



To,

Additional Principal Chief Conservator of Forests (C),  
Ministry of Environment, Forest and Climate Change,  
Regional Office (ECZ),  
Bungalow No. A-2, Shyamali Colony,  
Ranchi – 834002  
Tel. No. 0651-2410007, 2410002  
Email: ro[dot]ranchi-mef[at]gov[dot]in

MD/ENV/ 78 /101/18

Date: 29.05.2018

**Sub: Submission of Half-yearly Environmental Clearance compliance status report for a period of October' 2017 – March' 2018 of Noamundi Iron Mine, TATA Steel Ltd.**

**Ref: Environmental Clearance letter no. J-11015/104/2011-IA.II(M), dated: 10.06.2013.**

Dear Sir,

We are herewith submitting the six monthly Environmental Clearance compliance report of Noamundi Iron Mine, TATA Steel Ltd. for the period from **October'17 – March'18** as per EIA Notification, 2006. The same has also been submitted to your kind office by hard & soft copy along with e-mail to [ro.ranchi-mef@gov.in](mailto:ro.ranchi-mef@gov.in) for your ready reference.

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

Thanking you,  
Yours faithfully,

f: TATA Steel Limited

**Head (Planning), OMQ**

Encl: As above

Copy to

1. The Chairman, CPCB, Southern Conclave, Kolkata - 700107 (W. B.)
2. The Member Secretary, JSPCB, TA Building, Dhurva, Ranchi.
3. The Regional Officer, JSPCB, Jamshedpur

**TATA STEEL LIMITED**

Mines Division Noamundi 833 217 India

Tel 91 92343-1340 Fax 91 6596 290737

Registered Office Bombay House 24 Homi Mody Street Mumbai 400 001



**Compliance**

**to**

**Environmental Clearance Conditions**

**of**

**Noamundi Iron Ore Mine**  
**M/s. Tata Steel Limited**

**For the period: Oct'17 - March'18**


**(Environmental Clearance letter no. J-11015/104/2011.IA.II(M) dated: 10.06.2013)**

**ENVIRONMENTAL CLEARANCE  
OF  
NOAMUNDI IRON MINE OF TATA STEEL LIMITED**  
(Oct 2017 to Mar. 2018)










**(MoEF & CC Letter No. J-11015/104/2011-IA.II (M), DATED: 10/06/2013)  
FOR PRODUCTION OF 10 MTPA (ROM) &  
BENEFICIATION OF 18 MTPA (THROUGHPUT) OF IRON ORE**

Sl. No.	EC Conditions	Compliance
<b>Specific Conditions</b>		
1.	No mining activities will be allowed in forest area for which the Forest Clearance is not available.	Being complied with.  Noamundi Iron Mine of TATA Steel has 1160.06 ha lease area, out of which 762.43 ha is a forest land & rest is non-forest. Out of 762.43 ha, forest land diverted for mining is 370.92 ha vide letter no. 8-279, 1985 FC (Pt) dated 4 <sup>th</sup> Sept., 2014 & for rest 383.37 ha including safety zone of 8.14 ha, forest diversion proposal has already been applied & at advanced stage of clearance.
2.	The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide there letter F. No. 11-362/ 2012- FC, failing which the mining lease area will be reduced to the non-forest area plus the forest area for which the project proponent has been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.	New Guidelines for Forest Diversion Proposal by FC vide there letter F. No. 11-599/2014-FC dated: 01.04.2015 has been issued by MoEF &CC regarding this matter which suppressed the previous guidelines issued vide letter F. No. 11-362/2012-FC dated: 01.02.2013. None of the forest land has been reduced. The mine has already obtained Forest Clearance for 370.92 ha and for balance forest land 383.37 ha forest diversion already applied and is well advance stage of clearance as per law.  Noamundi mine lease is renewed till 31.03.2030 and the mine plan is already approved till 31.03.2022 by Indian Bureau of Mines, Govt. of India.
3.	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the Competent authority, as may be applicable to this project.	Not applicable.  As no specific clearance under the Wildlife (Protection) Act, 1972 is required for the project. However, we have submitted details of Protection & Conservation of Wild Life measures to MoEF & CC good office vide our letter No. MD/ENV/204/101/15 dated: 20.04.2015.
4.	Prior environmental clearance from the Standing Committee of the National Board for Wildlife shall be obtained if applicable, due to location of the mine within the core zone of Singhbhum Elephant Reserve, before starting any activity relating to the project at site. All the conditions stipulated by the Standing Committee shall be effectively implemented in the	Not applicable.  Prior Environmental Clearance is not required from the Standing Committee of the National Board for Wildlife as per letter no. Vanya Prani-19/2012/1310, dated. 19.03.2013 of State Govt.




Sl. No.	EC Conditions	Compliance
<b>Specific Conditions</b>		
	project. It shall be noted that this clearance does not necessarily imply that wildlife clearance shall be granted to the project and that your proposal for wildlife clearance shall be considered by the competent authorities on its merit and decision taken. The investment made in the project, if any based on environmental clearance granted to the project, in anticipation of the clearance from wildlife clearance shall be entirely at the cost and risk of the project proponent and ministry of Environment & Forests shall not be responsible in this regard in any manner.	
5.	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Jharkhand and effectively implement all the conditions stipulated therein.	Being complied with. Consent to Establish has been obtained from the Jharkhand State Pollution Control Board vide letter no. PC/NOC/JSR/26/12/B-1848, dated: 09.06.2015. Consent to Operate has also been obtained from State Pollution Control Board, Jharkhand vide letter No. JSPCB/HO/RNC/CTO-1162982/2017/779, dated: 13.06.2017, which is valid till 31.12.2020. All the conditions are being effectively implemented & complied. The compliance report is regularly submitted to JSPCB.
6.	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.	Noted down. However, there is no National Park, Sanctuaries, Elephant corridor and tiger reserves within 10 Km radius of the core zone.
7.	As part of Ambient Air Quality Monitoring during operational phase of the project, the air samples shall also be analysed for their mineralogical composition and records maintained.	Being Complied with. As a part of regular Ambient Air Quality Monitoring, mineralogical composition of air samples are being analysed on monthly basis and being submitted to regulatory agency. All the records are adequately maintained. The mineralogical composition report of ambient air for last six months is attached herewith (annexure-1).
8.	The beneficiated ore shall be transported to railway sidings only through closed conveyor.	Being Complied with. The beneficiated ore from processing plant is being transported to railway siding for transportation through covered conveyors.  <i>Closed conveyor used in mineral transport</i>
9.	Effective safeguard measures such as conditioning of ore with water, regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. It should be ensured that the	Being complied with. The effective safeguard measures such as conditioning of ore before transportation by wet process is regularly being done. Fixed and mobile water sprinklers are installed and used in the area. Regular water sprinkling is also being done on the haul roads. Mist sprays are

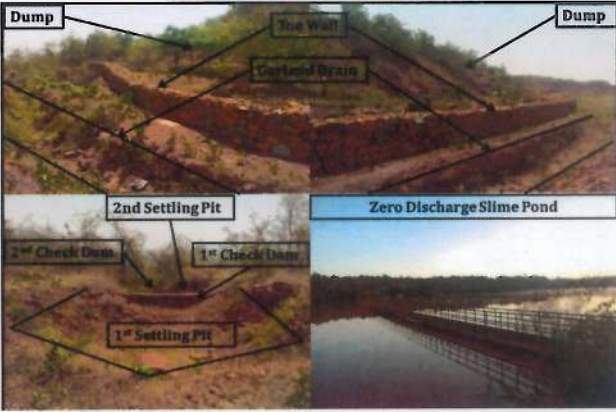



Sl. No.	EC Conditions	Compliance
<b>Specific Conditions</b>		
	<p>Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard</p>	<p>also installed in the area along in high dust generated areas. Fog based dust separators also installed and used.</p>   <p><i>Fixed and mobile water sprinklers in area</i></p> <p>Apart from above, the area is adequately covered with mass plantation. Thus dust generation has been controlled and eliminated.</p>   <p><i>Mist type dust suppression measures</i></p>   <p><i>Water jet with mist water spray in Noamundi</i></p>
10.	<p>The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</p>	<p>The rain water collected in the mine pits and allowed to be collected in the lowest level sumps to augment the ground water resources gradually. Rain water harvesting ponds and ground water recharge structures have been constructed and approved by the Ground Water Directorate, Jharkhand, Ranchi.</p>  <p><i>RWH structure for ground water augmentation in the area</i></p> <p>The unit has rain water harvesting approval from Hon. Director, Ground Water Directorate, Water Resources Dept. Jharkhand vide letter no. GWD 317/Ranchi, dated 14<sup>th</sup> Jun, 2012. At Noamundi area the various RWH structures in the form of Check Dams, Saucer ponds, Gabion Structures, Trenches and contour are made based on recommendation in available area.</p>   <p><i>RWH structure for ground water augmentation in the area</i></p>





Sl. No.	EC Conditions	Compliance
<b>Specific Conditions</b>		
11.	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office	Ground water quality and Ground water level are being monitored periodically in and around the lease areas. All the monitoring results are being submitted to regulatory agencies. The monitoring details are attached as annexure-II.
12.	The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment and Forests and Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	Being complied with. The mining operations are being restricted to above the ground water table. The lowest working depth of our mine pits is at 552 mRL, whereas the presence of ground water table has been estimated to be at 478 mRL post-monsoon. A detailed hydrogeological study was carried out for the purpose.
13.	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. The Balijore Nallah shall be left undisturbed and protected.	Being complied with
14.	The project proponent shall regularly monitor the flow rate of the Balijore Nallah flowing through the mine lease and maintain the records.	Being complied with. We are regularly monitoring the flow rate of the Balijore Nallah and the report is being sent to the JSPCB, Ranchi every month. Details of flow rate of Balijhor Nallah for last six months are attached as annexure-III.
15.	There shall be no external over burden dumps at the end of the mine life. The reclaimed and rehabilitated area shall be afforested. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	<p>Being complied. There shall not be any external over burden dumps at the end of mine life. The Over Burden (OB) is being dumped as per plan and within the earmarked area. Inactive portions of the OB dump are gradually stabilized and reclaimed by plantation &amp; native species plantation. Till now 1,95,158 saplings have been planted.</p>  <p style="text-align: center;"><i>Vetiver/ native planation over dumps</i></p>
16.	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and temporary OB dump(s) to prevent run off of water and flow of sediments directly into Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah,	Garland drains with settling pits have been constructed all along the OB dumps. Check dams have also been provided for the settling of siltation. The de-siltation of these check dams are done regularly and properly maintained. Sedimentation pits have been constructed



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<b>Specific Conditions</b>		
	<p>Baitarni River and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de-silted particularly after monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dump(s) to prevent run off of water and flow of sediments directly into Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah, Baitarni River and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and de-silted at regular intervals.</p>	<p>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>  <p style="text-align: center;"><i>Toewall, garland drain, settling tanks</i></p>
17.	<p>Dimension of the retaining wall at the toe of temporary over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data.</p>	<p>Retaining wall and Garland drains of appropriate size have been constructed around the OB dumps to check mine run-off.</p>
18.	<p>Plantation shall be raised in an area of 990.601ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of excavated void to be converted in to water body, roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.</p>	<p>Plantation over an area of 990.601 ha shall be achieved at the end of mine life. However, development of greenbelt over 7.5m in the safety zone is completed. Further, plantation is being carried out by native species on the inactive dump slopes. The tree density has been maintained as 5122 plants per ha.</p>
19.	<p>Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.</p>	<p>Being complied with. Fixed and mobile water sprinklers are installed and used in the area. Regular water sprinkling is also being done on the haul roads. Mist sprays are also installed in the area along in high dust generated areas such as loading unloading area. Fog based dust separators also installed at crushers and used along with dust extraction system.</p>  <p style="text-align: center;"><i>Other dust control measures in area</i></p>
20.	<p>Mine water discharge and/or any waste water shall be properly treated to meet the prescribed standards before reuse/discharge. The run off from temporary OB dumps and other surface run off shall be analysed for iron and in case its concentration is found higher</p>	<p>There is no waste water discharge from the mine and our unit is "Zero Discharge Unit". The decanted water from the slime dam is completely recycled &amp; reused to the beneficiation plant. No water is being discharged from it.</p>

Sl. No.	EC Conditions	Compliance
<b>Specific Conditions</b>		
	than the permissible limit, the waste water should be treated before discharge/reuse.	
21.	The decanted water from the beneficiation plant and slime/tailing pond shall be re-circulated within the mine and there shall be zero discharge from the mine.	Being complied with
22.	Regular monitoring of the flow rate of the springs and perennial nallahs shall be carried out and records maintained.	Being regularly complied with Details are attached as annexure-III.
23.	Regular monitoring of water quality upstream and downstream of Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	Water quality monitoring of Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah, are being carried out and record of monitoring data maintained. The results, so obtained are sent to Regional office, MoEF&CC, Jharkhand State Pollution Control Board, Ranchi and Central Pollution Control Board. Water Quality Analysis is attached as annexure-IV.
24.	Appropriate mitigate measures shall be taken to prevent pollution of Baitarni River, if any, in consultation with the State Pollution Control Board.	Baitarani River is flowing at a distance of about 12 Km from the mine and is not being polluted because of mining operations of Noamundi Iron Mine. However, different mitigation measures are being implemented for betterment of environment in and around the mine in consultation with the Jharkhand State Pollution Control Board.
25.	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water for the project. Ground water shall not be used for the mining operations.	Being complied with. Only Surface water from Baitarani is being used for mining and processing purpose. At present, we have permission for drawl of 9786 KLD of surface water and our operation is being managed well within that quantity. Apart from this, we are recycling our slime dam water to meet basic water requirement of wet plant up to some extent. However, for increased requirement, we have applied for drawl of additional quantity of water to the regulatory agency.
26.	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	Being complied with. Three rain water harvesting ponds and several ground water recharge structures have been constructed at the mine site hiring the expertise of KRG Foundation, Chennai and they are now operational.  Technical approval for design and Plan of Rain Water Harvesting (RWH) for Ground Water Recharge has already been approved by Hon. Director, Ground Water Directorate, Water Resources Dept. Jharkhand vide letter no. GWD 317/Ranchi, dated 14 <sup>th</sup> Jun, 2012.  At Noamundi area the various RWH structures in the form of Check Dams, Saucer ponds, Gabion Structures, Trenches and contour are made based on recommendation of Hon. Director, Ground Water Directorate, Water Resources Dept. Jharkhand and available land in the area.



Sl. No.	EC Conditions	Compliance
<b>Specific Conditions</b>		
27.	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	Being complied with. The vehicular emission is kept under control by regular monitoring and optimal loading of materials. The entire vehicles are emission tested once in every six months. The vehicles those who do not meet the emission standard, are withdrawn from operation and maintained properly.
28.	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Being complied with. Blasting is carried out only during day time. Controlled blasting is practiced with delay detonators for control of ground vibrations and to arrest fly rocks. Scientific studies are also being conducted from reputed agencies such as CIMFR, Dhanbad and all the recommendations followed for control of ground vibrations and fly rocks & boulders.
29.	Drills shall either be operated with dust extractors or equipped with water injection system.	Being complied with. All the drill are wet operated only.
30.	Mineral handling plant shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Being complied with. De-dusting unit are installed at crushing plant & is being regularly monitored. The last report is attached in annexure-V.   <i>Dust Extraction system at crusher Noamundi</i>
31.	Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine.	Valid consent to operate is obtained from Jharkhand State Pollution Control Board, which is valid till 31 <sup>st</sup> Dec., 2020.
32.	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	Being complied with. Two Sewage Treatment Plant (STP) of 50 KLD & 10 KLD and an Effluent Treatment Plant (ETP) of 10 KLD are already installed working smoothly. One more STP of 50KLD is being installed at new colony area along with an additional 10 KLD ETP for canteen in Bottom bin area.   <i>Sewage &amp; Effluent Treatment Plant at Noamundi</i>  For the workshops and all other areas and oil trap is installed with collection system. The entire water is reused in other activities such as gardening & dust suppressions. No wastewater is being generated from mining operations.


Sl. No.	EC Conditions	Compliance
<b>Specific Conditions</b>		
33.	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubneswar.	The digital processing of entire lease area is being carried out regularly. The current land use pattern is made by M/s Digital Cartography & Services Pvt. Ltd. the authorized agency by ORSAC, Bhubaneshwar. The Resource SAT-II with multispectral bands LISS IV & Carto SAT -I with monochromatic band of year 2016 & 2017 respectively used based on clear vision. The land use land cover change map as on date is attached as annexure-VI.
34.	Regular monitoring of ambient air quality including free silica shall be carried out and records maintained.	Ambient air quality including free silica is regularly monitored and records maintained. All the monitoring details are attached as annexure-VII.
35.	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	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 40 years and once in 5 years for the employees of age less than 45 years.
36.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna such as wolf, elephant, sloth bear, rhesus macaque etc. spotted in the core and buffer zone of the mine and contribute towards the cost of implementation of the plan and/or Regional Wildlife Management Plan for conservation of flora and fauna so prepared by the State Forest and Wildlife Department. The amount so contributed shall be included in the project cost. A copy of action plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months.	Tata Steel is taking all the precautionary measures towards conservation and protection of endangered flora and fauna. As per the demand of DFO, South Division, Chaibasa, within whose jurisdiction Noamundi Iron mine falls, the Steel Company has deposited Rs. 59,85,000/- towards implementation of the wildlife management plan in order to protect them within our mine and its periphery. Further, Company has submitted an undertaking to bear the proportionate cost towards the execution of comprehensive Wildlife Management plan in the area to be prepared by the state Govt. As required, a site specific wild life conservation plan has also been submitted to the Ministry and its Regional Office, Bhubaneswar vide letter No. MD/ENV/ 409A/101/2011, dated: 21.10.2013.
37.	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	A progressive mine closure plan approved by IBM is in place. The final mine closure plan along with details of Corpus fund will be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

**General Conditions**

1.	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Being complied with. We are operating as per the approved mining technology and scope of working mentioned in Environmental Clearance granted to us and No change in mining technology and scope of working shall be made and adhered to the condition of MoEF.
2.	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be	Being complied with. No change in calendar plan is made.



**General Conditions**

	made.	
3.	At least four ambient air quality-monitoring should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOX monitoring. Location of the stations should be decided based on the meteorological data, topographical features and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. The data so recorded should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board /Central Pollution Control Board once in six months.	<p>Ambient Air Quality monitoring is being regularly carried out at four different stations within the core zone and Buffer zone respectively, which were located in consultation with the visiting officers of State Pollution control Board, Jharkhand and reports are being submitted to Regional office, MoEFCC, Ranchi half yearly and to JSPCB monthly. Ambient Air Quality report is attached as Annexure-VIII.</p> <p>Apart from above three numbers of continuous online ambient quality stations (CAAQMS) are also installed in the core buffer area of mine Various parameters such as PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>x</sub>, NO<sub>x</sub> is being monitored for every 15 minutes and the date of same is continuously uploaded in Pollution Control Board server. The data is same is also been displayed using electronic display board in public domain.</p>  <p style="text-align: center;"><i>CAAQMS station of Noamundi</i></p>
4.	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM etc. should be provided with ear plugs / muffs.	Adequate measures are being taken care. All the machines of high noise generated are covered with acoustic enclosure, in separate closed room. Noise generation is eliminated at source by regular maintenance of machines and proper enclosures. Apart from above for adequate PPE is also provided to all persons working in the area. All HEMM operator's cabins are made of soundproofs with air conditioning system. Noise monitoring of area is regularly being done the data of same is attached as Annexure-IX.
5.	There will be zero waste water discharge from the plant.	Being complied. No water is being discharged from plant. Entire process water is recycled and reused.
6.	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.	Adequate dust masks are provided to employees engaged in dusty areas. The employees are also given regular awareness training on safety and health aspects as part of implementation process of OHSAS- 18001 & SA 8000 systems.
7.	Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Periodical Medical Examination of employees and contractor workers are organized regularly to observe any contractions due to exposure to dust and other occupational hazards.
8.	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive who will report directly to the Head of the Organization.	Complied with. A separate environmental management cell is in place with the people having relevant qualification on environmental science..
9.	The funds earmarked for environmental protection	Funds allocated for environmental management are

<b>General Conditions</b>		
	measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	spent only for environment related purposes and not diverted to any other purpose. Expenditure details of environmental protection measures during 2016-17 at Noamundi Iron Mine are attached as annexure- X
10.	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Noamundi is an operational Iron mine of TATA Steel Ltd from last several decades. Thus financial closure & it's approval is not applicable.
11.	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/information/ monitoring reports.	We extend full co-operation to the officers of the Regional Office during their visit and furnish the required data, information and monitoring reports.
12.	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the 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 Ranchi, Central Pollution Control Board Kolkata and State Pollution Control Board Jharkhand. Further, the six-monthly compliance reports along with the monitoring results is being uploaded on Tata Steel's website <a href="http://www.tatasteelindia.com">www.tatasteelindia.com</a> and updated periodically.
13.	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Complied with
14.	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Complied with
15.	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by email	The environmental statement for financial year 2016-17 has been submitted to the State Pollution Control Board on vide letter no. MD/ENV/597/120/2017, dated: 26.09.2017 and the same has been hosted on Company's website <a href="http://www.tatasteelindia.com">www.tatasteelindia.com</a> . Further, compliance status on environmental clearance conditions was also sent to the Regional Office of the Ministry of Environment and Forests, Ranchi by e-mail on 29.05.2017.



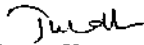
**General Conditions**

16.	<p>The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.</p>	<p>Details of Environment Clearance with regard to Noamundi Iron Mine were published both in English and Hindi in local newspapers named "The Hindustan Times" and "Dainik Jagran" respectively on 15th June, 2013. The copy of the newspaper advertisement was sent to the Regional Office, MoEF, Bhubaneswar vide our letter no. MD/ENV/245A/101/ 2013, dated. 19<sup>th</sup> June'2013, same is attached as Annexure-X.</p>
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**Annexure 1 – Mineralogical Composition – Noamundi Iron Mine**

**(October 2017 – March 2018)**

Month	Silica(%)	FeO(%)	CaO(%)	Al <sub>2</sub> O <sub>3</sub> (%)
Oct-17	0.32	0.24	0.018	<0.01
Nov-17	0.44	0.38	0.021	<0.01
Dec-17	0.56	0.76	0.044	<0.01
Jan-18	0.62	0.74	0.042	<0.01
Feb-18	0.64	0.82	0.043	<0.01
Mar-18	0.61	0.85	0.039	<0.01

  
Lab in Charge

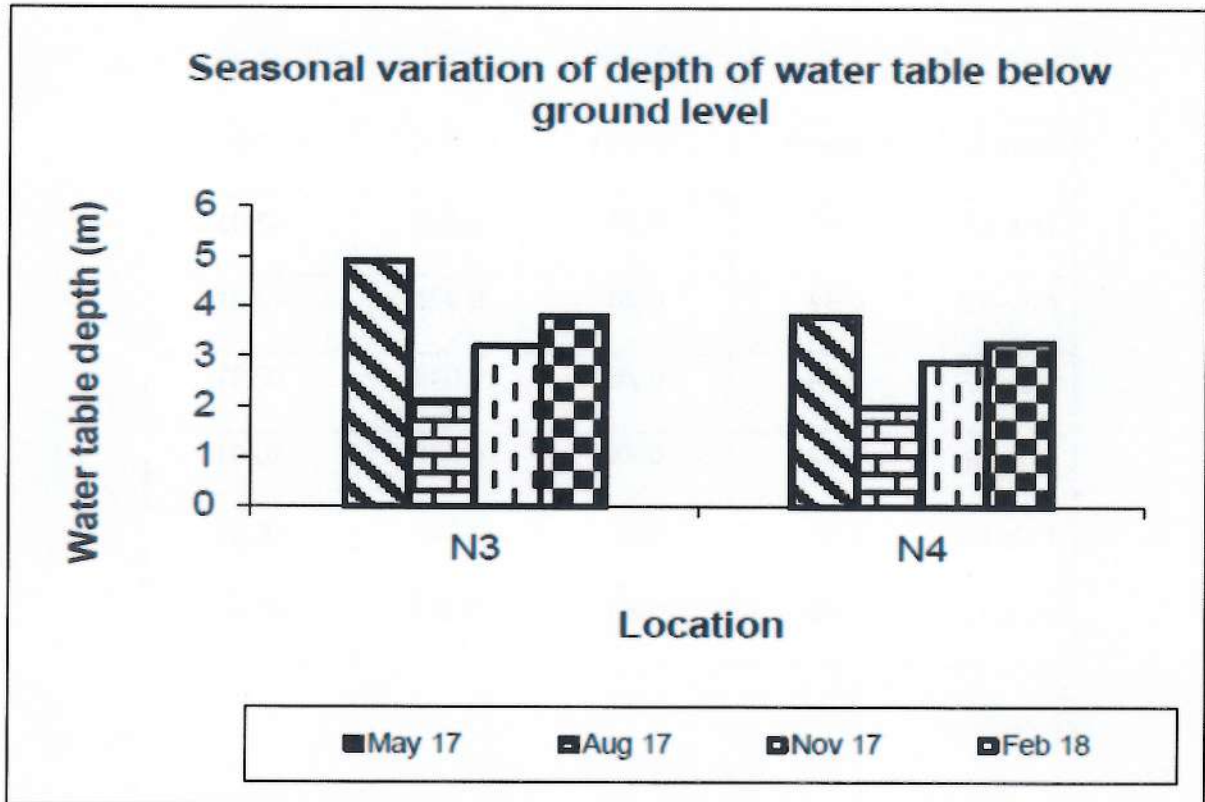


**Annexure II - Ground Water Level - Noamundi Iron Mine**

**October'17 - March'18**

**NOAMUNDI IRON MINE**

**TATA STEEL LIMITED**



**N3 - Well near Rly. Station**

**N4 - Well at Noamundi Basti**

Lab in Charge

**Annexure II - Ground Water Level - Noamundi Iron Mine**

<b>Ground Water Level in Noamundi Iron Mine</b>					
<b>Date of Monitoring : 12/01/2018</b>					
<b>Location</b>	<b>Coordinates</b>				<b>Water level in meter</b>
	<b>Direction</b>	<b>Degree<sub>0</sub></b>	<b>Min'</b>	<b>Sec"</b>	
<b>Sarbil (Munda sai)</b>	N	22	7	10.9	4.06
	E	85	31	0	
<b>Maudi(Munda sahi)</b>	N	22	8	46.6	8.66
	E	85	30	42.1	
<b>Mouidi (b/bin)</b>	N	22	9	2.3	1.7
	E	85	31	2.5	
<b>Lakhan sahi tola</b>	N	22	9	49.2	9.98
	E	85	30	9.3	
<b>Noamundi Basti</b>	N	22	9	39.2	2.04
	E	85	28	46.9	
<b>Noamundi Basti</b>	N	22	9	36	1.29
	E	85	28	49.8	

*Durath*



**Annexure II – Ground Water Level – Noamundi Iron Mine**

<b>Ground Water Level in Noamundi Iron Mine</b>					
<b>Date of Monitoring : 18/11/2017</b>					
<b>Location</b>	<b>Coordinates</b>				<b>Water level in meter</b>
	<b>Direction</b>	<b>Degree °</b>	<b>Min'</b>	<b>Sec"</b>	
<b>Sarbil (Munda sai)</b>	N	22	7	10.9	4.85
	E	85	31	0	
<b>Maudi(Munda sahi)</b>	N	22	8	46.6	9.25
	E	85	30	42.1	
<b>Moudi (b/bin)</b>	N	22	9	2.3	1.95
	E	85	31	2.5	
<b>Lakhan sahi tola</b>	N	22	9	49.2	10.2
	E	85	30	9.3	
<b>Noamundi Basti</b>	N	22	9	39.2	2.63
	E	85	28	46.9	
<b>Noamundi Basti</b>	N	22	9	36	1.48
	E	85	28	49.8	

*Jwal*

## Annexure-II: Ground Water Qlty. Report (Oct'17 - Mar'18)



**Visiontek Consultancy Services Pvt. Ltd.**  
(An Enviro Engineering Consulting Cell)



ISO 9001 : 2008  
ISO 14001 : 2004  
CRS/AN 18001 : 2007

Ref: VCSPL/17/R-3433

Date: 04-01-2018

### GROUND WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF DEC-2017

1. Name of Industry : **Nagamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Nagamundi Basti ;  
GW-2: Near Railway Station.**
3. Date of sampling : **14.12.2017**
4. Date of analysis : **15.12.2017 to 21.12.2017**
5. Sample collected by : **VCSPL Representative in presence of TATA Representative**

Sl. No	Parameter	Testing Methods	Unit	Standard as per IS-10500:1991	Analysis Results	
					GW-1	GW-2
<b>Essential Characteristics</b>						
1	Colour	APHA 2120 B, C	Haem	5	CL	CL
2	Odour	APHA 2150 B	--	200	100	100
3	Taste	APHA 2160 C	--	Agreeable	AI	AI
4	Turbidity	APHA 2130 B	NTU	5	<2	<2
5	pH Value	APHA 4500F B	--	6.5-8.5	7.30	7.44
6	Total Hardness (as CaCO <sub>3</sub> )	APHA 2540 C	mg/l	500	144.0	156.0
7	Iron (as Fe)	APHA 3500a, B	mg/l	0.3	0.28	0.26
8	Chloride (as Cl)	APHA 4500C B	mg/l	250	41.0	46.0
9	Residual, Free Chlorine	APHA 4500CL B	mg/l	0.2	ND	ND
<b>Desirable Characteristics</b>						
10	Dissolved Solids	APHA 2540 C	mg/l	500	235.0	248.0
11	Calcium (as Ca)	APHA 3500Ca B	mg/l	75	40.9	43.3
12	Magnesium (as Mg)	APHA 3500Mg B	mg/l	30	10.2	11.7
13	Copper (as Cu)	APHA 3111 B,C	mg/l	0.05	<0.05	<0.05
14	Manganese (as Mn)	APHA 3500Mn B	mg/l	0.1	0.013	0.01
15	Sulphate (as SO <sub>4</sub> )	APHA 4500 SO <sub>4</sub> E	mg/l	200	7.2	6.8
16	Nitrate (as NO <sub>3</sub> )	APHA 4500 NO <sub>3</sub> E	mg/l	45	2.7	2.8
17	Fluoride (as F)	APHA 4500F C	mg/l	1.0	0.024	0.021
18	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	APHA 5530 B,D	mg/l	0.001	<0.001	<0.001
19	Mercury (as Hg)	APHA 3190 Hg	mg/l	0.001	<0.001	<0.001
20	Cadmium (as Cd)	APHA 3111 B,C	mg/l	0.01	<0.001	<0.001
21	Selenium (as Se)	APHA 3114 B	mg/l	0.01	<0.001	<0.001
22	Arsenic (as As)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
23	Cyanide (as CN)	APHA 4500 CN C,D	mg/l	0.05	ND	ND
24	Lead (as Pb)	APHA 3111 B,C	mg/l	0.05	<0.01	<0.01
25	Zinc (as Zn)	APHA 3111 B,C	mg/l	5	0.08	0.07
26	Acidic Detergents (as MBAS)	APHA 5540 C	mg/l	0.2	<0.2	<0.2
27	Chromate (as Cr <sup>6+</sup> )	APHA 3500Cr B	mg/l	0.05	<0.05	<0.05
28	Mineral Oil	APHA 5220 B	mg/l	0.01	<0.001	<0.001
29	Alkalinity	APHA 2320 B	mg/l	200	130.0	140.0
30	Aluminium (as Al)	APHA 3500Al B	mg/l	0.03	<0.001	<0.001
31	Boron (as B)	APHA 4500B, B	mg/l	1	<0.01	<0.01
32	Poly Aromatic Hydrocarbon as PAH	APHA 6440 B	µg/l	--	<0.0001	<0.0001
33	Pathogens	APHA 6630 B,C	mg/l	Absent	Absent	Absent
34	Total Coliforms	APHA 9221 B	MPN/100ml	Not more than 100MPN/100ml	<2	<2

Note: CL - Colourless, AI - Agreeable, EDA - Unacceptable, ND - Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.



Plot No- M-22R23, Chandra Industrial Estate, Patil, Bhamburda-751024, Dist-Khorda, Odisha Tel. : 91-9437041170

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# Annexure-II: Ground Water Qlty. Report (Oct'17 - Mar'18).....contd



**Visiontek Consultancy Services Pvt. Ltd.**  
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ISO 9001: 2008  
ISO 14001: 2004  
CENAS 18601 - 2017

Ref: ENVIA No/ 18/R-213  
**GROUND WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF MARCH 2018** on 04/04/18

1. Name of Industry : **Nagamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Nagamundi Bore; GW-2: Near Railway Station.**
3. Date of sampling : **12.03.2018**
4. Date of analysis : **13.03.2018 TO 20.03.2018**
5. Sample collected by : **VCSEL Representative in presence of TATA Representative**

Sl. No	Parameter	Testing Methods	Unit	Standard as per IS - 10500:2003	Analysis Results	
					GW-1	GW-2
<b>Essential Characteristics</b>						
1	Colour	APHA 2130 B/C	Hexon	5	CL	CL
2	Odour	APHA 2134 B	--	100	ND	ND
3	Taste	APHA 2164 C	--	Agreeable	AL	AL
4	Turbidity	APHA 2130 B	NTU	5	<2	<2
5	pH Value	APHA 4500 B	--	6.5-8.5	7.4	7.38
6	Total Hardness (as CaCO <sub>3</sub> )	APHA 2130 C	mg/l	500	144.0	152.0
7	Iron (as Fe)	APHA 3500 A/B	mg/l	0.3	0.29	0.24
8	Chloride (as Cl <sup>-</sup> )	APHA 4500 F/B	mg/l	250	40.0	47.0
9	Residual Free Chlorine	APHA 4500 C/B	mg/l	0.2	ND	ND
<b>Desirable Characteristics</b>						
10	Dissolved Solids	APHA 2540 C	mg/l	500	231.0	242.0
11	Calcium (as Ca <sup>2+</sup> )	APHA 3500 A/B	mg/l	75	36.7	40.9
12	Magnesium (as Mg)	APHA 3500 A/B	mg/l	30	11.9	12.7
13	Copper (as Cu)	APHA 3111 B/C	mg/l	0.05	-0.05	-0.05
14	Manganese (as Mn)	APHA 3500 A/B	mg/l	0.1	0.015	0.018
15	Sulphate (as SO <sub>4</sub> <sup>2-</sup> )	APHA 4500 SO <sub>4</sub> B	mg/l	200	4.0	7.2
16	Nitrate (as NO <sub>3</sub> <sup>-</sup> )	APHA 4500 NO <sub>3</sub> B	mg/l	45	3.4	2.7
17	Fluoride (as F <sup>-</sup> )	APHA 4500 F/C	mg/l	1.0	0.027	0.028
18	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	APHA 3550 B/D	mg/l	0.001	-0.001	-0.001
19	Mercury (as Hg)	APHA 3500 Hg	mg/l	0.001	-0.001	-0.001
20	Cadmium (as Cd)	APHA 3111 B/C	mg/l	0.01	-0.001	-0.001
21	Selenium (as Se)	APHA 3114 B	mg/l	0.01	-0.001	-0.001
22	Arsenic (as As)	APHA 3114 B	mg/l	0.05	-0.001	-0.001
23	Cyanide (as CN <sup>-</sup> )	APHA 4500 CN C/D	mg/l	0.05	ND	ND
24	Lead (as Pb)	APHA 3111 B/C	mg/l	0.05	-0.05	-0.05
25	Zinc (as Zn)	APHA 3111 B/C	mg/l	5	0.1	0.12
26	Antimony Dioxide (as SbO <sub>2</sub> )	APHA 3540 C	mg/l	0.2	-0.2	-0.2
27	Chromium (as Cr <sup>6+</sup> )	APHA 3500 C/B	mg/l	0.05	-0.05	-0.05
28	Nitrosyl (NO)	APHA 3220 B	mg/l	0.01	-0.01	-0.003
29	Alkalinity	APHA 2320 B	mg/l	200	138.0	147.0
30	Aluminium (as Al)	APHA 3500 A/B	mg/l	0.03	-0.001	-0.001
31	Boron (as B)	APHA 4500 B	mg/l	1	0.01	0.01
32	PNV Aromatic Hydrocarbon as PAH	APHA 6440 B	µg/l	--	<0.001	<0.001
33	Pesticide	APHA 6031 B/C	mg/l	Absent	Absent	Absent
34	Total Coliform	APHA 9221 B	MPN/100ml	Not more than 10MPN/100ml	<2.0	<2.0

Note: CL - Colourless, AL - Agreeable, ND - Undetectable, ND - Not Detected



Plot No-M-21623, Chanda Industrial Estate, Pitha, Bhubaneswar-751024, Dist-Khorda, Odisha Tel. : 91-674-6451781, 752017905

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### **Annexure-III: Flow Rate of Balijhor Nalla (Oct'17 - Mar'18)**

#### **ANALYSIS OF WATER QUALITY Sample collected from Balijhore Nalla**

<b>Parameters</b>	<b>Oct-17</b>	<b>Nov-17</b>	<b>Dec-17</b>	<b>Jan-18</b>	<b>Feb-18</b>	<b>Mar-18</b>	<b>Limit</b>
BOD mg/l	1.40	1.20	1.05	1.10	1.00	1.20	20
TSS mg/l	25.90	12.40	10.20	9.50	9.00	10.20	100
Flow Rate Cum/hr	27.50	18.40	21.10	19.60	18.30	20.80	

There is no any industrial effluents discharge from the mine.

  
Lab-in-charge

# Annexure-IV: Surface Water Qlty. Balijhor Nalla ( Noamundi Iron Mine)

(Oct'17 - Mar'18)



**Visiontek Consultancy Services Pvt.Ltd.**

(An Enviro Engineering Consulting Cell)



EN 15001:2004  
EN 15001:2008  
OHSAS 18001:2007

Ref: VCSPL/17/R-3053

Date: 04.11.2017

## SURFACE WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF OCT-2017

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited) .
2. Sampling location : SW-1: Balijhorana Nallah U/S;  
SW-2: Balijhorana Nallah D/S.
3. Date of sampling : 09.10.2017
4. Date of analysis : 10.10.2017 to 16.10.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class -C*	Analysis Results	
					SW-1	SW-2
1	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4	6.3	6.2
2	Total Suspended Solids as TSS	APHA 2540 D	mg/l	--	60.0	60.0
3	BOD (5) days at 27°C (max)	APHA 5210 B	mg/l	3	<1.8	<1.8
4	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	--	5.0	7.0
5	Total Coli form	APHA 9221 B	MPN/100 ml	5000	210	410
6	pH Value	APHA 4500F D	--	6.0-9.0	7.32	7.36
7	Colour (max)	APHA 2120 B, C	Haeco	200	<1	<1
8	Total Dissolved Solids	APHA 2540 C	mg/l	1500	98.0	102.0
9	Copper as Cu (max)	APHA 3111 B,C	mg/l	1.5	<0.05	<0.05
10	Iron as Fe (max)	APHA 3500Fe, B	mg/l	0.5	0.34	0.36
11	Chloride (max)	APHA 4500C D	mg/l	600	18	19
12	Sulphates (SO <sub>4</sub> ) (max)	APHA 4500 SO <sub>4</sub> <sup>2-</sup> E	mg/l	400	2.1	2.3
13	Nitrate as NO <sub>3</sub> (max)	APHA 4500 NO <sub>3</sub> E	mg/l	50	0.86	0.94
14	Fluoride as F (max)	APHA 4500F C	mg/l	1.5	0.021	0.022
15	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH (max)	APHA 5530 B,D	mg/l	0.005	<0.001	<0.001
16	Cadmium as Cd (max)	APHA 3111 B,C	mg/l	0.01	<0.001	<0.001
17	Selenium as Se (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
18	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
19	Cyanide as CN (max)	APHA 4500 CN C,D	mg/l	0.05	ND	ND
20	Lead as Pb (max)	APHA 3111 B,C	mg/l	0.1	<0.05	<0.05
21	Zinc as Zn (max)	APHA 3111 B,C	mg/l	15	<0.05	<0.05
22	Hexa Chromium as Cr <sup>6+</sup>	APHA 3500Cr D	mg/l	0.05	<0.05	<0.05
23	Arsenic Detergents (max)	APHA 5540 C	mg/l	1.0	<0.2	<0.2
24	Mercury as Hg	APHA 3500 Hg	mg/l	--	<0.001	<0.001
25	Manganese as Mn	APHA 3500 Mn B	mg/l	--	<0.005	<0.005

Note: C.L. Colourless, ND: Not Detected



For Visiontek Consultancy Services Pvt. Ltd.

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Ref: VCSPL/171K-330

Date: 04-12-2017

**SURFACE WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF NOV-2017**

1. Name of Industry : **Nougundi Iron Mines (M/s TATA Steel Limited).**
2. Sampling location : **SW-1: Bahijharana Nallah D/S;  
SW-2: Bahijharana Nallah U/S.**
3. Date of sampling : **16.11.2017**
4. Date of analysis : **17.11.2017 to 23.11.2017**
5. Sample collected by : **VCSPL Representative in presence of TATA Representative**

Sl No.	Parameter	Testing Methods	Unit	Standards as per IS-2286:1992 Class -'C'	Analysis Results	
					SW-1	SW-2
1	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4	6.1	5.4
2	Total Suspended Solids as TSS	APHA 2540 D	mg/l	--	35.0	48.0
3	BOD (5) days at 27°C (max)	APHA 5210 B	mg/l	2	<0.8	<0.2
4	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	--	6.0	8.0
5	Total Cell form	APHA 9221 B	MPN/100 ml	5000	570	510
6	pH Value	APHA 4500F D	--	6.0-9.0	7.28	7.28
7	Colour (max)	APHA 2120 B, C	Platin	200	CL	CL
8	Total Dissolved Solids	APHA 2540 C	mg/l	1500	108.0	103.0
9	Copper as Cu (max)	APHA 3111 B,C	mg/l	1.5	<0.05	<0.05
10	Iron as Fe (max)	APHA 3500G, B	mg/l	0.5	0.3	0.32
11	Chloride (max)	APHA 4500C B	mg/l	600	23	23
12	Sulphates (SO <sub>4</sub> ) (max)	APHA 4500 SO <sub>4</sub> E	mg/l	400	2.8	2.6
13	Nitrate as NO <sub>3</sub> (max)	APHA 4500 NO <sub>3</sub> E	mg/l	50	0.98	1.04
14	Fluoride as F (max)	APHA 4500F C	mg/l	1.5	0.018	0.022
15	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH (max)	APHA 5570 B,D	mg/l	0.005	<0.001	<0.001
16	Cadmium as Cd (max)	APHA 3111 B,C	mg/l	0.01	<0.001	<0.001
17	Selenium as Se (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
18	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
19	Cyanide as CN (max)	APHA 4500 CN C,D	mg/l	0.05	ND	ND
20	Lead as Pb(max)	APHA 3111 B,C	mg/l	0.1	<0.01	<0.01
21	Zinc as Zn(max)	APHA 3111 B,C	mg/l	15	<0.05	<0.05
22	Hexa Chromium as Cr <sup>VI</sup>	APHA 3500C B	mg/l	0.05	<0.05	<0.05
23	Antonie Detergents (max)	APHA 3580 C	mg/l	1.0	<0.2	<0.2
24	Mercury as Hg	APHA 3500 Hg	mg/l	--	<0.001	<0.001
25	Manganese as Mn	APHA 3500 Mn B	mg/l	--	<0.002	<0.005

Note: CL: Colourless, ND: Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.





Ref: VCSPL/17/R-3432

Date: 04-01-2018

### SURFACE WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF DEC-2017

- Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited).
- Sampling location : SW-1: Baljharana Nallah US;  
SW-2: Baljharana Nallah DS.
- Date of sampling : 14.12.2017
- Date of analysis : 15.12.2017 to 21.12.2017
- Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results	
					SW-1	SW-2
1	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4	5.6	5.7
2	Total Suspended Solids as TSS	APHA 2540 D	mg/l	--	15.0	18.0
3	BOD (5) days at 27°C (max)	APHA 5210 B	mg/l	3	<0.8	<0.8
4	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	--	8.0	12.0
5	Total Coli form	APHA 9221 B	MPN/100 ml	5000	300	410
6	pH Value	APHA 4500H B	--	6.0-9.0	7.36	7.32
7	Colour (max)	APHA 2120 B, C	Plum	300	CL	CL
8	Total Dissolved Solids	APHA 2540 C	mg/l	1500	114.0	120.0
9	Copper as Cu (max)	APHA 3111 B,C	mg/l	1.5	<0.05	<0.05
10	Iron as Fe (max)	APHA 3500Fe, B	mg/l	0.5	0.35	0.38
11	Chloride (max)	APHA 4500C B	mg/l	600	23.0	28.0
12	Sulfates (SO <sub>4</sub> ) (max)	APHA 4500 SO <sub>4</sub> E	mg/l	400	3.1	3.4
13	Nitrate as NO <sub>3</sub> (max)	APHA 4500 NO <sub>3</sub> E	mg/l	50	1.32	1.36
14	Fluoride as F (max)	APHA 4500F C	mg/l	1.5	0.024	0.022
15	Phenolic Compounds as C <sub>12</sub> H <sub>10</sub> O (max)	APHA 5530 B,D	mg/l	0.05	<0.001	<0.001
16	Cadmium as Cd (max)	APHA 3111 B,C	mg/l	0.01	<0.001	<0.001
17	Selenium as Se (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
18	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
19	Cyanide as CN (max)	APHA 4500 CN C,D	mg/l	0.05	ND	ND
20	Lead as Pb(max)	APHA 3111 B,C	mg/l	0.1	<0.01	<0.01
21	Zinc as Zn(max)	APHA 3111 B,C	mg/l	15	<0.05	<0.05
22	Hexa Chromium as Cr <sup>VI</sup>	APHA 3500Cr B	mg/l	0.05	<0.05	<0.05
23	Anionic Detergents (max)	APHA 5540 C	mg/l	1.0	<0.2	<0.2
24	Mercury as Hg	APHA 3500 Hg	mg/l	--	<0.001	<0.001
25	Manganese as Mn	APHA 3500 Mn B	mg/l	--	<0.005	<0.005

Note: CL: Colourless, ND: Not Detected



For Visiontek Consultancy Services Pvt. Ltd.



Ref: Env Lab/18/R-323

Date: 05.02.2018

### SURFACE WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF JAN-2018

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited) .
2. Sampling location : SW-1: Balijharana Nallah U/S,  
SW-2: Balijharana Nallah D/S.
3. Date of sampling : 15.01.2018
4. Date of analysis : 16.01.2018 to 22.01.2018
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Chem-'C'	Analysis Results	
					SW-1	SW-2
1	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4	5.1	4.9
2	Total Suspended Solids as TSS	APHA 2540 D	mg/l	--	200	200
3	BOD (5) days at 27°C (max)	APHA 5210 B	mg/l	3	-1.8	-1.8
4	Chemical Oxygen Demand as COD	APHA 5220 C	mg/l	--	140	190
5	Total Cell form	APHA 9221 B	MPN/100 ml	5000	310	290
6	pH Value	APHA 4500H B	--	6.0-9.0	7.32	7.38
7	Colour (max)	APHA 2120 B, C	Plum	300	CL	CL
8	Total Dissolved Solids	APHA 2540 C	mg/l	1500	120.0	126.0
9	Copper as Cu (max)	APHA 3111 B,C	mg/l	1.5	-0.85	-0.85
10	Iron as Fe (max)	APHA 3500Fe, B	mg/l	0.5	0.4	0.42
11	Chloride (max)	APHA 4500Cl B	mg/l	600	29.0	30.0
12	Sulphates (SO <sub>4</sub> ) (max)	APHA 4500 SO <sub>4</sub> E	mg/l	400	4.2	4.4
13	Nitrate as NO <sub>3</sub> (max)	APHA 4500 NO <sub>3</sub> E	mg/l	50	1.72	1.8
14	Fluoride as F (max)	APHA 4500F C	mg/l	1.5	0.029	0.031
15	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH (max)	APHA 5530 H,D	mg/l	0.005	-0.001	-0.001
16	Cadmium as Cd (max)	APHA 3113 B,C	mg/l	0.01	-0.001	-0.001
17	Selenium as Se (max)	APHA 3114 B	mg/l	0.05	-0.001	-0.001
18	Arsenic as As	APHA 3114 B	mg/l	0.2	-0.001	-0.001
19	Cyanide as CN (max)	APHA 4500 CN C,D	mg/l	0.05	50	50
20	Lead as Pb (max)	APHA 3113 B,C	mg/l	0.1	-0.01	-0.01
21	Zinc as Zn (max)	APHA 3113 B,C	mg/l	15	-0.05	-0.05
22	Hexa Chromium as Cr <sup>VI</sup>	APHA 3500Cr B	mg/l	0.05	-0.05	-0.05
23	Anionic Detergents (max)	APHA 5540 C	mg/l	1.0	-0.2	-0.2
24	Mercury as Hg	APHA 3500 Hg	mg/l	--	-0.001	-0.001
25	Manganese as Mn	APHA 3500 Mn B	mg/l	--	-0.005	-0.005

Note: CL: Colourless, ND: Not Detected



For Visiontek Consultancy Services Pvt. Ltd.





Ref: Env Lab/18/R-404

Date: 03-08-2018

**SURFACE WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF FEB-2018**

1. Name of Industry : **Noumudi Iron Mines (M/o TATA Steel Limited).**
2. Sampling location : **SW-1: Baljharana Nallah U/S;  
SW-2: Baljharana Nallah D/S.**
3. Date of sampling : **12.02.2018**
4. Date of analysis : **13.02.2018 to 19.02.2018**
5. Sample collected by : **VCSPL Representative in presence of TATA Representative**

Sl No.	Parameter	Testing Methods	Unit	Standard as per IS-2296:1992 Class - 'C'	Analysis Results	
					SW-1	SW-2
1	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4	5.2	5.2
2	Total Suspended Solids as TSS	APHA 2540 D	mg/l	--	15.0	20.0
3	BOD (3) days at 27°C (max)	APHA 5210 B	mg/l	3	<1.8	<1.8
4	Chemical Oxygen Demand as COD	APHA 5220-C	mg/l	--	17.0	21.0
5	Total Cell form	APHA 9221 B	MPN/100 ml	5000	270	<10
6	pH Value	APHA 4500F B	--	6.0-9.0	7.38	7.41
7	Colour (max)	APHA 2120 B, C	Plum	300	CL	CL
8	Total Dissolved Solids	APHA 2540 C	mg/l	1500	126.8	132.8
9	Copper as Cu (max)	APHA 3111 B,C	mg/l	1.5	<0.05	<0.05
10	Iron as Fe (max)	APHA 3500Fe, D	mg/l	0.5	0.44	0.45
11	Chloride (max)	APHA 4500Cl B	mg/l	600	31.0	31.0
12	Sulphates (SO <sub>4</sub> ) (max)	APHA 4500 SO <sub>4</sub> E	mg/l	400	4.4	5.1
13	Nitrate as NO <sub>3</sub> (max)	APHA 4500 NO <sub>3</sub> , E	mg/l	50	1.04	1.94
14	Fluoride as F (max)	APHA 4500 F C	mg/l	1.5	0.03	0.034
15	Phenolic Compounds as C <sub>12</sub> H <sub>10</sub> O (max)	APHA 5530 B,D	mg/l	0.005	<0.001	<0.001
16	Cadmium as Cd (max)	APHA 3111 B,C	mg/l	0.01	<0.001	<0.001
17	Selenium as Se (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
18	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
19	Cyanide as CN (max)	APHA 4500 CN C,D	mg/l	0.05	ND	ND
20	Lead as Pb(max)	APHA 3111 B,C	mg/l	0.1	<0.01	<0.01
21	Zinc as Zn(max)	APHA 3111 B,C	mg/l	15	<0.05	<0.05
22	Hexa Chromium as Cr <sup>6+</sup>	APHA 3500Cr B	mg/l	0.05	<0.05	<0.05
23	Anionic Detergents (max)	APHA 5540 C	mg/l	1.0	<0.2	<0.2
24	Mercury as Hg	APHA 3500 Hg	mg/l	--	<0.001	<0.001
25	Manganese as Mn	APHA 3500 Mn D	mg/l	--	<0.005	<0.005

Note: CL: Colourless, ND: Not Detected



For Visiontek Consultancy Services Pvt. Ltd.



Ref: ENV/LAB/14/R-224

Date:

**SURFACE WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF MARCH-2018**

1. Name of Industry : **Nuamundi Iron Mines (M/s TATA Steel Limited) .**
2. Sampling location : **SW-1: Bahubharana Nallah U/S;  
SW-2: Bahubharana Nallah D/S.**
3. Date of sampling : **12.03.2018**
4. Date of analysis : **13.03.2018 TO 19.03.2018**
5. Sample collected by : **VCSPL Representative in presence of TATA Representative**

Sl. No.	Parameter	Testing Methods	Unit	Standards as per IS-2296:1992 Class - 'C'	Analysis Results	
					SW-1	SW-2
1	Dissolved Oxygen (minimum)	APHA 2540 C	mg/l	4	5.3	5.3
2	Total Suspended Solids as TSS	APHA 2540 D	mg/l	--	32.0	28.0
3	BOD (5) days at 27°C (max)	APHA 5210 B	mg/l	3	-1.8	-1.8
4	Chemical Oxygen Demand as COD	APHA 5220 C	mg/l	--	25.0	30.0
5	Total Coli form	APHA 9221 B	NPCL (10 ml)	5000	210.0	310.0
6	pH Value	APHA 4500 H B	--	6.0-9.0	7.3	7.35
7	Colour (max)	APHA 2120 B, C	Platno	300	CL	CL
8	Total Dissolved Solids	APHA 2540 C	mg/l	1500	130.0	136.0
9	Copper as Cu (max)	APHA 3111 B,C	mg/l	1.5	<0.05	<0.05
10	Iron as Fe (max)	APHA 3500 G, H	mg/l	0.5	0.41	0.40
11	Chloride (max)	APHA 4500 C B	mg/l	600	32.0	33.0
12	Sulphate (SO <sub>4</sub> ) (max)	APHA 4500 SM <sup>2</sup> E	mg/l	400	4.8	5.2
13	Nitrate as NO <sub>3</sub> (max)	APHA 4500 NO <sub>3</sub> E	mg/l	50	1.76	1.88
14	Fluoride as F (max)	APHA 4500 F C	mg/l	1.5	0.034	0.038
15	Phenolic Compounds as C <sub>12</sub> H <sub>10</sub> O (max)	APHA 5570 B,D	mg/l	0.005	<0.001	<0.001
16	Cadmium as Cd (max)	APHA 3111 B,C	mg/l	0.01	<0.001	<0.001
17	Selenium as Se (max)	APHA 3114 B	mg/l	0.05	<0.001	<0.001
18	Arsenic as As	APHA 3114 B	mg/l	0.2	<0.001	<0.001
19	Cyanide as CN (max)	APHA 4500 CN C, D	mg/l	0.05	ND	ND
20	Lead as Pb (max)	APHA 3113 B,C	mg/l	0.1	<0.01	<0.01
21	Zinc as Zn (max)	APHA 3113 B,C	mg/l	15	<0.05	<0.05
22	Hexa-Chlorine as Cl <sup>-</sup>	APHA 3500 C B	mg/l	0.05	<0.05	<0.05
23	Aromatic Detergents (max)	APHA 3540 C	mg/l	1.0	<0.2	<0.2
24	Mercury as Hg	APHA 3500 Hg	mg/l	--	<0.001	<0.001
25	Manganese as Mn	APHA 3500 Mn B	mg/l	--	<0.005	<0.005

Note: CL: Colorless, ND: Not Detected



For Visiontek Consultancy Services Pvt. Ltd.

# Annexure-V: Analysis Report- DE System (Noamundi Iron Mine)

(Oct'17 - Mar'18)



Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)



ISO 14001:2004  
ISO 9001:2008  
OHSAS 18001:2007

Ref.: VCSPL/J17/R-3052

Date: 04.11.2017

## ANALYSIS REPORT OF FLUE GAS

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)

		Date of Sampling	: 26.10.2017 at 10.30am
<b>A</b>	<b>General Information about Stack</b>	-	-
1	Stack Connected to	:	Dust Extractor System
2	Emission due to	:	Process Activities
3	Material of Construction of stack	:	MS
4	Shape of stack	:	Circular
5	Whether stack is provided with permanent platform & ladder	:	Yes
6	Generation capacity	:	---
<b>B</b>	<b>Physical Characteristics of Stack:</b>	-	-
1	Height of the stack from ground level	:	15.0m (approx)
2	Diameter of the stack at sampling point	:	0.46m
3	Height of the sampling point from GL	:	9.5m (approx)
4	Area of Stack	:	0.166 m <sup>2</sup>
<b>C</b>	<b>Analysis / Characteristic of Stack:</b>	-	-
1	Fuel Used	:	---
2	Fuel consumption	:	---
<b>D</b>	<b>Results of Sampling &amp; Analysis of Gaseous Emission</b>	-	-
		<b>Analysis Results</b>	<b>CPCB Limit</b>
1	Temperature of emission (°C)	:	32
2	Barometric pressure (mm of Hg)	:	712
3	Velocity of gas (m/sec.)	:	16.14
4	Quantity of gas flow (Nm <sup>3</sup> /hr.)	:	8859
5	Concentration of particulate Matters (mg/Nm <sup>3</sup> )	:	10.9                      100
<b>E</b>	<b>Pollution control Device</b>		
	Details of pollution control		
	Device attached with the stack	:	Pulse jet bag filter
<b>F</b>	<b>Remarks</b>		



For Visiontek Consultancy Services Pvt. Ltd.

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ISO 9001 : 2008  
ISO 14001 : 2004  
OHSAS 18001 : 2007

Ref: env lab/18/R-403

Date: 03.03.2018

**ANALYSIS REPORT OF FLUE GAS**

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)

		Date of Sampling	01.02.2018 at 11.30am
<b>A</b>	<b>General Information about Stack</b>		
1	Stack Connected to		Dust Extractor System
2	Emission due to		Process Activities
3	Material of Construction of stack		MS
4	Shape of stack		Circular
5	Whether stack is provided with permanent platform & ladder		Yes
6	Generation capacity		---
<b>B</b>	<b>Physical Characteristics of Stack:</b>		
1	Height of the stack from ground level		15.0m (approx)
2	Diameter of the stack at sampling point		0.46m
3	Height of the sampling point from GL		9.5m (approx)
4	Area of Stack		0.166 m <sup>2</sup>
<b>C</b>	<b>Analysis / Characteristic of Stack:</b>		
1	Fuel Used		---
2	Fuel consumption		---
<b>D</b>	<b>Results of Sampling &amp; Analysis of Gaseous Emission</b>		
		<b>Analysis Results</b>	<b>CPCB Limit</b>
1	Temperature of emission (°C)	29	
2	Barometric pressure (mm of Hg)	714	
3	Velocity of gas (m/sec.)	15.92	
4	Quantity of gas flow (Nm <sup>3</sup> /hr.)	8826	
5	Concentration of particulate Matters (mg/Nm <sup>3</sup> )	9.8	100
<b>E</b>	<b>Pollution control Device</b>		
	Details of pollution control Device attached with the stack		Pulse jet bag filter
<b>F</b>	<b>Remarks</b>		



For Visiontek Consultancy Services Pvt. Ltd.

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ISO 9001 : 2008  
ISO 14001 : 2004  
OHSAS 18001 : 2007

Ref.: ENVLAB/18/R-223

Date: 04/04/18

## ANALYSIS REPORT OF FLUE GAS

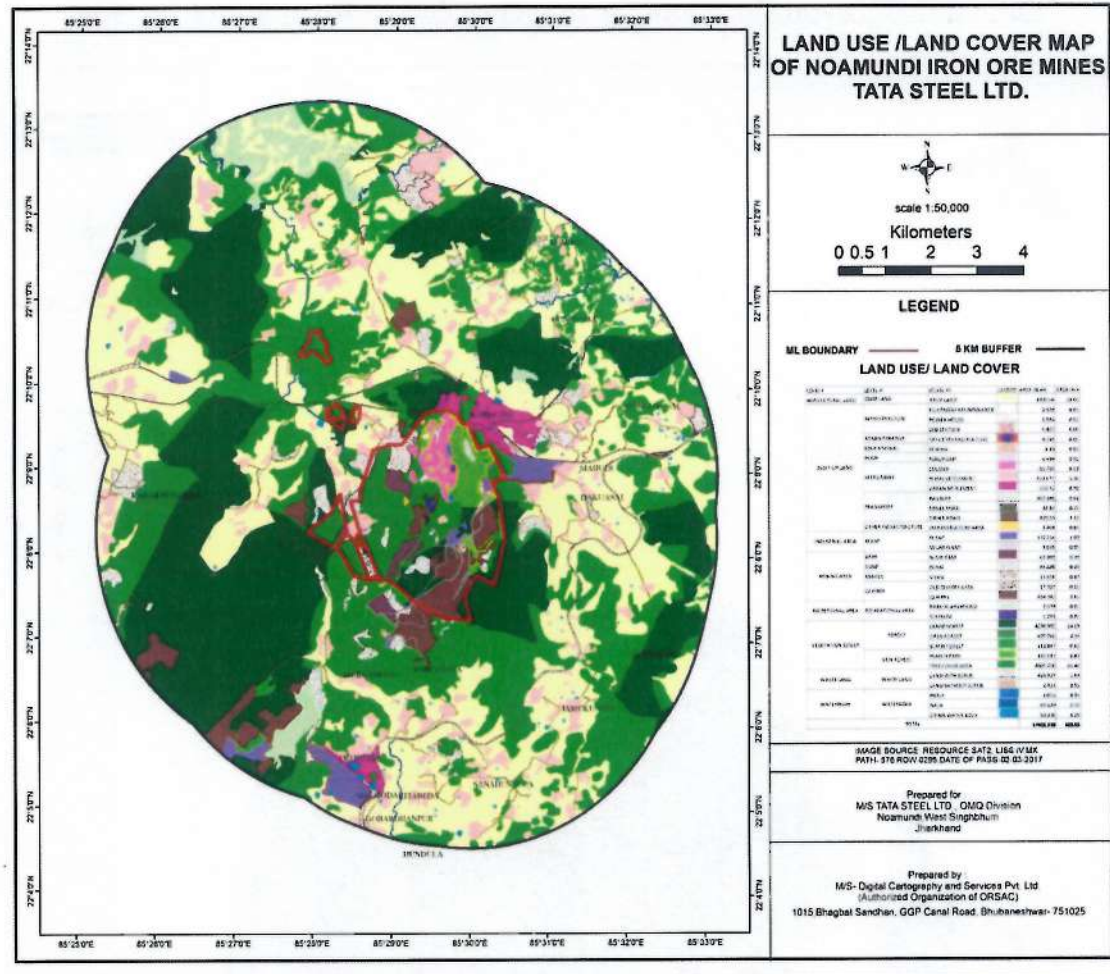
1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)

		Date of Sampling	: 12.03.2018 at 10.15am
<b>A</b>	<b>General Information about Stack</b>		
1	Stack Connected to		Dust Extractor System
2	Emission due to		Process Activities
3	Material of Construction of stack		MS
4	Shape of stack		Circular
5	Whether stack is provided with permanent platform & ladder		Yes
6	Generation capacity		---
<b>B</b>	<b>Physical Characteristics of Stack:</b>		
1	Height of the stack from ground level		15.0m (approx)
2	Diameter of the stack at sampling point		0.46m
3	Height of the sampling point from GL		9.5m (approx)
4	Area of Stack		0.166 m <sup>2</sup>
<b>C</b>	<b>Analysis / Characteristic of Stack:</b>		
1	Fuel Used		---
2	Fuel consumption		---
<b>D</b>	<b>Results of Sampling &amp; Analysis of Gaseous Emission</b>		
		<b>Analysis Results</b>	<b>CPCB Limit</b>
1	Temperature of emission (°C)	: 33.0	
2	Barometric pressure (mm of Hg)	: 714.0	
3	Velocity of gas (m/sec.)	: 16.39	
4	Quantity of gas flow (Nm <sup>3</sup> /hr.)	: 8967.0	
5	Concentration of particulate Matters (mg/Nm <sup>3</sup> )	: 10.3	100
<b>E</b>	<b>Pollution control Device</b>		
	Details of pollution control		
	Device attached with the stack		: Pulse jet bag filter
<b>F</b>	<b>Remarks</b>		



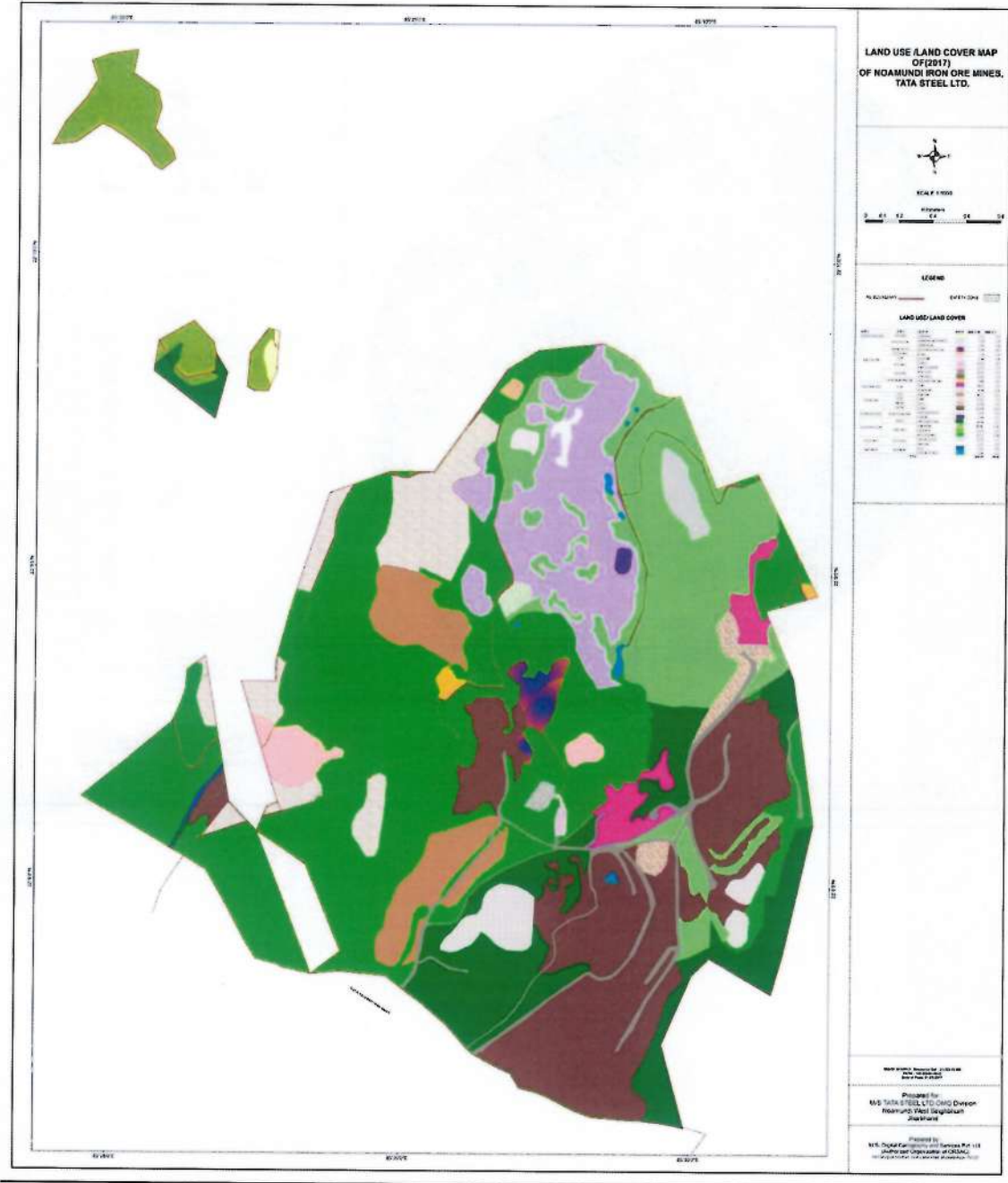
For Visiontek Consultancy Services Pvt. Ltd.

## Annexure-VI: Land Use/Land Cover ( Buffer Zone)- Noamundi Iron Mine





**Annexure-VI: Land Use/Land Cover ( Core Zone)- Noamundi Iron Mine**



## Annexure-VII: Analysis Report of Free Silica- Noamundi Iron Mine



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ISO 14001:2004  
ISO 9001:2008  
OHSAS 18001:2007

Ref.: VCSPL/17/R-3044

Date: 09.11.2017

### MINERALOGICAL COMPOSITION REPORT FOR OCT-2017

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)
2. Sampling Location : A-1: Mines Area
3. Monitoring Instruments : RDS(APM 460 BL)
4. Sample Collected by : VCSPL Representative in presence of TATA Representative.

Monitoring Date	Parameters	Analysis Results
		A-1
19.10.2017	Silica(%)	0.32
	FeO (%)	0.24
	CaO (%)	0.018
	Al <sub>2</sub> O <sub>3</sub> (%)	<0.01



For Visiontek Consultancy Services Pvt. Ltd.



Ref.: *VC SPL/IFIR-3292*

Date: *04.12.2017*

**MINERALOGICAL COMPOSITION REPORT FOR NOV-2017**

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling Location : **A-1: Mines Area**
3. Monitoring Instruments : **RDS(APM 460 BL)**
4. Sample Collected by : **VC SPL Representative in presence of TATA Representative.**

Monitoring Date	Parameters	Analysis Results
		A-1
20.11.2017	Silica(%)	0.44
	FeO (%)	0.38
	CaO (%)	0.021
	Al <sub>2</sub> O <sub>3</sub> (%)	<0.01

*For Visiontek Consultancy Services Pvt. Ltd.*







Ref: VCSPL/17/R-3423

Date: 04.01.2018

**MINERALOGICAL COMPOSITION REPORT FOR DEC-2017**

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)
2. Sampling Location : A-1: Mines Area
3. Monitoring Instruments : RDS(APM 460 BL)
4. Sample Collected by : VCSPL Representative in presence of TATA Representative.

Monitoring Date	Parameters	Analysis Results
		A-1
21.12.2017	Silica(%)	0.56
	FeO (%)	0.76
	CaO (%)	0.044
	Al <sub>2</sub> O <sub>3</sub> (%)	<0.01



For Visiontek Consultancy Services Pvt. Ltd.



**Visiontek Consultancy Services Pvt. Ltd.**  
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ISO 9001 : 2008  
OHSAS 18001 : 2007

Ref: Env/lab/18/R-314

Date: 05.02.2018

**MINERALOGICAL COMPOSITION REPORT FOR JAN-2018**

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)
2. Sampling Location : A-1: Mines Area
3. Monitoring Instruments : RDS(APM 460 BL)
4. Sample Collected by : VC SPL Representative in presence of TATA Representative.

Monitoring Date	Parameters	Analysis Results
		A-1
11.01.2018	Silica(%)	0.62
	FeO (%)	0.74
	CaO (%)	0.042
	Al <sub>2</sub> O <sub>3</sub> (%)	<0.01



For Visiontek Consultancy Services Pvt. Ltd.

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Ref: Env Lab/18/R-39K

Date: 03.03.2018

**MINERALOGICAL COMPOSITION REPORT FOR FEB-2018**

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)
2. Sampling Location : A-1; Mines Area
3. Monitoring Instruments : RDS(APM 460 BL)
4. Sample Collected by : VCSPL Representative in presence of TATA Representative.

Monitoring Date	Parameters	Analysis Results
		A-1
10.02.2018	Silica(%)	0.64
	FeO (%)	0.82
	CaO (%)	0.043
	Al <sub>2</sub> O <sub>3</sub> (%)	<0.01



For Visiontek Consultancy Services Pvt. Ltd.





Ref: ENVLAB/18/R-225

Date: 04/04/18

**MINERALOGICAL COMPOSITION REPORT FOR MARCH-2018**

1. Name of Industry : Noamundi Iron Mines (M/s TATA Steel Limited)
2. Sampling Location : A-1: Mines Area
3. Monitoring Instruments : RDS(APM 460 BL)
4. Sample Collected by : VCSPL Representative in presence of TATA Representative.

Monitoring Date	Parameters	Analysis Results
		A-1
16.03.2018	Silica(%)	0.61
	FeO (%)	0.85
	CaO (%)	0.039
	Al <sub>2</sub> O <sub>3</sub> (%)	<0.01



For Visiontek Consultancy Services Pvt. Ltd.

**NOAMUNDI IRON MINE  
Annexure-VIII: AVERAGE AIR QUALITY REPORT (CORE ZONE)**

Month	Industrial area												Residential area											
	MRSS Building				Bottom Bin				G.M's Office				Near Hospital											
	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO				
Oct 17	49.47	24.06	4.44	11.30	0.28	57.17	28.41	4.57	11.97	0.32	47.37	23.56	4.26	10.9	0.29	48.01	23.47	4.26	10.87	0.25				
Nov 17	52.21	26.19	4.39	11.36	0.29	62.76	31.30	5.00	13.29	0.43	48.44	23.49	4.20	10.6	0.24	49.61	23.67	4.19	11.03	0.28				
Dec 17	65.56	33.03	4.61	13.01	0.35	82.99	43.96	6.01	16.50	0.48	57.56	28.66	4.49	11.8	0.30	56.57	27.84	4.40	11.60	0.31				
Jan 18	72.11	36.47	4.89	14.99	0.41	81.99	42.17	5.94	16.56	0.50	67.70	33.26	4.73	13.5	0.38	65.69	32.81	4.89	13.69	0.38				
Feb 18	71.37	35.64	5.31	15.63	0.40	81.67	42.19	5.81	17.06	0.51	68.00	33.79	4.93	14.9	0.40	65.33	32.59	4.81	14.76	0.40				
Mar 18	72.29	36.41	4.90	15.96	0.46	84.30	44.23	5.66	17.59	0.54	69.47	34.56	4.73	15.1	0.40	67.50	33.79	4.74	14.70	0.38				

**AVERAGE AIR QUALITY REPORT (BUFFER ZONE)**

Month	Kankura												Kitabeda												Mireibera												Balita											
	Kankura				Kitabeda				Mireibera				Balita																																			
	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO																							
Oct 17	36.55	16.90	4.00	9.00	0.13	36.70	17.00	4.00	9.00	0.14	37.00	16.90	4.00	9.00	0.13	42.10	19.20	4.00	9.00	0.15																												
Nov 17	44.50	21.60	4.0	<9.0	0.17	46.70	22.60	4.0	<9.0	0.19	47.60	23.30	4.0	9.0	0.19	49.50	24.20	4.00	9.00	0.22																												
Dec 17	54.00	26.35	4.10	10.25	0.25	55.65	27.80	4.20	10.60	0.27	52.35	26.20	4.05	9.90	0.24	56.25	27.65	4.25	10.7	0.28																												
Jan 18	55.65	26.65	4.15	10.65	0.31	56.50	27.65	4.15	11.10	0.33	56.05	27.40	4.15	10.4	0.30	56.25	27.65	4.25	10.7	0.28																												
Feb 18	58.40	28.65	4.25	10.95	0.29	54.60	26.50	4.15	10.40	0.28	56.10	27.50	4.15	10.7	0.30	55.70	27.15	4.15	10.6	0.29																												
Mar 18	57.80	28.00	4.15	10.40	0.28	57.80	27.75	4.30	10.65	0.29	54.65	26.50	4.10	10.3	0.29	55.85	27.05	4.10	10.3	0.29																												

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

*J. M. M.*  
Lab-in-charge

**Annexure-IX: AMBIENT NOISE QUALITY AT NOAMUNDI (AVERAGE OCT 17 TO MAR 18)**

**AMBIENT NOISE QUALITY AT NOAMUNDI  
AVERAGE OCT 17 TO MAR 18**

	Location	Day Time 8.00 am to 10.00 pm	Limits in dB(A) Leq	Night Time 8.00 am to 10.00 pm	Limits in dB(A) Leq
Residential area	Hospital Premises	52.35	55.00	40.40	45.00
	Training Centre	52.98		39.17	
	GM's Office	51.08		37.47	
	Township	53.22		41.73	
Industrial area	Mining area	69.08	75.00	61.42	70.00
	Plant area	73.47		66.42	

  
Lab-in-charge



**Annexure X - ENVIRONMENTAL EXPENDITURE ON ENVIRONMENT SAFEGUARDS (2017-18)**

S. no.	Heads	Expenditure ( in lakhs)	
		Capital	Recurring
1	Operation of Mobile Water Sprinkling	0	144
2	Permanent Water Sprinkling	0	29.73
3	Vibration Studies	0	8
4	Optimising of blasting parameter to reduce Sp. Explosive Consumption	30	0
5	Maintanance of Capacity enhancement of tailing dam	0	20
6	Cleaning of Settling pit & Garland Drain	0	15
7	Water Cooling System replaed with air cooling system in HP300	5	0
8	Channel lubrication syste implemented to reduce oil spillage	0.1	0
9	Hood provided in crusher opper at secondary	0.5	0
10	Three cabins provided for perators	2	0
11	Operation & Maintenance fif water mist gun	0	3
12	Muck Cleaning from Chec Dam and Water Tank & other sources	0	50
13	Water recycling Operation from HRT	0	106.75
14	Water recycling Operation from slime dam and check dam	0	48.8
15	Water recycling Operation from mine	0	52.08
16	Use of releaser and binder or water recovery for recycling	0	50
17	Modificatfon of wire meshes Rinse Screen with PU screen mat to reduce noise.	50	0
18	Installation of on-line proc ss water filtration system at Slime dam.	21	0
19	Study for Iron Ore recover, from Slime	100	0
20	Primary Scraper at belt co veyors	14	0
21	Rubber liner in Scrubber "B "	40	0
22	Replacement of screw classifier by high frequency screen at hydro-cyclone plant to reduce slime loss	50	0
23	Replacement of Oil type transformers to Air Type transformers	23	0
24	Installation of capacitor banks at Jig and NDCMP to reduce power loss	35	0
25	Installation of transformers oil filtration unit to reduce Used Oil generation	31	0
26	Fixing of flow meter to monitor and reduce water consumption	42.5	0
27	Water Supply distribution network maintenance	0	5
28	Operation & Maintenance of Dry fog system	0	136.6
29	Spillage material recover from conveyor belt and inside plant	0	80
30	Upkeep of dry fog system at 1000 TPH Plant	0	3.38
31	Water sprinkling job at B/BIN	9.65	0
32	Mechanised up keeping o B/BIN area	0	7.46
33	Monthly filtration of oil	0	1.99
34	AMC for centralised lube Oil system.	0	14.26
35	Housekeeping of RLS Stacker & Drains.	0	46.27
36	Three cabins provided for operators	2	0
37	Covering of Product Fine	0	7.64
38	AMC for conveyor belt maintenance	0	68.85
39	Housekeeping of OLCS area	0	38.55
40	2 rest shelter with septic tank and soak pit	26	0

41	One rest shelter with Septic tank and soak pit	13	0
42	Blo-toilets at various locations	6.15	0
43	Septic tank at Ladies rest shelter	0	0.5
44	Garbage dump at Bottom Bin canteen	1	0.15
45	Parking Lot paver block	0	1
46	One ladies Toilet at UMPS	0	2.5
47	MCC area concreting	0	8
48	NDCMP screen house concreting	0	2
49	Noamundi Hill 5 Toe wall	0	25
50	Lease line fencing NIM	0	6
51	Lease Pillar NIM	0	1.5
52	Sewer cleaning in Operational area	0	15
53	Waste oil pit at Equipment Maintenance	0	3.5
54	Shed for storing Oil drum	0	2
55	Waste oil pit at Old DB swimming pool	0	9
56	Maintenance of Solid Waste Management Township	0	73
57	Providing PCC road in camp area	0	6
58	Solid Waste management	0	16.6
59	Operation of Incineration	0	2.37
60	Environmental Monitoring (Visiontek)	0	6.8
61	Display Board AMC	0	1.52
62	Plantation	0	112.56
63	CAAQMS Maintenance	2	0
64	Water Supply distribution network maintenance (including pipeline maintenance, camp maintenance & overhead tank cleaning)	0	35
65	Operation & maintenance of water treatment plant (including cost of chemicals quality testing by third party & stamping of flow meters)	0	35.9
66	Operation & maintenance of sewage treatment plant	0	20.6
67	Mobile Water Sprinkling Maintenance	0	37.75
68	100% Change over from DG set power to OSEB Power at Katamati	0	10
69	Replacement of 250W HPSV Light with 120W LED Light (100 Nos.)	0	12.1
70	Replacement Of Conventional Light Fittings By Led Lights	0	24.41
71	Undergrounding Of Oh Lines	0	48.65
72	Replacement Of Bare Oh Conductor By Ab Cable	0	3
73	Provision Of Solar Lights (2nos)	0	2
74	Provision Of Timers To Control Outdoor Light Timing	0	0.6
75	Fixing of Energy meter to monitor in houses & Control Energy	0	8.11
76	Installation of Dry Type Transformer in place of Oil Cooled Transformer	0	0.65
77	Environmental Awaareness Events	0	25
78	Mobile Water Sprinkling Maintenance/AMC	0	13.5
79	Electricity Cost/year in Water Pump Motor	0	1.25
80	Electricity Cost/year in Air Compressor Motor	0	3
81	Operation & Annual Maintenance of Dry fog system	0	9.6
<b>Total</b>		<b>503.9</b>	<b>1523.48</b>

# Annex XI - Advertisement w.r.t. Env. Clearance of Noamundi Iron Mine



पत्रिका का नाम: दैनिक जागरण  
पता: 4/27 (अ) 4/54 (अ) 202, बारा  
दरम्यान 1.0 (अ) 1.25 (अ) 1.50 (अ)  
अंक 96 (अ) 1.80 (अ)

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दरम्यान 1.0 (अ) 1.25 (अ) 1.50 (अ)  
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पता: 4/27 (अ) 4/54 (अ) 202, बारा  
दरम्यान 1.0 (अ) 1.25 (अ) 1.50 (अ)  
अंक 96 (अ) 1.80 (अ)

शुक्रवार, 15 नवंबर 2013

पृष्ठ संख्या: 3

## डीसी के आदेश पर बीडीओ हुए रैस

बारा जिले के डीसी के आदेश पर बीडीओ हुए रैस। डीसी ने बीडीओ को सूचित किया कि वे अपने क्षेत्र में निर्धारित समय पर रैस का आयोजन करें।

## बार एसोसिएशन के चुनाव में नाम वापसी आज

बार एसोसिएशन के चुनाव में नाम वापसी आज। बार एसोसिएशन के चुनाव में नाम वापसी का दिन है।

## संबद्ध होंगे टेक्नो इंडिया व नोवामुंडी कॉलेज

संबद्ध होंगे टेक्नो इंडिया व नोवामुंडी कॉलेज। नोवामुंडी कॉलेज और टेक्नो इंडिया के बीच संबंधों का वर्णन।



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विद्यार्थियों को सूचित किया जा रहा है कि वे अपने क्षेत्र में निर्धारित समय पर रैस का आयोजन करें।

### DAV UNIVERSITY

Engineering & Technology | Commerce & Business Management | Languages & Literature | Social Sciences | Sciences

### AIMS ADMISSION NOTICE 2013-14

ATMS

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BBA BSCM BSCA BHM

### GIACR

Spot Admission

12th, 13th, 14th

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# Popovich v Spoelstra

## EARLY DAYS Heat coach confident of comeback as fans fret over James' form



▲ Miami Heat's LeBron James (6) was a shadow of himself in Game 3.

MIAMI — Erik Spoelstra, the Miami Heat coach, is confident that his team will bounce back from a 2-1 deficit in the NBA playoffs. Spoelstra, who has coached the Heat since 2008, said that his team's performance in Game 3 of the first round against the Boston Celtics was a "wake-up call" for the team. He said that his team is "not giving up" and that they are "ready to go back to work." Spoelstra also said that he is confident that his team will be able to overcome the Celtics' lead in the series. He said that his team is "not giving up" and that they are "ready to go back to work." Spoelstra also said that he is confident that his team will be able to overcome the Celtics' lead in the series.

### SHOT SELECTION

MIAMI — Heat's LeBron James, the 6'9" is listed as a great athlete, one of the most versatile players NBA has ever seen and a phenomenon. James, 31, takes a look at the game and sees a lot of things that other players who were also known for their signature shots.



▲ A video of the game shot, this is a moment as the player is looking at the shot and seeing the ball in the air. The moment of the shot is a moment of the game, and it is a moment of the game.

### RUPINDRALP HELPS INDIA SALVAGE DRAW

NEW DELHI — In a dramatic turn of events, Rupindralp Singh has helped India salvage a draw in the 10th round of the 2013 World Chess Championship. Singh, who is a former world champion, defeated his opponent in a closely fought game. The result has put India back in the lead in the tournament. Singh's victory was a significant moment for the Indian chess community, as it showed that they are still capable of competing at the highest level of the sport.

INDIA — The Indian chess team has a chance to win the 2013 World Chess Championship. The team is led by the former world champion, Vishwanath Anand. Anand has been the key player for India in the tournament. He has won several games and has helped India maintain its lead. The team is confident that they can win the championship and bring glory to India. The tournament is being held in Chennai, India, and is one of the most prestigious events in the world of chess.

### RAJASTHAN STATE MINES & MINERALS LIMITED

**Notice Inviting Tender**  
The Government of Rajasthan, through the Rajasthan State Mines & Minerals Limited, is inviting tenders for the supply of various minerals. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, Rajasthan State Mines & Minerals Limited, Jaipur. The tender documents are also available on the website of the company. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: Rajasthan State Mines & Minerals Limited, Plot No. 1, Sector 1, Jaipur-302015. The tender documents are available for purchase at the following address: Rajasthan State Mines & Minerals Limited, Plot No. 1, Sector 1, Jaipur-302015. The tender documents are available for purchase at the following address: Rajasthan State Mines & Minerals Limited, Plot No. 1, Sector 1, Jaipur-302015.

Sl. No.	Item Description	Quantity	Unit	Estimate Price (Rs.)	EMD (Rs.)
1	...	...	...	...	...
2	...	...	...	...	...
3	...	...	...	...	...

**HEALTH CARE FINANCIAL BOARD**  
TENDER NOTICE  
The Health Care Financial Board is inviting tenders for the supply of various medical equipment. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, Health Care Financial Board, New Delhi. The tender documents are also available on the website of the board. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: Health Care Financial Board, Plot No. 1, Sector 1, New Delhi-110001. The tender documents are available for purchase at the following address: Health Care Financial Board, Plot No. 1, Sector 1, New Delhi-110001.

**TATA STEEL**  
NOTICE  
Tata Steel is inviting tenders for the supply of various steel products. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, Tata Steel, Jamshedpur. The tender documents are also available on the website of the company. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: Tata Steel, Plot No. 1, Sector 1, Jamshedpur-831001. The tender documents are available for purchase at the following address: Tata Steel, Plot No. 1, Sector 1, Jamshedpur-831001.

**RYTES Limited**  
NOTICE INVITING TENDER  
RYTES Limited is inviting tenders for the supply of various construction materials. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, RYTES Limited, Jaipur. The tender documents are also available on the website of the company. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: RYTES Limited, Plot No. 1, Sector 1, Jaipur-302015. The tender documents are available for purchase at the following address: RYTES Limited, Plot No. 1, Sector 1, Jaipur-302015.

**URJANTRA CORPORATION OF INDIA LIMITED**  
NOTICE INVITING TENDER  
URJANTRA Corporation of India Limited is inviting tenders for the supply of various construction materials. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, URJANTRA Corporation of India Limited, Jaipur. The tender documents are also available on the website of the company. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: URJANTRA Corporation of India Limited, Plot No. 1, Sector 1, Jaipur-302015. The tender documents are available for purchase at the following address: URJANTRA Corporation of India Limited, Plot No. 1, Sector 1, Jaipur-302015.

**STEEL AUTHORITY OF INDIA LIMITED**  
NOTICE INVITING TENDER  
Steel Authority of India Limited is inviting tenders for the supply of various steel products. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, Steel Authority of India Limited, Jamshedpur. The tender documents are also available on the website of the company. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: Steel Authority of India Limited, Plot No. 1, Sector 1, Jamshedpur-831001. The tender documents are available for purchase at the following address: Steel Authority of India Limited, Plot No. 1, Sector 1, Jamshedpur-831001.

**GOVERNMENT OF INDIA**  
DEPARTMENT OF ATOMIC ENERGY  
DIRECTORATE OF PURCHASE & STORES  
MADRAS REGIONAL PURCHASE UNIT (MRPU)  
E-TENDER NOTICE  
The Government of India, Department of Atomic Energy, is inviting tenders for the supply of various atomic energy equipment. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, Directorate of Purchase & Stores, Madras Regional Purchase Unit, Chennai. The tender documents are also available on the website of the unit. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: Directorate of Purchase & Stores, Madras Regional Purchase Unit, Plot No. 1, Sector 1, Chennai-600001. The tender documents are available for purchase at the following address: Directorate of Purchase & Stores, Madras Regional Purchase Unit, Plot No. 1, Sector 1, Chennai-600001.

Sl. No.	Item Description	Quantity	Unit	Estimate Price (Rs.)	EMD (Rs.)
1	...	...	...	...	...
2	...	...	...	...	...

**MINOR INDUSTRIAL ENTERPRISES AUTHORITY OF INDIA**  
NOTICE INVITING TENDER  
The Minor Industrial Enterprises Authority of India is inviting tenders for the supply of various industrial equipment. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, Minor Industrial Enterprises Authority of India, New Delhi. The tender documents are also available on the website of the authority. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: Minor Industrial Enterprises Authority of India, Plot No. 1, Sector 1, New Delhi-110001. The tender documents are available for purchase at the following address: Minor Industrial Enterprises Authority of India, Plot No. 1, Sector 1, New Delhi-110001.

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NOTICE INVITING TENDER  
The Minor Industrial Enterprises Authority of India is inviting tenders for the supply of various industrial equipment. The tenders are to be submitted by the deadline date mentioned in the tender documents. The tender documents are available for purchase at the office of the Tender Officer, Minor Industrial Enterprises Authority of India, New Delhi. The tender documents are also available on the website of the authority. The tender documents are in Hindi and English. The tender documents are available for purchase from 10.00 AM on 15.06.2013 to 05.00 PM on 17.06.2013. The tender documents are available for purchase at the following address: Minor Industrial Enterprises Authority of India, Plot No. 1, Sector 1, New Delhi-110001. The tender documents are available for purchase at the following address: Minor Industrial Enterprises Authority of India, Plot No. 1, Sector 1, New Delhi-110001.

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