The Addnl. PCCF
Eastern Regional Office
Ministry of Environment, Forests & Climate Change,
Govt. of India
A/3, Chandrasekharpur
Bhubaneswar–751 013 (Odisha)

MD/ENV/489/102/16
Date: 29.11.2016

Ref: Environmental Clearance letter no. J-11015/215/2008-IA.II(M) dated: 11.03.2013

Sub: Half-yearly compliance status report of Environmental Clearance conditions for the period April'16 - September'16 in respect of Joda East Iron Mine.

Dear Sir,

We are herewith submitting the six monthly compliance report in respect of the stipulated Environmental Clearance conditions of Joda East Iron Mine for the period from **April'16 - September'16** as per EIA Notification, 2006. We are also sending you the soft copy of the report to your good office on email: mef.or@nic.in for your ready reference.

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

Thanking you,
Yours faithfully,

f: TATA Steel Limited

Head (Planning), OMQ

Encl : As above

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

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

COMPLIANCE REPORT PERIOD: APRIL'2016 - SEPTEMBER'2016

ENVIRONMENTAL CLEARANCE TO
JODA EAST IRON MINE OF TATA STEEL LIMITED
VIDE MoEF's LETTER NO. J-11015/215/2008-IA.II(M), DATED: 11.03.2013
FOR PRODUCTION OF 12 MTPA (ROM) OF IRON ORE

Specific Conditions:

Sl. No.	Condition	Compliance
1	No mining activities will be allowed in forest area for which the FC is not available.	The present mining operation is restricted within 567.087 ha of forest land for which Forest Clearance has been obtained under the Forest (Conservation) Act, 1980 vide letter no. F. No. 8-32/1993-FC (vol-II) dated: 24.09.2007.
2	The project proponent shall seek and obtain approval under the FC Act for diversion of the entire forest land located within the mining lease within a period of two years w.e.f. 01.02.2013, 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 MoEFCC regarding this matter in which guidelines of letter F. No. 11-362/ 2012-FC dated: 01.02.2013 have been supressed. At present, mining operation is restricted within 567.087 ha of forest area for which due approval for diversion has already been obtained. In addition, we have also submitted fresh DRP for 41.819 ha (32.435 ha forest area and 9.394 ha safety zone).
3	The project proponent shall abide by the guidelines dated: 01.02.2013 vide no. 1-362/12012-FC put in place by the FC Division of MoEFCC in respect of cases of mines where at present the forest clearance is available to only a part of the forest land involved in the mine.	New Guidelines for Forest Diversion Proposal by FC vide there letter F. No. 11-599/ 2014-FC dated: 01.02.2013 has been issued by MoEFCC regarding this matter in which guidelines of letter F. No. 11-362/ 2012-FC dated: 0l.02.2013 have been supressed. As per guidelines of letter vide no. 11-362/12012-FC dated: 01.02.2013 the mine has applied for diversion of entire forest area.

Sl. No.	Condition	Compliance
4	Environmental clearance is subject to obtaining Clearance as may be necessary under the Wildlife (Protection) Act, 1972 from the competent authority	No specific clearance under the Wildlife (Protection) Act, 1972 is required for the project.
5	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board., Orissa and effectively implement all the conditions stipulated therein.	Consent to Establish has been obtained from OSPCB vide letter no. 21271/IND-II-NOC-5144 dated: 08.07.2011. Consent to Operate has also been obtained from State Pollution Control Board, Orissa vide letter No. 1484/IND-I-CON-184 dated: 19.01.2016 and the consent order is valid till 31.03.2021.
6	The Company shall submit Within 3 months their policy towards Corporate Environment Responsibility which should inter-alia provide for (i) Standard operating process /process to bring into focus any infringement /deviation / violation of the environmental or forest norms/ conditions, (ii) Hierarchical system or Administrative order of the Company to deal with the environmental issues and for ensuring compliance With the EC conditions and (iii) System of reporting of non-compliances /violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders.	Details on Tata Steel's Policy on corporate Environment Responsibility and other requirements have been submitted to the MoEFCC vide letter no. MD/ENV/233A/102/2013 dated: 08.06.2013. Tata Steel Environmental Policy is attached as **Annexure-I**.
7	The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	The mining operation is restricted above the ground water table. There has been no intersection of ground water table. The lowest working depth of our mine pits is at 612 m RL, whereas the presence of ground water table has been estimated to be at 492 mRL. A detailed hydro-geological study was carried out for the purpose.
8	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations.	No natural watercourse or water resources are obstructed due to our mining operations. Further, no first order or the second order streams are emanating.
9	The top soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The	There has been no generation of top soil during the period. Whatever top soil generated before was stacked at earmarked

Sl. No.	Condition	Compliance
	topsoil shall be used for land reclamation and plantation.	place and has already been used for plantation purpose.
10	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.	As a part of Ambient Air Quality monitoring, air samples are being analysed for mineralogical composition. Mineralogical Composition details of Joda East Iron Mine for the period April'2016-Sep'2016 are attached as **Annexure-II.**
11	The water recovery and spill way system shall be so designed that the natural water resources are not affected and that no spill water from the plant goes into the Kundra nallah or any other water body.	The water recovery and spill way system has been designed such that the natural water resources are not affected and no spill water from the mine goes beyond the lease boundary. The slime is stored in the zero discharge slime pond. The decanted water from the slime pond is completely recycled back to beneficiation plant within the mine, ensuring zero outside discharge Photographs are attached as **Annexure-III.**
12	The filter cake shall be disposed at the earmarked site, which shall be above highest water table and shall be lined to prevent any leaching from the filter cake disposal site into groundwater. Efforts shall also be made to gainfully utilize the filter cake so generated in an environmentally compatible manner.	There is no filter cake generation in our operations.
13	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.	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 3200m in addition to two 40 KL & one 28 KL mobile water tankers and dust suppressants are added into the sprinkling water for effective dust suppression. Photographs of Mobile and Fixed water sprinklers are attached as **Annexure-IV.** Ambient Air Quality is monitored regularly and the results are well within the limit prescribed. The results are also sent to the OSPCB, Bhubaneswar once in every month. AAQ monitoring report is attached as **Annexure-V.**

Sl. No.	Condition	Compliance
14	The over burden (OB) generated during the mining operation shall be stacked at earmarked dump site(s) only and should not be kept active for long period. There shall be one external OB dump having maximum projected height of 30m with three terraces of 10m each. The overall slope of the dump shall not exceed 27°. The OB dump should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	The OB and minerals rejects are being dumped as per the mining plan and at earmarked dumping area only. The slopes of the OB dumps are terraced and the overall slope is maintained. The inactive dump slopes are vegetated with native species. The compliance status report is regularly sent to the Regional office, MoEFCC, Bhubaneswar and SPCB, Orissa once in every six months. Photograph of OB dump plantation is attached as **Annexure-VI.**
15	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working, soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted particularly after monsoon and maintained properly. Garland drain of appropriate size, gradient and length shall be constructed for both mine pit and OB dump 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 should be constructed at the corners of the garland drains and designed at regular intervals.	Garland drains of running meterage of 2010 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. Sedimentation pits of total 11 Nos. have been constructed at the corner of the garland drains to take care of runoff water even during peak rain fall and they are de-silted regularly before and after monsoon. Photograph of Garland drain, settling ponds along toe wall and Sedimentation pit are attached as **Annexure-VII.**

Sl. No.	Condition	Compliance
16	Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.	Retaining walls of dimension 1mx1mx0.6m and running meterage of 2340 meters have been provided at the toe of over burden dumps to check run-off. Moreover, another layer of toe wall covering 1000m length has been provided all along the existing toe walls for better effectiveness. This is being effective to meet the purpose even during peak rain fall. Photograph of retention wall along OB dump is attached as **Annexure-VII.**
17	Plantation shall be raised in an area of 11 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around OB dump, reclaimed area, mine benches, along the roads etc. in consultation with the local DFO/Agriculture Department.	Reclamation and rehabilitation programme have been established. Till Sep'2016, we have planted about 638756 nos. of plants over an area of 146.26 ha with native species. The density has been maintained at the rate of over 4367 plants per ha. Photograph of dump plantation s attached as **Annexure-VI.** Moreover, vetiver plantation is being carried out over 1 ha with 1,00,000 slips. Plantation over an area of 606.229 ha shall be achieved gradually at the time of post mine closure (Conceptual land use). Photographs of vetiver plantation are attached as **Annexure-VI.**
18	Effective safeguard measures such as 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. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	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 3200m in addition to two 40 KL & one 28 KL mobile water tankers and dust suppressants are added into the sprinkling water for effective dust suppression. Photographs of Mobile and Fixed water sprinklers are attached as **Annexure-IV.** Ambient Air Quality is monitored regularly and the results are well within the limit prescribed. The results are also sent to the OSPCB, Bhubaneswar once in every month. AAQ monitoring report is attached as **Annexure-V.**

Sl. No.	Condition	Compliance
19	The project Proponent shall Obtain necessary prior permission of the competent authority for drawl of requisite quantity of surface water, if any, required for the Project.	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. However, rain water harvesting ponds and ground water recharge structures have been constructed and now they are operational. The rain water harvesting system has been approved by the CGWB, Bhubaneswar. Photograph of Rain water harvesting pond at JEIM is attached as **Annexure-VIII.**
20	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing 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 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 Director, Central Ground Water Board. If at any stage, it is observed that the ground water table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	Ground water quality and Ground water level are being monitored periodically with the help of engagement of the experts during four times a year pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January). The results are being sent to Regional office, MoEFCC and SPCB, Odisha half yearly. Ground water quality and Ground water level reports are attached **Annexure-IX & Annexure-X** respectively. Since, our mining operations are carried out above the ground water table; there will be no depletion of ground water table because of our mining activity. We also like to mention that because of Rain Water Harvesting structures at Joda East Mine, the ground water level has been increased.
21	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water required for the project.	Joda East Iron mine has current surface water drawl permission of 8531 KLD. Our operation is now being managed within that quantity. However, for increased requirement of 9000 KL/day of water, we have applied to Department of water Resources, Govt. of Odisha for obtaining drawl permission, which is in active consideration.

Sl. No.	Condition	Compliance
22	The safeguard measures as suggested by the Central Ground Water Board vide letter No. 21-4(231)/CGWA/SER/2010-1010 dated 11.06.2010 shall be effectively implemented.	The safeguard measures as suggested by the Central Ground Water Board vide letter No. 21-4(231)/CGWA/SER/2010-1010, dated: 11.06.2010 has been effectively implemented.
23	The project proponent shall practice suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rainwater harvesting, in consultation with the Central Ground Water Authority and submit a copy of the same to the Ministry of Environment and Forests and its Regional Office, Bhubneswar.	Rainwater harvesting structures has been constructed at the mine site by the engagement of expertise of M/s. KRG Rainwater Foundation, Chennai and is now operational. Rainwater harvesting system has been approved by the CGWB, Bhubaneswar. A copy of the approved plan shall be sent to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar. Photograph of Rain water harvesting pond at JEIM is attached as **Annexure-VIII.**
24	Vehicular emission shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of minerals. The vehicles should be covered with a tarpaulin and shall not be overloaded.	Regular vehicular emission testing is being conducted once in every 6 months. The vehicles those who do not meet the emission standard, are withdrawn from operation and maintained properly. A vehicle is kept abeyance from operation till it does not meet the emission standard. Also the vehicles are not run overloaded. Overloading of trucks is avoided to prevent spillage of material.
25	No blasting shall be carried out after the sunset. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practices. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented	Blasting is carried out during day time only. Controlled Blasting is carried out for control of ground vibrations and to arrest fly rocks, as per the recommendations of CIMFR, Dhanbad.
26	Drills shall either be operated with the dust extractors or equipped with water injection system.	Wet drilling is in practice and All drills are also provided with dust suppression system. Photograph of wet drilling is attached as **Annexure-XI.**
27	Mineral handling area 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	Effective and high efficiency dust extraction systems are in place at the mineral handling plant. Loading and unloading areas including transfer points have been provided with dust suppression facilities. Photographs of dust suppression system are attached as

Sl. No.	Condition	Compliance
	maintained and operated.	**Annexure-XII.**
28	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the Workshop and wastewater generated during the mining Operation.	There is no colony inside the Mining Lease area. All employees live in colony of Joda West. As per topography of the residential area, installation of a Sewage Treatment Plant has not been feasible. Further study is in progress and plan has been made to install small STPs at different locations. Presently, at two locations STPs have been installed of capacity 50 KL & 10 KL and it shall be extended to other locations to treat all sewage water generated from the colony. For waste water from workshop, oil and grease separation pits are provided. Further, no waste water is generated from our mining operation and hence requires no treatment. Photographs of Sewage Treatment Plant and Oil separation pit are attached **Annexure-XIII** & **Annexure-IX** respectively.
29	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 are 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 40 years. The concentration of Respirable dust at different locations is monitored. The employees are also given regular awareness training on safety and health aspects as part of implementation process of OHSAS-18001 systems.
30	Provision shall be made for the housing of construction labour within the site with necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may in the form of temporary structures to be removed after the completion of the project.	All constructional activities for the project have been completed and there was no requirement for construction of temporary housing since the mine has permanent infrastructural facilities.
31	The project proponent shall take all precautionary measures during mining	Tata Steel is taking all precautionary measures towards conservation and

Sl. No.	Condition	Compliance
	operation for conservation and Protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to this project site and approved by the Chief Conservator of Forest, (Wildlife) shall be effectively implemented. A copy of Wildlife Conservation Plan shall be submitted to the Ministry of Environment and Forest and its Regional Office Bhubaneswar.	protection of endangered flora and fauna. We have also deposited a sum of Rs.1,00,66,395/- with the forest department for implementation of the wildlife management plan in order to protect them within our mine and its periphery. Besides that, the mine had prepared site specific Wild Life Conservation Plan and it has been approved by the PCCF (Wildlife) & Chief Wildlife Warden vide letter no. 3195 dated: 25.04.2016.
32	The critical parameters such as RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NO in the ambient air within the impact zone, peak particle Velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically . Further, quality of discharged water shall also be monitored [(TDS, DO, pH and total suspended solids (TSS)]. The monitored data shall be uploaded on the website of the Company as well as display on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.II(M) dated: 27.05.2009 issued by Ministry of Environment and Forest which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	RSPM & NOx in ambient air is monitored regularly and the results are given as **Annexure-V.** Peak particle velocity at the time of blasting is also monitored regularly at 300m distance. No water is discharged out of the mine premises. Monitoring data is being uploaded on the Company's website www.tatasteelindia.com as part of this report and also displayed on a display board at the main entrance gate of the mine.
33	A Final Mine closure Plan along with detail 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 shall be submitted to the Ministry of Environment & Forests 5 years in advance.

General Conditions:

<table>
<tr><th>Sl. No.</th><th>Condition</th><th>Compliance</th></tr>
<tr><td>1</td><td>No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.</td><td>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 been made and adhered to the condition of MoEFCC.</td></tr>
<tr><td>2</td><td>No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.</td><td>Calendar plan (IBM Approved Mining Plan) prepared for the mine is being strictly adhered to and we are well within the limits specified in Mining Plan as well as EC and CTO granted capacity. The production achieved during 2016-17 (Till Sep’16) is as given below.
<table>
<tr><th>Fig in LT</th><th>Plan</th><th>Actual</th></tr>
<tr><td>ROM</td><td>60.00</td><td>47.51</td></tr>
<tr><td>OB, Waste</td><td>13.10</td><td>10.37</td></tr>
<tr><td>Sub-Grade</td><td>16.10</td><td>12.75</td></tr>
<tr><td>Total Excavation</td><td>89.20</td><td>70.63</td></tr>
</table></td></tr>
<tr><td>3</td><td>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.</td><td>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, Orissa. The ambient air quality reports are submitted to Regional office, MoEF, Bhubaneswar and SPCB, Orissa, once in every six months. AAQ monitoring report is attached as Annexure-V.</td></tr>
<tr><td>4</td><td>Data on Ambient Air Quality [(RSPM(particulate matter with size less than 10 micron i.e. PM10) and NOx] should be regularly submitted to the Ministry including its Regional office located at Bhubneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.</td><td>The Ambient Air Quality reports are submitted to Regional office, MoEF, Bhubaneswar and SPCB, Orissa, once in every six months. Please find enclosed the monitoring details in Annexure-V.</td></tr>
</table>

Sl. No.	Condition	Compliance
5	Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	Effective water sprinkling is being done on haul roads and at loading and unloading points. Dust suppression systems in the drills have been provided for effective functioning. Dust fall analysis reports are attached as **Annexure-II.**
6	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.	High noise areas are earmarked and people working there are provided with ear protection equipment's and the system is ensured by certification to OHSAS 18001 and regular field audits. Noise quality reports are attached as **Annexure- X.**
7	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the Standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Oil & Grease separation pits have been provided to take care of effluents from the workshop. The same water quality is monitored regularly and the parameters meet the prescribed standard. There is no waste water generation from the mines. The result of the workshop effluent is enclosed as **Annexure-XI.**
8	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. 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.	Adequate dust masks are provided to employees engaged in dusty areas. It is also ensured that they use the same. The employees are also given regular awareness training on safety and health aspects as part of implementation process of OHSAS–18001 systems. Further, employees undergo Lung Function Tests during the Periodical Medical Examination. Periodical Medical Examination of employees and contractor workers are organized regularly to observe any contractions due to exposure to dust and other occupational hazards.
9	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.	A separate environmental management cell is in place with the people having relevant qualification on environmental science. The Head of the environment department reports to General Manager i.e. the head of the organization.
10	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure	Funds allocated for environmental management are spent only for environment related purposes and not diverted to any other purpose. During the year 2015-16 an

Sl. No.	Condition	Compliance
	should be reported to the Ministry and its Regional Office located at Bhubaneswar.	amount of Rs.1111.11 lakhs (approx..) was spent towards environmental protection measures at Joda East Iron Mine. Expenditure on Environmental Protection is attached as **Annexure-XII.**
11	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closing 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 for start of land development work can be assigned. However, the copy of the Environmental Clearance has been sent to the Regional Office, MoEFCC, Bhubaneswar for kind information.
12	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.
13	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 Bhubneswar, 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 environment 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, Bhubneswar, the respective Zonal Officer of CPCB and the SPCB.	Six monthly compliance reports are being submitted regularly to the MoEFCC, its Regional Office Bhubaneswar, Central Pollution Control Board Kolkata and State Pollution Control Board. Further, the six monthly compliance reports along with the monitoring results are uploaded in Tata Steel's website www.tatasteelindia.com and updated periodically. Last six monthly compliance report has been sent vide letter no. MD/ENV/191/102/16 dated: 24.05.2016.
14	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	A copy of the clearance letter was sent to the Chairman, Joda Municipality on 16.03.2013, The President, Zila Parishad, Keonjhar on 16.03.2013, Addl. PCCF (Central), Eastern Regional Office, Bhubaneswar on 14.03.2013 and Member Secretary, OSPCB, Bhubaneswar on 14.03.2013. EC letter has

Sl. No.	Condition	Compliance
	put on the website of the Company by the proponent.	been uploaded on the Tata Steel website, www.tatasteelindia.com.
15	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 from State Pollution Control Board, Odisha
16	The environmental statement for each financial year ending 31st 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, Bhubneswar by e-mail.	The environmental statement for financial year 2015-16 has been submitted to the State Pollution Control Board on 29.09.2016 and the same has been hosted on company's website www.tatasteelindia.com. Further, half-yearly compliance status of environmental clearance conditions for financial year 2015-16 has been sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail. Last six monthly compliance report was sent vide letter No MD/ENV/191/102/16, dated:24.05.2016.
17	The project authority should advertise at least in two local newspapers 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	Details of Environmental Clearance with regard to Joda East Iron Mine was published in local newspapers (English Daily, New Indian Express & in oriya (Dainik Jagran) on 16.03.2013.

Annexure-I: Corporate Environment Responsibility

TATA STEEL

TATA

ENVIRONMENTAL POLICY

Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

1. We are committed to deal proactively with Climate Change issue by efficient use of natural resources & energy; reducing and preventing pollution; promoting waste avoidance and recycling measures; and product stewardship.
   - We shall identify, assess and manage our environment impact.
   - We shall regularly monitor, review and report publicly our environmental performance.
   - We shall develop & rehabilitate abandoned sites through afforestation and landscaping and shall protect and preserve the biodiversity in the areas of our operations.
   - We shall enhance awareness, skill and competence of our employees and contractors so as to enable them to demonstrate their involvement, responsibility and accountability for sound environmental performance.
2. We are committed to continual improvement in our environmental performance.
   - We shall set objective-targets, develop, implement and maintain management standards and systems, and go beyond compliance of the relevant industry standards, legal and other requirements.
3. We will truly succeed when we sustain our environmental achievement and are valued by the communities in which we work.

Date : November 1, 2013

T V Narendran
Managing Director

Annexure-II: Mineralogical Composition report of JEIM for the period April'2016 - Sep'2016

Sl. No.	Parameter	Apr'16	May'16	June'16	July'16	Aug'16	Sep'16
1	Silica (%)	0.66	0.58	0.52	0.46	0.42	0.44
2	FeO (%)	0.92	0.78	0.68	0.54	0.16	0.18
3	CaO (%)	0.052	0.032	0.034	0.028	0.016	0.014
4	Al_2O_3 (%)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Lab-in-charge

Annexure-III: Zero Discharge Slime Dam

Annexure-IV: Photographs of Mobile & Fixes Water Sprinklers

Mobile Water Sprinkling

Fixed Water Sprinkling

Annexure-V: Ambient Air Quality Report (April'16-September'16)

Core Zone

Month	Manmora Slime Dam					Near Rain Water Harvesting					Near New Slime Dam					Near Equipment Maintenance				
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
Apr'16	52.44	30.52	4.29	9.39	0.16	48.64	28.37	4.12	10.19	0.13	55.12	32.32	5.29	12.41	0.20	61.33	36.67	6.00	12.76	0.19
May'16	50.99	27.43	4.24	9.48	0.15	47.59	24.94	4.12	9.57	0.13	53.69	29.41	4.93	12.07	0.19	60.24	34.10	5.98	12.89	0.20
Jun'16	51.13	25.40	4.38	10.13	0.17	49.04	24.11	4.20	9.62	0.14	52.28	26.01	4.59	10.90	0.18	58.53	29.96	5.29	11.58	0.20
Jul'16	35.49	16.65	4.03	9.19	0.13	34.64	16.24	4.00	9.00	0.12	37.41	17.85	4.04	9.18	0.13	39.11	18.86	4.25	9.68	0.16
Aug'16	31.64	15.11	4.08	9.30	0.12	29.57	14.24	4.00	9.00	0.11	32.98	15.81	4.14	9.51	0.13	34.28	16.56	4.33	9.77	0.14
Sep'16	32.32	15.00	4.06	9.22	0.12	33.06	15.74	4.17	9.76	0.13	30.71	14.09	4.00	9.00	0.11	35.39	16.99	4.37	10.52	0.14

Buffer Zone

Month	Manmora Slime Dam					Near Rain Water Harvesting					Near New Slime Dam					Near Equipment Maintenance				
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
Apr 16	52.44	30.52	4.29	9.39	0.16	48.64	28.37	4.12	10.19	0.13	55.12	32.32	5.29	12.41	0.20	61.33	36.67	6.00	12.76	0.19
May 16	50.99	27.43	4.24	9.48	0.15	47.59	24.94	4.12	9.57	0.13	53.69	29.41	4.93	12.07	0.19	60.24	34.10	5.98	12.89	0.20
Jun 16	51.13	25.40	4.38	10.13	0.17	49.04	24.11	4.20	9.62	0.14	52.28	26.01	4.59	10.90	0.18	58.53	29.96	5.29	11.58	0.20
Jul 16	35.49	16.65	4.03	9.19	0.13	34.64	16.24	4.00	9.00	0.12	37.41	17.85	4.04	9.18	0.13	39.11	18.86	4.25	9.68	0.16
Aug 16	31.64	15.11	4.08	9.30	0.12	29.57	14.24	4.00	9.00	0.11	32.98	15.81	4.14	9.51	0.13	34.28	16.56	4.33	9.77	0.14
Sep 16	32.32	15.00	4.06	9.22	0.12	33.06	15.74	4.17	9.76	0.13	30.71	14.09	4.00	9.00	0.11	35.39	16.99	4.37	10.52	0.14

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

Lab-in-charge

Annexure-VI: Dump Plantation

Annexure-VII: Garland Drain, Settling Pond, Toe Wall

Annexure-VIII: Rain Water Harvesting

Annexure-IX: Ground Water Quality Report (April'16-September'16)

Visiontek Consultancy Services Pvt.Ltd.
(An Enviro Engineering Consulting Cell)
ISO 14001:2004
ISO 9001: 2008
OHSAS 18001:2007

Ref.: VCSPL/16/R-532 Date.: 07.07.2016

GROUND WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF JUNE-2016

1. Name of Industry : **Joda East Iron Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Khuntpani Village; GW-2: Bounsapani Village.**
3. Date of sampling : 29.06.2016
4. Date of analysis : 30.06.2016 to 05.07.2016
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
Essential Characteristics						
1	Colour	APHA 2120 B, C	Hazen	**5**	CL	CL
2	Odour	APHA 2150 B	--	**U/O**	U/O	U/O
3	Taste	APHA 2160 C	--	**Agreeable**	AL	AL
4	Turbidity	APHA 2130 B	NTU	**5**	<2	<2
5	pH Value	APHA 4500H$^+$ B	--	**6.5-8.5**	7.2	7.3
6	Total Hardness (as $CaCO_3$)	APHA 2340 C	mg/l	**300**	128.0	140.0
7	Iron (as Fe)	APHA 3500Fe, B	mg/l	**0.3**	0.24	0.28
8	Chloride (as Cl)	APHA 4500Cl B	mg/l	**250**	8.0	10.0
9	Residual, free Chlorine	APHA 4500Cl, B	mg/l	**0.2**	ND	ND
Desirable Characteristics						
10	Dissolved Solids	APHA 2540 C	mg/l	**500**	194.0	204.0
11	Calcium (as Ca)	APHA 3500Ca B	mg/l	**75**	33.7	38.1
12	Magnesium (as Mg)	APHA 3500Mg B	mg/l	**30**	10.7	10.9
13	Copper (as Cu)	APHA 3111 B,C	mg/l	**0.05**	<0.001	<0.001
14	Manganese (as Mn)	APHA 3500Mn B	mg/l	**0.1**	<0.005	<0.005
15	Sulphate (as SO_4)	APHA 4500 SO_4^{2-} E	mg/l	**200**	7.2	6.7
16	Nitrate (as NO_3)	APHA 4500 NO_3^- E	mg/l	**45**	5.1	4.6
17	Fluoride (as F)	APHA 4500F C	mg/l	**1.0**	0.16	0.18
18	Phenolic Compounds (as C_6H_5OH)	APHA 5530 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)	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**	<0.05	<0.05
26	Anionic Detergents (as MBAS)	APHA 5540 C	mg/l	**0.2**	<0.2	<0.2
27	Chromium (as Cr^{+6})	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**	110.0	121.0
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	Pesticide	APHA 6630 B,C	mg/l	**Absent**	Absent	Absent
34	Total Coli form	APHA 9221 B	MPN/100 ml	**Not more than 10MPN/100 ml**	<2	<2

Note: CL : Colourless, AL: Agreeable, U/O : Unobjectionable, ND: Not Detected.

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

*For **Visiontek Consultancy Services Pvt. Ltd.***

Plot No-108,District Centre,Chandrasekharpur,Bhubaneswar-16,Tel-91-674-2744594, 3250790
Email:visiontekin@gmail.com,visiontekin@yahoo.co.in,visiontek@vcspl.org, Visit us at: www.vcspl.org

Annexure-IX: Ground Water Quality Report (April'16-September'16).....Cont.

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

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

Ref.: VCSPL/116/R-977 Date.: 03.10.2016

GROUND WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF SEPTEMBER-2016

1. Name of Industry : **Joda East Iron Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Khuntpani Village; GW-2: Bounsapani Village.**
3. Date of sampling : 14.09.2016
4. Date of analysis : 15.09.2016 to 21.09.2016
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
Essential Characteristics						
1	Colour	APHA 2120 B, C	Hazen	**5**	CL	CL
2	Odour	APHA 2150 B	--	**U/O**	U/O	U/O
3	Taste	APHA 2160 C	--	**Agreeable**	AL	AL
4	Turbidity	APHA 2130 B	NTU	**5**	<2	<2
5	pH Value	APHA 4500H^+ B	--	**6.5-8.5**	7.2	7.4
6	Total Hardness (as $CaCO_3$)	APHA 2340 C	mg/l	**300**	132.0	136.0
7	Iron (as Fe)	APHA 3500Fe, B	mg/l	**0.3**	0.26	0.29
8	Chloride (as Cl)	APHA 4500Cl^- B	mg/l	**250**	12.0	16.0
9	Residual, free Chlorine	APHA 4500Cl, B	mg/l	**0.2**	ND	ND
Desirable Characteristics						
10	Dissolved Solids	APHA 2540 C	mg/l	**500**	210.0	232.0
11	Calcium (as Ca)	APHA 3500Ca B	mg/l	**75**	39.3	40.9
12	Magnesium (as Mg)	APHA 3500Mg B	mg/l	**30**	8.3	8.3
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**	<0.005	<0.005
15	Sulphate (as SO_4)	APHA 4500 SO_4^{2-} E	mg/l	**200**	7.4	6.9
16	Nitrate (as NO_3)	APHA 4500 NO_3^- E	mg/l	**45**	4.8	4.2
17	Fluoride (as F)	APHA 4500F^- C	mg/l	**1.0**	0.15	0.19
18	Phenolic Compounds (as C_6H_5OH)	APHA 5530 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)	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**	<0.05	<0.05
26	Anionic Detergents (as MBAS)	APHA 5540 C	mg/l	**0.2**	<0.2	<0.2
27	Chromium (as Cr^{+6})	APHA 3500Cr B	mg/l	**0.05**	<0.05	<0.05
28	Mineral Oil	APHA 5220 B	mg/l	**0.01**	<0.01	<0.01
29	Alkalinity	APHA 2320 B	mg/l	**200**	114.0	126.0
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	Pesticide	APHA 6630 B,C	mg/l	**Absent**	Absent	Absent
34	Total Coli form	APHA 9221 B	MPN/100 ml	**Not more than 10MPN/100 ml**	<2	<2

Note: CL : Colourless, AL: Agreeable, U/O : Unobjectionable, ND: Not Detected.

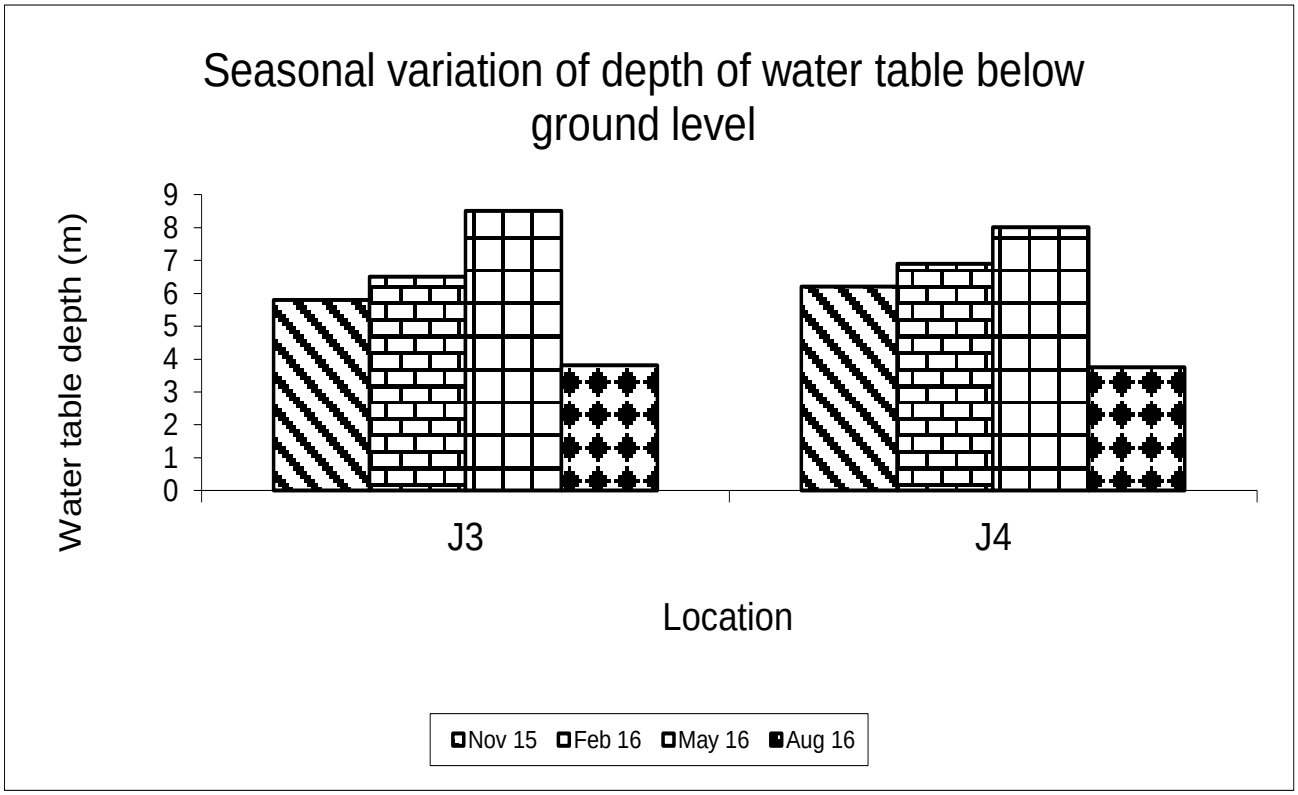
*For **Visiontek Consultancy Services Pvt. Ltd.***

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Plot No-108,District Centre,Chandrasekharpur,Bhubaneswar-16,Tel-91-674-2744592,3244790
Email:visiontekin@gmail.com,visiontekin@yahoo.co.in,visiontek@vcspl.org, Visit us at: www.vcspl.org

"Committed For The Better Environment"

Annexure-X: Ground Water Level (Joda East Iron Mine) (April'16-September'16)



J3 – Well at Khuntpani
J4 – Well Banspani (Mangal Munda House)

Annexure-XI: Wet Drilling

Annexure-XII: Dust Suppression System

Annexure-XIII: Oil & Grease Separation Pit

Annexure-IX: Sewage Treatment Plant

50 KLD STP at colony

10 KLD STP at Hospital

Annexure-X: Ambient Noise Quality Report (April'16-September'16)

Area	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	50.88	55.00	36.42	45.00
	Training Centre	49.92		36.55	
	Township	51.70		39.62	
Industrial area	Chief Office	47.78		37.88	70.00
	Mining area	69.57	75.00	61.73	
	Plant area	73.13		66.40	

Lab-in-charge

Annexure-XI: Workshop Effluent Quality Report (April'16-September'16)

Parameter	Joda East Equipment Maintenance	Limit
pH	5.87	5.5 – 9.0
Suspended Solids mg/l	62.27	100.00
Oil & Grease mg/l	7.52	10.00

Lab-in-charge

Annexure-XII: Annual Expenditure on Environment Safeguards 2015-16

Sl. No.	Activity	Capital (Lakhs)	Recurring (Lakhs)
1	Covering of Fine stack	6.00	
2	Fixing of high pressure jet near stacker & MHS	5.00	
3	Construction of toe wall & garland drain(Pillar 22,22-23,19,26-27,41-42, manmora dam(total length 2.5 km)	45.00	
4	Cleaning & de-silting of check dam(3500 m3)	14.00	
5	Mobile water sprinkler	12.50	
6	Fixed water sprinkling maintenance		4.32
7	Fixed water sprinkling repair		1.70
8	Dust suppression-Nalco Chemicals		10.25
9	Operation & Maintenance of dry fog system at dry plant		130.00
10	Purchase of spare parts of dry fog system	10.00	
11	Maintenance of vertiver plantation		9.50
12	Maintenance of rain water harvesting site		6.08
13	Installation of LED lights(at wet plant, dry plant , mines area, offices etc)	80.00	
14	Laying of pipe line of water sprinkling		6.00
15	Construction of new oil catchment pit		10.00
16	construction of shed for storage of waste material kile lubricants etc. near equipment division		2.00
17	Implementation of wet drilling interlocking system in the new drill machine		15.00
18	implementation of electronic detonator system in blasting to reduce ground vibration and fly rock		13.00
19	study on ground vibration		4.00
19	Study on advance vibration management using Monte carlo simulation method	108.00	
20	purchase & installation of two nos. of Lechar gun at dry fine stacking	30.00	
21	Purchase of mobile blasting centre	20.00	
22	Installation of automatic bit grinder to reduce scrap generation	40.00	
23	project on to reduce the dust level at tertiary crusher floor from 8.9mg/m3 to 3mg/m3	30.00	
24	Project on to improve the availibility of NBC2 conveyor by control of spillages in tail end side	15.00	
25	Modification in AC compressor and alternator drive system in ROCL8-2Drill machine		0.50
26	Priming facilities introduced for oil catchment pit centrifugal pump		0.12
27	Project on increase in compliance on excavation plan from 40% to 80 %	20.00	
28	Road development at Banspani Hill	25.00	
29	Revamping of auto sampler C-10 conveyer(Fines ore product)		0.11

Sl. No.	Activity	Capital (Lakhs)	Recurring (Lakhs)
30	Enhancement of availability of emergency light at wet plant		1.00
31	Implementation of online slime disposal monitoring at wet processing	5.00	
32	Installation of flow meters at different input and output point at wet processing plant	30.00	
33	Provision of material handling system at C#1 conveyer area		4.00
34	Up gradation of VS2 screen to improve TPH and reduce undersize lump		95.00
35	Up gradation of tertiary crusher heat exchanger		8.00
36	Utilization of intake water at To6 water pump house		2.00
37	To reduce jamming in transfer chute DC#2 and Flip Flow receiving chute		6.00
38	Increase plant utilization % from 72 to 75 percent by modification in C#3 conveyer		2.00
39	Improvement in illumination level at inpit slime dam		5.00
40	Housekeeping in Joda operational & township are		152.00
41	Management of Biomedical waste at Joda hospital		3.00
42	AMC of sewage treatment plant		20.00
43	Study on iron recovery from slime	100.00	
44	Development and execution of monsoon plan at JEIM		5.00
45	Awareness Programme (MEMC Week, World Environment Day)		4.00
46	CTO & CTE Fees		44.00
47	Environmental Monitoring		9.72
48	Display Board AMC		0.97
49	Plantation		84.44
	Total =	**595.50**	**658.70**