Dr. R.K. DEY, IFS
Addnl. PCCF (C)
Regional Office (EZ)
Ministry of Environment, Forests & Climate Change,
Govt. of India
A/3, Chandrasekharpur
Bhubaneswar–751 013 (Odisha)

MD/ENV/ 81 /106 /18
Date: 29.05.2017

Sub: Half-yearly compliance status report of Environmental Clearance conditions for the period October'17 – March'18 in respect of Khondbond Iron & Manganese Mine.

Ref: Environmental Clearance letter no. J-11015/888/2007-IA.II(M), dated: 21.12.2011.

Dear Sir,

We are herewith submitting the six-monthly compliance report in respect of the stipulated Environmental Clearance conditions of Khondbond Iron & Manganese Mine for the period from **October'17 - March'18** as per EIA Notification, 2006. We are also sending you the soft copy of the report to your good office on email: roez.bsr-mef@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)

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Registered Office Bombay House 24 Homi Mody Street Mumbai 400 001

TATA

TATA STEEL

Compliance

to

Environmental Clearance Conditions

of

Khondbond Iron & Manganese Mine
M/s. Tata Steel Limited

(Environmental Clearance letter no. J-11015/888/2007-IA.II(M), dated: 21.12.2011)

for the period: Oct'17 – March'18

COMPLIANCE REPORT PERIOD: OCTOBER'2017 - MARCH'2018

ENVIRONMENTAL CLEARANCE TO
KHONDBOND IRON & MANGANESE MINE OF TATA STEEL LIMITED
VIDE MoEF&CC's LETTER NO. J-11015/888/2007.IA.II (M), DATED: 21.12.2011
FOR PRODUCTION OF 8 MTPA (ROM) OF IRON ORE & 0.1 MTPA MANGANESE ORE

Specific Condition:

Sl. No.	Condition	Compliance
1	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).
2	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 and consent to operate have been obtained from State Pollution Control Board, Orissa.
3	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.	Fresh EC shall be obtained at the time of next lease renewal as per EIA Notification, 2006 as amended subsequently.
4	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.	At present, the lowest working depth of the mine in the Iron ore zone is much above the ground water table 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.
5	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.	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. 20.03.12.
6	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.	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.
7	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.	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.
8	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.	An area of 0.50 ha has been identified for storage of top soil (Annexure-I). 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.
9	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.	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. Photographs of air quality management are attached as Annexure-II.

Sl. No.	Condition	Compliance
10	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.	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.
11	The tailing ponds shall be lined HDPE lining.	When tailing ponds shall be constructed, that will be provided with HDPE lining.
12	The decanted water from the tailing dam shall be re- circulated and there should be zero discharge from the tailing dam.	This will be ensured when both the wet processing plant and tailing ponds are operational.
13	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.	This will be ensured when both the wet processing plant and tailing ponds are operational.
14	The project proponent shall constitute on 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.	The mine is certified under ISO 9001, ISO 14001, OHSAS 18001 & SA 8000. 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.
15	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.	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 adequate dimensions 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. Photographs of dump management are attached as Annexure-III.
16	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. 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.	Garland drains with settling pits, have been made all along the OB dumps to prevent run off of water. 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. All the Garland drains, Settling tanks and Check dams of appropriate size, gradient and length been constructed both around the mine pit and over burden dump(s) to prevent run off of water and flow of sediments directly into water bodies. Sump capacity has been designed keeping 50% safety margin over and above peak sudden rainfall (based on previous years data). Photographs of Garland Drains, Settling pits etc. are shown as Annexure-III.

Sl. No.	Condition	Compliance
17	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.	To restrict the run-off, garland drains of adequate dimensions have been constructed beyond the retaining walls as per catchment area of OB dumps and rainfall data which are adequate to take care of the water during peak rain fall.
18	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.	This being the activity at the end of mine life shall be done in due course of time.
19	Plantation shall be raised in an area of 965.018 ha 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.	Till end of Mar'2018, we have planted 362060 numbers of saplings. Plantation over an area of 965.018 ha shall be achieved at the end of mine life. Plantation over 7.5m greenbelt is in progress Further, plantation is being carried out by native species on the dump slopes and along the side of the roads.
20	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.	Regular water sprinkling is being carried out by use of mobile water sprinklers around the crushing and screening plant, loading & unloading area and haul roads. 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.
21	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.	Monitoring of flow rate of Kundra nallah flowing at the side of the mining lease is being out and records maintained.
22	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.	The Q- ore body is being augmented for rain water harvesting at Khondbond. Photographs of the same are attached as Annexure-IV.
23	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 is monitored regularly four times a year. The results are sent to Regional office, MoEF&CC&CC and SPCB, Odisha once in every six months. 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. The monitoring results of Ground water quality & Ground water level are annexed as Annexure-V.
24	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.	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.
25	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water required for the project.	We have obtained surface water permission from water resource division vide letter no 3300, dated: 11.02.2016.
26	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.	To prevent pollution of Sona river during rains, all the mitigative measures are taken such as toe wall, garland drains, check dams , settling pits etc.
27	The Project proponent shall practise suitable rainwater harvesting measures on long term basis and work out a detailed scheme for	Detailed study has been conducted by engagement of the expertise of M/s. KRG Foundation, Chennai to construct

Sl. No.	Condition	Compliance
	rain water harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the MoEF&CC & its Regional Office, Bhubaneswar.	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&CC&CC & its Regional Office, Bhubaneswar.
28	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	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.
29	No transportation of ore outside the mine lease area shall be carried out after sunset.	Because of restrictions made by the District Collector, Keonjhar, not to transport ore during day time, the same is transported during night.
30	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.	Blasting is being carried out during day time only. Controlled Blasting is being carried out for control of ground vibrations and to arrest fly rocks, as per the recommendations of CIMFR, Dhanbad.
31	Drills shall either be operated with Dust extractors or equipped with water injection system.	Wet drilling is in practice. Drills have been provided with dust suppression system.
32	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.	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.
33	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	10 KLD Sewage Treatment Plant was commissioned to treat the waste water generated from Khondbond Iron & Mn Mine and for waste water from workshop, oil and grease separation pits are provided. Photographs of the same are shown as Annexure-VI.
34	During operation of the project, special emphasis shall be given to minimise risks and hazards due to manganese poisoning.	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.
35	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.	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 being monitored. The employees are also given regular awareness training on safety and health aspects as part of implementation process of OHSAS – 18001 systems.
36	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.	There has been no requirement for construction of temporary housing for the project labours, since the mine has permanent infrastructural facilities at Joda.
37	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	Digital processing of the lease area based on high resolution satellite imagery was carried out during 2016 by engagement of the expertise of Odisha Space Application Centre (ORSAC), Department of Science & Technology, Govt. of Odisha .The analysis of the imagery data is attached as Annexure-VII.

Sl. No.	Condition	Compliance
38	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 deptt. A copy of approved wild life conservation plan shall be submitted to the Ministry & its Regional office , Bhubaneswar within three months.	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 approved from state forest and wild life department vide letter no. 843/1 WL-SSP-100/2016; dated 28th January 2016. The copy of approved wild life conservation plan has been submitted to the Ministry & its Regional office, Bhubaneswar vide letter no: KIM/325/38-A ; dated 20.05.2016
39	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.	We have sought guidance and clarification of ACF, Champua forest Range for erection of solar power electric fencing in mine lease area, vide our letter dated 17th May, 2012. Further ACF, Champua forest range has asked guidance from DFO, Keonjhar and the clarification is awaited. . On receipt of approval/suggestion from the state forest department, the solar power electric fencing will be installed.
40	The critical parameters such as RSPM (Particulate matter with size less than 10 miocron i.e., PM10) 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.	The critical parameters like RSPM & NOx in ambient air are being monitored regularly and all the results are within the limits. Peak particle velocity at the time of blasting is also monitored regularly at 300m distance. Quality of discharged water (TDS, DO,PH, and total suspended Solids (TSS)) is also being monitored and all the results are within the limits. All the 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
41	A final Mine closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	A progressive mine closure plan approved by IBM is in place. The final mine closure plan along with details of Corpus fund will be submitted to the Ministry of Environment & Forests 5 years in advance.

General Condition:

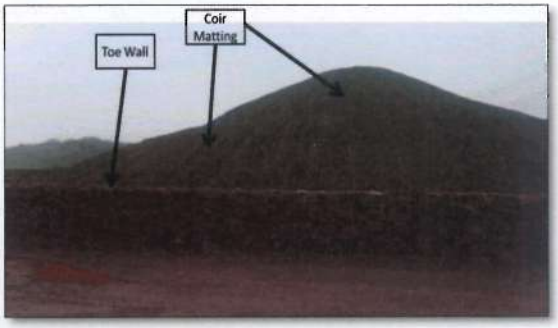
Sl. No.	Condition	Compliance
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	We are operating as per the approved mining technology and scope of working mentioned in Environmental Clearance granted to us and no change in mining technology and scope of working shall been made and adhered to the condition of MoEF&CC.
2	No further expansion or modification in the plant shall be carried out without prior approval of the MoEF&CC.	For any expansion or modification in future prior approval shall be sought from MoEF&CC.
3	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.	Calendar plan (IBM Approved Mining Plan) prepared for the mine is being strictly adhered to and we are well within thelimits specified in Mining Plan as well as EC and CTO granted capacity.
4	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	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. Ambient Air Quality Report are attached as Annexure-VIII.

Sl. No.	Condition	Compliance
	sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	
5	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.	RSPM(Particulate matter with size less than 10micron i.e., PM10) and , NOx in ambient air are being monitored as per standard guidelines and the reports are submitted to Regional office, MoEF&CC, Bhubaneswar on half yearly basis and SPCB, Odisha on monthly basis.
6	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.	Fugitive dust emissions from all the sources are controlled regularly. Effective water sprinkling is being done on haul roads, loading and unloading and at transfer points.Dry fog system is being used in plant areas to avoid generation of fugitive dust.
7	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.	Regular noise monitoring is done at different work areas. High noise areas are earmarked and people working there are provided with ear protection equipment and the system is ensured by certification to OHSAS 18001 and regular field audits.
8	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. Photograph of Oil & Separation pit is attached as Annexure-IX.
9	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. Respirable dust survey at different locations is done regularly. 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.
10	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.
11	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	Funds allocated for environmental management are spent only for environment related purposes and not diverted to any other purpose. During the year 2017-18 an amount Rs. 476.64 lakhs (approx) was spent towards environmental protection measures at Khondbond Mine and details are attached as Annexure-X.
12	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 of start of land development work can be assigned. However, the copy of the Environmental Clearance has been sent to the Regional Office, MoEF&CC, Bhubaneswar for kind information.
13	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.
14	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	Six monthly reports are submitted regularly on the status of implementation of the stipulated environmental safeguards to the Regional Office, MoEF&CC, 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.

Sl. No.	Condition	Compliance
	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 Central Pollution Control Board and the State Pollution Control Board.	
15	A copy of the clearance letter shall be sent by the proponent to Concerned Panchayat, Zila Parisad / Municipal Corporation Urban Local Body and the Local NGO, if any, from whom suggestions/ representations if any, were received while processing the proposal. The Clearance letter shall also be put on the website of the Company by the proponent.	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.
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.	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 2016-17 was submitted on 26th Sept'207. 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.
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 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 26.12.11.Vide our letter no. MD/ENV/ 616/ 106/ 2011, dated 27.12.11,the copy of the environmental clearance was communicated to the Member Secretary, OSPCB, Bhubaneswar.

Annexure-I: Top Soil Collection at the site & at earmarked place

Annexure-II: Air Quality Management



Coir Matting of Dumps

Fixed Water Sprinkler

Mobile Water Sprinkler

Dry Fog at Crushing & Screening Plant

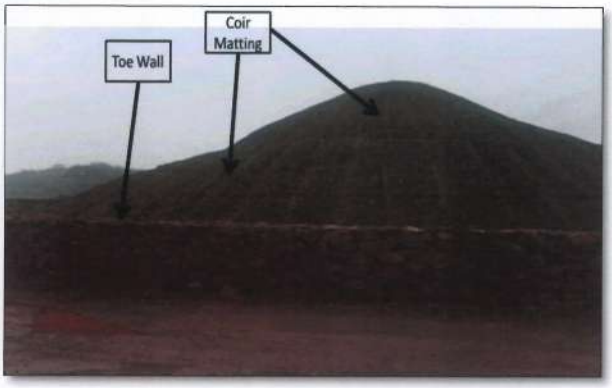
Annexure-II: Air Quality Management.....Cont.

Wet Drilling

Water Mist Canon

Plantation on Dumps

Annexure-III: Dump Management



Coir Matting of Dumps

Garland Drains

Annexure-III: Dump Management .....Cont.


Toe Walls at Dumps

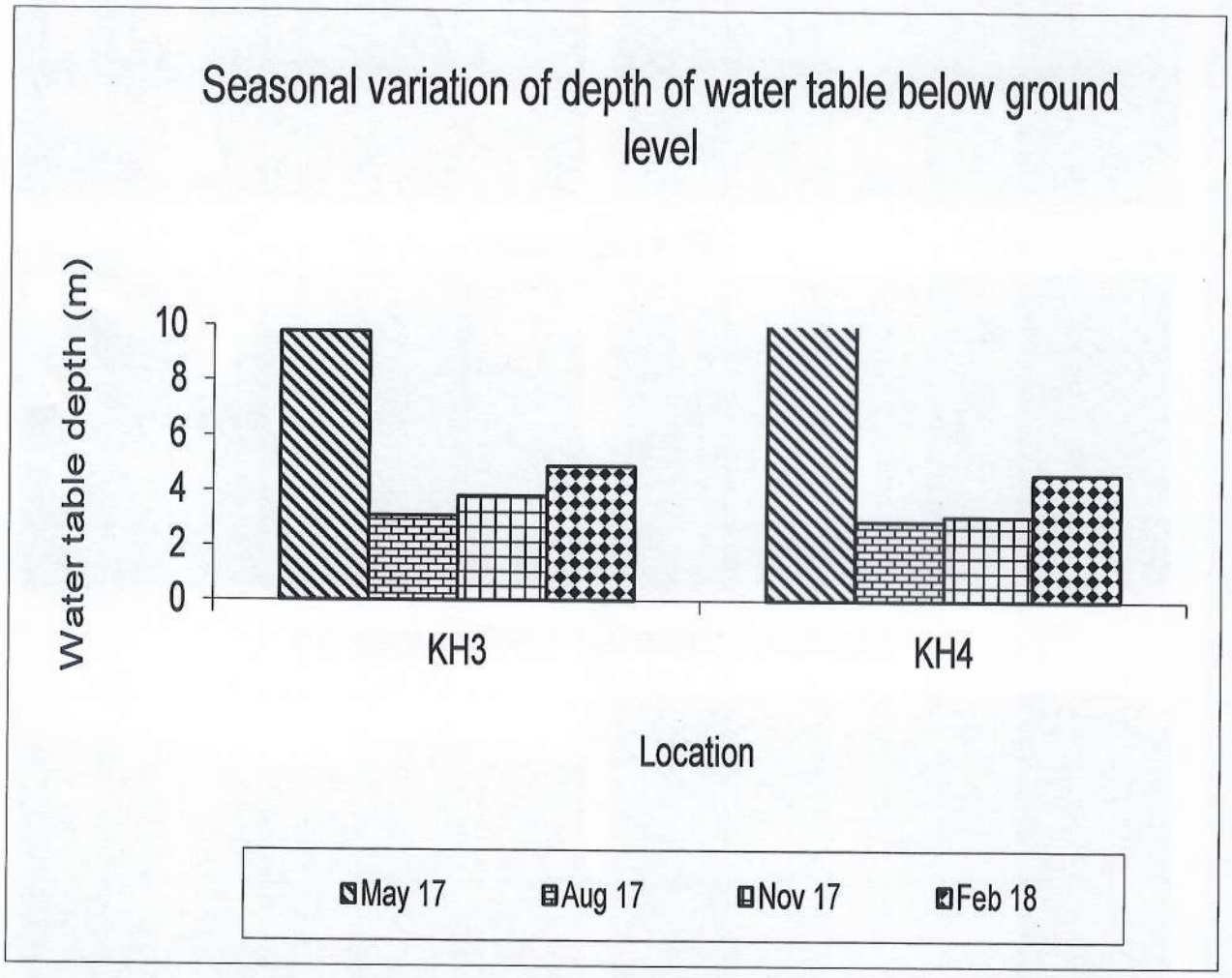

Dump Plantation


Check Dam for Surface Runoff Management


Settling Pit for Surface Runoff Management

Annexure-IV: Rain Water Harvesting Structure

Annexure-V: Ground Water Level and quality



KH3 – Well at Sebasram Gonua **KH4 – Well Gonua village**

Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)

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

Ref.: VCSPL/17/R-3418 Date: 04.01.2018

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

1. Name of Industry : **Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Sebasram Ganua Village ; GW-2: Guruda Village.**
3. Date of sampling : 15.12.2017
4. Date of analysis : 16.12.2017 to 21.12.2017
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No	Parameter	Testing Methods	Unit	Standard as per IS -10500:1991	Analysis Results	
					GW-1	GW-2
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	7.38	7.42
6	Total Hardness (as $CaCO_3$)	APHA 2340 C	mg/l	300	138.0	144.0
7	Iron (as Fe)	APHA 3500Fe, B	mg/l	0.3	0.25	0.28
8	Chloride (as Cl)	APHA 4500Cl$^-$B	mg/l	250	37.0	40.0
9	Residual, free Chlorine	APHA 4500Cl, B	mg/l	0.2	ND	ND
Desirable Characteristics						
10	Dissolved Solids	APHA 2540 C	mg/l	500	218.0	227.0
11	Calcium (as Ca)	APHA 3500Ca B	mg/l	75	38.1	39.3
12	Magnesium (as Mg)	APHA 3500Mg B	mg/l	30	10.4	11.2
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	6.6	6.4
16	Nitrate (as NO_3)	APHA 4500 NO_3^- E	mg/l	45	2.1	2.2
17	Fluoride (as F)	APHA 4500F$^-$C	mg/l	1.0	0.016	0.019
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	124.0	132.0
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 Coliform	APHA 9221B	MPN/100 ml	Not more than 10MPN/100ml	<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.-M-22&23, Chandaka Industrial Estate, Patia, Bhubaneswar-751024, Dist-Khurda, Odisha Tel. : 91-674-6451781, 7752017905
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Committed For Better Environment

Visiontek Consultancy Services Pvt. Ltd

(An Enviro Engineering Consulting Cell)

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

Ref.: ENVLAB/18/R814 *Date:* 04/04/18

GROUND WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF MARCH-2018

1. Name of Industry : **Khondbond Iron & Manganese Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Sebasram Ganua Village ; GW-2: Guruda Village.**
3. Date of sampling : 15.03.2018
4. Date of analysis : 16.03.2018 TO 22.03.2018
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	<2.0	<2.0
5	pH Value	APHA 4500H+ B	--	6.5-8.5	7.4	7.36
6	Total Hardness (as $CaCO_3$)	APHA 2340 C	mg/l	300	144.0	150.0
7	Iron (as Fe)	APHA 3500Fe, B	mg/l	0.3	0.24	0.26
8	Chloride (as Cl)	APHA 4500Cl B	mg/l	250	38.0	42.0
9	Residual, free Chlorine	APHA 4500Cl, B	mg/l	0.2	ND	ND
Desirable Characteristics						
10	Dissolved Solids	APHA 2540 C	mg/l	500	225.0	238.0
11	Calcium (as Ca)	APHA 3500Ca B	mg/l	75	38.9	40.1
12	Magnesium (as Mg)	APHA 3500Mg B	mg/l	30	11.4	12.2
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	0.008	0.009
15	Sulphate (as SO_4)	APHA 4500 SO_4^{2-} E	mg/l	200	6.5	6.8
16	Nitrate (as NO_3)	APHA 4500 NO_3^- E	mg/l	45	2.16	2.28
17	Fluoride (as F)	APHA 4500F- C	mg/l	1.0	0.020	0.022
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	0.07	0.08
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	132.0	138.0
30	Aluminium as(Al)	APHA 3500 Al 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 Coliform	APHA 9221B	MPN/100 ml	Not more than 10MPN/100ml	<2.0	<2.0

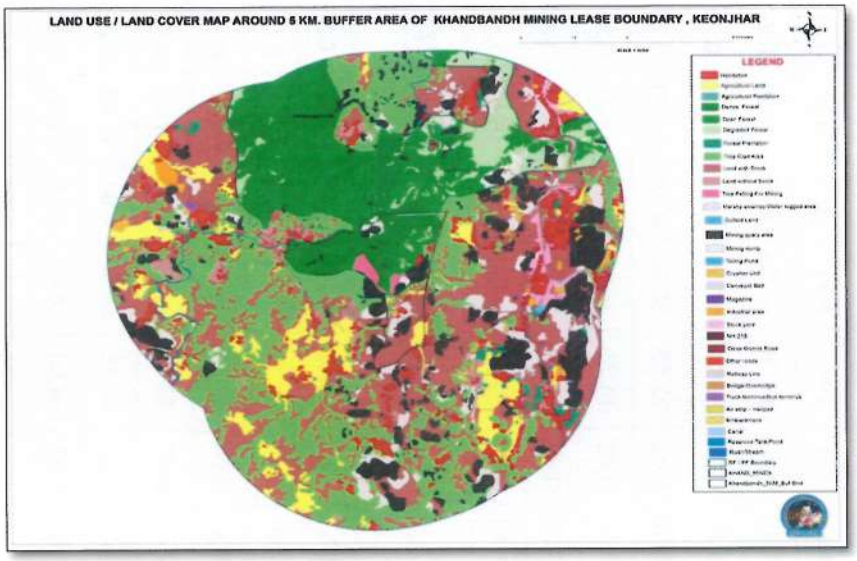
Note: CL : Colourless, AL: Agreeable, U/O : Unobjectionable, ND: Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

Plot No.-M-22&23, Chandka Industrial Estate, Patia, Bhubaneswar-751024, Dist-Khurda, Odisha Tel. : 91-674-6451781, 7752017905
E-mail : visiontekin@yahoo.co.in, visiontekin@gmail.com, Visit us at: www.vcspl.org
Committed For Better Environment

Annexure-VI: STP

Annexure-VII: Land Use of KIMM



Annexure-VIII: Ambient Air Quality Report

AVERAGE AIR QUALITY REPORT (CORE ZONE)

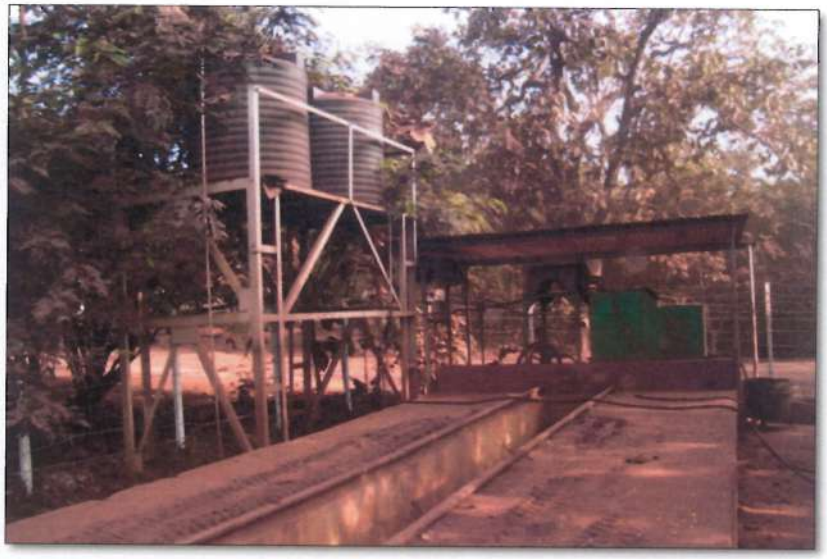
Month	Near Helipad					Near manganese Mines					Near 16-D					Near Labour Colony				
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
Oct 17	53.39	26.62	4.38	11.67	0.30	47.04	22.99	4.22	10.64	0.27	42.36	19.82	4.09	8.90	0.23	60.03	30.21	4.77	12.76	0.36
Nov 17	63.00	31.80	4.79	13.10	0.35	56.90	27.80	4.40	12.00	0.29	50.50	24.50	4.19	10.40	0.25	67.50	34.40	5.25	14.10	0.41
Dec 17	76.83	38.98	5.49	15.32	0.42	72.12	36.24	4.87	13.90	0.35	66.34	33.14	4.54	12.71	0.33	81.87	42.47	6.02	16.36	0.46
Jan 18	75.58	38.18	5.16	15.46	0.42	71.71	35.90	4.81	14.47	0.38	66.69	33.39	4.51	13.48	0.35	80.60	41.38	5.82	16.82	0.47
Feb 18	74.11	37.26	5.26	16.53	0.43	68.68	34.26	4.78	15.11	0.38	62.45	30.93	4.23	12.98	0.33	81.48	41.65	5.68	17.60	0.49
Mar 18	79.80	39.90	5.20	17.40	0.45	69.65	34.85	4.61	15.44	0.40	62.64	31.09	4.19	12.99	0.33	82.05	41.50	5.65	18.24	0.51

AVERAGE AIR QUALITY REPORT (BUFFER ZONE)

Month	Katesahi					Choramalda					Guruda Village					Khondbond village				
	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
Oct 17	28.60	12.10	4.00	9.00	0.11	32.20	14.60	4.00	9.00	0.11	30.95	13.70	4.00	9.00	0.11	29.75	12.70	4.00	9.00	0.11
Nov 17	38.90	18.50	4.1	<9.4	0.14	42.40	20.00	<4.1	<9.6	0.17	46.60	22.80	4.10	9.80	0.17	50.30	24.70	4.2	10.40	0.19
Dec 17	51.55	25.20	4.25	10.70	0.20	53.80	26.40	4.40	11.25	0.23	53.45	26.75	4.40	11.35	0.25	48.10	23.30	4.0	9.40	0.18
Jan 18	53.50	26.00	4.20	10.70	0.23	59.15	28.50	4.60	11.40	0.25	55.10	26.80	4.45	11.90	0.28	56.70	27.40	4.0	11.90	0.27
Feb 18	55.80	27.25	4.20	11.00	0.27	54.50	26.40	4.35	11.00	0.25	57.95	27.95	4.45	11.65	0.29	57.90	28.05	4.45	11.80	0.28
Mar 18	58.80	28.30	4.30	11.20	0.30	53.70	27.00	4.20	10.75	0.28	60.40	29.50	4.35	11.40	0.31	59.95	28.45	4.40	11.65	0.33

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

Annexure-IX: Oil & Grease Separation Pit



Annexure-X: Annual Expenditure on Environment Safeguards 2017-18

Sl. No.	Activity	2017-18	Type
1	CAAQMS	114.32	Capital
2	Installation of Bio Toilet	2.00	Capital
3	Civil construction for CAAQMS installation	3.00	Recurring
4	Maintenance of Sewage Treatment Plant	9.18	Recurring
5	Expenses in Dry Fog system operation and maintenance in plant	3.00	Recurring
6	Spares for maintaining DFS	5.00	Recurring
7	Power consumption-cost (running of compressor, DFS pump, sprinkler pump etc)	15.00	Recurring
8	Operation and maintenance of mobile water sprinkler	50.00	Recurring
9	Operation & Maintenance of wet Drill	5.00	Recurring
10	Construction of settling pit	20.00	Recurring
11	Construction of toe wall & garland drain with sausage net	55.00	Recurring
12	Maintenance of despatch roads	63.40	Recurring
13	Maintenance of haul roads	25.00	Recurring
14	Maintenance of oil separation pit	0.25	Recurring
15	Coir matting of fine stocks	15.00	Recurring
16	Fixed water sprinklers	24.00	Recurring
17	Awareness Programme (MEMC Week, World Environment Day)	3.00	Recurring
18	Display board Installation	7.00	Capital
19	Maintenance of Electronic display board	4.00	Recurring
20	Ground vibration study	4.00	Recurring
21	Environmental Monitoring	10.00	Recurring
22	IUCN Study on BMP	5.00	Recurring
23	Scientific Technology in mining operations	20.00	Recurring
24	Energy Audit	4.50	Recurring
25	Plantation	10.00	Recurring
	Total	**476.64**	