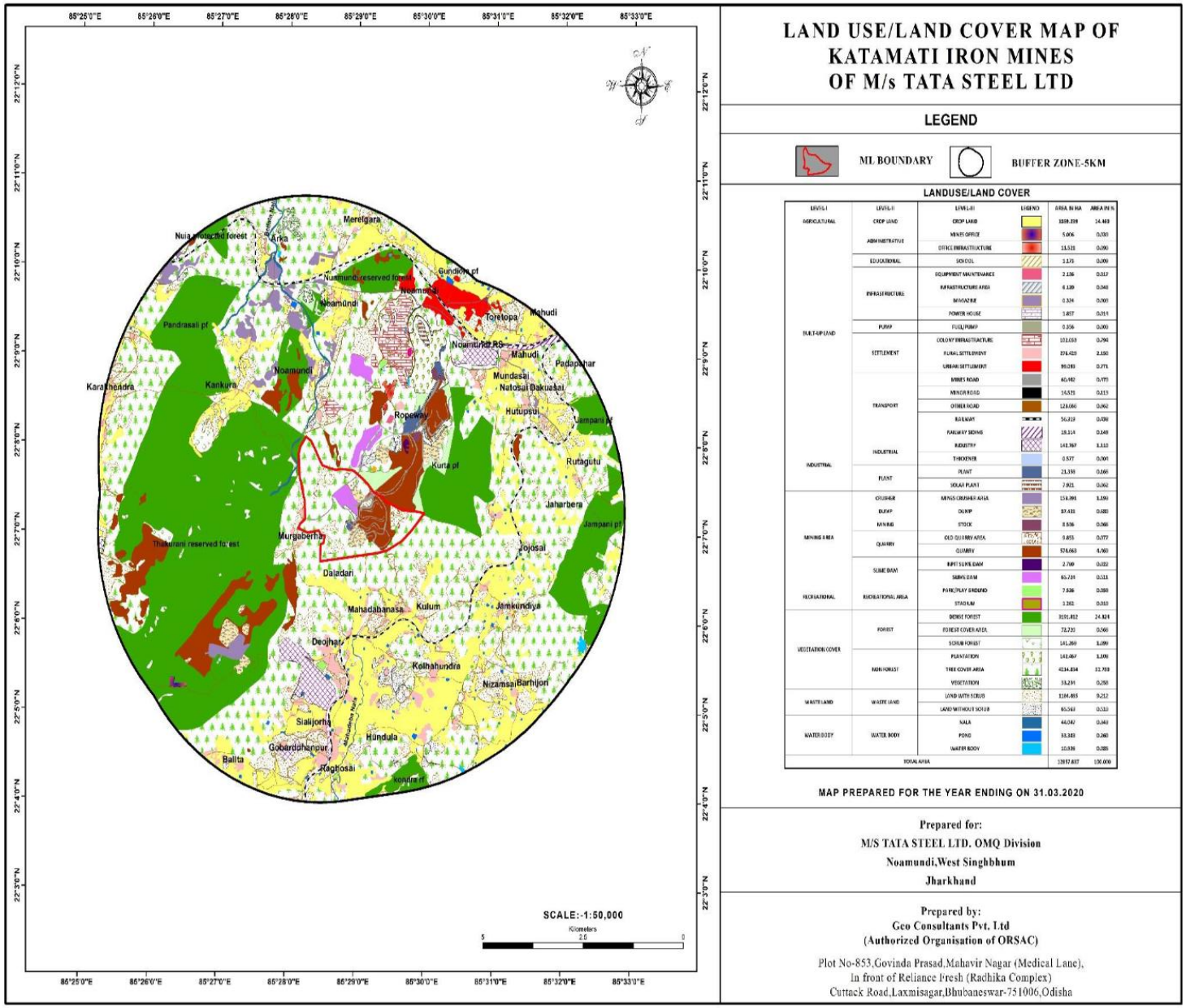


Annexure-6



Land use/ Land cover (Core Zone) – Katamati Iron Mine

Land use/ Land cover (Buffer Zone) – Katamati Iron Mine



LAND USE/LAND COVER MAP OF KATAMATI IRON MINES OF M/s TATA STEEL LTD

LEGEND

ML BOUNDARY

BUFFER ZONE-5KM

LANDUSE/LAND COVER

LEVEL I	LEVEL II	LEVEL III	LEGEND	AREA IN HA	AREA IN %
AGRICULTURAL	CROP LAND	CROP LAND		1858.239	14.403
BUILT-UP LAND	ADMINISTRATIVE	MINES OFFICE		5.006	0.039
		OFFICE INFRASTRUCTURE		11.521	0.090
	EDUCATIONAL	SCHOOL		1.173	0.009
	INFRASTRUCTURE	EQUIPMENT MAINTENANCE		2.156	0.017
		INFRASTRUCTURE AREA		6.189	0.048
		MAGAZINE		0.324	0.003
		POWER HOUSE		1.857	0.014
	PUMP	FUEL/PUMP		0.356	0.003
	SETTLEMENT	COLONY INFRASTRUCTURE		102.053	0.790
		RURAL SETTLEMENT		274.429	2.150
		URBAN SETTLEMENT		99.093	0.771
	TRANSPORT	MINES ROAD		60.482	0.470
		MINOR ROAD		14.575	0.113
		OTHER ROAD		123.066	0.962
		RAILWAY		56.213	0.436
		RAILWAY SIDING		28.114	0.140
INDUSTRIAL	INDUSTRIAL	INDUSTRY		142.767	1.110
		THICKENER		0.577	0.004
	PLANT	PLANT		21.330	0.166
		SOLAR PLANT		7.921	0.062
MINING AREA	CRUSHER	MINES CRUSHER AREA		154.391	1.191
	DUMP	DUMP		87.431	0.680
	MINING	STOCK		8.506	0.066
	QUARRY	OLD QUARRY AREA		9.853	0.077
		QUARRY		574.663	4.465
RECREATIONAL	SLIME DAM	INPIT SLIME DAM		2.700	0.021
		SLIMES DAM		65.724	0.511
	RECREATIONAL AREA	PARK/PLAY GROUND		7.526	0.058
		STADIUM		1.282	0.010
VEGETATION COVER	FOREST	DENSE FOREST		3191.912	24.824
		FOREST COVER AREA		72.720	0.566
		SCRUB FOREST		141.269	1.099
	NON FOREST	PLANTATION		142.067	1.106
		TREE COVER AREA		4234.834	32.938
		VEGETATION		33.231	0.258
WASTE LAND	WASTE LAND	LAND WITH SCRUB		1184.465	9.212
		LAND WITHOUT SCRUB		65.563	0.510
WATER BODY	WATER BODY	NALA		44.047	0.343
		POND		33.383	0.260
		WATER BODY		10.836	0.085
TOTAL AREA				12857.837	100.000

MAP PREPARED FOR THE YEAR ENDING ON 31.03.2020

Prepared for:
M/S TATA STEEL LTD. OMQ Division
Noamundi,West Singhbhum
Jharkhand

Prepared by:
Geo Consultants Pvt. Ltd
(Authorized Organisation of ORSAC)

Plot No-853,Govinda Prasad,Mahavir Nagar (Medical Lane),
In front of Reliance Fresh (Radhika Complex)
Cuttack Road,Laxmisagar,Bhubaneswar-751006,Odisha