



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

**MD/ENV/277/106/15
1st June 2015**

Ref: Environmental clearance letter No. J-11015/888/2007-IA.II(M), Dated 21st December'2011

Sub: Half-yearly compliance status of environmental clearance conditions for the period October'2014 to March'2015 in respect of Khondbond Iron & Manganese Mine.

Dear Sir,

With reference to above environmental clearance, we are submitting herewith the compliance status of the stipulated conditions there in, for the period October'2014 to March'2015 in respect of Khondbond Iron & Manganese 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

mef.or@nic.in

Head (Planning)-OMQ

Encl: As above

Copy to: Addnl. Director(S), MoEFCC, Govt of India, CGO complex, Lodhi Road, New Delhi -110003
: Chairman, CPCB, Paribesh Bhawan, East Arjun Nagar, New Delhi – 110032
: Member Secretary, State Pollution Control Board, Unit – VIII, Bhubaneswar - 751012
: Regional Officer, State Pollution Control Board, College Road, Keonjhar, Orissa.

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Compliance

to

Environmental Clearance Conditions

of

Khondbond Iron & Manganese Mine

M/s. Tata Steel Limited

**for the period
(October'14 – March'15)**

Environmental Clearance letter No. J-11015/888/2007.IA.II (M), Dtd. 21th December, 2011 of Khondbond Iron & Manganese Mine, for production of 8.00 MTPA of Iron Ore & 0.1 MTPA Manganese ore.

Half yearly compliance report for the period: October'14 – March'15

A. Specific conditions

Sl. No	Specific Condition	Compliance status
i	No mining shall be carried out in the forestland without obtaining requisite prior forestry clearance under the Forest (Conservation) Act, 1980 for forestland involved in the project. The environmental clearance is subject to grant of forestry clearance.	The present mining operation is restricted within 453.150 ha. of forest land for which forest clearance has been obtained under the Forest (Conservation) Act, 1980 vide letter no. F. No. 8-98/2004/FC, dated 09.08.2006 (317 ha. fresh + 136.15 ha broken prior to 1980).
ii	The project proponent shall obtain Consent to Establish and Consent to Operate from The State Pollution Control Board, Orissa and effectvely implement all the conditions stipulated therein.	<ul style="list-style-type: none"> • Consent to Establish has been obtained vide OSPCB's lter No. 21730/IND-II-NOC-5093, dated. 23rd Dec' 2011. • Similarly consent to operate has also been obtained from State Pollution Control Board, Orissa vide letter No. 7523/IND-I-CON-1127, dated 2nd May 2015 and the consent order is valid till 31st March 2016.
iii	The environmental clearance is co-terminus to mining lease and the proponent shall obtain fresh Environmental Clearance at the time of renewal of mine lease in accordance with the provisions of the EIA Notification, 2006 as amended subsequently.	<ul style="list-style-type: none"> • Fresh EC shall be obtained at the time of next lease renewal as per EIA Notification, 2006 and its subsequent amendments, if required.
iv	The mining operations shall be restricted to above ground water table in the iron ore zone and it should not intersect the ground water table. In case of working below the ground water table in the iron ore zone, 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.	<ul style="list-style-type: none"> • At present, the lowest working depth of the mine is at 624 mRL in the Iron ore zone. Hydro-geological study was carried out for the mining lease area and it has been estimated that, the presence of ground water table is at a depth of 555 mRL during post-monsoon. • The condition of Environmental Clearance for the mine restricts mining operation above the ground water table for Iron ore zone and it is strictly adhered to.
v	The Company shall submit within 3 month their policy towards Corporate Environment Responsibility which should inter- alia address (i) Standard Operating process/ procedure to bring into focus any infringements/ deviation/ violation of environmental or forest norms/conditions, (ii) Hierarchical system or Administrative order of the company to deal with environmental issues and ensuring compliance EC conditions and (iii) System of reporting of non compliance/ violation environmental norms to the Board of Director of the company and/ or stake holders or share holders.	<ul style="list-style-type: none"> • Details as required, were submitted to the Ministry within 3 months of grant of Environmental Clearance vide letter No. MD/ENV/775 /106/2012, Dated. 20th March, 2012.

Sl. No	Specific Condition	Compliance status
vi	A safety zone of 50m shall be left as no mining zone and no waste shall be dumped within this safety zone along the side of Suna Nadi (Kundra Nallah) & the Kakrapani nallah following adjacent to the mine lease area.	<ul style="list-style-type: none"> • Before this condition was given, there exists an old waste dump within the 50m distance from Kundra nallah and that has been stabilized by plantation. However, at present no mining activity is being carried out within the safety zone of 50m along the side of Kundra nallah.
vii	The project proponent shall ensure that no natural watercourse and / or water resources shall be obstructed due to any mining operations. Adequate measures shall be taken for conservation and protection of the first order and the second order streams, if any, emanating from the mine lease area during the course of mining operation.	<ul style="list-style-type: none"> • No natural watercourse or water resources are obstructed due to our mining operations. Further, no first order and the second order streams are emanating from the mine lease area.
viii	The top Soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	<ul style="list-style-type: none"> • An area of 0.50 ha has been identified for storage of top soil. Further, generation of top soil is very minimal and whatever top soil is used they are stored in the earmarked area and subsequently used for plantation.
ix	The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission, without effecting flow of ore in the ore processing and handling areas.	<ul style="list-style-type: none"> • This shall be taken care when wet processing of ore will start. However, to minimise fugitive dust emission at existing dry crushing and screening plant, dry fog is used and water sprinkling by mobile sprinklers are done at material handling points.
x	The effluent from the ore beneficiation plant shall be treated in the tailing thickener and the tailings slurry shall be transported through a closed pipeline to the tailing ponds.	<ul style="list-style-type: none"> • At present, wet processing plant is under construction and hence has not started functioning. When the wet processing plant shall be operational, tailing management shall be made as per the condition given.
xi	The tailing ponds shall be lined HDPE lining.	<ul style="list-style-type: none"> • When tailing ponds shall be constructed, that will be provided with HDPE lining.
xii	The decanted water from the tailing dam shall be re- circulated and there should be zero discharge from the tailing dam.	<ul style="list-style-type: none"> • This will be ensured when both the wet processing plant and tailing ponds are operational.
xiii	Appropriate technology shall be used for maximum recovery of ore in order to reduce slurry discharge and to increase the life of the tailing ponds.	<ul style="list-style-type: none"> • This will be ensured when both the wet processing plant and tailing ponds are operational.
xiv	The project proponent shall constitute an emergency management team under the control of project incharge to deal with the emergency situation pertaining to the tailing pond for the timely & effective control of emergency situation, it shall be ensured that training programme and mock drill shall be organised for the employees.	<ul style="list-style-type: none"> • The mine is certified under ISO 9001, ISO 14001, OHSAS 18001 & SA8000. Emergency preparedness procedure is already in place to meet the emergency situations. However, after the tailing ponds are constructed and operational, the expected emergency situations arising because of tailing pond management shall be included and mock drills shall be organised for the employees.

Sl. No	Specific Condition	Compliance status
xv.	<p>The Over burden (OB) generated during the mining operations shall be stacked at earmarked dump site (s) only and it should not be kept active for a long period of time and its phase-wise stabilisation shall be carried out. Backfilling shall commence from the fifth year onwards. There shall be six over burden (four for iron and two for manganese ore). Proper terracing of the OB dumps shall be carried out so that the overall slope of the dumps shall be maintained to 28°. The overburden dumps shall 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. Out of the total excavated area of 763.665ha, an area of 758.665ha shall be reclaimed and 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 & Forest and its regional office located at Bhubaneswar on six monthly basis.</p>	<ul style="list-style-type: none"> • OB is being dumped as per plan and within the earmarked area. Inactive portions of the OB dump are gradually stabilised and reclaimed by plantation. The slope of the dump is terraced and the overall slope angle is maintained less than 28 degree. Retaining walls of total running meterage of 1876 m have been constructed around the dumps to arrest the suspended solids of the surface run-off effectively. • As regard to reclamation of 758.665 ha of excavated land, this will be done as per progressive mine closure plan and shall be achieved at the end of mine life. • Compliance status is being submitted regularly to the Ministry of Environment & Forest and its regional office located at Bhubaneswar once in every six months.

Sl. No	Specific Condition	Compliance status
xvi	<p>Catch drains and siltation ponds of appropriate size should be constructed around the tailing ponds, mine working, soil, OB and mineral dump(s) to prevent run off of water and flow of sediments directly into the Suna Nadi (Kundra Nalla), the Jalpa Nadi, the Baitarni River, the Karo Nadi, the kakrapani nalla, the kundru nalla, the Dalko nalla, the kashi nalla, the Tapodihi nalla, the Teherei nalla, the Achanda nalla and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after the monsoon and maintained properly.</p> <p>Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the tailing ponds, mine pit, soil, OB and mineral dump(s) to prevent run off of water and flow of sediments directly into the Suna Nadi (Kundra Nalla), the Jalpa Nadi, the Baitarni River, the Karo Nadi, the kakrapani nalla, the kundru nalla, the Dalko nalla, the kashi nalla, the Tapodihi nalla, the Teherei nalla, the Achanda nalla and other water bodies and sump capacity should be designed keeping 50% safety margin over and above the 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.</p>	<ul style="list-style-type: none"> • Garland drains of total running meterage of 1050 meters with settling pits, have been made all along the OB dumps to prevent run off of water and flow of sediments directly into the natural stream. • 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 during and after the monsoon.
xvii	<p>Dimension of retaining wall at the toe of the OB dumps and benches within the mine to check run-off and siltation should be based on the rainfall data.</p>	<ul style="list-style-type: none"> • Retaining wall and Garland drains have been constructed around the OB dumps to check mine run-off. Size, gradient and length of the drains are adequate to take care of the water during peak rain fall.
xviii	<p>The void left unfilled in an area of 5ha shall be converted into water body. The higher benches of excavated void/ mining pit shall be terraced and plantation done to stabilize the slopes. The slopes of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.</p>	<ul style="list-style-type: none"> • This being the activity at the end of mine life shall be done in due course of time.

Sl. No	Specific Condition	Compliance status
xix	Plantation shall be raised in an area of 965.018 including a 7.5 wide green belt in the safety zone around the mining lease by planting the native species around reclaimed area, mine benches, water body, tailing ponds, along the roads etc. In consultation with the local DFO/Agriculture Department. The density of the tree should be around 2500 plants per hectare. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	<ul style="list-style-type: none"> Plantation over an area of 965.018 ha shall be achieved at the end of mine life. However, developed plantation over 7.5m greenbelt is in progress and shall be completed within next five years. Further, plantation is being carried out by native species on the dump slopes and along the side of the roads. Till end of March 2015, we have planted 303595 nos of saplings over an area of 63.06 ha. The tree density has been maintained at the rate of over 4157 plants per ha.
xx	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 point. 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.	<ul style="list-style-type: none"> Regular water sprinkling is being carried out by use of 3 mobile water sprinklers of capacity 10 KL each around the crushing and screening plant, loading & unloading area and haul roads. 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.
xxi	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.	<ul style="list-style-type: none"> Monitoring of flow rate of Kundra nallah flowing at the side of the mining lease is being out and records maintained.
xxii	The project authority should 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 mines 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, state-of-the art rain water harvesting ponds and ground water recharge structures have been constructed by the Steel Company both at Joda & Noamundi and another rain water harvesting structure shall be made at Khondbond mine site also.
xxiii	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.	<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, Odisha once in every six months. The monitoring results of Ground water quality & Ground water level are annexed as Annexure – I & II. 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.

Sl. No	Specific Condition	Compliance status
xxiv	The ground water quality around the tailing pond shall be monitored regularly and time series data generated. It shall be ensured that the groundwater quality is not affected adversely due to the project.	<ul style="list-style-type: none"> Tailing pond has not yet been constructed. However, after it is made and becomes operational, ground water quality around the tailing pond shall be monitored regularly.
xxv	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water required for the project.	<ul style="list-style-type: none"> Application has already been submitted with Water Resource Department, Govt. of Odisha, for drawl of 19200 KL/day of surface water and the approval is awaited. However, Executive Engineer, Salapada has given temporary permission for drawl of 250 KLD of surface water from Kundra nallah.
xxvi	Appropriate mitigative measures should be taken to prevent pollution of the Baitarni River, the Suna Nadi & the Karo Nadi in consultation with State Pollution Control Board.	<ul style="list-style-type: none"> The Baitarni River, Suna Nadi & Karo Nadi are not being polluted because the mining activities of Khondbond Iron & Manganese mine. However, necessary preventive measures shall be taken, if State Pollution Control Board suggests anything.
xxvii	The Project proponent shall practise suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rain water harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the MoEF & its Regional Office, Bhubaneswar.	<ul style="list-style-type: none"> Detailed study has been conducted by engagement of the expertise of M/s. KRG Foundation, Chennai to construct rain water harvesting system at the mine site. The rainwater harvesting plan has also been approved by CGWB, South Eastern Region, Bhubaneswar. Copy of the same plan shall be submitted to the MoEF & its Regional Office, Bhubaneswar.
xxviii	Vehicular emission shall be kept under control and regular monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded	<ul style="list-style-type: none"> Emission checks for all the vehicles are carried out once in every six months. Effective water sprinkling is done on haul roads to control fugitive dust. Moreover, outside transportation of mineral is carried out through covered trucks. Further, overloading of trucks is restricted to prevent spillage of material.
xxix	No transportation of ore outside the mine lease area shall be carried out after sunset.	<ul style="list-style-type: none"> Because of restrictions made by the District Collector, Keonjhar, not to transport ore during day time, the same is transported during night.
xxx	No blasting shall be carried out after sunset. Blasting operation shall be carried 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.	<ul style="list-style-type: none"> 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.
xxxi	Drills shall either be operated with Dust extractors or equipped with water injection system.	<ul style="list-style-type: none"> Wet drilling is in practice. All drills have been provided with dust suppression system.
xxxii	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.	<ul style="list-style-type: none"> Effective 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. Further, the dust extraction and suppression system are maintained properly for effective dust control.

Sl. No	Specific Condition	Compliance status
xxiii	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	<ul style="list-style-type: none"> • There is a common residential colony at Joda both for the employees of Khondbond Iron & Mn Mine & Joda East Iron Mine. Because of hilly topography of the residential area, installation of a single Sewage Treatment Plant has not been feasible. • Presently, at two locations STP has been installed and it shall be extended for all sewage water generated from the colony. Photographs of STP are attached as Annexure IX. For waste water from workshop, oil and grease separation pits are provided. • Further, no waste water generated from Khondbond Iron & Mn Mine is discharged outside of the lease and hence requires no treatment.
xxiv	During operation of the project, special emphasis shall be given to minimise risks and hazards due to manganese poisoning.	<ul style="list-style-type: none"> • Management of risks and hazards is being done as per established procedure made under OHSAS 18001. At the time of PME for the employees manganese poisoning is monitored and necessary care is taken for prevention and control.
xxxv	Pre-placement of medical examination and periodical examination of the workers engaged in the project shall be carried out and record maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	<ul style="list-style-type: none"> • Pre-placement medical examination and Periodical examination of the workers engaged are conducted regularly. 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 less than 40 years.
xxxvi	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	<ul style="list-style-type: none"> • There has been no requirement for construction of temporary housing for the project labours, since the mine has permanent infrastructural facilities at Joda.
xxxvii	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.	<ul style="list-style-type: none"> • Digital processing of the lease area based on high resolution satellite imagery was carried out during 2012 by engagement of the expertise of M/s. Ecomen Laboratories Pvt. Ltd. Lucknow. The analysis of the imagery data is attached as Annexure – VIII

Sl. No	Specific Condition	Compliance status
xxxviii	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely sloth bear, elephant, godhi etc. spotted in the study area. The critical habitats if any within the impact zone shall be individually identified and the conservation plan prepared specific to this project in consolation with the state forest and wild life deptt. Should effectively address the same. All the safeguard measures brought out in the wild life conservation plan prepared specific to this project site shall be effectively implemented in consolation with the state forest and wild life dept. A copy of approved wild life conservation plan shall be submitted to the Ministry & its Regional office, Bhubaneswar within three months.	<ul style="list-style-type: none"> • Tata Steel is taking all the precautionary measures towards conservation and protection of endangered flora and fauna. The endangered species such as, wolf, sloth bear etc. are never or very rarely seen in the area. Site specific Wild Life Conservation Plan with required fund allocation for the mine was prepared and submitted for approval of Chief Wild Life Warden. However, as advised by DFO, Keonjhar, the plan is now prepared as per the revised format and shall be submitted again for approval. • A copy of action plan shall be submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, after the plan is approved.
xxxix	The entire mining lease area shall be fenced by erecting solar power electric fencing all around it. The fencing so erected shall be maintained properly and the cost towards erection and maintenance of the solar power electric fencing shall be borne by the project proponent out of the project cost.	<ul style="list-style-type: none"> • For erection of solar power electric fencing, approval of ACF, Champua forest Range, vide our letter dated 12th May, 2012 is sought. On receipt of approval/suggestion from the state forest department, the solar power electric fencing will be installed.
xl	The critical parameters such as RSPM (Particulate matter with size less than 10 micron i.e., PM ₁₀) and NOx 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 displayed 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 Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	<ul style="list-style-type: none"> • RSPM & NOx in ambient air is monitored regularly and the results are given as Annexure – IV. • Peak particle velocity at the time of blasting is also monitored regularly at 300m distance. • Monitoring data is being uploaded on the Company's website as part of this report and also displayed on a display board at the main entrance gate of the mine.
xli	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.	<ul style="list-style-type: none"> • A progressive mine closure plan approved by IBM is in place. • The final mine closure plan along with details of Corpus fund will be submitted to the Ministry of Environment & Forests 5 years in advance.

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.	<ul style="list-style-type: none"> No change in mining technology and scope of working has been made.
(ii)	No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	<ul style="list-style-type: none"> For any expansion or modification in future prior approval shall be sought from MoEF.
(iii)	No change in the calendar plan including excavation, quantum of iron ore and waste produced should be made.	<ul style="list-style-type: none"> Calendar plan is being strictly adhered to the excavation.
(iv)	Atleast four ambient air quality- monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x and CO monitoring. Location of the stations should be decided based on the meteorological data, topographical features, and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.	<ul style="list-style-type: none"> Ambient air quality monitoring is regularly 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. Please find enclosed the monitoring details in Annexure - IV. All the parameters are within the prescribed limit.
(v)	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional Office at Bhubaneshwar and to the State Pollution Control Board/ Central Pollution Control Board once in six months.	<ul style="list-style-type: none"> This report is submitted to SPCB, Orissa and Regional office, MoEF, Bhubaneswar once in every six months. Please find the enclosed monitoring details in Annexure - IV. All parameters are within the prescribed limit.
(vi)	Fugitive dust emissions from all the sources should be controlled regularly, monitored and data recorded properly. Water spraying arrangements on haul roads, wagon loading, dumpers/ trucks, loading and unloading points should be provided and properly maintained. Crushers and conveyors shall be enclosed and provided with dust extraction systems near the sources of generation.	<ul style="list-style-type: none"> Effective water sprinkling is done on haul roads and at loading and unloading points. Dust suppression systems in the drills are functioning effectively.
(vii)	Adequate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting operations, operations of HEMM, etc. should be provided with ear plugs/muffs. Workers in Noise generating areas and engaged with noise generating machinery should be subjected to audiometric tests annually.	<ul style="list-style-type: none"> Regular noise monitoring is done at different work areas. High noise areas are earmarked and people working there are provided with ear protection equipments and the system is ensured by certification to OHSAS 18001 and regular field audits. Noise monitoring data is attached as Annexure – V.

Sl No.	General Conditions	Compliance Status/ Action Plan
(viii)	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 19 th May 1993 and 31 st December 1993 or as amended from time to time.	<ul style="list-style-type: none"> • 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. The result of the workshop effluent is enclosed as Annexure – III. • There is no waste water generation from the mines.
(ix)	<p>Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.</p> <p>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>	<ul style="list-style-type: none"> • 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 and the report is enclosed as Annexure – VI. • 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 organised regularly to observe any contractions due to exposure to dust and other occupational hazards.
(x)	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 Organisation.	<ul style="list-style-type: none"> • A separate environmental management cell is in place with the people having relevant qualification on environmental science. The Head of the department reports to General Manager, the head of the organisation.
(xi)	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purposes. Year-wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	<ul style="list-style-type: none"> • Funds allocated for environmental management are spent only for environment related purposes and not diverted to any other purpose. • During the year 2014-15 an amount Rs. 121.6 lakhs (approx) was spent towards environmental protection measures at Khondbond Iron Mine. Details are given in Annexure - VII.
(xii)	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	<ul style="list-style-type: none"> • 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 kind information.
(xiii)	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full co-operation to the officer(s) of the Regional Office by furnishing the requisite data/information/ monitoring reports.	<ul style="list-style-type: none"> • We extend full co-operation to the officers of the Regional Office during their visit and furnish the required data, information and monitoring reports.

Sl No.	General Conditions	Compliance Status/ Action Plan
xiv.	<p>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>	<ul style="list-style-type: none"> • Six monthly reports are submitted regularly on the status of implementation of the stipulated environmental safeguards to the Regional Office, MoEF, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board. • Further, the six monthly compliance report along with the monitoring results are uploaded in Tata Steel's website and updated periodically.
xv	<p>A copy of the clearance letter shall be sent by the proponent to the 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>	<ul style="list-style-type: none"> • A copy each of Environment Clearance has been sent to the Sarpanch, Balada Gram Panchayat, Sarpanch, Jalahari Gram Panchayat, Sarpanch, Malada Gram Panchayat and President, Zila Parisad, Keonjhar on 27th December, 2011.
xvi	<p>The environment 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 mentioned 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 e-mail.</p>	<ul style="list-style-type: none"> • Environment statement in Form-V is submitted annually to the State Pollution Control Board, Odisha as prescribed under the Environment (Protection) Rules, 1986. The environmental statement for the year 2013-14 was submitted on 23rd Sept'2014. • Further, the Environmental statement along with status of Environmental clearance conditions is also put in our Company's website www.tatasteel.com. The same reports are also sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.
xvii	<p>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.</p>	<ul style="list-style-type: none"> • Details of Environment Clearance with regard to Khondbond Iron & Mn Mine were published both in Oriya and English local newspapers named "Pragativadi" and "New India Express" respectively on 26th December 2011. • Vide our letter no. MD/ENV/ 616/ 106/ 2011, dated 27th December, 2011, the copy of the environmental clearance was communicated to the Member Secretary, OSPCB, Bhubaneswar.

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

Date of Sampling: 27th November 2014

No.	Parameter	Permissible Limits	OW* Sebasram Gonua Vill (KH3)	OW* Patrasai Gonua Vill (KH4)
1	pH	6.5-8.5	7.36	7.24
2	Chloride, ppm	250	4.45	5.87
3	Iron, ppm	0.3	0.21	0.12
4	Fluoride, ppm	0.6-1.2	0.73	0.81
5	TDS, g/l	500	44.74	11.54
6	EC, ms/m	600	106.32	183.43
7	Sulphate	400	5.22	6.12
8	Nitrate	45	6.11	3.38
9	Calcium, ppm	200	14.36	24.76
10	Magnesium, ppm	30	10.25	11.56
11	Arsenic, ppm	0.05	0.003	0.002
12	Manganese, ppm	0.30	0.121	0.015
13	Zinc, ppm	5	0.022	0.029
14	Chromium, ppm	0.05	0.007	0.013
15	Lead, ppm	0.05	0.005	0.011
16	Microbial count (CFU/ml) after 24 h	10	Nil	Nil

*OW: Open Well

R.K. Panda
28/12/14

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

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

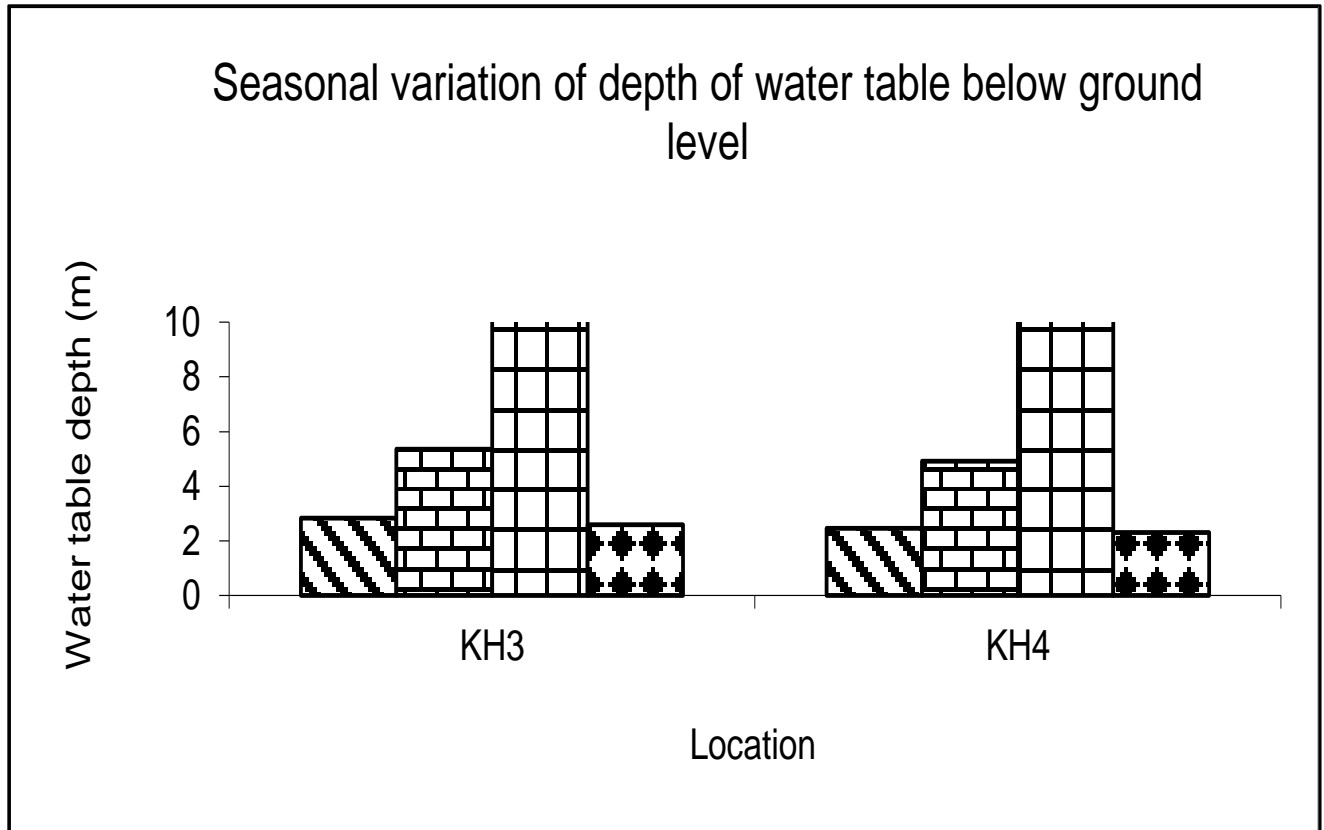
Date of Sampling: 25th February 2015

No.	Parameter	Permissible Limits	OW* Sebasram Gonua Vill (KH3)	OW* Patrasai Gonua Vill (KH4)
1	pH	6.5-8.5	7.62	6.13
2	Chloride, ppm	250	5.47	6.15
3	Iron, ppm	0.3	0.16	0.13
4	Fluoride, ppm	0.6-1.2	0.68	0.74
5	TDS, g/l	500	43.64	12.93
6	EC, ms/m	600	116.57	189.41
7	Sulphate	400	7.62	6.11
8	Nitrate	45	5.27	3.82
9	Calcium, ppm	200	17.12	27.84
10	Magnesium, ppm	30	11.45	12.61
11	Arsenic, ppm	0.05	0.003	0.002
12	Manganese, ppm	0.30	0.16	0.022
13	Zinc, ppm	5	0.044	0.032
14	Chromium, ppm	0.05	0.011	0.013
15	Lead, ppm	0.05	0.012	0.009
16	Microbial count (CFU/ml) after 24 h	10	Nil	Nil

*OW: Open Well


 20/3/15
Dr. R. K. PANDAY
 Professor
 Dept. of Agricultural & Food Engg.
 Indian Institute of Technology
 Kharagpur - 721302, India

Khondbond Iron & Manganese Mine
TATA STEEL LIMITED



KH3 – Well at Sebasram Gonua

KH4 – Well Ganua village

Debraj
Lab-in-charge

Annexure - III

Khondbond Iron & Manganese Mine
Workshop Effluent Quality
Average October'14 – March' 14

Parameter	Khondbond Oil & Grease Trap	Limit
pH	4.08	5.5 – 9.0
Suspended Solids mg/l	49.02	100.00
Oil & Grease mg/l	6.03	10.00

Debraj
Lab-in-charge

Annexure - IV

Khondbond Iron & Manganese Mine																				
Average Air Quality 2014-15																				
	Near Plant					Mining Site					Near Weighbridge					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 14	56.88	39.38	9.69	10.00	ND	55.13	37.75	9.51	9.84	ND	54.25	36.75	9.48	9.73	ND	45.38	27.63	8.54	8.79	ND
May 14	52.63	35.25	9.26	9.58	ND	51.88	34.63	9.19	9.50	ND	48.63	31.13	8.86	9.14	ND	42.75	24.88	8.28	8.54	ND
Jun 14	42.38	24.88	8.24	8.46	ND	41.38	23.88	8.14	8.41	ND	40.75	24.50	8.08	8.47	ND	39.13	22.25	7.99	8.26	ND
Jul 14	37.13	19.13	7.71	7.94	ND	37.00	19.25	7.70	7.93	ND	37.88	20.13	7.79	8.03	ND	35.00	17.00	7.50	7.70	ND
Aug 14	39.50	21.00	7.95	8.18	ND	37.25	18.88	7.73	7.94	ND	36.38	17.88	7.65	7.86	ND	31.38	13.13	7.14	7.34	ND
Sep 14	40.50	22.88	8.05	8.28	ND	38.88	21.38	7.89	8.11	ND	39.63	22.25	7.96	8.21	ND	36.88	20.25	7.69	7.94	ND
Oct 14	41.13	23.38	8.11	8.34	ND	40.25	22.88	8.03	8.26	ND	40.00	23.63	8.00	8.38	ND	37.13	19.63	7.74	7.98	ND
Nov 14	41.88	24.25	8.19	8.46	ND	40.25	22.63	8.01	8.26	ND	40.13	22.00	8.01	8.24	ND	37.75	20.88	7.78	8.04	ND
Dec 14	42.13	24.63	8.19	8.41	ND	41.00	23.25	8.10	8.34	ND	41.78	23.88	8.18	8.44	ND	39.38	21.38	7.94	8.18	ND
Jan 15	43.50	25.75	8.35	8.59	ND	43.13	25.50	8.31	8.55	ND	43.25	25.50	8.33	8.55	ND	37.50	19.63	7.75	7.99	ND
Feb 15	43.13	25.63	8.29	8.58	ND	42.63	25.00	8.26	8.51	ND	42.63	24.88	8.26	8.50	ND	38.75	20.88	7.90	8.13	ND
Mar 15	41.50	23.88	8.15	8.40	ND	39.88	22.13	7.98	8.23	ND	43.38	25.63	8.34	8.61	ND	36.75	19.00	7.68	7.90	ND
Limit (24 hours average)	100	60	80	80	4	100	60	80	80	4	100	60	80	80	4	100	60	80	80	4
(Figures are in micrograms/m ³ except CO which is in mg/m ³)																				

Debra
Lab-in-charge

Annexure - V

AVERAGE AMBIENT NOISE QUALITY AT KHONDBOND
2014-15

	Location	Day Time (6.00 am to 10.00 pm)	Limits in dB(A) Leq.	Night Time (10.00 pm to 06.00 am)	Limits in dB(A) Leq.
Residential Area	Hospital Premises	53.11		42.34	
	Training Centre	51.33	55.0	41.34	45.0
	Township	53.85		42.48	
Industrial Area	Manager's office	52.47		41.37	
	Mining area	56.13	75.0	44.44	70.0
	Plant area	57.24		45.47	

Debraj
Lab-in-charge

Annexure - VI

RESPIRABLE DUST SURVEY

Mine : Khondbond Iron & Manganese Mine Summer 2014

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

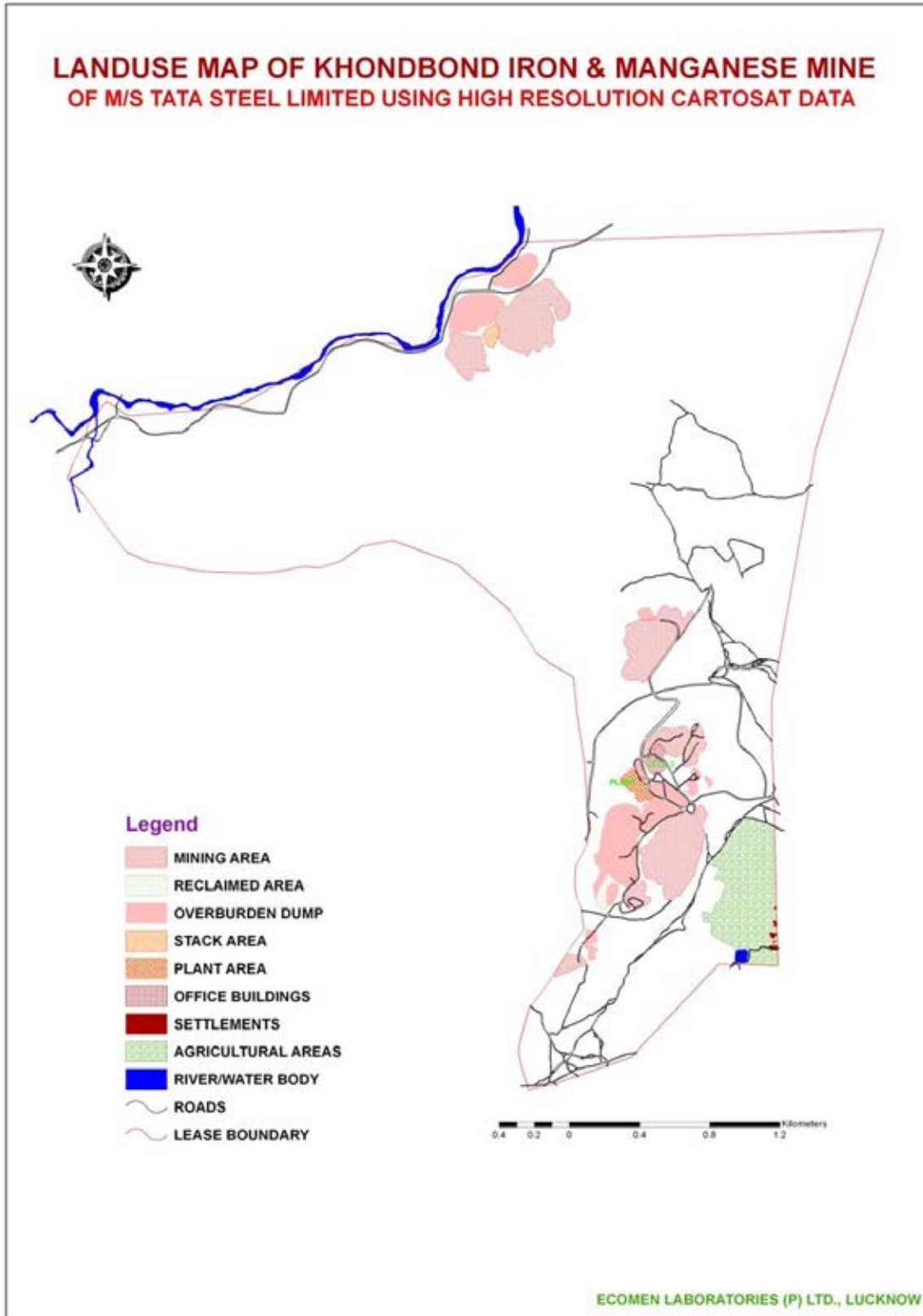
Date	SI No	Location	Level mg/cu.m	Standard as prescribed by DGMS	Remarks
10.09.14	01	Near Dumping Hopper	1.28	3.00 mg/cu.m	Within limit
18.09.14	02	Secondary crusher	1.38	3.00 mg/cu.m	Within limit
08.10.14	03	Drill 1m away	1.15	3.00 mg/cu.m	Within limit
18.10.14	04	Shovel 1m away	1.19	3.00 mg/cu.m	Within limit
14.11.14	05	Dumper (cabin)	0.50	3.00 mg/cu.m	Within limit
23.11.14	06	Loading point	0.55	3.00 mg/cu.m	Within limit

Jefroon
Lab-in-charge

ANNUAL ENVIRONMENTAL EXPENDITURE
Khondbond Iron & Manganese Mine
2014-15

Sl No	Heads	Amount (Rs. in lakhs)
I	Expenses in dry fog system installation and maintenance-wet and dry plant	02.80
ii	Operation and maintenance of mobile water sprinkler	40.80
iii	Maintenance of wet drill	13.54
iv	Construction of toe wall & garland drain with sasuage net	29.00
v	Construction and maintenance of check dams.	01.50
vi	Construction and maintenance of oil separation pit	01.40
vii	Repairing of earth pits at plant	00.50
viii	Provision of Concrete footpath at equipment area for reduction in dust generation.	02.50
ix	Pre-feasibility study for installation of rain water harvesting facilities.	04.64
x	Horticulture and plantation activities.	11.22
xi	Celebration of MEMC & Environment week.	02.00
xii	Environment monitoring	07.20
xiii	Maintenance of Electronic display board	01.20
xiv	Ground vibration study	03.30
	Total:	121.60

Annexure – VIII



**Annexure – IX:
Photographs of Sewage Treatment Plant for treatment of domestic effluent
At Colony**

