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The Addnl. PCCF
Eastern Regional Office
Ministry of Environment & Forests
Govt. of India
A/3 Chandrasekharpur
Bhubaneswar – 751 013

MD/ENV/ 212 /101/14
30th May, 2014.

Ref : Environmental clearance letter No.J-11015/104/2011.IA.II(M), Dated: 10th June, 2013.

Dear Sir

Sub: Half-yearly compliance status of environmental clearance conditions for the period October 2013 to March 2014 in respect of Noamundi Iron Mine.

With reference to above environmental clearance, we are submitting herewith the compliance status of the stipulated conditions there in, for the period October 2013 to March 2014 in respect of Noamundi Iron Mine for your kind perusal.

As required, the soft copy of the report has also been emailed in the ID: mef.or@nic.in.

Thanking you

Yours faithfully

Atsena Kashyap

f Head (Planning), OMQ

Encl : As above

Copy to : Addnl. Director(S), MoEF, Govt of India, CGO complex, Lodhi Road, New Delhi -110003
: Chairman, CPCB, Paribesh Bhawan, East Arjun Nagar, New Delhi – 110032
: Member Secretary, Jharkhand Pollution Control Board, TA Building, Ranchi-834004
: Regional Officer, SPCB, MB/12 New Housing Colony Adityapur, Jamshedpur

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Compliance
to
Environmental Clearance Conditions
of
Noamundi Iron Mine
M/s. Tata Steel Limited

For the period: October 2013 to March 2014

Environment Clearance letter No. J-11015/104/2011-IA.II (M), Dated. 10th June, 2013 of Noamundi Iron Mine, for production of 10 MTPA (ROM) & beneficiation of 18 MTPA throughput of Iron Ore.

Half yearly compliance report for the period March 2014 to March 2015

A. Specific Conditions

Sl. No	Specific Condition	Compliance status
i.	No mining activities will be allowed in forest area for which the Forest Clearance is not available.	Presently, mining operation is being carried out in the non-forest area of 397.63 ha and forest area of 370.92 ha for which Stage 6I (In principle approval) approval has already been obtained with one year working permission vide letter No. 8-279/1985-FC(Pt), dated. 6 th Sept, 2013.
ii.	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 their 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.	Besides the above Stage 6I clearance for 370.92 ha of forest land, DRP has also been submitted for diversion of 383.37 ha of forest land, leaving a total forest area of 8.14 ha for safety zone.
iii.	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	No specific clearance under the Wildlife (Protection) Act, 1972 is required for the project.

Sl. No	Specific Condition	Compliance status
iv.	<p>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 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 and Forests shall not be responsible in this regard in any manner.</p>	<p>◁ Though the project area falls within the core zone of Singhbhum Elephant Reserve, prior EC is no more 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. However, prior to grant of this EC, Company has submitted a plan for approval of NBWL with an undertaking to bear the proportionate cost towards the execution of comprehensive Wildlife Management plan to be prepared by the state Govt.</p>
v.	<p>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.</p>	<p>◁ Consent to Establish has been obtained from the Jharkhand State Pollution Control Board vide letter no. PC/NOC/JSR/26/12/G3959, dated 23.10.2013.</p> <p>◁ Consent to Operate has also been obtained from State Pollution Control Board, Jharkhand vide letter No. PC/JSR/Air/N-11/02-G-4971, dated 19.12.2013 and the consent order is valid till 31st Dec 2014.</p> <p>◁ All the conditions are being effectively implemented.</p>
vi.	<p>Environmental clearance is subject to final order of the <i>J q p ø d n g " U w r t g o g " E q w t</i> Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.</p>	<p>◁ There is no National Park, Sanctuaries, Elephant corridor and tiger reserves within 10 Km radius of the core zone.</p> <p>◁ An authenticated map showing distance of all these ecologically sensitive areas from the mine has already been submitted with MoEF, New Delhi.</p>
vii.	<p>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.</p>	<p>◁ As a part of ambient air quality monitoring, R&D department has been engaged for analysis of mineralogical composition of air samples.</p>
viii.	<p>The beneficiated ore shall be transported to railway sidings only through closed conveyor.</p>	<p>◁ The beneficiated ore are transported to railway siding through existing covered conveyors, those already exist.</p>

Sl. No	Specific Condition	Compliance status
ix.	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 Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	<ul style="list-style-type: none"> ◁ Regular water sprinkling is done on the haul roads, loading & unloading points for effective dust suppression. ◁ Fixed water sprinklers have been put into operation on the main haul road of length 1600 m and dust suppressants are added into the sprinkling water for effective dust suppression. ◁ Ambient air quality is monitored regularly and the results are well within the limit prescribed. The results are also sent to the JSPCB office, Ranchi.
x.	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.	<ul style="list-style-type: none"> ◁ As a step towards conservation of ground water, it is not used for mining operation purpose. ◁ Further, the rain water collected in the mine pits during monsoon is not pumped out. Rather, it is allowed to be collected in the lowest level sumps to augment the ground water resources gradually. ◁ Moreover, rain water harvesting ponds and ground water recharge structures have been constructed and approved by the Ground Water Directorate, Jharkhand, Ranchi. ◁ The rain water harvesting plan has also been submitted for approval of Regional Director, CGWB, Patna, vide letter No. MD/ENV/259/101/2013, dated: 02.07.2013.
xi.	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 Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	<ul style="list-style-type: none"> ◁ Ground water quality is monitored regularly by engagement of the expertise of IIT, Kharagpur during four times a year. ◁ The results are sent to Regional Office, MoEF and SPCB, Bhubaneswar once in every six months. ◁ The monitoring results of Ground water quality & Ground water level are annexed as <u>Annexure 0I & II.</u>

Sl. No	Specific Condition	Compliance status
xii.	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.	<ul style="list-style-type: none"> ◁ Our mining operation is restricted 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.
xiii.	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.	<ul style="list-style-type: none"> ◁ No natural watercourse or water resources are obstructed due to our mining operations. The Balijore Nallah is left undisturbed and protected.
xiv.	The project proponent shall regularly monitor the flow rate of the Balijore Nallah flowing through the mine lease and maintain the records.	<ul style="list-style-type: none"> ◁ We are regularly monitoring the flow rate of the Balijore Nallah. ◁ The report is being sent to the JSPCB, Ranchi once in every month.
xv.	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.	<ul style="list-style-type: none"> ◁ 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. ◁ Compliance status is being submitted regularly to the Ministry of Environment & Forest and its Regional Office located at Bhubaneswar once in every six months.
xvi.	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, 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 desilted 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 desilted at regular intervals.	<ul style="list-style-type: none"> ◁ Garland drains of total running meterage of 670 meters with settling pits, have been constructed all along the OB dumps to prevent run off of water and flow of sediments directly into the natural stream. ◁ Series of check dams have also been constructed across the Balijore Nallah which flows through the mining lease. The de-siltation of these check dams 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 desilted regularly before and after the monsoon.

Sl. No	Specific Condition	Compliance status
xvii.	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.	<ul style="list-style-type: none"> ◁ Retaining wall and Garland drains have been constructed around the OB dumps to check mine run-off. Size of the retaining walls is sufficient to take care of the surface water flow during peak rain fall.
xviii .	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.	<ul style="list-style-type: none"> ◁ 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 in progress and shall be completed within next two years. ◁ Further, plantation is being carried out by native species on the dump slopes and along the side of the roads. Till the end of March 2014, a total of 19,22,666 nos. of saplings have been planted over an area of 366.765 ha both within and outside the mine lease with native species. Besides those, Vetiver plantation has also been carried out over 0.4 ha area with 30000 slips. ◁ The tree density has been maintained at the rate of 5242 plants per ha.
xix.	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.	<ul style="list-style-type: none"> ◁ Regular water sprinkling is being carried out by use of mobile water sprinklers around the crushing and screening plant, loading & unloading area and haul roads. ◁ In addition, fixed water sprinkling has been installed over a length of 1.6 km on haul road. ◁ Regular monitoring of Ambient Air quality is being done and the results are within the permissible limits as prescribed by the Central Pollution Control Board.
xx.	Mine water discharge and/or any waste water shall be properly treated to meet the prescribed standards before reuse/discharge. The runoff from temporary OB dumps and other surface run off shall be analysed for iron and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.	<ul style="list-style-type: none"> ◁ There is no waste water discharge from the mine. The decanted water from the zero discharged slime dam is completely recycled back to the beneficiation plant. ◁ The water quality of Balijore Nallah is analyzed thrice in every season and report is sent to SPCB, Jharkhand, once in every six months. ◁ The Iron content of same is well within the standard limit of 0.3 mg / liter.

Sl. No	Specific Condition	Compliance status
xxi.	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.	<p>◁ The slime is stored in the zero discharge slime ponds. The decanted water from the slime ponds is completely recycled back to beneficiation plant established within the mining lease area ensuring zero outside discharge.</p>
xxii.	Regular monitoring of the flow rate of the springs and perennial nallahs shall be carried out and records maintained.	<p>◁ Monitoring of flow rate of Balijore nallah flowing at the side of the mining lease is being carried out and records maintained.</p>
xxiii	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, Bhubaneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	<p>◁ Water quality monitoring of Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah, are being carried out and record of monitoring data maintained.</p> <p>◁ The results, so obtained are sent to Regional office, MoEF, Jharkhand State Pollution Control Board, Ranchi and Central Pollution Control Board.</p>
xxiv.	Appropriate mitigative measures shall be taken to prevent pollution of Baitarni River, if any, in consultation with the State Pollution Control Board.	<p>◁ 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.</p> <p>◁ 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.</p>
xxv.	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.	<p>◁ Ground water is not being used for mining operations. At present, we have permission for drawl of 9786 KL / day of surface water and our operation is being managed well within that quantity.</p> <p>◁ However, for increased requirement, we have applied for drawl of 29000 KL/day of water vide our letter No. MD/LO/98/227, dated 24.08.07 and it under consideration of State Govt..</p>

Sl. No	Specific Condition	Compliance status
xxvi.	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	<p>◁ Water conservation measures are continued. A pond is in use within our botanical park for collection of rain water during monsoon and the same is used for gardening purpose.</p> <p>◁ Further, 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.</p> <p>◁ Rain Water Harvesting pond has also been constructed in the Mohudi village, which falls in the core zone of the mine.</p>
xxvii .	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.	<p>◁ Regular vehicular emission testing is being conducted once in every six months. The vehicles those who do not meet the emission standard, are withdrawn from operation and maintained properly.</p> <p>◁ A vehicle is kept abeyance from operation till it does not meet the emission standard. Also, the vehicles are not run overloaded.</p>
xxvii i.	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.	<p>◁ Blasting is carried out during day time only.</p> <p>◁ Controlled Blasting is carried out for control of ground vibrations and to arrest fly rocks, as per the recommendations of CIMFR, Dhanbad.</p>
xxix.	Drills shall either be operated with dust extractors or equipped with water injection system.	◁ Wet drilling is in practice. All drills have been provided with dust suppression system.
xxx.	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.	<p>◁ Effective and high efficiency dust extraction system is in place at the mineral handling plant. Loading and unloading areas including transfer points have been provided with dust suppression facilities.</p> <p>◁ Further, the dust extraction and suppression system are maintained properly for effective dust control.</p>
xxxii.	Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine.	◁ Consent to operate has been obtained for production of 10 MTPA (ROM) for the year 2013 vide letter no. PC/JSR/Air/N-11/02-G-4971, dated 19.12.2013 from the State Pollution Control Board, Jharkhand.

Sl. No	Specific Condition	Compliance status
xxxii	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	<p>◁ As per the topography of the residential area, installation of single sewage treatment plant is not feasible. However, the sewage water is effectively taken care by the septic tanks and soak pits and no sewage water goes outside.</p> <p>◁ Further, action has been initiated to install u o c n n " e c r c e k v { " o q f different locations in the colony for treatment of sewage water. As a result, two small capacity STPs have already been installed in the colony and there is plan to install more STPs in coming years.</p> <p>◁ For waste water from workshop, oil and grease separation pits are provided. Further, no waste water is generated from the mining and plant operations are discharged beyond the lease boundary and hence require no treatment.</p>
xxxii i.	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, Bhubaneswar.	◁ Digital processing of the entire lease area using remote sensing technique was carried out during 2012 by engagement of the expertise of Ecomen Laboratory Pvt. Ltd., Lucknow. The copy of the land use pattern is attached as <u>Annexure 6VIII.</u>
xxxii v.	Regular monitoring of ambient air quality including free silica shall be carried out and records maintained.	<p>◁ Ambient air quality is regularly monitored and records maintained. The results are attached as <u>Annexure 6III.</u></p> <p>◁ Analysis of free silica is also carried out by the help of our R&D Department at Jamshedpur.</p>
xxxv .	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.	<p>◁ Pre-placement medical examination and periodical examination of the workers engaged are being conducted & record maintained.</p> <p>◁ 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 40 years.</p>

Sl. No	Specific Condition	Compliance status
xxxv i.	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.	<p>◁ Tata Steel is taking all the precautionary measures towards conservation and protection of endangered flora and fauna.</p> <p>◁ The endangered species such as wolf, sloth bear etc. are never or very rarely seen in the area.</p> <p>◁ However, 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.</p> <p>◁ 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.</p> <p>◁ 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.</p>
xxxv ii.	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.	<p>◁ A progressive mine closure plan approved by IBM is in place.</p> <p>◁ 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.</p>

B. General Conditions

Sl No.	General Conditions	Compliance Status/ Action Plan															
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	◁ No change in mining technology and scope of working shall be made; and adhered to the condition of MoEF.															
(ii)	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.	<p>Calendar plan prepared for the mine is being strictly adhered to. The production achieved during 2013-14 is as given below.</p> <table border="1"> <thead> <tr> <th></th> <th>Plan</th> <th>Actual</th> </tr> </thead> <tbody> <tr> <td>ROM</td> <td>10.00</td> <td>5.37</td> </tr> <tr> <td>OB,Waste</td> <td>0.85</td> <td>0.51</td> </tr> <tr> <td>Sub-Grade</td> <td>1.20</td> <td>0.80</td> </tr> <tr> <td>Total Excavation</td> <td>12.05</td> <td>6.68</td> </tr> </tbody> </table>		Plan	Actual	ROM	10.00	5.37	OB,Waste	0.85	0.51	Sub-Grade	1.20	0.80	Total Excavation	12.05	6.68
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Sl No.	General Conditions	Compliance Status/ Action Plan
(iii)	At least four ambient air quality-monitoring stations 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 environmentally 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 regularly being carried out at four different stations within the core zone. The stations were located in consultation with the visiting officers of State Pollution control Board, Jharkhand.</p> <p>◁ The ambient air quality reports are submitted to Regional office, MoEF, Bhubaneswar and SPCB, Jharkhand, once in every six months.</p> <p>◁ The results so obtained are attached as <u>Annexure- IV.</u></p>
(iv)	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.	<p>◁ Regular noise monitoring is being done. High noise areas are earmarked and people working there are provided with ear protection equipments.</p> <p>◁ Noise monitoring data is attached as <u>Annexure- V.</u></p> <p>◁ People engaged in noisy operations are administered audiometric test annually.</p>
(v)	There will be zero waste water discharge from the plant.	<p>◁ Oil & Grease separation pits have been provided to take care of effluents from the workshop. The water quality of the workshop effluent is monitored regularly and the parameters meet the prescribed standard.</p> <p>◁ The result of workshop effluent is enclosed as <u>Annexure- VI.</u></p> <p>◁ There is no waste water generation from the mines.</p>
(vi)	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>◁ Adequate dust masks are provided to employees engaged in dusty areas. It is also ensured that they use the same. Respirable dust survey at different locations is done regularly.</p> <p>◁ The employees are also given regular awareness training on safety and health aspects as part of implementation process of OHSAS 618001 & SA 8000 systems.</p>
(vii)	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.	<p>◁ Periodical Medical Examination of employees and contractor workers are organized regularly to observe any contractions due to exposure to dust and other occupational hazards.</p> <p>◁ Further, employees undergo Lung Function Tests during the Periodical Medical Examination.</p>

Sl No.	General Conditions	Compliance Status/ Action Plan
(viii)	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.	<p>◁ A separate environmental management cell is in place with the people having relevant qualification on environmental science.</p> <p>◁ The Head of the environment department reports to the General Manager i.e. the regional head of the organization.</p>
(ix)	The funds earmarked for environmental protection 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.	<p>◁ Funds allocated for environmental management are spent only for environment related purposes and not diverted to any other purpose.</p> <p>◁ During the year 2013-14 an amount of Rs.1035.70 lakhs (approx.) was spent towards environmental protection measures at Noamundi Iron Mine. Details of expenditure are attached as <u>Annexure - VII.</u></p>
(x)	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.	◁ This is a running mine. No specific date of start of land development work can be assigned. However, the copy of the Environmental Clearance has been sent to the Regional Office, MoEF, Bhubaneswar for necessary information.
(xi)	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.
(xii)	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.	<p>◁ Six monthly compliance reports are being submitted regularly on the status of implementation of the stipulated environmental safeguards to the MoEF, its Regional Office Bhubaneswar, Central Pollution Control Board Kolkata and State Pollution Control Board Jharkhand.</p> <p>◁ Further, the six monthly compliance report along with the monitoring results are w r n q c f g f " k p " V c v c www.tatasteel.com and updated periodically.</p>

Sl No.	General Conditions	Compliance Status/ Action Plan
(xiii)	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.	<p>◁ A copy of Environment Clearance has been sent to the nearby Panchayats & Zila Parisad, Chaibasa.</p> <p>◁ Further, copy of EC letter has also been uploaded on the Tata Steel website, www.tatasteel.com.</p>
(xiv)	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the C q n n g q h h k e g l " V g j u k n f c t ø u " Q	Complied
(xv)	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by email.	<p>◁ The environmental statement for financial year 2012-13 has been submitted to the State Pollution Control Board on vide letter no. MD/ENV/362/120/13 dated 18.09.2013 and the same has been hosted on C q o r c website www.tatasteel.com.</p> <p>◁ Further, compliance status on environmental clearance conditions was also sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail on 31st May, 2014.</p>
(xvi)	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 http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	<p>◁ Details of Environment Clearance with regard to Noamundi Iron Mine were published both in English and Hindi in local newspapers named ò V j g " J k p f w c p f " ò F c k p respectively ont 15th June, 2013.</p> <p>◁ The copy of the newspaper advertisement was sent to the Regional Office, MoEF, Bhubaneswar vide our letter no. MD/ENV/245A/101/ 2013, dated. 19th June, 2013.</p>

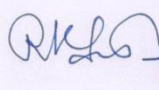
Ground Water Quality Report
Noamundi Iron Mine
TATA STEEL
(As per BIS 10500:1991)

**Ground Water Quality Report at various locations around
NOAMUNDI IRON MINE
TATA STEEL
(As per BIS 10500: 1991)**

Date of Sampling: 24th November 2013

Sl No.	Parameter	Permissible Limits	OW* Rly Stn (N3)	OW* Noamundi Basti (N4)
1	pH	6.5-8.5	8.18	7.42
2	Chloride, ppm	250	16.95	6.21
3	Iron, ppm	0.3	0.22	0.20
4	Fluoride, ppm	0.6-1.2	0.81	0.92
5	TDS, g/l	500	25.82	23.13
6	EC, ms/m	600	158.16	167.51
7	Sulphate	400	13.89	12.62
8	Nitrate	45	10.24	5.16
9	Calcium, ppm	200	20.15	13.60
10	Magnesium, ppm	30	14.75	12.38
11	Arsenic, ppm	0.05	0.010	0.005
12	Manganese, ppm	0.1	0.019	0.013
13	Zinc, ppm	5	0.025	0.017
14	Chromium, ppm	0.05	0.004	0.007
15	Lead, ppm	0.05	0.002	0.004
16	Microbial count (CFU/ml) after 24 h	10	Nil	Nil

*OW: Open well


27/12/13

Dr. R. K. PANDA
Professor
Deptt. of Agricultural & Food Engg.
Indian Institute of Technology
Kharagpur - 721302, India

Ground Water Quality Report
Noamundi Iron Mine
TATA STEEL
(As per BIS 10500:1991)

Ground Water Quality Report
NOAMUNDI IRON MINE
TATA STEEL
(As per BIS 10500: 1991)

Date of Sampling: 20th February 2014

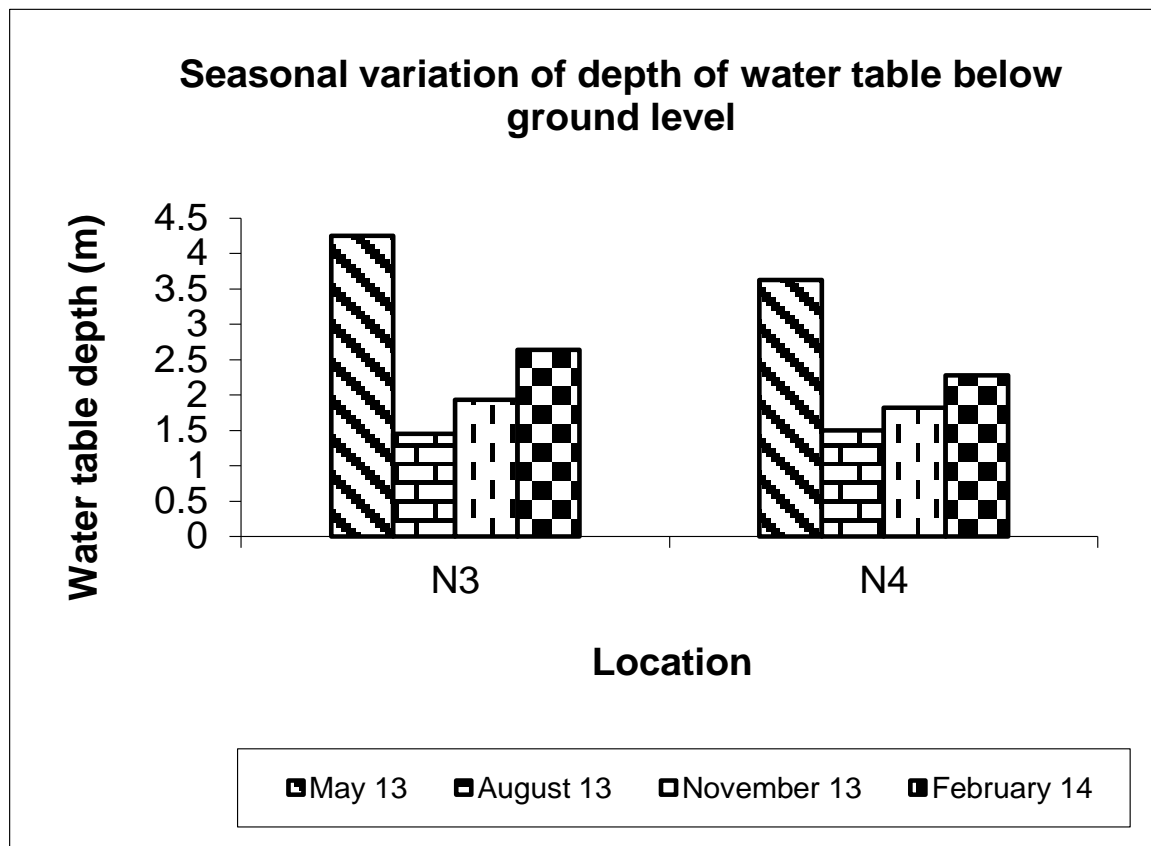
Sl No.	Parameter	Permissible Limits	OW* Rly Stn (N3)	OW* Noamundi (N4)
1	pH	6.5-8.5	8.16	7.69
2	Chloride, ppm	250	16.87	7.14
3	Iron, ppm	0.3	0.18	0.22
4	Fluoride, ppm	0.6-1.2	0.65	0.71
5	TDS, g/l	500	27.58	24.24
6	EC, ms/m	600	154.35	159.76
7	Sulphate	400	14.87	12.15
8	Nitrate	45	10.12	5.13
9	Calcium, ppm	200	23.29	14.16
10	Magnesium, ppm	30	14.84	12.48
11	Arsenic, ppm	0.05	0.006	0.004
12	Manganese, ppm	0.32	0.048	0.013
13	Zinc, ppm	5	0.052	0.017
14	Chromium, ppm	0.05	0	0
15	Lead, ppm	0.05	0.003	0.004
16	Microbial count (CFU/ml) after 24 h	10	Nil	Nil

*OW: Open Well

R.K. Panda
27/3/14

Dr. R. K. Panda
Professor of Land & Water Resources Engg.
Deptt. of Agricultural & Food Engg.
Indian Institute of Technology
Karagpur-721302, India

NOAMUNDI IRON MINE
TATA STEEL LIMITED



N3 Well near Railway Station
N4 Well at Noamundi basti

J. Brahma

AVERAGE AIR QUALITY REPORT
Noamundi Iron Mine

Month	Industrial area												Residential area											
	Mining Site						Bottom Bin						q • Á U ~ ~ ã & ^						Near Hospital					
	PM ₁	PM _{2.5}	SPM	SO ₂	NO _x	CO	PM ₁	PM _{2.5}	SPM	SO ₂	NO _x	CO	PM ₁	PM _{2.5}	SPM	SO ₂	NO _x	CO	PM ₁	PM _{2.5}	SPM	SO ₂	NO _x	CO
Oct 13	37.9	19.1	128.3	7.80	7.99	ND	q H ĩ	18.3	123.5	7.70	7.88	ND	31.8	13.3	103.8	7.18	7.35	ND	31.1	12.5	100.5	7.23	7.29	ND
Nov 13	53.3	34.6	177.3	9.33	9.66	ND	52.1	33.5	170.8	9.21	9.51	ND	41.1	23.0	135.8	8.11	8.43	ND	38.6	20.0	127.5	7.99	8.30	ND
Dec 13	56.0	37.3	187.3	9.60	9.99	ND	54.0	35.9	176.8	9.40	9.74	ND	43.4	25.0	144.0	8.34	8.61	ND	40.3	22.0	134.0	8.08	8.36	ND
Jan 14	56.3	38.3	186.0	9.61	9.91	ND	55.8	37.6	184.0	9.58	9.91	ND	44.1	25.8	146.5	8.41	8.73	ND	42.3	23.6	140.0	8.23	8.51	ND
Feb 14	59.1	41.6	199.0	9.91	10.2	ND	58.5	41.1	197.5	9.85	10.1	ND	45.8	28.0	150.0	8.58	8.95	ND	43.3	25.6	144.3	8.31	8.65	ND
Mar 14	58.1	40.8	195.3	9.93	10.3	ND	55.8	37.6	185.8	9.63	10.0	ND	43.8	25.4	141.8	8.45	8.80	ND	41.6	23.1	135.3	8.21	8.55	ND

Unit of measurement for all parameters except CO: $\mu\text{g}/\text{m}^3$ or mg/m^3

J. Abraham

Labin-charge

RESPIRABLE DUST SURVEY
 Mine : Noamundi Iron Mine Winter 2013-14

(Respirable Dust assessed with Personal Dust Sampler)
 (100% cut off at 7 microns unit density spheres)

Date	SI No	Location	Level mg/cu.m	Standard as prescribed by DGMS	Remarks
03.12.13	01	Primary Crusher	2.06	3.00 mg/cu.m	Within limit
09.12.13	02	Scalp Screen	1.94	3.00 mg/cu.m	Within limit
15.12.13	03	Secondary crusher	2.08	3.00 mg/cu.m	Within limit
23.12.13	04	DCMP Hopper	2.11	3.00 mg/cu.m	Within limit
04.01.14	05	DCMP screen floor	2.05	3.00 mg/cu.m	Within limit
11.01.14	06	Drill 1 meter away	1.72	3.00 mg/cu.m	Within limit
17.01.14	07	Shovel 1m away	1.63	3.00 mg/cu.m	Within limit
24.01.14	08	Dumper (cabin)	0.50	3.00 mg/cu.m	Within limit
06.02.14	09	Bottom Bin screen	2.19	3.00 mg/cu.m	Within limit
13.02.14		Bottom floor of screen house	2.21	3.00 mg/cu.m	Within limit
24.02.14		Loading Station control room	0.54	3.00 mg/cu.m	Within limit

J. Braaker

Lab Incharge

**AMBIENT NOISE QUALITY AT NOAMUNDI
AVERAGE OCT 13 TO MAR 14**

	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	52.30	55.00	41.78	45.00
	Training Centre	51.07		40.95	
	Õ T q • Á U ~	51.37		40.70	
	Township	53.22		42.17	
Industrial area	Mining area	70.82	75.00	63.38	70.00
	Plant area	73.82		67.72	

J. Braalson

LabIn-charge

Noamundi Iron Mine
Workshop Effluent Quality
Oct 13 Mar 14

Parameter	Noamundi Central Worksh		Noamundi Equipment Maintenance	Limit
	Washing Yard	MOR sectio		
pH	6.20	6.22	6.18	5.5 9.0
Suspended Solids mg/l	63.28	61.60	62.72	100.00
Oil & Grease mg/l	7.33	7.52	7.56	10.00

Jubraaker.

ANNUAL ENVIRONMENTAL EXPENDITURE
Noamundi Iron Mine
2013/14

Sl No	Heads	Amount (Rs. in lakhs)
01	Maintenance of dry fog system	2.90
02	Maintenance and operation of mobile water sprinkler	46.90
03	Maintenance of wet drill	8.10
04	Maintenance of recycling pit	1.80
05	Use of flocculants/chemical in thickener / slime dam	190.00
06	Maintenance and capacity enhancement of slime ponds	212.00
07	Recycling of slime water	14.00
08	Use of offline filtration unit for hydraulic oil in shovel	8.00
09	Recycling of lubricant oil	0.45
10	Maintenance of oil separation pit	1.50
11	Construction & maintenance of garland drains/toe walls	1.40
12	Implementation of EMP for reduction of diesel consumption	48.00
13	Replacement of diesel operated equipment (installation of UMPS)	320.00
14	Installation of solar lights	35.00
15	Construction and maintenance of rain water harvesting for Noamundi	100.00
16	Horticulture and plantation	4.90
17	Celebration of MEMC Week & Environment day	2.65
18	Maintenance of electronic display board	1.20
19	Environment Monitoring	7.20
20	Vetiver plantation	1.40
21	Installation of PVC doors	20.00
22	Concreting of equip. Maintenance floor	5.00
23	Ground vibration study	3.30
	Total	1035.70

**LAND USE / LAND COVER MAP
OF NOAMUNDI IRON MINE OF M/S TATA STEELS LIMITED
USING HIGH RESOLUTION CARTOSAT SATELITE DATA**



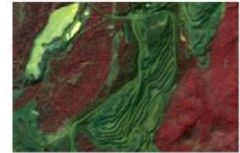
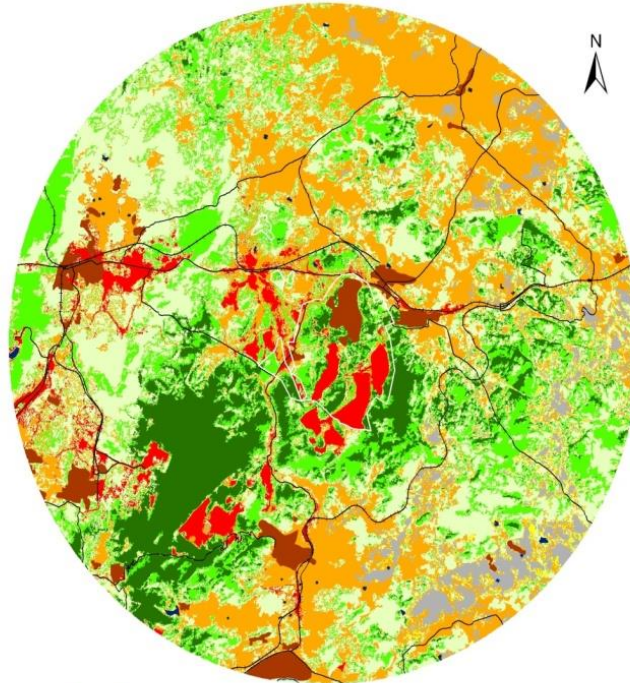
DENSE FOREST



OPEN FOREST



DEGRADED FOREST



MINING AREAS



SCRUB LAND WITH OR WITHOUT SCRUB



BARREN ROCKY AREA

Legend

- | | | |
|-----------------|--------------------|----------------|
| DENSE FOREST | AGRICULTURAL LAND | SETTLEMENTS |
| OPEN FOREST | BARREN ROCKY AREA | LEASE BOUNDARY |
| DEGRADED FOREST | MINING AREAS | ROADS |
| SCRUB LAND | RIVER/WATER BODIES | RAILWAY LINES |

0 2 4 6 Kilometers

ECOMEN LABORATORIES(P) LTD., LUCKNOW

Photographs of Rain Water Harvesting facility
Noamundi Iron Mine



RWH at Balijore camp

RWH at Central camp