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Integrated Regional Office,
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Ranchi – 834002
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MD/ENV/ 148 / 103 / 2022
Date: 30.05.2022

Ref: I. Environmental Clearance letter no. J-11015/104/2011. IA. II (M) dated: 06.09.2021.
II. Environmental Clearance letter no. J-11015/104/2011. IA. II (M) dated: 29.10.2021.

Sub: Half-yearly compliance status report of Environmental Clearance conditions for the period October'21 - March'22 in respect of Noamundi Iron Mine, M/s Tata Steel Limited.

Dear Sir,

Kindly find attached herewith the half-yearly compliance status report in respect of the stipulated Environmental Clearance conditions of Noamundi Iron Mine, M/s Tata Steel Limited for the period from **October'21 - March'22**.

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

Chief (Mine Planning & Projects), 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, T.A. Division (Ground Floor), H.E.C. Dhurwa, Ranchi - 834004 (Jharkhand)
: The Regional Officer, JSPCB, MB/12, New Housing Colony, Adityapur, Jamshedpur – 831013 (Jharkhand)

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**HALF-YEARLY EC COMPLIANCE REPORT FOR
NOAMUNDI IRON MINE OF TATA STEEL LIMITED**

**ENVIRONMENTAL CLEARANCE NO. J-11015/104/2011-IA.II (M) DATED 06.09.2021
(Period of Compliance: October 2021 to March 2022)**

Sl. No.	Conditions	Compliance
A. Specific conditions		
1.	Implementation of the revised remediation plan, natural resource augmentation plan (NRAP) and community resource augmentation plan (CRAP) which was submitted by PP after the EAC meeting.	Implementation of the revised remediation plan, natural resource augmentation plan (NRAP) and community resource augmentation plan (CRAP) has been initiated. Various activities such as development of safety zone plantation, Miyawaki plot, fruit bearing plots in village area and rainwater harvesting ponds are in progress. Detailed status (Year-1 compliance) would be shared in next EC compliance report.
2.	Implementation of the environmental monitoring plan with emphasis on air quality, noise and vibration, water quality as well as soil degradation to be submitted.	Noted. It is being complied.
3.	Wildlife conservation plan be augmented with additional points revised in the light of guidance given by EAC during the meeting with more emphasis on wildlife conservation rather than creating infrastructure which cannot be controlled by project proponent.	Noted. It will be done accordingly in consultation with forest department officials.
4.	Public hearing concerns must be addressed as committed.	All the concerns raised in Public Hearing are being addressed. The implementation of action plan has been initiated and activities such as provision of critical ambulance, school bus, etc. are in progress. Detailed status (Year-1 compliance) would be shared in next EC compliance report.
5.	The EMP cost should include plantation within the mine lease area whereas plantation outside the mine lease area will be given to NRAP cost.	Noted. All the cost involved for plantation within mine lease area shall be included in EMP cost and plantation outside the mine lease area has already been included in NRAP cost.
6.	No mining activities will be allowed in the forest area for which forest clearance is not available.	Noted and shall be abided.
7.	As the public hearing has been carried out for the entire project area and PP has paid the NPV for entire forest land involved in the project area, PP after taking stage- II Forest Clearance for remaining area i.e. 391.51 Ha; may again approach the Ministry for undertaking mining in the remaining area with the proper mining plan.	After the grant of stage II FC for remaining area of 391.51 Ha, we shall approach the Ministry with proper mining plan for undertaking mining in the remaining area.
B. 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.

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(2)	The Project proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August,2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India &Ors before commencing the mining operations.	A payment of Rs 56,96,51,093.00/- is made as per demand notice no. 1986/M dated 12.09.2017. 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.
(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 56,96,51,093.00/- is made as per demand notice no. 1986/M dated 12.09.2017. 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)	This Environmental Clearance shall become operational only after receiving formal NBWL Clearance from MoEF&CC subsequent to the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project.	Not applicable. There are no protected areas/ eco-sensitive zones within 10 km of the mine lease area.
(5)	This Environmental Clearance shall become operational only after receiving formal Forest Clearance (FC) under the provision of Forest Conservation Act, 1980, if applicable to the Project.	Noamundi Iron Mine of TATA Steel has restricted its operations in diverted forest and non-forest area as per approvals obtained. The mine has 1160.06 ha lease area, out of which 762.42 ha is forest land & rest is non-forest land. Out of 762.42 ha, forest land diverted for mining is 370.92 ha vide letter no. 8-279, 1985 FC (Pt) dated 4th Sept., 2014 & for rest 391.51 ha (including safety zone), forest diversion proposal has already been applied & is at advanced stage of clearance.
(6)	Project Proponent (PP) shall obtain Consent to Operate after grant of EC and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish / Consent to Operate from the concerned State Pollution Control Board/Committee.	Consent to Establish (CTE) has been granted by JSPCB vide letter no: JSPCB/HO/RNC/CTE-10765772/2021/354 dated 17.12.2021. Consent to Operate (CTO) has been granted by JSPCB vide letter no: JSPCB/HO/RNC/CTO-11411247/2022/128 dated 02.02.2022 which is valid till 31.12.2022. All the conditions stipulated in CTE & CTO are being implemented effectively.
(7)	The PP shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development & Regulation), Act, 2015 and rules & regulations made there under. PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.	Noted and shall be abided.
(8)	The Project Proponent shall obtain consents from all the concerned landowners, before start of mining operations, as per the provisions of MMDR Act, 1957 and rules made there under in respect of	Since it is an old mine, this is not applicable. Further the expansion is proposed within the mine lease area.

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	lands which are not owned by it.	
(9)	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. The compliance is indicated later against other standard EC conditions.
(10)	The Project Proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and from CGWA for withdrawal of ground water for the project.	Only Surface water from Baitarani river is being used for mining and allied activities. No ground water withdrawal is required for this project. Approval for drawing 10.6 MCM water on annual basis (~29000 KLD) from Baitarani river vide letter no: - 1/PMC/VIVIDH/975/2020-514 dated 24.08.2021 has been granted by Water Resources Department, GoI. Subsequently an agreement was signed on 20.10.2021 with the Executive Engineer, Water ways Division Chaibasa.
(11)	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 was submitted to local panchayats i.e Noamundi, Balijore, Diriburu, Kadajamda and Mahudi panchayat.
(12)	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.
(13)	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 Noamundi Iron Mine were published both in English (Avenue Mail) and Hindi (Prabhat Khabar) in local newspapers on 12.09.2021. The copy of the newspaper advertisement was sent to the Regional Office, MoEF&CC, Ranchi with letter no: MD/ENV/210/97/2021 dated 13.09.2021 and also attached along with half-yearly EC compliance report submitted in November 2021.
(14)	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 than mining operation shall only be carried out after 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		
(1)	The Project Proponent shall install a minimum	Three continuous ambient air quality monitoring stations

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	<p>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</p>	<p>are installed in the core zone (two nos.) and buffer zone (one no.) of mine lease area. Various parameters such as PM10, PM2.5, SO_x, NO_x & CO are being monitored as per guidelines.</p> <p>Manual ambient air quality stations are installed at prominent places such as Hospital, Mega Centre, Bottom bin, etc. and monitoring of the NAAQS parameters is done on regular basis.</p> <p>Monitored data is being displayed using electronic display board in front of the main gate of mines site as well as public domain.</p> <p>Average air quality data is enclosed as Annexure 1.</p> <div style="text-align: center;">  </div> <p style="text-align: center;"><i>CAAQMS station & Display board at Noamundi Mine</i></p>
(2)	<p>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</p>	<p>Fugitive dust emissions from all the sources are being controlled regularly on daily basis.</p> <p>A network of fixed water sprinklers has been laid on permanent haul roads. Two mobile water tankers of large capacity namely 50 KL which can cover the entire width of the haul road has been commissioned.</p> <p>All feed hoppers where ore is unloaded and all transfer chutes have been provided with dry-fog dust suppression system.</p> <p>Mist cannons have placed at strategic points to prevent and control of fugitive dust emission.</p> <p>Ambient air quality conforms to the CPCB norms.</p> <div style="text-align: center;">  </div> <p style="text-align: center;"><i>Dust control measures at Noamundi Iron Mine</i></p>
<p>III. Water quality monitoring and preservation</p>		
(1)	<p>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,</p>	<p>As per approved mining plan, the mining operations are restricted above the ground water table. The ultimate working depth is 480 mRL while the Ground water table is at 478 mRL. Hence, the mine workings will never intersect ground water during the entire life of the mine. However, in case of working below ground water table</p>

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	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	prior approval for CGWA shall be taken.
(2)	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table. 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.	Regular monitoring of flow rate of springs and nallahs is carried out and records are maintained. Streams (Balijhore nallah and Jojo nallah) which are present in and around the mine lease area shall not be disturbed. Ground water quality and Ground water level are being monitored periodically in and around the lease area through a network of dugwells and piezometric borewells. Dugwells are located in villages adjacent to the mine lease area while piezometric borewells are located within the mine lease area. All the monitored data is being submitted to various agencies on six monthly basis along with half yearly EC compliance reports.
(3)	Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six- monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department/ State Pollution Control Board.	Ground water quality and Ground water level are being monitored periodically in and around the lease area through network of dugwells and piezometric borewells. All the monitored data is being submitted on six monthly basis along with Half yearly EC compliance reports to the Regional Office of the Ministry, CGWA/CGWB and Jharkhand State Pollution Control Board and enclosed as Annexure 2.
(4)	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 and maintain its records. The project proponent shall undertake regular monitoring of water quality upstream and downstream of water bodies passing within and nearby/ adjacent to the mine lease and maintain its records. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. PP shall carryout regular monitoring w.r.t. pH and included the same in monitoring plan. The parameters to be monitored shall include their water quality vis-a-vis suitability for usage as per CPCB criteria and	Water quality monitoring of perennial nallahs (upstream and downstream) present inside and outside the mine lease area is done regularly. A copy of report is enclosed as Annexure 3. All the water parameters are within the stipulated limits. No obstruction or alteration will be made to water bodies during mining operations. The monitoring is carried out four times in a year and monitoring reports are submitted to Regional Office of Ministry of Environment, Forest and Climate Change, Central Ground Water Authority and Regional Director, Central Ground Water Board, Jharkhand State Pollution Control Board and Central Pollution Control Board as part of EC compliance reports.

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	<p>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 MoEF&CC. 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 may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.</p>	
<p>(5)</p>	<p>Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS), Dissolved Oxygen (DO), pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.</p>	<p>There is no wastewater discharge from the mine and mineral processing plant, i.e entire unit is "Zero Discharge Unit". After mineral processing (wet plant) the water is collected in slime pond, where decanted water from the slime dam is completely recycled & reused in the beneficiation plant and slime is recovered and stored for future use. Thus no water is being discharged to environment.</p> <p>The environmental monitoring data is regularly uploaded on the company website as a part of six-monthly EC compliance reports. The link for the same is attached here (https://www.tatasteel.com/corporate/our-organisation/environment/environment-compliance-reports/).</p> <p>In addition to this all the monitored data is shown in display board present at the entrance gate.</p> 
<p>(6)</p>	<p>Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.</p>	<p>Rainwater harvesting (RWH) ponds and ground water recharge structures have been constructed and approved by the Ground Water Directorate, Jharkhand, Ranchi. The capacity of RWH ponds is 19,785 cum. The catchment area of the RWH pond complex is approx. 117 Ha hence it has been calculated that the rainwater harvesting potential of the RWH pond structure is</p>

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approx. 12,50,000 cum/annum.



RWH structure for ground water augmentation in the area

Approval from Ground Water Directorate, Water Resources Dept. Jharkhand for RWH pond structure was received vide letter no. GWD 317/Ranchi, dated 14th Jun, 2012.

Further, the rainwater collected in the mine pits are allowed to be collected in the lowest level sumps to augment the ground water resources gradually. Various RWH structures in the form of Check Dams, Saucer ponds, Gabion Structures, Trenches and contour are also made based on recommendation in available area.





RWH structure for ground water augmentation in the area

To augment the ground water level of surrounding village areas, about 06 new additional ponds are constructed in buffer zone of Noamundi mine lease at Lelang, Mahudi, Jampani & Sarbil villages.

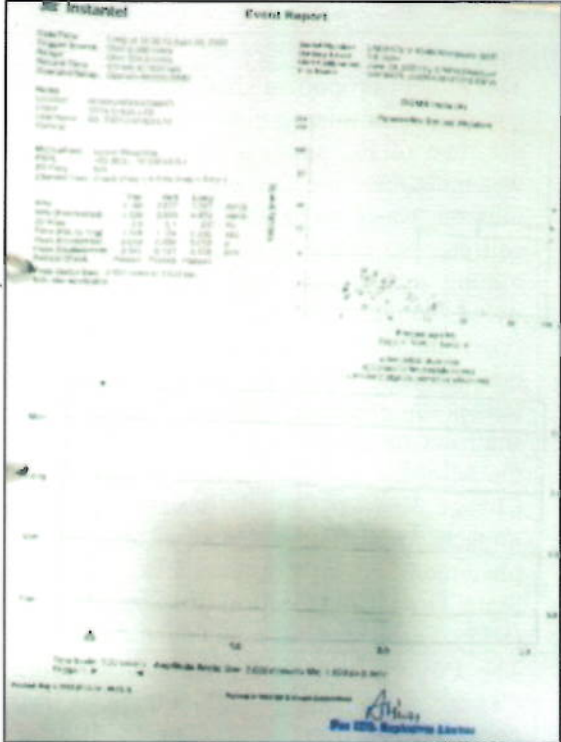


Newly constructed ponds in surrounding villages

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<p>(7)</p>	<p>Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap.</p>	<p>A 30 KLD CETP along with Oil & grease pit with collection system has been installed at HEMM maintenance area. Oil is separated by gravitational technique and solids settle by sedimentation. Clear water flows to next chamber after passing through baffle wall. Clear water is again re-used. Water quality analysis is done on regular basis.</p>  <p align="center"><i>Flow sheet of 30KLD CETP</i></p> <p>Two Sewage Treatment Plant (STP) of 50 KLD each and two Effluent Treatment Plant (ETP) of 10 KLD each are also installed & working smoothly in mine lease area of Noamundi. Copy of monitoring reports are enclosed as Annexure 4.</p>  <p align="center"><i>Sewage & Effluent Treatment Plant at Noamundi</i></p>
<p>(8)</p>	<p>The water balance/ water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF&CC and State Pollution Control Board/Committee.</p>	<p>Noted. Evaluation of water consumption is being carried out and suitable measures for reducing water consumption have been identified such as commissioning of paste thickener etc. There is zero waste-water discharge by the mine and it will be maintained in the future as well. Optimization of the water consumption will be done to reduce the specific water consumption year-on-year.</p>
<p>IV. Noise and vibration monitoring and prevention</p>		
<p>(1)</p>	<p>The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.</p>	<p>Monitoring of peak particle velocity (ppv) is done after every blast as per DGMS guidelines and the reports are being maintained.</p>







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		<p>The sample report of vibration monitoring done at Noamundi is given herewith:</p> 
(2)	<p>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</p>	<p>The illumination & sound has been done in such a way that the villagers are not disturbed. In addition to this we are planning to install noise barriers around the railway siding boundary to significantly reduce the noise propagation outside the mine premises.</p>
(3)	<p>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.</p>	<p>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. All persons working in dusty areas are provided with protective dust masks. Adequate training, awareness and information on safety and health aspects are provided on regular basis.</p>

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V. Mining plan		
(1)	<p>The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form to Short Term Permit (STP), Query license or any other name.</p>	<p>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, etc. shall be adhered as per the approved mining plan.</p>
(2)	<p>The Project Proponent shall get the Final Mine Closure Plan along with Financial Assurance approved from Indian Bureau of Mines/Department of Mining & Geology as required under the Provision of the MMDR Act, 1957 and Rules/ Guidelines made there under. A copy of approved final mine closure plan shall be submitted within 2 months of the approval of the same from the competent authority to the concerned Regional Office of the Ministry of Environment, Forest and Climate Change for record and verification.</p>	<p>This is not applicable in this financial year as it is an operational mine.</p>
(3)	<p>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 compliance status shall be submitted half-yearly to the MoEF&CC and its concerned Regional Office.</p>	<p>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.</p> <p>In FY 22 around 23876 saplings have planted in the mine lease area.</p>
VI. Land reclamation		
(1)	<p>The Overburden (O.B.) 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 dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the</p>	<p>Over burden is stacked at the earmarked places only. The slopes of the OB dumps are terraced, and the overall height width and slope angle is maintained as per approved Mining Plan. 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</p>

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	<p>guidelines/circulars issued by D.G.M.S w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of top soil/OB dumps. The topsoil shall be used for land reclamation and plantation.</p>	<p>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, vetiver grass and coir matting is done for better slope stabilization.</p> <div style="display: flex; justify-content: space-around;">   </div> <p align="center"><i>Vetiver grass</i> <i>Coir matting</i></p>
(2)	<p>The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.</p>	<p>Reject/waste is stacked at the earmarked places only. The slopes of the dumps are terraced, and the overall height width and slope angle is maintained as per approved Mining Plan.</p>
(3)	<p>The reclamation of waste dump sites shall be done in scientific manner as per the Approved Mining Plan cum Progressive Mine Closure Plan.</p>	<p>Currently two Over Burden (OB) dumps are made as per plan at earmarked area which are progressively stabilized by native species plantation and grass vegetation as per direction of MoEF&CC.</p> <p>In FY 22 around 23876 saplings have planted in the mine lease area.</p> <div style="display: flex; justify-content: space-around;">   </div> <p align="center"><i>Plantation on Waste dump D2</i></p> <p>Grassing on bunds of haul roads to control wind pollution also been practiced as per kind suggestion from MoEF&CC office at mine.</p> <div style="display: flex; justify-content: space-around;">   </div>





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<p>(4)</p>	<p>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 / clay liners/ Bentonite etc. shall be undertaken for stabilization of the dump.</p>	<p><i>Local grass plantation on bunds of haul roads at mine.</i></p> <p>The inactive dump slopes are vegetated with native species, vetiver grass and coir matting is done for better slope stabilization.</p> <p>The dump mass is consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, laying of coir mat along with grass seeding is practiced.</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;"><i>Vetiver grass Coir matting</i></p>
<p>(5)</p>	<p>The Project Proponent shall carry out slope stability study in case the dump height is more than 30 meters. The slope stability report shall be submitted to concerned regional office of MoEF&CC.</p>	<p>Slope stability study has been done for dumps at Noamundi Iron Mine by CSIR-Central Institute of Mining and Fuel Research, Dhanbad. The report has been submitted to Regional Office of MoEF&CC vide letter no: MD/ENV/303/103/2021 dated 19.11.2021.</p>
<p>(6)</p>	<p>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</p>	<p>Garland drains with settling pits have been constructed all along the OB dumps. Settling pits have also been provided to arrest the silt flow from area. The de-siltation of these check dams settling pits are done regularly and properly maintained. Sedimentation pits have been constructed at the corners of the garland drains to take care of run off of water even during peak rain fall and they are being de-silted regularly before and after the monsoon. Garland drains, settling tanks and Check dams had been constructed both around the mine pit and over burden dump(s).</p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;"><i>garland drains, Settling pits at mine</i></p> <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center;"><i>De-siltation of slime & check dams before monsoon.</i></p>





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(7)	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.	Check dams of appropriate size, gradient and length are constructed along with sedimentation pits as per progressive mine closure plan.
(8)	The top soil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the top soil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose	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.
VII. Transportation		
(1)	No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.	All the finished iron ore product is transported to end-users through Noamundi captive railway siding. As an interim arrangement, it is proposed to additionally use the public railway sidings (Bokaro siding and Line no.5 Siding) for dispatch to end users. Therefore the road between Bottom bin and public railway sidings will be used for transporting the material through trucks. This is as per approval granted by MoEFCC. Pollution Under Control (PUC) certificate has been obtained for all the vehicles from authorized pollution testing centers. Sample is attached herewith:

HALF-YEARLY EC COMPLIANCE REPORT FOR NOAMUNDI IRON MINE OF TATA STEEL LIMITED

		
<p>(2)</p>	<p>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 equipment's 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</p>	<p>A network of fixed water sprinklers has been laid on permanent haul roads. Mobile water tankers of large capacity namely 50 KL which can cover the entire the entire width of the haul road has been commissioned.</p>  <p style="text-align: center;"><i>Mobile & Fixed water sprinklers in Noamundi mines</i></p> <p>All feed hoppers where ore is unloaded and all transfer chutes have been provided with dry-fog dust suppression system.</p> <p>Mist cannons have placed at strategic points to prevent and control of fugitive dust emission.</p>  <p style="text-align: center;"><i>Mist type dust suppression measures</i></p> <p>The beneficiated ore from processing plant to railway sidings being transported through covered conveyors only.</p>  <p style="text-align: center;"><i>Closed conveyor used in mineral transport</i></p>

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		<p>Dust Extraction system is present at Primary crusher.</p> 
VIII. Green Belt		
(1)	<p>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.</p>	<p>Safety zone of 7.5 meters all along the mine lease boundary is maintained with plantation of saplings. In FY 22 around 1456 saplings have been planted as gap filling in safety zone of Noamundi Iron Mine.</p> 
(2)	<p>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.</p>	<p>Plantation of saplings on waste dumps, backfilled area is done as per approved mine plan.</p> <p>In this financial year i.e 2021-22 plantation of about 23876 saplings is done on Waste dump D2, Kurtha dump. In addition to this Avenue plantation outside the mine lease is also carried out.</p>  <p style="text-align: center;"><i>Plantation on dumps</i></p>  <p style="text-align: center;"><i>Avenue Plantation outside the mine</i></p>
(3)	<p>The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate</p>	<p>No grazing land has been acquired.</p>


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	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.	
(4)	The Project Proponent shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-I species during mining operation. A Wildlife Conservation Plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life Warden of the State Govt. and implemented in consultation with the State Forest and Wildlife Department. A copy of Wildlife Conservation Plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.	The site specific wildlife conservation plan (SSWLCP) has been approved by Chief Wildlife Warden on 28.08.2020. The impact of mining project on wildlife of the study area and detailed mitigative measures are part of this plan. The total approved cost for implementation of SSWLCP is Rs.25.26 crores (to be spent over a 10-year period). Site specific wild life conservation plan and its approval has been submitted to the Ministry and its Regional Office. The annual implementation status of the plan (for FY22) is provided as Annexure 5.
IX. Public hearing and human health issues.		
(1)	The Project Proponent shall appoint an Occupational Health Specialist for Regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records shall be maintained properly. PP shall also carryout Occupational health check-ups in respect of workers which are having ailments like BP, diabetes, habitual smoking, etc. The check-ups shall be undertaken once in six months and necessary remedial/preventive measures be taken. A status report on the same may be sent to MoEFCC Regional Office and DGMS on half-yearly basis.	Noamundi hospital is well-equipped with an Occupational Health Center OHS center employs a full-time occupational health specialist. Health of the employees through audiometry, x-ray, pathology, ophthalmology, lung-function test, etc monitored. Some of the best practices related to occupational health adopted in mine are: <ul style="list-style-type: none"> • Employees' health check-up under Wellness @ workplace program • Health awareness classes on weekly basis for shop floor employees • Officers' health check-up on yearly basis for lifestyle disease • Counseling to high blood pressure, sugar cholesterol, hypertension employees through medical board
(2)	The Project Proponent must demonstrate commitment to work towards 'Zero Harm' from their mining activities and carry out Health Risk Assessment (HRA) for identification workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community. The proponent shall maintain accurate and systematic records of the HRA. The HRA for neighborhood has to focus on Public	The company's commitment in the area of Health & Safety is well supported by implementation of: Safety Principles & Occupational Health Policy Occupational Health & Safety Management System (ISO 45001:2018). Hazards in work place are identified as a part of occupational health policy and appropriate control measures are in place to protect the health and well being of workers. Various awareness programs regarding health, sanitation

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	<p>Health Problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under five, respiratory infections due to bio mass cooking. The proponent shall also create awareness and educate the nearby community and workers for Sanitation, Personal Hygiene, Hand washing, not to defecate in open, Women Health and Hygiene (Providing Sanitary Napkins), hazard of tobacco and alcohol use. The Proponent shall carryout base line HRA for all the category of workers and thereafter every five years.</p>	<p>etc. have been conducted with the help of Tata Steel Rural Development Society(TSRDS). The health related initiatives in place are-</p> <ul style="list-style-type: none"> ▪ Mega health camps, Malaria parasite control programme, Cataract surgery camp, Prenatal care ▪ MANSI project: Reducing infant and maternal mortality ▪ Providing financial assistance and waivers for needy patients, on a case-to-case basis ▪ Preventing and treating communicable diseases like malaria, tuberculosis and HIV / AIDS ▪ Treating and rehabilitating persons with disabilities ▪ RISHTA project: working on adolescent and reproductive sexual health issues 
<p>(3)</p>	<p>The Proponent shall carry out Occupational health surveillance which be a part of HRA and include Biological Monitoring where practical and feasible, and the tests and investigations relevant to the exposure (e.g. for Dust a X-Ray chest; For Noise Audiometric; for Lead Exposure Blood Lead, For Welders Full Ophthalmologic Assessment; for Manganese Miners a complete Neurological Assessment by a Certified Neurologist, and Manganese (Mn) Estimation in Blood; For Inorganic Chromium- Fortnightly skin inspection of hands and forearms by a responsible person. Except routine tests all tests would be carried out in a Lab accredited by NABH. Records of Health Surveillance must be kept for 30 years, including the results of and the records of Physical examination and tests. The record of exposure due to materials like Asbestos, Hard Rock Mining, Silica, Gold, Kaolin, Aluminum, Iron, Manganese, Chromium, Lead, Uranium need to be handed over</p>	<p>Noamundi hospital is well-equipped with an Occupational Health Center OHS center employs a full-time occupational health specialist. Health of the employees through audiometry, x-ray, pathology, ophthalmology, lung-function test, etc monitored.</p> <p>Pre-placement medical examination and periodical examination of the workers engaged is being conducted & record maintained. The schedule of Periodical Medical Examination is once in every 3 years for the employees of age more than 45 years and once in 5 years for the employees of age less than 45 years.</p> <p>Some of the best practices related to occupational health adopted in mine are:</p> <ul style="list-style-type: none"> • Employees' health check-up under Wellness @ workplace program • Health awareness classes on weekly basis for shop floor employees • Officers' health check-up on yearly basis for lifestyle disease

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	<p>to the Mining Department of the State in case the life of the mine is less than 30 years. It would be obligatory for the State Mines Departments to make arrangements for the safe and secure storage of the records including X-Ray. Only conventional X-Ray will be accepted for record purposes and not the digital one). X-Ray must meet ILO criteria (17 x14 inches and of good quality).</p>	<ul style="list-style-type: none"> • Counseling to high blood pressure, sugar cholesterol, hypertension employees through medical board • Observation of important health days like World No Tobacco day, AIDS day, Heart day, Diabetic day etc • Display of calorie chart in canteens alongside the menu <p>No adverse cases have been found till date.</p> 
(4)	<p>The Proponent shall maintained a record of performance indicators for workers which includes (a) there should not be a significant decline in their Body Mass Index and it should stay between 18.5 - 24.9, (b) the Final Chest X-Ray compared with the base line X-Ray should not show any capacities ,{c) At the end of their leaving job there should be no Diminution in their Lung Functions Forced Expiratory Volume in one second (FEV1),Forced Vital Capacity (FVC), and the ratio) unless they are smokers which has to be adjusted, and the effect of age, (d) their hearing should not be affected. As a proof an Audiogram (first and last need to be presented}, (e) they should not have developed any Persistent Back Pain, Neck Pain, and the movement of their Hip, Knee and other joints should have normal range of movement, (f) they should not have suffered loss of any body part. The record of the same should be submitted to the Regional Office, MoEF&CC annually along with details of the relief and compensation paid to workers having above indications.</p>	<p>All the performance indicators for workers during IME and PME are maintained. In addition to health check-ups, health awareness classes on weekly basis for shop floor employees, counselling to high blood pressure, sugar, cholesterol etc is done.</p> <p>No adverse cases have been found till date.</p>
(5)	<p>The Project Proponent shall ensure that 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.</p>	<p>All the personnel working in dusty areas are provided with protective respiratory devices such as masks and also provided adequate training and information on safety and health aspects.</p>
(6)	<p>Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure.</p>	<p>Township has been developed for workers with all the adequate facilities such as hospital, schools, STP etc.</p>

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	The domestic waste water should be treated with STP in order to avoid contamination of underground water.	
(7)	The activities proposed in Action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status report on implementation of action plan shall be submitted to the concerned Regional office of the Ministry along with District Administration.	Shall be complied.
X. Corporate Environment Responsibility (CER)		
(1)	The activities and budget earmarked for Corporate Environmental Responsibility (CER) as per Ministry's O.M No 22-65/2017-1A. II (M) dated 01.05.2018 or as proposed by EAC should be kept in a separate bank account. The activities proposed for CER shall be implemented in a time bound manner and annual report of implementation of the same along with documentary proof viz. photographs, purchase documents, latitude & longitude of infrastructure developed & road constructed needs to be submitted to Regional Office MoEFCC annually along with audited statement.	All the activities proposed during Public Consultation are being implemented. The detailed status (Year-1 compliance) shall be shared in next compliance report.
(2)	Project Proponent shall keep the funds earmarked for environmental protection measures in a separate account and refrain from diverting the same for other purposes. The Year wise expenditure of such funds should be reported to the MoEF&CC and its concerned Regional Office.	Funds allocated for environmental management are spent only for environment related purposes and not diverted to any other purpose. Expenditure details of environmental protection measures are reported to MoEF&CC and its Regional Office every year. Expenditure details for the year 2021-22 is enclosed as Annexure 6.
XI. Miscellaneous		
(1)	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, Bhubaneswar. The land use land cover change map is enclosed as Annexure 7.
(2)	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. Noamundi is an operational Iron mine of Tata Steel Ltd from last several decades. Thus financial closure & it's approval is not applicable.
(3)	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, Central Pollution Control Board and Jharkhand State Pollution Control Board.

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(4)	A separate 'Environmental Management Cell' with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEF&CC.	A separate environmental management cell is in place with people having relevant qualification on environmental science. Organization has adequate environmental reporting system for adequate decision making.
(5)	The concerned Regional Office of the MoEF&CC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEF&CC officer(s) by furnishing the requisite data/information/ monitoring reports.	Full cooperation shall be extended to the officers in furnishing the requisite data/ information/ monitoring reports.

**ENVIRONMENTAL CLEARANCE NO. J-11015/104/2011-IA.II (M) DATED 29.10.2021
(Period of Compliance: October 2021 to March 2022)**

S.No	Specific Condition	Compliance
1	After this road is brought into utilization for transport, 6 monthly monitoring report as well as videography of the transportation undertaken to be submitted to Ministry.	It shall be complied after the road is brought into utilization. Currently all the finished iron ore product is transported to end-users through Noamundi captive railway siding.
2	The project proponent is advised to undertake a videography of 10.5 km road for those who are already using this road for transportation of the mineral other than M/s Tata Steel Limited from their respective mines to Jamda site and submit to the Ministry for information.	Videography of the 10.5 km road has been completed. It is being shared herewith through One-drive link. It is requested to click on the link below to view the video. Access has been provided to- ro.ranchi-mef@gov.in Video Noamundi Jamda.mp4
3	It was also mentioned by the project proponent that they are willingly accepting not to use Jamda siding and this will stay till the information on Jamda transportation available with the Ministry and within 5 years `project proponent must bring conveyer system till railway siding and stop using road.	Jamda siding shall not be used for transportation of mineral by Noamundi Iron Mine of Tata Steel Limited.

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List of Annexures

Sl. No.	Annexure Details
Annexure – 1	Ambient Air Quality (Average AAQ values for core zone and buffer zone – 4 locations each)
Annexure – 2.A	Ground Water Quality (NABL-lab monitoring reports for 4 nos. dugwells in buffer zone for Nov'21 and Feb'22)
Annexure – 2.B	Ground Water Level (Nov'21 and Feb'22)
Annexure – 3	Surface Water Quality (NABL-lab monitoring reports for upstream & downstream water quality of Balijhore nallah in core zone for Nov'21 and Feb'22)
Annexure – 4	STP & ETP Water Quality (NABL-lab monitoring reports for inlet-outlet water quality for 4 STP-ETP units for Feb'22)
Annexure – 5	Implementation Status of the SSWLCP (FY22)
Annexure – 6	Environmental Expenditure (FY22)
Annexure – 7	Land Use & Land Cover Map

NOAMUNDI IRON MINE
AVERAGE AIR QUALITY REPORT (CORE ZONE)

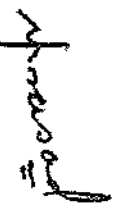
Month	MRSS Building						Bottom Bin						Near WTP						Near Hospital					
	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	CO	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	CO	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	CO	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	
Oct 21	51.6	17.9	7.9	16.0	0.212	0.212	52.1	19.4	8.1	16.6	0.197	0.197	51.1	17.1	8.1	17.2	0.188	0.188	49.9	16.3	7.2	17.2	0.182	0.182
Nov 21	54.0	19.0	9.3	17.9	0.248	0.248	51.2	18.5	8.1	16.5	0.181	0.181	51.0	17.2	8.5	16.9	0.187	0.187	50.7	16.3	7.0	16.8	0.175	0.175
Dec 21	53.2	19.4	9.5	16.9	0.213	0.213	51.3	17.5	8.4	17.0	0.181	0.181	52.3	18.5	9.4	17.1	0.196	0.196	50.5	16.5	7.0	17.3	0.167	0.167
Jan 22	54.1	18.1	10.5	17.6	0.217	0.217	49.5	17.7	7.8	16.5	0.178	0.178	51.7	19.9	11.0	19.6	0.203	0.203	50.9	18.2	7.9	17.2	0.171	0.171
Feb 22	58.8	20.6	9.9	17.8	0.228	0.228	51.4	18.0	8.4	16.3	0.194	0.194	55.2	22.5	11.2	19.9	0.229	0.229	51.6	19.2	10.0	18.0	0.179	0.179
Mar 22	57.1	22.8	9.8	17.6	0.259	0.259	56.7	18.5	8.0	16.1	0.191	0.191	52.4	20.5	10.7	17.6	0.210	0.210	51.2	17.5	8.4	16.7	0.173	0.173

AVERAGE AIR QUALITY REPORT (BUFFER ZONE)

Month	Tankura Village						Miralgera Village						Kirabeda Village						Balita Village					
	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	CO	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	CO	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	CO	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	
Oct 21	51.0	17.4	6.5	8.4	0.170	0.170	49.0	17.1	6.9	10.5	0.175	0.175	45.7	13.4	6.1	15.2	0.153	0.153	50.0	15.0	8.7	16.1	0.179	0.179
Nov 21	50.0	17.1	7.2	9.0	0.169	0.169	50.9	18.0	8.8	13.0	0.199	0.199	50.5	14.4	7.1	15.7	0.157	0.157	50.4	15.4	8.5	17.9	0.198	0.198
Dec 21	49.7	17.9	8.0	10.3	0.177	0.177	50.1	16.9	7.8	14.3	0.179	0.179	50.9	15.2	6.5	15.4	0.148	0.148	49.7	15.3	7.9	16.9	0.177	0.177
Jan 22	50.0	17.9	8.0	10.6	0.171	0.171	51.1	16.9	8.5	13.6	0.174	0.174	52.8	16.0	7.2	16.0	0.16	0.16	50.2	15.8	8.8	17.2	0.177	0.177
Feb 22	50.4	17.0	8.7	10.3	0.16	0.16	50.0	17.1	8.1	15.1	0.169	0.169	52.4	16.1	7.2	16.3	0.157	0.157	49.4	15.3	7.2	17.5	0.183	0.183
Mar 22	53.4	17.6	8.2	11.1	0.167	0.167	53.5	18.0	8.2	15.8	0.160	0.160	53.9	16.9	7.8	15.8	0.167	0.167	50.7	16.0	7.0	15.7	0.162	0.162

Unit of measurement for all parameters except CO is µg/m³, Co is in mg/m³

Senior Manager (Environment)





- ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified
- Recognized By Ministry of Environment & Forests (MoEF), New Delhi
- 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

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-29A

dated 30/11/2021

Page 1 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-13	Analysis Start 23/11/2021
		Inward Date 22/11/2021	Analysis End 29/11/2021
		Reference W.O.- 3000132460/962	Report Issue Date 30/11/2021
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-13	Location Co-ordinates Lat: 22°9'30.46"N, Long: 85°28'53.38"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Quantity Received 5.0 Ltr & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Basti (Nr. Play Ground)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I Biological Testing 1. Water						
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II Chemical Testing 1. Water						
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	128.8
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	48.93
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	34.85
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL - 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.05
11	Nitrate (as NO ₃)	mg/l	APIHA method 23rd edition: 2017	45	No relaxation	9.54
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.34 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	18.74
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	232
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.5
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	136.62

□ Please refer last Page for Note and Remarks.

Verified By

Shubhangi Armarkar
Technical Manager

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

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-29A

dated 30/11/2021

Page 2 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-13 Inward Date 22/11/2021 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 23/11/2021 Analysis End 29/11/2021 Report Issue Date 30/11/2021 Sample Category Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-13	Location Co-ordinates Lat: 22°9'30.46"N. Long: 85°28'53.38"E	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Basti (Nr. Play Ground)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55): 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.26
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)

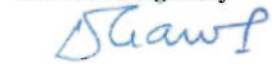
□ Please refer last Page for Note and Remarks.

Verified By


Shashikant Satdeve
Sr. Chemist


Sonali Gharpure
Technical Manager

Authorized Signatory


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



TEST REPORT

ULR No.- TC54582100003041F

Test Report No. : ALPL/30112021/1-29A

dated 30/11/2021

Page 3 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-13 Inward Date 22/11/2021 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 23/11/2021 Analysis End 29/11/2021 Report Issue Date 30/11/2021 Sample Category Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-13	Location Co-ordinates Lat: 22°9'30.46"N, Long: 85°28'53.38"E	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Basti (Nr. Play Ground)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaonox	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	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 No. : AL/PL/30112021/1-29B

dated 30/11/2021

Page 1 of 1

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-13 Inward Date 22/11/2021 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 23/11/2021 Analysis End 29/11/2021 Report Issue Date 30/11/2021 Sample Category Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-13	Location Co-ordinates Lat: 22°9'30.46"N, Long: 85°28'53.38"E	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Basti (Nr. Play Ground)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I	Chemical Testing 1. Residues In Water					
1	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

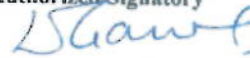
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REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Verified By


 Sonali Gharpure
 Technical Manager

Authorized Signatory


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

-----END OF REPORT-----



TEST REPORT

ULR No.- TC64582100003041F

Test Report No. : ALPL/30112021/1-30A

dated 30/11/2021

Page 1 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-14 Inward Date 22/11/2021 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 23/11/2021 Analysis End 29/11/2021 Report Issue Date 30/11/2021 Sample Category Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-14	Location Co-ordinates Lat: 22°9'25.41"N, Long: 85°30'21.34"E	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Bazar (Nr. Petrol Pump)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I Biological Testing 1. Water						
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II Chemical Testing 1. Water						
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	135.7
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	35.15
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	31.68
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F ⁻)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL - 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.54
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	8.93
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.40 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	10.11
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	244
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.5
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	130.68


□ Please refer last Page for Note and Remarks.

Verified By


Shubhangi Armarkar
Technical Manager

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.

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TEST REPORT

ULR No.- TC54582100003041F

Test Report No. : ALPL/30112021/1-30A

dated 30/11/2021

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Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-14 Inward Date 22/11/2021 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 23/11/2021 Analysis End 29/11/2021 Report Issue Date 30/11/2021 Sample Category Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-14	Location Co-ordinates Lat: 22°9'25.41"N, Long: 85°30'21.34"E	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Bazar (Nr. Petrol Pump)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
11	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55): 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.34
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)

□ Please refer last Page for Note and Remarks.

Verified By

Shashikant Satdeve
Sr. Chemist

Sonali Gharpure
Technical Manager

Authorized Signatory

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



TC - 5458

TEST REPORT

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-30A

dated 30/11/2021

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Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-14	Analysis Start 23/11/2021
		Inward Date 22/11/2021	Analysis End 29/11/2021
		Reference W.O.- 3000132460/962	Report Issue Date 30/11/2021
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-14	Location Co-ordinates Lat: 22°9'25.41"N, Long: 85°30'21.34"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Quantity Received 5.0 Ltr & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Bazar (Nr. Petrol Pump)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	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-----

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 No. : ALPL/30112021/1-30B

dated 30/11/2021

Page 1 of 1

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-14	Analysis Start 23/11/2021
		Inward Date 22/11/2021	Analysis End 29/11/2021
		Reference W.O - 3000132460/962	Report Issue Date 30/11/2021
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-14	Location Co-ordinates Lat: 22°9'25.41"N, Long: 85°30'21.34"E
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm
			Sampling Location Noamundi Bazar (Nr. Petrol Pump)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
1	Chemical Testing 1. Residues In Water					
1	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	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. ● #Permissible limit in absence of an alternate source for drinking water. ANtr/7.2/RES-06: 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-----



TEST REPORT

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-31A

dated 30/11/2021

Page 1 of 3

M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No.	2021/MON-147/60- GW-15	Analysis Start	23/11/2021
		Inward Date	22/11/2021	Analysis End	29/11/2021
		Reference	W.O.- 3000132460/962	Report Issue Date	30/11/2021
		Reference Date	15.05.2020	Sample Category	Water
Sample Name	Sample Source	Sample Particulars	Location Co-ordinates	Quantity Received	
Ground Water	Dugwell	Sample Code-GW-15	Lat: 22°8'54.89"N, Long: 85°31'8.03"E	2.0 Ltr & 250 ml	
Sample Collected By		Sampling Date	Sampling Time	Sampling Location	
Anacon Representative Mr. K. Pandey		19/11/2021	11.40 am to 4.45 pm	Mahudi Village (Railway Station Road)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	142.6
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	40.38
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	42.77
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL - 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	10.12
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	7.48
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.41 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	16.67
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	242
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.5
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	148.5

□ Please refer last Page for Note and Remarks.

Verified By

Shubhangi Armarkar
 Shubhangi Armarkar
 Technical Manager

Authorized Signatories

Pooja Kadhane
 Pooja Kadhane
 Technical Manager

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

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122.

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TC - 5458



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TEST REPORT

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-31A

dated 30/11/2021

Page 2 of 3

M/s Noamundi Iron Mines M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-15	Analysis Start 23/11/2021	
		Inward Date 22/11/2021	Analysis End 29/11/2021	
		Reference W.O.- 3000132460/962	Report Issue Date 30/11/2021	
		Reference Date 15.05.2020	Sample Category Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-15	Location Co-ordinates Lat: 22°8'54.89"N, Long: 85°31'8.03"E	Quantity Received 2.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm	Sampling Location Mahudi Village (Railway Station Road)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55): 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.27
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)

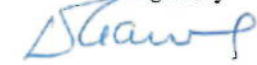
□ Please refer last Page for Note and Remarks.

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 Bulburi, Nagpur - 441 122.

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TEST REPORT

ULR No.- TC54582100003041F

Test Report No. : ALPL/30112021/1-31A

dated 30/11/2021

Page 3 of 3

M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217	Sample Inward No. 2021/MON-147/60- GW-15 Inward Date 22/11/2021 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 23/11/2021 Analysis End 29/11/2021 Report Issue Date 30/11/2021 Sample Category Water		
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-15	Location Co-ordinates Lat: 22°8'54.89"N, Long: 85°31'8.03"E	Quantity Received 2.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm	Sampling Location Mahudi Village (Railway Station Road)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01 : 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01 : 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01 : 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01 : 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01 : 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01 : 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01 : 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01 : 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01 : 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01 : 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01 : 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01 : 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01 : 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01 : 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01 : 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01 : 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01 : 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01 : 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01 : 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01 : 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01 : 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01 : 2018	30	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
 Sonali Gharpure
 Technical Manager

Authorized Signatory

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

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Bulburi, Nagpur - 441 122.

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TEST REPORT

Test Report No. : ALPL/30112021/1-31B

dated 30/11/2021

Page 1 of 1

M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-15 Inward Date 22/11/2021 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 23/11/2021 Analysis End 29/11/2021 Report Issue Date 30/11/2021 Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-15	Location Co-ordinates Lat: 22°8'54.89"N, Long: 85°31'8.03"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Quantity Received 5.0 Ltr & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Mahudi Village (Railway Station Road)


TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
1	Chemical Testing 1. Residues In Water					
1	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)


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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 Giharpure
Technical Manager

Authorized Signatory


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

-----END OF REPORT-----



TC - 5458

TEST REPORT

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-32A

dated 30/11/2021

Page 1 of 3

M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-16	Analysis Start 23/11/2021
		Inward Date 22/11/2021	Analysis End 29/11/2021
		Reference W.O.- 3000132460/962	Report Issue Date 30/11/2021
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-16	Location Co-ordinates Lat: 22°8'52.58"N, Long: 85°30'28.50"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Quantity Received 5.0 Ltr & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Bottom Bin (Nr. Barrack)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	161
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	47.50
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	45.14
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	BDL (DL - 0.1)
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.05
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	8.36
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.43 at 25°C
14	Phenolic compounds (as C ₆ H ₅ O11)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	13.44
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	270
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	162.36

□ Please refer last Page for Note and Remarks.

Verified By

Shubhangi Armarkar
 Technical Manager

Authorized Signatories

Pooja Kathane
 Technical Manager

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

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TEST REPORT

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-32A

dated 30/11/2021

Page 2 of 3


M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No.	2021/MON-147/60- GW-16	Analysis Start	23/11/2021
		Inward Date	22/11/2021	Analysis End	29/11/2021
		Reference	W.O.- 3000132460/962	Report Issue Date	30/11/2021
		Reference Date	15.05.2020	Sample Category	Water
Sample Name	Sample Source	Sample Particulars	Location Co-ordinates	Quantity Received	
Ground Water	Dugwell	Sample Code-GW-16	Lat: 22°8'52.58"N, Long: 85°30'28.50"E	5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date	Sampling Time	Sampling Location	
		19/11/2021	10.40 am to 4.45 pm	Bottom Bin (Nr. Barrack)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing 2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55): 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.32
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANqr RES-30	0.1	No relaxation	BDL(DL-0.03)


□ Please refer last Page for Note and Remarks.

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;

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TC - 5458

TEST REPORT

ULR No.- TC545821000003041F

Test Report No. : ALPL/30112021/1-32A

dated 30/11/2021

Page 3 of 3

M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-16	Analysis Start 23/11/2021
		Inward Date 22/11/2021	Analysis End 29/11/2021
		Reference W.O - 3700132460/962	Report Issue Date 30/11/2021
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-16	Location Co-ordinates Lat: 22°8'52.58"N, Long: 85°30'28.50"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Quantity Received 5.0 Ltr & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Bottom Bin (Nr. Barrack)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/C1: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/C1: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/C1: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/C1: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/C1: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaaxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	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---

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 No. : ALPL/30112021/1-32B

dated 30/11/2021

Page 1 of 1

M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- GW-16	Analysis Start 23/11/2021
		Inward Date 22/11/2021	Analysis End 29/11/2021
		Reference W.O.- 3000132460/962	Report Issue Date 30/11/2021
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-16	Location Co-ordinates Lat: 22°8'52.58"N, Long: 85°30'28.50"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Quantity Received 5.0 Ltr & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Bottom Bin (Nr. Barrack)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
1	Chemical Testing 1. Residues In Water					
1	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)

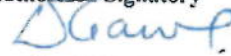
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REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Verified By


Sonali Gharpure
Technical Manager

Authorized Signatory


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

-----END OF REPORT-----

Test Report No. : ALPL/28022022/1-29A

dated 28/02/2022

Page 1 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-13 Inward Date 22/02/2022 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-13	Location Co-ordinates Lat: 22°9'30.46"N, Long: 85°28'53.38"E
Sample Collected By Anacon Representative Mr. K. Pansley		Sampling Date 18/02/2022	Quantity Received 5.0 Ltr & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Basti (Nr. Play Ground)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I Biological Testing I. Water						
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II Chemical Testing I. Water						
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	137.64
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	51.29
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	32.68
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.16
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.47
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	8.26
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.14 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	16.28
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	256
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	137.02

Please refer last Page for Note and Remarks.

Verified By


Shubhangi Armarkar
Technical Manager

Authorized Signatories


Pooja Kathane
Technical Manager


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



Test Report No. : ALPL/28022022/1-29A

dated 28/02/2022

Page 2 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-13	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O.- 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2029	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-13	Location Co-ordinates Lat: 22°9'30.46"N, Long: 85°28'53.38"E
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 10.40 am to 4.45 pm
Sampling Location Noamundi Basti (Nr. Play Ground)			

TEST RESULTS

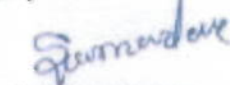
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55) : 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.21
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.2/RES/06: 2018	0.1	No relaxation	BDL(DL-0.03)

○ Please refer last Page for Note and Remarks.

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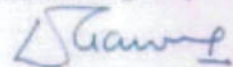


Shashikant Satdeve
Sr. Chemist



Shubhangi Armarkar
Technical Manager

Authorized Signatory



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



Test Report No. : ALPL/28022022/1-29A

dated 28/02/2022

Page 3 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-13 Inward Date 22/02/2022 Reference W/O - 3000132160/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-13	Location Co-ordinates Lat: 22°9'30.46"N, Long: 85°28'53.38"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Quantity Received 5.0 Lit & 250 ml
		Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Basti (Nr. Play Ground)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

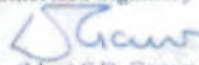
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REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Verified By


Sonali Gharpure
Technical Manager

Authorized Signatory


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

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, Nagpur - 441 122.

Email : support@anacon.in

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Test Report No. : ALPL/28022022/I-30A

dated 28/02/2022

Page 1 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32-60- GW-14	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O.- 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-14	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Location Noamundi Bazar (Nir. Petrol Pump)
		Sampling Time 10.40 am to 4.45 pm	
Location Co-ordinates Lat: 22°9'25.41"N, Long: 85°30'21.34"E			

TEST RESULTS

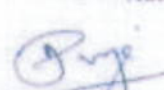
S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I Biological Testing I. Water						
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II Chemical Testing I. Water						
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	141.62
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K): 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	48.25
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	26.31
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.18
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	12.64
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	9.17
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	6.97 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	17.24
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	294
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.3
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	117.68

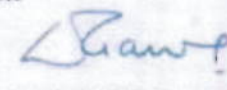
□ Please refer last Page for Note and Remarks.

Verified By


Shubhangi Armarkar
Technical Manager

Authorized Signatories


Pooja Kathang
Technical Manager


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

Test Report No. : ALPL/28022022/1-30A

dated 28/02/2022

Page 2 of 3


Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-14 Inward Date 22/02/2022 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-14	Location Co-ordinates Lat: 22°9'25.41"N, Long: 85°30'21.34"E
Quantity Received 5.0 Lit & 250 ml		Sample Collected By Anacon Representative Mr. K. Pandey	
Sampling Date 18/02/2022		Sampling Time 10:40 am to 4:45 pm	Sampling Location Noamundi Bazar (Nr. Petrol Pump)

TEST RESULTS


S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55) : 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.18
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANtr/7.3/RES/06: 2018	0.1	No relaxation	BDL(DL-0.03)

Please refer last Page for Note and Remarks.

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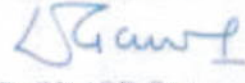


Shashikant Satdeve
Sr. Chemist



Shubhangi Armurkar
Technical Manager

Authorized Signatory



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



Test Report No. : ALPL/28022022/1-30A		dated 28/02/2022		Page 3 of 3	
Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-14 Inward Date 22/02/2022 Reference W.O. - 3000132460/962 Reference Date 15.05.2020		Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water	
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-14	Location Co-ordinates Lat: 22°9'25.41"N, Long: 85°30'21.34"E		Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 10.40 am to 4.45 pm	Sampling Location Noamundi Bazar (Nr. Petrol Pump)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Mofocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	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



Test Report No. : ALPL/28022022/1-31A

dated 28/02/2022

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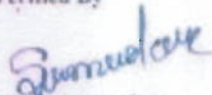
Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-15 Inward Date 22/02/2022 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water
Sample Name Ground Water	Sample Source Dagwell	Sample Particulars Sample Code-GW-15	Location Co-ordinates Lat: 22°8'54.89"N, Long: 85°31'8.03"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 10.40 am to 4.45 pm
		Quantity Received 5.0 Ltr & 250 ml	
		Sampling Location Mahadi Village (Railway Station Road)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I	Biological Testing I. Water					
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II	Chemical Testing I. Water					
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	172.16
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	26.82
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	46.19
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.17
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.58
11	Nitrate (as NO ₃ -N)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	8.16
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	7.03 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	18.32
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	287
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.6
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	171.25

Please refer last Page for Note and Remarks.

Verified By


Shubhangi Armarkar
Technical Manager

Authorized Signatories


Pooja Kathang
Technical Manager


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

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Bubori, Nagpur - 441 122.

Email : support@anacon.in

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Test Report No. : ALPL/28022022/1-31A dated 28/02/2022 Page 2 of 3


Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217	Sample Inward No. 2022/MON-32/60- GW-15 Inward Date 22/02/2022 Reference W.O - 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water
	Sample Name Ground Water Sample Source Dugwell Sample Particulars Sample Code-GW-15 Location Co-ordinates Lat: 22°8'54.89"N, Long: 85°31'8.03"E Quantity Received 5.0 Ltr & 250 ml	
	Sample Collected By Anacon Representative Mr. K. Pandey Sampling Date 18/02/2022 Sampling Time 10.40 am to 4.45 pm Sampling Location Mahudi Village (Railway Station Road)	

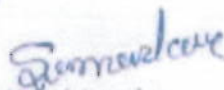
TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55) : 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.21
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANr/7.2/RES/06: 2018	0.1	No relaxation	BDL(DL-0.03)

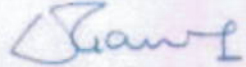
Please refer last Page for Note and Remarks.

Verified By


 Shashikant Satdeve
 Sr. Chemist


 Shubhangi Armarkar
 Technical Manager

Authorized Signatory


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



Test Report No. : ALPL/28022022/1-31A

dated 28/02/2022

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Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-15	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O - 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-15	Location Co-ordinates Lat: 22°8'54.89"N, Long: 85°31'8.03"E
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 10.40 am to 4.45 pm
			Sampling Location Mahudi Village (Railway Station Road)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'- DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	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



Subal Chaturpuri
Technical Manager

Authorized Signatory



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

Laboratory address : FP-34-25, 25th Phase, 3 & Star Industrial Estate, MIDC Butibori, Nagpur - 441 122.

Email : support@anacon.in;

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Test Report No. : ALPL/28022022/1-32A

dated 28/02/2022

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Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-16	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O.- 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-16	Location Co-ordinates Lat: 22°8'52.58"N, Long: 85°30'28.50"E
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 10.40 am to 4.45 pm
		Sampling Location Bottom Bin (Nr. Barrack)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
I Biological Testing I. Water						
1	<i>Escherichia coli</i>	Per 100 ml	IS 15185 : 2016	Absent	Absent	Absent
II Chemical Testing I. Water						
2	Alkalinity (as CaCO ₃)	mg/l	IS 3025 (Part 23) : 1986	200	600	146.27
3	Anionic surface active agents (as MBAS)	mg/l	IS 13428 : (Annex K) : 2005	0.2	1.0	BDL (DL - 0.01)
4	Colour	Hazen units	IS 3025 (Part 4) : 2021	5	15	1
5	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.05	No relaxation	BDL (DL - 0.005)
6	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	250	1000	32.95
7	Calcium (as Ca)	mg/l	IS 3025 (Part 40) : 1991	75	200	51.26
8	Free residual chlorine	mg/l	IS 3025 (Part 26) : 2021	Min. 0.2	1	BDL (DL - 0.1)
9	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.0	1.5	0.14
10	Magnesium (as Mg)	mg/l	IS 3025 (Part 46) : 1994	30	100	13.27
11	Nitrate (as NO ₃)	mg/l	APHA method 23rd edition: 2017	45	No relaxation	9.14
12	Odour	-	IS 3025 (Part 5) : 1983	Agreeable	Agreeable	Agreeable
13	pH	-	IS 3025 (Part 11) : 1983	6.5 to 8.5	No relaxation	6.82 at 25°C
14	Phenolic compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	0.001	0.002	BDL (DL - 0.001)
15	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	200	400	16.24
16	Taste	-	IS 3025 (Part 8) : 1984	Agreeable	Agreeable	Agreeable
17	Total dissolved solids	mg/l	IS 3025 (Part 16) : 1984	500	2000	291
18	Turbidity	NTU	IS 3025 (Part 10) : 1984	1	5	0.4
19	Total hardness (as CaCO ₃)	mg/l	IS 3025 (Part 21) : 2009	200	600	182.65

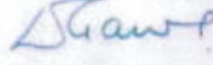
Please refer last Page for Note and Remarks.

Verified By


Shubhangi Armarkar
Technical Manager

Authorized Signatories


Pooja Khatune
Technical Manager


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

Test Report No. : ALPL/28022022/1-32A

dated 28/02/2022

Page 2 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60- GW-16	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O. - 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-16	Location Co-ordinates Lat: 22°8'52.58"N, Long: 85°30'28.50"E
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 10.40 am to 4.45 pm
			Sampling Location Bottom Bin (Nr. Barrack)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
II	Chemical Testing					
	2. Residues In Water					
20	Arsenic (as As)	mg/l	IS 3025 (Part 37) : 1988	0.01	No relaxation	BDL (DL - 0.01)
21	Aluminium (as Al)	mg/l	IS 3025 (Part 2) : 2019 / IS 3025 (Part 55) : 2003	0.03	0.2	BDL (DL - 0.01)
22	Barium (as Ba)	mg/l	IS 3025 (Part 2) : 2019	0.7	No relaxation	BDL (DL - 0.01)
23	Boron (as B)	mg/l	IS 3025 (Part 2) : 2019	0.5	2.4	BDL (DL - 0.1)
24	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	0.05	1.5	BDL (DL - 0.03)
25	Cadmium (as Cd)	mg/l	IS 3025 (Part 2) : 2019	0.003	No relaxation	BDL (DL - 0.001)
26	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	1.0	No relaxation	0.17
27	Lead (as Pb)	mg/l	IS 3025 (Part 2) : 2019	0.01	No relaxation	BDL (DL - 0.001)
28	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	0.1	0.3	BDL (DL - 0.05)
29	Mercury (as Hg)	mg/l	IS 3025 (Part 48) : 1994	0.001	No relaxation	BDL (DL - 0.0005)
30	Selenium (as Se)	mg/l	IS 3025 (Part 56) : 2003	0.01	No relaxation	BDL (DL - 0.001)
31	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	0.05	No relaxation	BDL (DL - 0.03)
32	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5	15	BDL (DL - 0.1)
33	Polynuclear aromatic hydrocarbon (PAH)	µg/l	ANr/7.2/RES/06-2018	0.1	No relaxation	BDL(DL-0.03)

Please refer last Page for Note and Remarks.

Verified By




Shashikant Satdeve
Sr. Chemist



Shubhangi Armarkar
Technical Manager

Authorized Signatory



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

Test Report No. : ALPL/28022022/1-32A

dated 28/02/2022

Page 3 of 3

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-GW-16	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O - 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Ground Water	Sample Source Dugwell	Sample Particulars Sample Code-GW-16	Location Co-ordinates Lat: 22°8'52.58"N, Long: 85°30'28.50"E
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 10.40 am to 4.45 pm
		Sampling Location Bottom Bin (Nr. Barrack)	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Requirement as per IS 10500 : 2012 (Drinking Water Specifications) Including Amendment No. 3		Test Result
				Acceptable Limit	Permissible Limit #	
34	Mineral Oil	mg/l	ANtr/7.2/RES/06: 2018	1	No relaxation	BDL (DL - 0.001)
35	Pesticide Residues Organochlorine					
i	Alpha-HCH	µg/l	ANtr/7.2/RES/01: 2018	0.01	No relaxation	BDL (DL - 0.01)
ii	Beta HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
iii	Gamma - HCH (Lindane)	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
iv	Delta- HCH	µg/l	ANtr/7.2/RES/01: 2018	0.04	No relaxation	BDL (DL - 0.03)
v	Alachlor	µg/l	ANtr/7.2/RES/01: 2018	20	No relaxation	BDL (DL - 0.03)
vi	Aldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
vii	Dieldrin	µg/l	ANtr/7.2/RES/01: 2018	0.03	No relaxation	BDL (DL - 0.03)
viii	Butachlor	µg/l	ANtr/7.2/RES/01: 2018	125	No relaxation	BDL (DL - 0.03)
ix	p,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
x	o,p'-DDE	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xi	p,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xii	o,p'-DDD	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiii	o,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xiv	p,p'-DDT	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xv	Monocrotophos	µg/l	ANtr/7.2/RES/01: 2018	1	No relaxation	BDL (DL - 0.03)
xvi	Atrazine	µg/l	ANtr/7.2/RES/01: 2018	2	No relaxation	BDL (DL - 0.03)
xvii	Parathion methyl	µg/l	ANtr/7.2/RES/01: 2018	0.3	No relaxation	BDL (DL - 0.03)
xviii	Paraoxon methyl	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xix	Malathion	µg/l	ANtr/7.2/RES/01: 2018	190	No relaxation	BDL (DL - 0.03)
xx	Malaoxon	µg/l	ANtr/7.2/RES/01: 2018	-	-	BDL (DL - 0.03)
xxi	Ethion	µg/l	ANtr/7.2/RES/01: 2018	3	No relaxation	BDL (DL - 0.03)
xxii	Chlorpyrifos	µg/l	ANtr/7.2/RES/01: 2018	30	No relaxation	BDL (DL - 0.03)

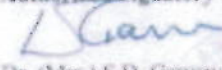
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REMARKS: As requested by the client, sample was tested for above parameters only. Sample complies with IS:10500:2012, for tests conducted, indicating that it is fit for drinking purpose with respect to tested parameters.

Verified By


Sonali Chaturvedi
Technical Manager

Authorized Signatory


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

—End of Report—

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122.

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Ground Water level details

Noamundi Iron Mine, M/s Tata Steel Limited

Compliance to Standard condition clause no. III Water quality monitoring & Preservation, sub-clause point no.3 of EC vide no. J-11015/104/2011-IA.II (M), 06th September 2021.

(3) 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.

Regular monitoring of ground water level in and around the mine lease of existing dug-well & piezometers are regularly been done in desired frequency.

Monitored water level for the month of November 2021 and February 2022 are as follows:

Sl. No.	Location	Month	
		November 2021	February 2022
Dug Well Locations:			
1.	Mohudi Railway Station, Kash Moudi Inside Home	1.4 m	1.5 m
2.	Near Bottom Bin Gate	3.5 m	3.6 m
3.	Noamundi Basti (inside house)	2.5 m	2.3 m
4.	Noamundi Bazar (In front of Petrol Pump)	2.2 m	2.4 m
Piezometer Locations:			
5.	Balijharan, Near Aqua Park, Noamundi	20.0 m	21.2 m
6.	Jojo Camp	5.8 m	6.1 m
7.	Bottom bin	1.6 m	1.59 m
8.	Near Power House	15.8 m	15.2 m


 Senior Manager Environment



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TEST REPORT

Test Report No. : ALPL/30112021/1-37

dated 30/11/2021

Page 1 of 1

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2021/MON-147/60- SW-5 & 6	Analysis Start 23/11/2021
		Inward Date 22/11/2021	Analysis End 29/11/2021
		Reference W.O.- 3000132460/962	Report Issue Date 30/11/2021
		Reference Date 15.05.2020	Sample Category Water
Sample Name Surface Water	Sample Source Balijhora Nallah	Sample Particulars Sample Code-SW-5 & 6	Location Coordinate SW-5 Lat: 22°8'59.1"N; Long: 85°29'37.62"E SW-6 Lat: 22°9'35.88"N; Long: 85°29'49.87"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 19/11/2021	Sampling Time 10.40 am to 4.45 pm
		Sampling Location Balijhora Nallah (SW-1; Nr. Aqua Park) 2. (SW-2; Nr. DVC)	
Quantity Received 2.0 Lit & 250 ml each			

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result	
					SW-5	SW-6
I	Biological Testing 1. Water					
1	Total Coliform	MPN/100ml	IS 1622 : 1981	5000	BDL(DL-2)	BDL(DL-2)
II	Chemical Testing 1. Water					
2	pH value	-	IS 3025 (Part 11) : 1983	6.0 to 9.0	7.43 at 25°C	7.38 at 25°C
3	Colour	Hazen units	IS 3025 (Part 4) : 2021	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	212	218
9	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	1.5	BDL(DL-0.03)	BDL(DL-0.03)
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32) : 1988	600	59.78	62.19
11	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24) : 1986	400	9.07	10.11
12	Nitrate (as NO ₃)	mg/l	IS 3025 (Part 34) : 1988	50	8.57	7.69
13	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	1.5	0.27	0.35
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 C ₆ H ₅ OH)	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)
	Chemical Testing 2. Residues In Water					
17	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	0.5	0.03	0.50
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-0.001)	BDL(DL-0.001)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.05)	BDL(DL-0.05)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	15	BDL(DL-0.05)	BDL(DL-0.05)
23	Hexa Chromium (as Cr ^{VI})	mg/l	IS 3025 (Part 2) : 2019	0.05	BDL(DL-0.001)	BDL(DL-0.001)
24	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	--	BDL(DL-0.005)	BDL(DL-0.005)
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

Authorized Signatories

Shushikant Satdeve
Sr. Chemist

Shubhangi Armarkar
Technical Manager

Pooja Kulkarni
Technical Manager

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

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC, Suibori, Nagpur - 441 122.
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Test Report No. : ALPL/28022022/1-57

dated 28/02/2022

Page 1 of 1

Issued To : M/s Noamundi Iron Mines (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-12-06-SW-5 & 6	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O. - 3000112460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Surface Water	Sample Source Babilhore Nallah	Sample Particulars Sample Code-SW-5 & 6	Location Coordinate SW-5 Lat: 22°45'41"N, Long: 85°29'37.62"E SW-6 Lat: 22°45'45.88"N, Long: 85°29'40.87"E
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Quantity Received 20 Litre @ 200 ml each
		Sampling Time 10:00 am to 4:45 pm	Sampling Location Babilhore Nallah (SW-1), Nr. Aqua Park 2, (SW-2, Nr. DVC)

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards as per IS 2296:1992 Class C	Test Result	
					SW-5	SW-6
I. Biological Testing - 1. Water						
1	Total Coliform	MPN/100ml	IS 1521:1981	5000	0.0 (DL-2)	0.0 (DL-2)
II. Chemical Testing - 1. Water						
2	pH value	-	IS 3025 (Part 1): 1983	6.0 to 9.0	7.47 at 25°C	7.36 at 25°C
3	Colour	Haazen unit	IS 3025 (Part 4): 2021	300	1	1
4	Dissolved Oxygen	mg/l	IS 3025 (Part 38): 1983	4.0	6.1	6.3
5	Total Suspended Solid (as TSS)	mg/l	IS 3025 (Part 37): 1983	-	ND (DL-10)	ND (DL-10)
6	BOD (5 days at 27°C)	mg/l	IS 3025 (Part 44): 1993	3.0	ND (DL-2)	ND (DL-2)
7	Chemical oxygen demand	mg/l	IS 3025 (Part 58): 2006	-	ND (DL-4)	ND (DL-4)
8	Total Dissolved Solids (TDS)	mg/l	IS 3025 (Part 16): 1983	1500	209	212
9	Copper (as Cu)	mg/l	IS 3025 (Part 2): 2019	1.5	ND (DL-0.01)	ND (DL-0.01)
10	Chloride (as Cl)	mg/l	IS 3025 (Part 32): 1988	600	54.63	58.27
11	Sulphate (as SO ₄)	mg/l	IS 3025 (Part 24): 1986	400	11.24	8.32
12	Nitrate (as NO ₃)	mg/l	IS 3025 (Part 34): 1988	50	6.82	7.19
13	Fluoride (as F)	mg/l	IS 3025 (Part 66): 2008	1.5	0.31	0.28
14	Cyanide (as CN)	mg/l	IS 3025 (Part 27): 1986	0.05	ND (DL-0.005)	ND (DL-0.005)
15	Phenolic compounds (as m/m)	mg/l	IS 3025 (Part 43): 1981	0.005	ND (DL-0.001)	ND (DL-0.001)
16	Anionic Detergent	mg/l	IS 13128: 2805 Annex K	1.0	ND (DL-0.01)	ND (DL-0.01)
Chemical Testing - 2. Residues In Water						
17	Iron (as Fe)	mg/l	IS 3025 (Part 2): 2019	0.5	0.16	0.21
18	Cadmium (as Cd)	mg/l	IS 3025 (Part 41): 1992	0.01	ND (DL-0.001)	ND (DL-0.001)
19	Selenium (as Se)	mg/l	IS 3025 (Part 2): 2019	0.05	ND (DL-0.001)	ND (DL-0.001)
20	Arsenic (as As)	mg/l	IS 3025 (Part 37): 1988	0.2	ND (DL-0.001)	ND (DL-0.001)
21	Lead (as Pb)	mg/l	IS 3025 (Part 47): 2003	0.1	ND (DL-0.001)	ND (DL-0.001)
22	Zinc (as Zn)	mg/l	IS 3025 (Part 2): 2019	15	ND (DL-0.001)	ND (DL-0.001)
23	Hexa Chromium (as Cr ⁶⁺)	mg/l	IS 3025 (Part 2): 2019	0.05	ND (DL-0.001)	ND (DL-0.001)
24	Mercury (as Hg)	mg/l	IS 3025 (Part 48): 1994	-	ND (DL-0.005)	ND (DL-0.005)
25	Manganese (as Mn)	mg/l	IS 3025 (Part 2): 2019	-	ND (DL-0.05)	ND (DL-0.05)

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

Verified By



Shubhankar Sathave
Sr. Chemist



Shubhankar Armarkar
Technical Manager

Authorized Signatories



Pooja Kathale
Technical Manager



Dr. Mrs. S.D. Ganay
Quality Manager
ANACONLABS

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TEST REPORT

ULR No.- TC54582200000856F

Test Report No. : ALPL/28022022/1-12A

dated 28/02/2022

Page 1 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-11&12 Inward Date 22/02/2022 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water	
Sample Name Sewage Water	Sample Source New Town Ship STP 50 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-11 & 12	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm	Sampling Location New Town Ship STP 50 KLD Inlet & Outlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
1	Chemical Testing Pollution & Environment					
1	pH value	-	IS 3025 (Part 11): 1983	5.5 to 9.0	7.21 at 25°C	7.28 at 25°C
2	Oil & Grease	mg/l	IS 3025 (Part 39): 1991	10	BDL(DL-4)	BDL(DL-4)
3	Total Suspended Solid (TSS)	mg/l	IS 3025 (Part 17): 1984	100	85	26
4	Ammonical Nitrogen (as N)	mg/l	IS 3025 (Part 34): 1988	50	10.20	5.28
5	Total Kjeldahl Nitrogen (as N)	mg/l	IS 3025 (Part 34): 1988	100	20	9
6	BOD(3 days at 27°C)	mg/l	IS 3025 (Part 44): 1993	30	30	6
7	Chemical Oxygen Demand	mg/l	IS 3025 (Part 58): 2006	250	158	28
8	Cyanide (as CN)	mg/l	IS 3025 (Part 27): 1986	0.2	BDL(DL-0.1)	BDL(DL-0.1)
9	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43): 1992	1.0	BDL(DL-0.1)	BDL(DL-0.1)

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Verified By

Shubhangi Armarkar
Technical Manager

Authorized Signatory

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

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Bulburi, Nagpur - 441 122.

Email : support@anacon.in

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TEST REPORT

ULR No.- TC545822000000856F

Test Report No. : ALPL/28022022/1-12A

dated 28/02/2022

Page 2 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-11&12 Inward Date 22/02/2022 Reference W.O.- 3800132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water
Sample Name Sewage Water	Sample Source New Town Ship STP 50 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-11 & 12	Sample Condition Sealed & Ice Preserved Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm Sampling Location New Town Ship STP 50 KLD Inlet & Outlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
11	Chemical Testing 2. Residues In Water					
10	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	3.0	0.18	0.14
11	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	3.0	BDL(DL-5)	BDL(DL-5)
12	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
13	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.01	BDL(DL-0.01)	BDL(DL-0.01)
14	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	2.0	BDL(DL-0.1)	BDL(DL-0.1)
15	Selenium (as Se)	mg/l	IS : 3025 (Part 56)	0.05	BDL(DL-0.1)	BDL(DL-0.1)
16	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)	BDL(DL-0.1)
17	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.2	BDL(DL-0.05)	BDL(DL-0.05)
18	Nickel (as Ni)	mg/l	IS 13428 : 2005(Annexure L)	3.0	BDL(DL-0.1)	BDL(DL-0.1)
19	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5.0	BDL(DL-5)	BDL(DL-5)
20	Total Chromium	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
21	Vanadium (as V)	mg/l	IS 3025 (Part 2) : 2019	0.2	BDL(DL-0.1)	BDL(DL-0.1)

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

Verified By

Shashikant Satdeve
Sr. Chemist

Authorized Signatory

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

---End of Report---



Test Report No. : ALPL/28022022/1-12B

dated 28/02/2022

Page 1 of 1

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-11&12	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O- 3000132460962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Sewage Water	Sample Source New Town Ship STP 50 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-11 & 12	Sample Condition Sealed & Ice Preserved
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
		Sampling Location New Town Ship STP 50 KLD Inlet & Outlet	

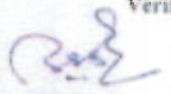
TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
I	Biological Testing I,Water					
1	Faecal coliform	MPN/100 ml	IS 1622 : 1981	--	63	58
II	Chemical Testing Pollution & Environment					
2	Colour	Hazen units	IS 3025 (Part 4) : 1983	Colourless	2	0 (Colourless)
3	Odour	-	IS 3025 (Part 5) : 2018	Odourless	Disagreeable	Agreeable
4	Temperature	°C	APHA Method	Shall not exceed 5°C above the receiving water temperature	25°C	25°C
5	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	1.0	BDL(DL-0.1)	BDL(DL-0.1)
6	Particulate size of SS		Gravimetric Method	Shall pass 850 micron IS Sieve	<850	<850
7	Free Ammonia (as NH ₃)	mg/l	APHA Method	5	BDL(DL-0.1)	BDL(DL-0.1)
8	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	2.0	0.36	BDL(DL-0.1)
9	Sulphide (as S)	mg/l	IS 3025 (Part 29) : 1986	2.0	BDL(DL-0.03)	BDL(DL-0.03)
10	Nitrate Nitrogen	mg/l	APHA Method	10	6.5	BDL (DL-2)
11	Bio Assay Test	%	APHA 22nd Edition	90% Survival of fish after 96 hours in 100% effluent	83%	96%
12	Hexavalent Chromium (as Cr ^{VI})	mg/l	IS 3025 (Part 2) : 2019	0.1	BDL(DL-0.01)	BDL(DL-0.01)
13	Dissolved Phosphate (as P)	mg/l	IS 3025 (Part 31) : 1988	5.0	BDL(DL-0.1)	BDL(DL-0.1)

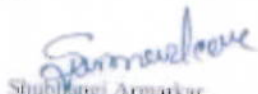
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REMARKS : As requested by the client, sample was tested for above parameters only.

Verified By



Shashikant Sathe
Sr. Chemist



Shubhangi Armarkar
Technical Manager

Authorized Signatories



Pooja Kathare
Technical Manager



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

—End of Report—

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Bulburi, Nagpur - 441 122.

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TEST REPORT

ULR No.- TC54582200000856F

Test Report No. : ALPL/28022022/1-13A

dated 28/02/2022

Page 1 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-15&16 Inward Date 22/02/2022 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water
Sample Name Sewage Water	Sample Source Central Camp STP 50 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-15 & 16	Sample Condition Sealed & Ice Preserved
Sample Collected By Anacon Representative Mr.K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
		Quantity Received 5.0 Ltr & 250 ml	
		Sampling Location Central Camp STP 50 KLD Inlet & Outlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
1	Chemical Testing Pollution & Environment					
1	pH value	-	IS 3025 (Part 11): 1983	5.5 to 9.0	7.10 at 25°C	7.26 at 25°C
2	Oil & Grease	mg/l	IS 3025 (Part 39): 1991	10	BDL(DL-4)	BDL(DL-4)
3	Total Suspended Solid (TSS)	mg/l	IS 3025 (Part 17): 1984	100	80	20
4	Ammonical Nitrogen (as N)	mg/l	IS 3025 (Part 34): 1988	50	7.20	BDL(DL-1)
5	Total Kjeldahl Nitrogen (as N)	mg/l	IS 3025 (Part 34): 1988	100	13.0	4.10
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44): 1993	30	30	6.5
7	Chemical Oxygen Demand	mg/l	IS 3025 (Part 58): 2006	250	130	20
8	Cyanide (as CN)	mg/l	IS 3025 (Part 27): 1986	0.2	BDL(DL-0.1)	BDL(DL-0.1)
9	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43): 1992	1.0	BDL(DL-0.1)	BDL(DL-0.1)

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Verified By

Shubhangi Armarkar
 Shubhangi Armarkar
 Technical Manager

Authorized Signatory

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





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TEST REPORT

ULR No. - TC54582200000856F

Test Report No. : ALPL/28022022/1-13A

dated 28/02/2022

Page 2 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-15&16	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O. - 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Sewage Water	Sample Source Central Camp STP 50 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-15 & 16	Sample Condition Sealed & Ice Preserved
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr.K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
			Sampling Location Central Camp STP 50 KLD Inlet & Outlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
10	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	3.0	0.18	0.13
11	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	3.0	BDL(DL-5)	BDL(DL-5)
12	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
13	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.01	BDL(DL-0.01)	BDL(DL-0.01)
14	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	2.0	BDL(DL-0.1)	BDL(DL-0.1)
15	Selenium (as Se)	mg/l	IS : 3025 (Part 56)	0.05	BDL(DL-0.1)	BDL(DL-0.1)
16	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)	BDL(DL-0.1)
17	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.2	BDL(DL-0.05)	BDL(DL-0.05)
18	Nickel (as Ni)	mg/l	IS : 13428 : 2005 (Annexure 1.)	3.0	BDL(DL-0.1)	BDL(DL-0.1)
19	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5.0	BDL(DL-5)	BDL(DL-5)
20	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
21	Vanadium (as V)	mg/l	IS 3025 (Part 2) : 2019	0.2	BDL(DL-0.1)	BDL(DL-0.1)


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

Verified By

Shashikant Satdeve
Sr. Chemist

Authorized Signatory


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

---End of Report---

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Test Report No. : ALPL/28022022/1-13B

dated 28/02/2022

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Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-15&16 Inward Date 22/02/2022 Reference W.O. - 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water	
Sample Name Sewage Water	Sample Source Central Camp STP 50 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-15 & 16	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr.K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm	Sampling Location Central Camp STP 50 KLD Inlet & Outlet


TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
I	Biological Testing I.Water					
1	Faecal coliform	MPN/100 ml	IS 1622; 1981	--	109	84
II	Chemical Testing Pollution & Environment					
2	Colour	Hazen units	IS 3025 (Part 4); 1983	Colourless	2	0 (Colourless)
3	Odour	-	IS 3025 (Part 5); 2018	Odourless	Disagreeable	Agreeable
4	Temperature	°C	APHA Method	Shall not exceed 5°C above the receiving water temperature	25°C	25°C
5	Free residual chlorine	mg/l	IS 3025 (Part 26); 1986	1.0	BDL(DL-0.1)	BDL(DL-0.1)
6	Particulate size of SS		Gravimetric Method	Shall pass 850 micron IS Sieve	<850	<850
7	Free Ammonia (as NH ₃)	mg/l	APHA Method	5	BDL(DL-0.1)	BDL(DL-0.1)
8	Fluoride (as F)	mg/l	IS 3025 (Part 60); 2008	2.0	BDL(DL-0.1)	BDL(DL-0.1)
9	Sulphide (as S)	mg/l	IS 3025 (Part 29); 1986	2.0	BDL(DL-0.05)	BDL(DL-0.03)
10	Nitrate Nitrogen	mg/l	APHA Method	10	7.23	BDL(DL-2)
11	Bio Assay Test	%	APHA 22nd Edition	90% Survival of fish after 96 hours in 100% effluent	81%	95%
12	Hexavalent Chromium (as Cr ^{VI})	mg/l	IS 3025 (Part 2); 2019	0.1	BDL(DL-0.01)	BDL(DL-0.01)
13	Dissolved Phosphate (as P)	mg/l	IS 3025 (Part 31); 1988	5.0	BDL(DL-0.1)	BDL(DL-0.1)

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

Verified By


 Shashikant Satdeve
 Sr. Chemist


 Shubhangi Armarkar
 Technical Manager

Authorized Signatories


 Pooja Kadhap
 Technical Manager


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

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TEST REPORT

ULR No.- TC54582200000856F

Test Report No. : ALPL/28022022/1-14A

dated 28/02/2022

Page 1 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-17&18	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O.- 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Sewage Water	Sample Source Hospital ETP 10 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-17 & 18	Sample Condition Sealed & Ice Preserved
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr.K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
			Sampling Location Hospital ETP 10 KLD Inlet & Outlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
1	Chemical Testing Pollution & Environment					
1	pH value	-	IS 3025 (Part 11): 1983	5.5 to 9.0	6.21 at 25°C	7.16 at 25°C
2	Oil & Grease	mg/l	IS 3025 (Part 39): 1991	10	BDL(DL-4)	BDL(DL-4)
3	Total Suspended Solid (TSS)	mg/l	IS 3025 (Part 17): 1984	100	134	26
4	Ammonical Nitrogen (as N)	mg/l	IS 3025 (Part 34): 1988	50	7.20	4.12
5	Total Kjeldahl Nitrogen (as N)	mg/l	IS 3025 (Part 34): 1988	100	20	10
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44): 1993	30	40	9.2
7	Chemical Oxygen Demand	mg/l	IS 3025 (Part 58): 2006	250	140	40
8	Cyanide (as CN)	mg/l	IS 3025 (Part 27): 1986	0.2	BDL(DL-0.1)	BDL(DL-0.1)
9	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43): 1992	1.0	BDL(DL-0.1)	BDL(DL-0.1)

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Verified By

Shubhangi Armarkar

Shubhangi Armarkar
Technical Manager

Authorized Signatory

S.D. Gorway

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

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Bulbon, Nagpur - 441 122.

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

TEST REPORT

ULR No.- TC54582200000856F

Test Report No. : ALPL/28022022/1-14A

dated 28/02/2022

Page 2 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-17&18	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O - 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Sewage Water	Sample Source Hospital ETP 10 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-17 & 18	Sample Condition Sealed & Ice Preserved
		Quantity Received 5.0 Ltr & 250 ml	
Sample Collected By Anacon Representative Mr.K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
		Sampling Location Hospital ETP 10 KLD Inlet & Outlet	

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
10	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	3.0	0.18	0.13
11	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	3.0	BDL(DL-5)	BDL(DL-5)
12	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
13	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.01	BDL(DL-0.01)	BDL(DL-0.01)
14	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	2.0	BDL(DL-0.1)	BDL(DL-0.1)
15	Selenium (as Se)	mg/l	IS : 3025 (Part 56)	0.05	BDL(DL-0.1)	BDL(DL-0.1)
16	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)	BDL(DL-0.1)
17	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.2	BDL(DL-0.05)	BDL(DL-0.05)
18	Nickel (as Ni)	mg/l	IS:13428 : 2005(Annexure L)	3.0	BDL(DL-0.1)	BDL(DL-0.1)
19	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5.0	BDL(DL-5)	BDL(DL-5)
20	Total Chromium (as Cr)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
21	Vanadium (as V)	mg/l	IS 3025 (Part 2) : 2019	0.2	BDL(DL-0.1)	BDL(DL-0.1)

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

Verified By

Shashikant Sardeve
Sr. Chemist

Authorized Signatory

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

---End of Report---

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Bulburi, Nagpur - 441 122

Email : support@anacon.in

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Test Report No. : ALPL/28022022/1-14B

dated 28/02/2022

Page 1 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-17&18	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O.- 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Sewage Water	Sample Source Hospital ETP 10 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-17 & 18	Sample Condition Sealed & Ice Preserved
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr.K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
			Sampling Location Hospital ETP 10 KLD Inlet & Outlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
I	Biological Testing I,Water					
1	Faecal coliform	MPN/100 ml	IS 1622 : 1981	--	109	46
II	Chemical Testing Pollution & Environment					
2	Colour	Hazen units	IS 3025 (Part 4) : 1983	Colourless	2	0 (Colourless)
3	Odour	-	IS 3025 (Part 5) : 2018	Odourless	Disagreeable	Agreeable
4	Temperature	°C	APHA Method	Shall not exceed 5°C above the receiving water temperature	25°C	25°C
5	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	1.0	BDL(DL-0.1)	BDL(DL-0.1)
6	Particulate size of SS		Gravimetric Method	Shall pass 850 micron IS Sieve	<850	<850
7	Free Ammonia (as NH ₃)	mg/l	APHA Method	5	BDL(DL-0.1)	BDL(DL-0.1)
8	Fluoride (as F)	mg/l	IS 3025 (Part 60) : 2008	2.0	0.42	BDL(DL-0.1)
9	Sulphide (as S)	mg/l	IS 3025 (Part 29) : 1986	2.0	BDL(DL-0.03)	BDL(DL-0.03)
10	Nitrate Nitrogen	mg/l	APHA Method	10	6.31	BDL(DL-2)
11	Bio Assay Test	%	APHA 22nd Edition	90% Survival of fish after 96 hours in 100% effluent	82%	93%
12	Hexavalent Chromium (as Cr ⁶⁺)	mg/l	IS 3025 (Part 2) : 2019	0.1	BDL(DL-0.01)	BDL(DL-0.01)
13	Dissolved Phosphate (as P)	mg/l	IS 3025 (Part 31) : 1988	5.0	BDL(DL-0.1)	BDL(DL-0.1)

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

Verified By


Shashikant Saideve
Sr. Chemist


Shubhangi Armarkar
Technical Manager

Authorized Signatories


Pooja Kathane
Technical Manager


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

—End of Report—

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Bulburi, Nagpur - 441 122.

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TEST REPORT

ULR No.- TC54582200000856F

Test Report No. : ALPL/28022022/I-12A

dated 28/02/2022

Page 1 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-3260-13&14	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O.- 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Sewage Water	Sample Source Bottom Bin ETP 10 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-13 & 14	Sample Condition Sealed & Ice Preserved
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
			Sampling Location Bottom Bin ETP 10 KLD Inlet & Outlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
1	Chemical Testing Pollution & Environment					
1	pH value	-	IS 3025 (Part 11) : 1983	5.5 to 9.0	6.12 at 25°C	7.20 at 25°C
2	Oil & Grease	mg/l	IS 3025 (Part 39) : 1991	10	BDL(DL-4)	BDL(DL-4)
3	Total Suspended Solid (TSS)	mg/l	IS 3025 (Part 17) : 1984	100	96	23
4	Ammonical Nitrogen (as N)	mg/l	IS 3025 (Part 34) : 1988	50	7.14	6.2
5	Total Kjeldahl Nitrogen (as N)	mg/l	IS 3025 (Part 34) : 1988	100	16.20	8.9
6	BOD (3 days at 27°C)	mg/l	IS 3025 (Part 44) : 1993	30	28.8	7.2
7	Chemical Oxygen Demand	mg/l	IS 3025 (Part 58) : 2006	250	80	30
8	Cyanide (as CN)	mg/l	IS 3025 (Part 27) : 1986	0.2	BDL(DL-0.1)	BDL(DL-0.1)
9	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	IS 3025 (Part 43) : 1992	1.0	BDL(DL-0.1)	BDL(DL-0.1)

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Verified By

Shubhangi Armarkar
 Shubhangi Armarkar
 Technical Manager

Authorized Signatory

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





TC - 5458

- ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 Certified
- Recognized By Ministry of Environment & Forests (MoEF), New Delhi
- 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

ULR No.- TCS4582200000856F

Test Report No. : ALPL/28022022/1-12A

dated 28/02/2022

Page 2 of 2

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32,60-13&14	Analysis Start 22/02/2022
		Inward Date 22/02/2022	Analysis End 28/02/2022
		Reference W.O.- 3000132460/962	Report Issue Date 28/02/2022
		Reference Date 15.05.2020	Sample Category Water
Sample Name Sewage Water	Sample Source Bottom Bin ETP 10 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-13 & 14	Sample Condition Sealed & Ice Preserved
			Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.50 am to 4.20 pm
			Sampling Location Bottom Bin ETP 10 KLD Inlet & Outlet

TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
II	Chemical Testing 2. Residues In Water					
10	Iron (as Fe)	mg/l	IS 3025 (Part 2) : 2019	3.0	0.14	0.11
11	Copper (as Cu)	mg/l	IS 3025 (Part 2) : 2019	3.0	BDL(DL-5)	BDL(DL-5)
12	Manganese (as Mn)	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
13	Mercury (as Hg)	mg/l	IS : 3025 (Part 48) : 1994	0.01	BDL(DL-0.01)	BDL(DL-0.01)
14	Cadmium (as Cd)	mg/l	IS : 3025 (Part 41) : 1992	2.0	BDL(DL-0.1)	BDL(DL-0.1)
15	Selenium (as Se)	mg/l	IS : 3025 (Part 56)	0.05	BDL(DL-0.1)	BDL(DL-0.1)
16	Lead (as Pb)	mg/l	IS 3025 (Part 47) : 2003	0.1	BDL(DL-0.1)	BDL(DL-0.1)
17	Arsenic (as As)	mg/l	IS : 3025 (Part 37) : 1988	0.2	BDL(DL-0.05)	BDL(DL-0.05)
18	Nickel (as Ni)	mg/l	IS-13428 : 2005(Annexure L)	3.0	BDL(DL-0.1)	BDL(DL-0.1)
19	Zinc (as Zn)	mg/l	IS 3025 (Part 2) : 2019	5.0	BDL(DL-5)	BDL(DL-5)
20	Total Chromium	mg/l	IS 3025 (Part 2) : 2019	2.0	BDL(DL-0.1)	BDL(DL-0.1)
21	Vanadium (as V)	mg/l	IS 3025 (Part 2) : 2019	0.2	BDL(DL-0.1)	BDL(DL-0.1)

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

Verified By

Shaubikant Satdeve
Sr. Chemist

Authorized Signatory

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

---End of Report---

Laboratory address : FP-34, 35, Food Park, 5 Star Industrial Estate, MIDC Butibori, Nagpur - 441 122.

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- Export inspection council (EIC), AGMARK.

Test Report No. : ALPL/28022022/1-12B

dated 28/02/2022

Page 1 of 1

Issued To : M/s Noamundi Iron Mine (M/s TATA Steel Limited) Noamundi, Jharkhand Postal Code: 833217		Sample Inward No. 2022/MON-32/60-13&14 Inward Date 22.02/2022 Reference W.O.- 3000132460/962 Reference Date 15.05.2020	Analysis Start 22/02/2022 Analysis End 28/02/2022 Report Issue Date 28/02/2022 Sample Category Water	
Sample Name Sewage Water	Sample Source Bottom Bin ETP 10 KLD Inlet & Outlet	Sample Particulars Sample Code-WW-13 & 14	Sample Condition Sealed & Ice Preserved	Quantity Received 5.0 Ltr & 250 ml
Sample Collected By Anacon Representative Mr. K. Pandey		Sampling Date 18/02/2022	Sampling Time 11.30 am to 4.20 pm	Sampling Location Bottom Bin ETP 10 KLD Inlet & Outlet


TEST RESULTS

S.N.	Test Parameter	Measurement Unit	Test Method	Standards (In Land Surface Water)	Test Result	
					Inlet	Outlet
1	Biological Testing - Water					
1	Faecal coliform	MPN/100 ml	IS 1622 : 1981	--	109	94
II	Chemical Testing Pollution & Environment					
2	Colour	Hazen units	IS 3025 (Part 4) : 1983	Colourless	2	0 (Colourless)
3	Odour	-	IS 3025 (Part 5) : 2018	Odourless	Disagreeable	Agreeable
4	Temperature	°C	APHA Method	Shall not exceed 5°C above the receiving water temperature	25°C	25°C
5	Free residual chlorine	mg/l	IS 3025 (Part 26) : 1986	1.0	BDL(DL-0.1)	BDL(DL-0.1)
6	Particulate size of SS		Gravimetric Method	Shall pass 850 micron IS Sieve	<850	<850
7	Free Ammonia (as NH ₃)	mg/l	APHA Method	5	BDL(DL-0.1)	BDL(DL-0.1)
8	Fluoride (as F)	mg/l	IS 3025 (Part 69) : 2008	2.0	0.40	BDL(DL-0.1)
9	Sulphide (as S)	mg/l	IS 3025 (Part 29) : 1986	2.0	BDL(DL-0.03)	BDL(DL-0.03)
10	Nitrate Nitrogen	mg/l	APHA Method	10	6.20	BDL(DL-2)
11	Bio Assay Test	%	APHA 22nd Edition	90% Survival of fish after 96 hours in 100% effluent	83%	97%
12	Hexavalent Chromium (as Cr ^{VI})	mg/l	IS 3025 (Part 2) : 2019	0.1	BDL(DL-0.01)	BDL(DL-0.01)
13	Dissolved Phosphate (as P)	mg/l	IS 3025 (Part 31) : 1988	5.0	BDL(DL-0.1)	BDL(DL-0.1)

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Verified By


Shashikant Satdeve
Sr. Chemist


Shubhangi Armarkar
Technical Manager

Authorized Signatories


Pooja Khatke
Technical Manager


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

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

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Annual Progress Report

Point wise compliance of the conditions of Site-specific Wildlife Conservation Plan approval vide letter no. 1251 dated 28.08.2020 in favour of Tata Steel Limited of Noamundi Iron mine in West Singhbhum District of Jharkhand.

CHAPTER- IV



To be implemented by Project Authorities.


Sl. No.	Conditions	(A)	Wild Animal Rescue and Release	Compliance
1	(a) Payment towards cost of establishing wild animal Rescue team including services of One Veterinary Doctor@60000/-, One paramedics/Paravet@15000/- and three daily wage worker@6689.6x3=20069/-per month stationed at Chaibasa for lease period under the supervision of DFO, Chaibasa. Expenditure will be incurred based on demand note and direction received from the DFO, Chaibasa. (for rescue and treating wild animals)			We have established wild animal rescue team under the guidance of Veterinary Doctor (Dr. Faisal Niaz), Paramedics Sri Shyam Kishor and daily wage worker Sikandar Hessa, Jairam Champia.



<p>(b) Equipment for wild animal rescue Double barrel dart gun (Dan inject) @5.5 lakh, Portable cage @30000x2=60000/-, Nylon net@30000/,stretcher@20000x2=40000/-, First aid kit for staff-20000/- Medicine for tranquilization etc. 20000/, and Training of forest officials-2.00 lakh as per specification from DFO, Chaibasa.</p>	<p>We are in the process of procuring Dart Gun and other accessories. We have submitted undertaking vide letter no. GM/LO/149/441-B/2021 Dt. 19.07.2021. Portable cage is ready will be provided. Nylon net, Stretcher, first aid kit will be provided.</p> 
<p>(c) One vehicle for housing cage, dart gun etc. as per direction received from the DFO, Chaibasa.</p>	<p>For Animal rescue, one vehicle -Tata 407 Gold bearing Registration no. JH 06P 1274 stationed at Noamundi has been deployed at the disposal of animal rescue team, Driver – Neeraj Guqhait. Painted the vehicle as “Wildlife Rescue Vehicle, Chaibasa Forest Division, Chaibasa, Courtesy by Tata Steel”.</p> 

	(d) Operational cost Rs.1.00 lakh per year	Incidental operational cost is being borne by us.
(B)	Forest Conservation, fire protection and GIS Cell	
2	a) Establishment of a GIS Cell at Division headquarters. (including software and other accessories)	<p>All necessary software and hardware as per direction of DFO's office have been purchased. We shall install it in GIS Cell after completion of its interior construction, Screen/TV, Cordless Mic, to be installed.</p> <p>01 (one) HP Desktop Computer and 01 (one) HP Printer have been handed over to DFO's office vide letter no. GM/LO/181/441-B/21 Dt. 11.08.2021.</p> <p>Workstation for GIS, PC and ARCGIS software Dongle with Licence Key: EFL438019559 have been handed over to DFO's office vide letter no. GM/LO/40/441-B/22 Dt. 07.02.2022.</p> <p>01 (one) Plotter cum Scanner of HP have been handed over.</p> <p>04 (Four) Air Conditions have been installed.</p>





	
<p>(b) Wages of two skilled persons one GIS expert @ 35000/- and one computer operator@9589/- per month, Expenditure will be incurred based on demand note and direction received from the DFO, Chaibasa.</p>	<p>We have hired Computer Operator (Ms. Aseema Dungdung) for GIS Cell. We are in the process of hiring GIS expert who will be deployed after completion of GIS Cell's interior construction.</p>
<p>(c) Office furniture and accessory to house GIS Cell and forest fire management centre as per specification from respective office.</p>	<p>Office furniture such as Thirty-two office Chairs, conference table, five Executive chairs and tables for GIS Cell / forest fire management centre have been delivered to DFO's office vide letter no. GM/LO/286/441-B/21 dt. 03.11.2021 and GM/LO/05/441-B/22 dt. 05.01.2022.</p> 

<p>(d) Ten (10) motorcycles to be procured by UA for RFO Office @ 125000x10 nos. as per specification from respective office for patrolling.</p>	<p>Ten motorcycles have been procured, registered in the name of state forest dept., and handed over to Range office, Noamundi vide letter no. GM/LO/101/441/21 Dt. 23.02.2021.</p> 
<p>e) One fire protection squad stationed at Range Forest Office, Noamundi with 10 members with hired vehicle for 5 five months for the year @ Rs. 6.50 lakhs each over the plan. Expenditure will be incurred based on demand note and direction received from the RFO, Noamundi</p>	<p>10 manpower namely Desai Hemrom, Dumbi Laguri, Jadu Purty, Bishal Horo, Mukesh Kerai, Parmeshwar Sinku, Narsingh Angrai, Miltu Hemrom, Anil Purty and Gono Chatomba with a hired vehicle (Scorpio JH 05 BD 8205) are being provided to Range Office Noamundi from February'2022 to June'2022 is continuing.</p>
<p>f) Purchase of firefighting equipment with 10 nos. of fire blowers@60000/-, Bush cutter-10@Rs. 25000/-, Firefighting suit-10@Rs.70000/-. As per specification from DFO, Chaibasa.</p>	<p>10(ten) no. Fire blowers and 10(ten) nos. Bush cutters have been handed over to Range forest office, Noamundi vide letter no. GM/LO/1018/441/21 Dt. 23.02.2021.</p> <p>10 (ten) no. sets of Firefighting suits consisting Jacket& trouser, hood, helmet, gloves, and boots have been handed over to Range forest office, Noamundi, vide letter no. GM/LO/190/441-B/21 Dt. 18.08.2021.</p>

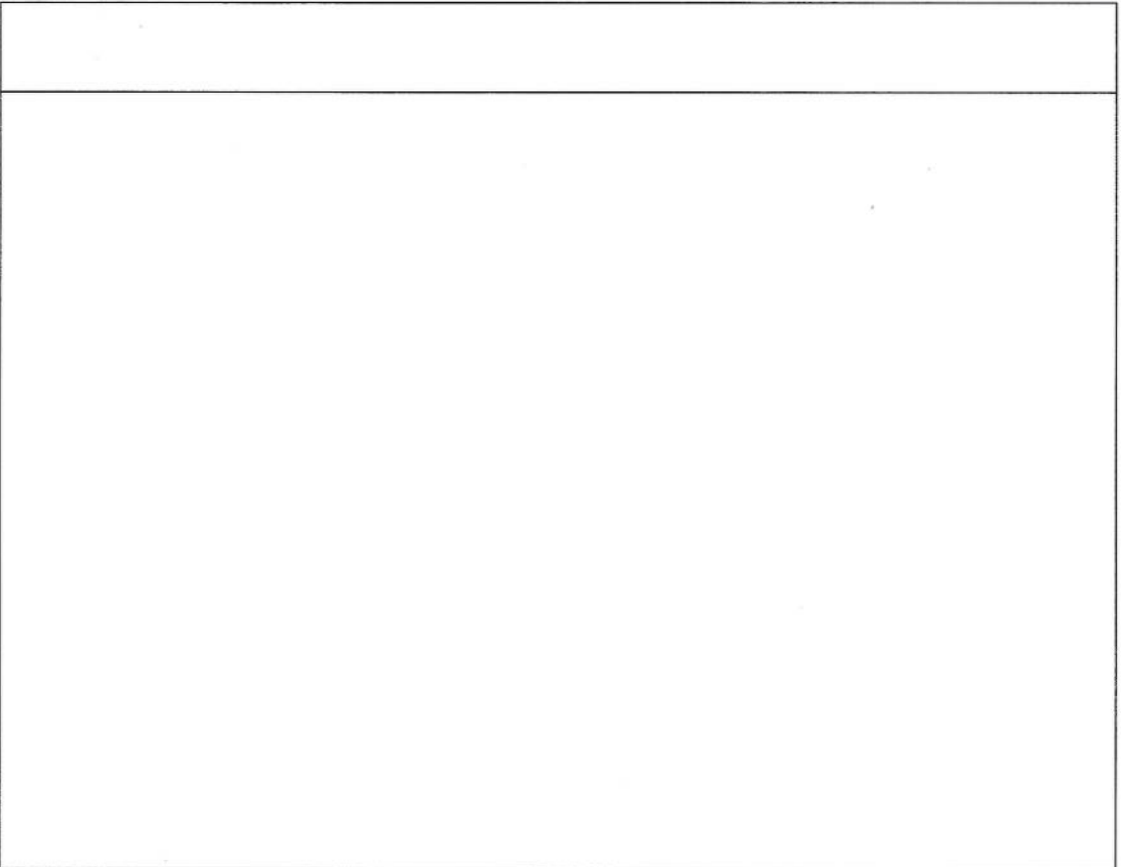
	
<p>(g) One anti-depredation squad stationed at Range Forest Office, Noamundi with 5 members @ 6689.6 per year over the plan period, Expenditure will be incurred based on demand note and direction received from the DFO, Chaibasa.</p>	<p>Anti-depredation squad with 5 members have been deployed and stationed at Range Forest Office, Noamundi vide letter no. GM/LO/968/441/21 dt.15.01.2021 they are - Sanny Sanpuria, Sunil Laguri, Ravindra Gope, Boyar Laguri and Mohan Gope.</p>
<p>(h) Procurement of anti-depredation items like crackers, torch etc., @1.0 lakh per year each for the plan period of 10 years Expenditure will be incurred based on demand note and direction received from the DFO, Chaibasa.</p>	<p>Crackers delivered to RFO, Noamundi vide letter no. GM/LO/58/441-B/22 Dt.15.02.2022. 10 (ten) no. Torches (LED Search light) have been handed over to DFO's office vide letter no. GM/LO/182/441-B/21 Dt. 11.08.2021.</p> 
<p>(i) Provision for use of Drones fitted with cameras for monitoring of wild animals in stress in forest area. As per the specification from DFO, Chaibasa</p>	<p>We are in the process of procuring Drone.</p>

<p>(j) Procurement of night vision binoculars - 03 pieces, Handheld GPS -03 pcs,, Digital camera-01 piece. As per the specification from DFO, Chaibasa.</p>	<p>03 (three) no. Handheld GPS (GARMIN Montana 680) have been handed over to DFO's office vide letter no. GM/LO/182/441-B/21 Dt.11.08.2021. Night vision binocular have been handed over to DFO's office. Order placed for Digital Camera which will provide.</p> 
<p>(k) Providing one DG set, Computer, printer to Division office and Range office. As per the specification from DFO, Chaibasa.</p>	<p>01 (one) DG set (Kirloskar koel green) have been handed over to DFO's office vide letter no. GM/LO/103/441-B/21 Dt. 18.06.2021. 02 (Two) nos. All in one Desktop computer, 02 (two) nos. A4 size Printer cum scanner/copier will be provide.</p> 

	(1) Operational cost for maintaining motorcycle and firefighting equipment. Expenditure will be incurred based on demand note and direction received from the DFO, Chaibasa.	Will be complied upon receiving direction from DFO
C	Monitoring and supervision of site-specific plan	
3	a) 2 vehicles procured by UA (one Vehicle for DFO, Chaibasa @20.00 lakh & one for RFO, Noamundi@15.00 lakh each for monitoring of Site-Specific Wildlife Scheme as per specification from respective office. b) Payment of Wages for 2 daily wages driver @2.30 lakh per year for 10 years. Expenditure will be incurred as per demand note from DFO, Chaibasa c) POL @ 10 litres per day for 300 days per year for 10 years x 2 vehicle as per demand note from DFO, Chaibasa d) Cost for vehicle repair etc @50000/- per year per vehicle for 10 years as per demand note from respective office.	02 (Two) vehicles vide letter no. GML/O/840-1/441/20 Dt. 06.10.2020 and bearing Registration No. JH06N-2331 and JH06N-9744, handed over to DFO's office Chaibasa. One driver (Turi Lagun) deployed at RFO, Noamundi and one driver (Neeraj Guichair) appointed and deployed with Animal rescue vehicle as per directive received by DFO. POL is being provided as and when demanded by office of DFO Chaibasa and RFO Noamundi respectively. Cost of vehicle repair is being paid by User agency.




<p>(e) Contingency @2.00 lakhs/year x 10 years Expenditure will be incurred by UA as per demand note from DFO, Chaibasa</p>	<p>Will be Paid as and when direction from DFO's office Chaibasa are received.</p>
<p>D Public Awareness and education</p>	
<p>4 (a) Construction of Nature interpretation centre at Chaibasa with bore bell with pump</p>	<p>Since land provided at Sikursai, was disputed by local people the work could not start. Hence, alternate site has been provided at Forest Training School, Chaibasa by DFO. MOA has been signed with CEE, Ahmedabad, and TATA STEEL regarding the development of NIC. Site drawings and detailed engineering are being developed by CEE. Architectural drawings for the Nature Interpretation Centre at Chaibasa have prepared by CEE. Foundation stone had laid on 30.01.2022.</p>
<p>(b) Mini library, visual display multimedia system (LED TV to runs wildlife/nature documentary.</p>	
<p>(c) Live hedge fencing with entrance gate</p>	
<p>(d) Aesthetic plantation/Medicinal garden/lotus pond etc</p>	
<p>(e) 2 Unskilled @6689.6x2=13379.20/- and one computer operator@9589/- per month</p>	
<p>(f) Running expenditure like electricity bill etc. as per the actual bill received</p>	
	

<p>(g) D.G. set @ 5.00 lakh as per demand note from respective office.</p>	
<p>(h) Installation of 8 KW Solar Panels</p>	  <p>Wildlife week was celebrated from 02.10.21 to 08.10.2021 in which wildlife theme painting at Dist. Collectorate Building, Chaibasa, distribution of bags, masks, caps, screening of wildlife movies & documentaries at Tata Steel Auditorium, walk for wildlife, speech addressed in protecting forest and wildlife by DC, W. Singhbhum, SP, W. Singhbhum and DFO Saranda, DFO Kolhan, DFO Chaibasa, DFO Porahat and attached officer at Forest Training School, Chaibasa. Football match was organised at Chaibasa and Siyaljoda, Painting, Essay writing at different schools at Chaibasa and Noamundi etc. was undertaken.</p>  
<p>5 (a) Public awareness by organising wildlife week, Run for wildlife, Wildlife painting and essay competition etc. in collaboration and direction from DFO, Chaibasa @6.0 lakh per years. Expenditure will be incurred as per the demand note of DFO, Chaibasa.</p>	



	<p>Visual signages have been procured and installed at sites. Some shall more be installed it very soon.</p>
<p>(E) Capacity building</p>	
<p>6 Training and capacity building of front-line staff and daily wages engage in wildlife rescue Expenditure will be incurred as per the demand note of DFO, Chaibasa.</p>	<p>Arrangement will be made as when the things are normalised after COVID pandemic.</p>
<p>(F) Mitigative measures to protect Sambhar Deer, Elephant, Wild Boar, Hare and other wildlife to avoid Human-Wildlife Conflict</p>	
<p>7 (a) Installation of ANIDERS: An Animal Intrusion Detection & Repellent System is proposed to effectively solve Human-Wildlife Conflict. It works as a Smart Scarecrow. Solar powered, Uses IR sensors and alarm system to repel. Makes multiple sounds and light pattern. Uses GSM for real time communication. Installation of such system for 18 KMs (1 Km per Forest Fringe village Boundary) ; 6 active system and 6 passive system per km; @ Rs. 31500 per Active system; @ Rs. 12,100 per Passive system</p>	<p>ANIDERS have been Installed at village Angardiha and has been communicated to DFO's office vide letter no. GM/LO/978/21 Dt. 25.01.2021. More such ANIDERS will be installed after selection of appropriate place for installation.</p>



	
(b) Maintenance for above system	
(G) Strengthening of infrastructure for forest and wildlife protection: Upgradation of forest check post @Bada Janda	
8 (a) Automated Barrier, Wheel mounted barrier	<p>Solar Panel set with UPS, 04 nos. CCTV, 01 no. PoE NVR, 01 no. 32” LED, 01 no. 9U Rack, 02 nos. Automated barrier set, and 04 nos. wheel mounted barrier have been installed at Bada Janda Check Post on 26.10 2021.</p>
(b) CCTV 4 nos.	
(c) Solar Panel of 4 kwh	



CHAPTER- V

Interventions to be implemented by Forest Department.

Sl. No.	Condition	Compliance
1	Payment against activities to be undertaken by State forest department under the approved Site-Specific Wildlife Conservation Plan in to State CAMPA Fund.	Deposited online an amount of Rs. 14,98,70,000/- (Rupees fourteen crore ninety-eight lakh seventy thousand only) through RTGS on 28.12.2020 into State CAMPA fund, Jharkhand vide letter no. GM/LO/965/441-B/21 Dt. 12.01.2021.

Environment Expenditure at Noamundi Iron Mine

FY 2021-22

Sl. No.	Heads / Item	Expenditure (Lakhs)	
		Capital	Recurring
1	General housekeeping at HEMM shed & upkeeping of recycling pit at mega center	--	4.00
2	Haz. waste disposal to common Haz. Waste facility	--	1.50
3	Operation & Maintenance of dry fog system at Railway sidings (1000TPH)	--	7.50
4	Housekeeping & maintenance of Rapid Loading System, stackers, bins, Over Laying Conveyors at Railway siding areas	--	250.00
5	Air pollution control measures such as closed conveyors & DFDS in new C&S plant	100	--
6	Installation of 30 KLD CETP	80	--
7	Operation & maintenance of STPs & ETPs	--	38.00
8	Installation of WTP	500	--
9	Operation & maintenance of WTP	--	35.00
10	Installation of STP at Sangram sahi	250	--
11	Operation & maintenance of municipal solid waste (collection, segregation, development of compost) in colony & Other area	--	36.00
12	Development of Nursery, gardens, sapling plantation & maintenance in and around Noamundi	--	490.00
13	Supply & laying of coir mat along with grass seeding	--	33.00
14	Operation and maintenance of mobile water sprinklers	--	160.00
15	Consent fees	--	29.70
16	Environmental monitoring in & around Noamundi	--	11.00
17	CAAQMS maintenance & operation & display board	--	47.40
18	Desilting of thickeners & check dam, Housekeeping of plant, spillage control measures at Processing plant	--	2.00
19	Operation & assistance in waste collection & check dam de-siltation, disposal of slime at dump, housekeeping of plant etc.	--	30
Total		930	1,175.10
Environmental Expenditure for the year 2021-22 at Noamundi Iron Mine = Rs. 21.05 Cr			


 Senior Manager Environment

ANNEXURE 7

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



LEGEND



LAND USE/LAND COVER

CODE	CLASS	CLASS IN	CLASS	AREA (HA)	PERCENT
00000000	WATER	WATER	0.00	0.00	0.00
00000001	WATER	WATER	0.00	0.00	0.00
00000002	WATER	WATER	0.00	0.00	0.00
00000003	WATER	WATER	0.00	0.00	0.00
00000004	WATER	WATER	0.00	0.00	0.00
00000005	WATER	WATER	0.00	0.00	0.00
00000006	WATER	WATER	0.00	0.00	0.00
00000007	WATER	WATER	0.00	0.00	0.00
00000008	WATER	WATER	0.00	0.00	0.00
00000009	WATER	WATER	0.00	0.00	0.00
00000010	WATER	WATER	0.00	0.00	0.00
00000011	WATER	WATER	0.00	0.00	0.00
00000012	WATER	WATER	0.00	0.00	0.00
00000013	WATER	WATER	0.00	0.00	0.00
00000014	WATER	WATER	0.00	0.00	0.00
00000015	WATER	WATER	0.00	0.00	0.00
00000016	WATER	WATER	0.00	0.00	0.00
00000017	WATER	WATER	0.00	0.00	0.00
00000018	WATER	WATER	0.00	0.00	0.00
00000019	WATER	WATER	0.00	0.00	0.00
00000020	WATER	WATER	0.00	0.00	0.00
00000021	WATER	WATER	0.00	0.00	0.00
00000022	WATER	WATER	0.00	0.00	0.00
00000023	WATER	WATER	0.00	0.00	0.00
00000024	WATER	WATER	0.00	0.00	0.00
00000025	WATER	WATER	0.00	0.00	0.00
00000026	WATER	WATER	0.00	0.00	0.00
00000027	WATER	WATER	0.00	0.00	0.00
00000028	WATER	WATER	0.00	0.00	0.00
00000029	WATER	WATER	0.00	0.00	0.00
00000030	WATER	WATER	0.00	0.00	0.00
00000031	WATER	WATER	0.00	0.00	0.00
00000032	WATER	WATER	0.00	0.00	0.00
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00000036	WATER	WATER	0.00	0.00	0.00
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00000038	WATER	WATER	0.00	0.00	0.00
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00000041	WATER	WATER	0.00	0.00	0.00
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00000073	WATER	WATER	0.00	0.00	0.00
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00000075	WATER	WATER	0.00	0.00	0.00
00000076	WATER	WATER	0.00	0.00	0.00
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00000084	WATER	WATER	0.00	0.00	0.00
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00000088	WATER	WATER	0.00	0.00	0.00
00000089	WATER	WATER	0.00	0.00	0.00
00000090	WATER	WATER	0.00	0.00	0.00
00000091	WATER	WATER	0.00	0.00	0.00
00000092	WATER	WATER	0.00	0.00	0.00
00000093	WATER	WATER	0.00	0.00	0.00
00000094	WATER	WATER	0.00	0.00	0.00
00000095	WATER	WATER	0.00	0.00	0.00
00000096	WATER	WATER	0.00	0.00	0.00
00000097	WATER	WATER	0.00	0.00	0.00
00000098	WATER	WATER	0.00	0.00	0.00
00000099	WATER	WATER	0.00	0.00	0.00
00000100	WATER	WATER	0.00	0.00	0.00

MAP PREPARED FOR THE YEAR ENDING ON 31.03.2021

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