Dr. T H Mahato
Scientist C, Regional Office (Ranchi)
Ministry of Environment, Forests & Climate Change, Govt. of India
Bungalow no. A-2, Shyamali Colony
Ranchi-834002, Jharkhand
Tel: 0651-2410007, 2410002, Email: ro.ranchi-mef@gov.in

MD/ENV/487/101/16
Date: 29.11.2016

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

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

Dear Sir,

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

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

Thanking you,
Yours faithfully,

f: TATA Steel Limited

Utkay Kashyap

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, T.A. Division (Ground Floor), H.E.C. Dhurva, Ranchi - 834004 (Jharkhand)
: The Regional Officer, State Pollution Control Board, College Road, MB/12, New Housing Colony, Adityapur, Jamshedpur – 834004 (Jharkhand)

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

COMPLIANCE REPORT PERIOD: APRIL'2016 - SEPTEMBER'2016

ENVIRONMENTAL CLEARANCE TO
NOAMUNDI IRON MINE OF TATA STEEL LIMITED
VIDE MoEF's LETTER NO. J-11015/104/2011-IA.II (M), DATED: 10/06/2013
FOR PRODUCTION OF 10 MTPA (ROM) &
BENEFICIATION OF 18 MTPA THROUGHPUT OF IRON ORE

Specific Condition:

Sl. No.	Condition	Compliance
1	No mining activities will be allowed in forest area for which the Forest Clearance is not available.	Presently, mining operation is being carried out in the non-forest area of 397.63 ha and forest area of 370.92 ha for which Stage-I(In Principle Approval) has been obtained from MoEF, GoI with one year working permission vide letter No. 8-279/1985-FC(Pt), dated: 06.09.2013. After complying conditions of Stage-I clearance, we have obtained Stage–II approval (Final approval) from MoEF. GoI vide letter No. F. No. 8-279/1985-FC(Pt), dated: 04.09.2014.
2	The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide there letter F. No. 11-362/ 2012-FC, failing which the mining lease area will be reduced to the non-forest area plus the forest area for which the project proponent has been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.	New Guidelines for Forest Diversion Proposal by FC vide there letter F. No. 11-599/2014-FC dated: 01.04.2015 has been issued by MoEFCC regarding this matter in which guidelines of letter F. No. 11-362/2012-FC dated: 01.02.2013 have been supressed. Although, we have obtained approval under the FC Act, 1980 for 397.63 ha non forest area and 370.92 ha forest area located within the mining lease within a period of two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide there letter F. No. 11-362/ 2012-FC, dated: 01.02.2013 from MoEF, GoI. De-Reservation Proposal has also been submitted for diversion of remaining 383.37 ha of forest land, leaving a total forest area of 8.14 ha for safety zone. It is in positive consideration with State Government.
3	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	No specific clearance under the Wildlife (Protection) Act, 1972 is required for the project. However we have submitted details of Protection & Conservation of Wild Life measures to your good office vide our letter No. MD/ENV/204/101/15 dated: 20.04.2015.

Sl. No.	Condition	Compliance
4	Prior environmental clearance from the Standing Committee of the National Board for Wildlife shall be obtained if applicable, due to location of the mine within the core zone of Singhbhum Elephant Reserve, before starting any activity relating to the project at site. All the conditions stipulated by the Standing Committee shall be effectively implemented in the project. It shall be noted that this clearance does not necessarily imply that wildlife clearance shall be granted to the project and that your proposal for wildlife clearance shall be considered by the competent authorities on its merit and decision taken. The investment made in the project, if any based on environmental clearance granted to the project, in anticipation of the clearance from wildlife clearance shall be entirely at the cost and risk of the project proponent and Ministry of Environment and Forests shall not be responsible in this regard in any manner.	Though the project area falls within the core zone of Singhbhum Elephant Reserve, Environmental Clearance is no more required from the Standing Committee of the National Board for Wildlife as per letter no. Vanya Prani-19/2012/1310, dated. 19.03.2013 of State Govt. However, prior to grant of this EC, Company has submitted a plan for approval of NBWL with an undertaking to bear the proportionate cost towards the execution of comprehensive Wildlife Management plan to be prepared by the state Govt. However we have submitted details of Protection & Conservation of Wild Life measures to your good office vide our letter No. MD/ENV/204/101/15 dated: 20.04.2015.
5	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Jharkhand and effectively implement all the conditions stipulated therein.	Consent to Establish has been obtained from the Jharkhand State Pollution Control Board vide letter no. PC/NOC/JSR/26/12/G-3959, dated: 23.10.2013. Consent to Operate has also been obtained from State Pollution Control Board, Jharkhand vide letter No. PC/JSR/Air/325579/G-391, dated: 11.01.2016, which is valid till 31.12.2020. All the conditions are being effectively implemented and compliance report is being sent to JSPCB on monthly basis.
6	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.	There is no National Park, Sanctuaries, Elephant corridor and tiger reserves within 10 Km radius of the core zone.
7	As part of Ambient Air Quality Monitoring during operational phase of the project, the air samples shall also be analysed for their mineralogical composition and records maintained.	As a part of Ambient Air Quality Monitoring, mineralogical composition of air samples are being analysed on monthly basis and all the records are properly maintained. Mineralogical Composition details of Noamundi Iron Mine for the period April'2016-Sep'2016 are attached as **Annexure-I**.
8	The beneficiated ore shall be transported to railway sidings only through closed conveyor.	The beneficiated ore from beneficiation plant is being transported to railway siding for transportation through existing covered conveyors. Photograph of covered conveyor is attached as **Annexure-II.**

Sl. No.	Condition	Compliance
9	Effective safeguard measures such as conditioning of ore with water, regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Conditioning of ore is being done in wet processing plant to reduce the alumina content before transportation. Regular water sprinkling is being done on the haul roads, loading & unloading points for effective dust suppression. Dust suppressants are also being added at the time of sprinkling the water for effective dust suppression. Fixed water sprinklers have been put into operation on the main haul road of length 1600 m. Length of the fixed water sprinkling is being increasing from main gate of Noamundi Iron Mine to mining office of length around 300m. We have also installed water jet system and water mist system at the point of unloading point of the plant. Apart from this, we have covered all the conveyors and also done massive plantation around the conveyors. Photographs of Effective safeguard measures of Air Quality are attached as **Annexure-III.** We are regularly doing Ambient Air Quality monitoring at core and buffer zone of mining lease, which includes residential, sensitive and industrial areas and the results are well within the limit prescribed by the Central Pollution Control Board. The results are also being sent to the Member Secretary, JSPCB office, Ranchi & Regional Office, JSPCB Office, Jamshedpur. Ambient Air Quality report of Noamundi Iron Mine for the period April'2016 – Sep'2016 is attached as **Annexure-IV.**
10	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	As a step towards conservation of ground water, it is not used for mining operation purpose. Further, the rain water collected in the mine pits during monsoon is not pumped out. Rather, it is allowed to be collected in the lowest level sumps to augment the ground water resources gradually. Moreover, rain water harvesting ponds and ground water recharge structures have been constructed and approved by the Ground Water Directorate, Jharkhand, Ranchi. The rain water harvesting plan has also been submitted for approval of Regional Director, CGWB, Patna, vide letter No. MD/ENV/259/101/2013 dated:02.07.2013. Photographs of Rain Water Harvesting structures are attached as **Annexure-V.**

Sl. No.	Condition	Compliance
11	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	Ground water quality and Ground water level are being monitored periodically during four times a year pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January). The results are being sent to Regional Office, MoEFCC and SPCB, Bhubaneswar once in every six months and there is no depletion of ground water level. We also like to mention that because of Rain Water Harvesting structures at Noamundi Mine, the ground water level has been increased. The monitoring results of Ground Water Quality & Ground Water Level are attached as **Annexure-VI & Annexure-VII** respectively.
12	The mining operations shall be restricted to above ground water table and it should not intersect groundwater table. In case of working below ground water table, prior approval of the Ministry of Environment and Forests and Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	Our mining operation is restricted above the ground water table. The lowest working depth of our mine pits is at 552 mRL, whereas the presence of ground water table has been estimated to be at 478 mRL post-monsoon. A detailed hydrogeological study was carried out for the purpose.
13	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. The Balijore Nallah shall be left undisturbed and protected.	Our mining operation is restricted above the ground water table. The lowest working depth of our mine pits is at 552 mRL, whereas the presence of ground water table has been estimated to be at 478 mRL post-monsoon. A detailed hydrogeological study was carried out for the purpose.
14	The project proponent shall regularly monitor the flow rate of the Balijore Nallah flowing through the mine lease and maintain the records.	We are regularly monitoring the flow rate of the Balijore Nallah and the report is being sent to the JSPCB, Ranchi every month. Details of flow rate of Balijhor Nallah for last six months are attached as **Annexure-VIII.**
15	There shall be no external over burden dumps at the end of the mine life. The reclaimed and rehabilitated area shall be afforested. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	The Over Burden (OB) is being dumped as per plan and within the earmarked area. Inactive portions of the OB dump are gradually stabilized and reclaimed by vetiver plantation & native species plantation. We are also doing maintenance of the complete planted area on daily basis. Compliance status is being submitted regularly to the Ministry of Environment & Forest and its Regional Office located at Ranchi once in every six months. Some of the Dump plantation photographs are attached as **Annexure-IX.**

Sl. No.	Condition	Compliance
16	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and temporary OB dump(s) to prevent run off of water and flow of sediments directly into Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah, Baitarni River and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly de-silted particularly after monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dump(s) to prevent run off of water and flow of sediments directly into Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah, Baitarni River and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and de-silted at regular intervals.	Garland drains of total running meterage of 670 meters with settling pits have been constructed all along the OB dumps to prevent run off of water and flow of sediments directly into the natural stream. 2 Check dams have been provided for the settling of siltation. Series of check dams have also been constructed across the Balijore Nallah which flows through the mining lease. The de-siltation of these check dams are done regularly and properly maintained. Sedimentation pits have been constructed at the corners of the garland drains to take care of run off of water even during peak rain fall and they are being de-silted regularly before 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. Some of the photographs of Garland Drain, Toe wall, settling ponds are attached as **Annexure-X.**
17	Dimension of the retaining wall at the toe of temporary over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data.	Retaining wall and Garland drains have been constructed around the OB dumps to check mine run-off. Size of the retaining walls is sufficient to take care of the surface water flow during peak rain fall. Photographs of retaining wall have shown in **Annexure-X.**
18	Plantation shall be raised in an area of 990.601ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of excavated void to be converted in to water body, roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.	Plantation over an area of 990.601 ha shall be achieved at the end of mine life. However, development of greenbelt over 7.5m in the safety zone is in progress and shall be completed within next 18 months. Further, plantation is being carried out by native species on the inactive dump slopes and along the side of the roads. Till the end of September'2016, a total of 19,51,583 nos. of saplings have been planted over an area of 381.10 ha both within the mine lease with native species. Besides those, Vetiver plantation has also been carried out over 0.4 ha area with 30000 slips. The tree density has been maintained at the rate of 5122 plants per ha. Photographs of plantation on dumps are attached as **Annexure-IX.**

Sl. No.	Condition	Compliance
19	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Regular water sprinkling is being carried out by use of mobile water sprinklers around the crushing and screening plant, loading & unloading area and haul roads. In addition, fixed water sprinkling has been installed over a length of 1.6 km on haul road and this length is being increased by installing more fixed sprinkler over the length of 300 m. Photographs of Mobile, Stationary Water sprinkling, Water jet & Water Mist system are attached as **Annexure-XI.** Regular monitoring of Ambient Air Quality is being done and all the results are within the permissible limits as prescribed by the Central Pollution Control Board. Ambient air Quality report is attached as **Annexure-IV.**
20	Mine water discharge and/or any waste water shall be properly treated to meet the prescribed standards before reuse/discharge. The run off from temporary OB dumps and other surface run off shall be analysed for iron and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.	There is no waste water discharge from the mine and our unit is "Zero Discharge Unit". The decanted water from the zero discharged slime dam is completely recycled back to the beneficiation plant. Photograph of Zero Discharge slime pond is shown in **Annexure-X.** The water quality of Balijore Nallah is being analysed and report is being sent to SPCB, Jharkhand half yearly. Iron content of same is well within the standard limit of 0.3 mg/litre. Flow rate of Balijhor Nallah is attached as **Annexure-VIII.**
21	The decanted water from the beneficiation plant and slime/tailing pond shall be re-circulated within the mine and there shall be zero discharge from the mine.	The slime is stored in the zero discharge slime ponds. The decanted water from the slime ponds is completely recycled back to beneficiation plant established within the mining lease area ensuring zero outside discharge. Photograph of Zero Discharge slime pond is shown in **Annexure-X.**
22	Regular monitoring of the flow rate of the springs and perennial nallahs shall be carried out and records maintained.	Monitoring of flow rate of Balijore nallah flowing at the side of the mining lease is being carried out and records maintained. Flow rate of Balijhor Nallah is attached as **Annexure-VIII.**
23	Regular monitoring of water quality upstream and downstream of Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	Water quality monitoring of Balijore Nallah, Kundra Nallah, Jojo Nallah, Mahadev Nallah, are being carried out and record of monitoring data maintained. The results, so obtained are sent to Regional office, MoEF, Jharkhand State Pollution Control Board, Ranchi and Central Pollution Control Board. Water Quality Analysis and flow rate of Balijhor Nallah is attached as **Annexure-VIII.**
24	Appropriate mitigative measures shall be taken to prevent pollution of Baitarni River, if any, in consultation with the State Pollution Control Board.	Baitarani River is flowing at a distance of about 12 Km from the mine and is not being polluted because of mining operations of Noamundi Iron Mine. However, different mitigation measures are being implemented for

Sl. No.	Condition	Compliance
		betterment of environment in and around the mine in consultation with the Jharkhand State Pollution Control Board.
25	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water for the project. Ground water shall not be used for the mining operations.	At present, we have permission for drawl of 9786 KLD of surface water and our operation is being managed well within that quantity. Apart from this, we are recycling our slime dam water to meet basic water requirement of wet plant up to some extent. However, for increased requirement, we have applied for drawl of 29000 KL/day of water vide our letter No. MD/ENV/181/234-SW-NIM/15, dated: 06.04.2015 and also applied online on 20.05.2016 and it is under consideration of State Govt. Ground water is not being used for mining operations. Only Surface water from Baitarani is being used for mining and processing purpose.
26	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	Water conservation measures are continued. A pond is in use within our botanical park for collection of rain water during monsoon and the same is used for gardening purpose. Further, three rain water harvesting ponds and several ground water recharge structures have been constructed at the mine site hiring the expertise of KRG Foundation, Chennai and they are now operational. Photographs of Rain Water Harvesting structures have been shown as **Annexure-V.** Rain Water Harvesting pond has also been constructed in the Mohudi village, which falls in the core zone of the mine.
27	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	Regular vehicular emission testing is being conducted once in every six months. The vehicles those who do not meet the emission standard, are withdrawn from operation and maintained properly. A vehicle is kept abeyance from operation till it does not meet the emission standard. Also, the vehicles are not run overloaded.
28	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	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. We are doing SME/ NONEL technology for the blasting.
29	Drills shall either be operated with dust extractors or equipped with water injection system.	We are practicing wet drilling in our operation. All drills have been provided with dust suppression system. Photograph of wet drilling is attached as **Annexure-III.**
30	Mineral handling plant shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Effective and high efficiency dust extraction system is in place at the mineral handling plant. Loading and unloading areas including transfer points have been provided with dust suppression facilities. Further, the dust extraction and suppression system are maintained properly for effective dust control. Photograph of the

Sl. No.	Condition	Compliance
		same are shown in **Annexure-III.**
31	Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine.	Consent to Operate has been obtained from State Pollution Control Board, Jharkhand vide letter No. PC/JSR/Air/325579/G-391 dated: 11.01.2016, which is valid till 31.12.2020.
32	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	As per the topography of the residential area, installation of single sewage treatment plant is not feasible. However, the sewage water is effectively taken care by the septic tanks and soak pits and no sewage water goes outside. Further, action has been initiated to install small capacity modular STP's gradually at different locations in the colony for treatment of sewage water. As a result, two small capacity STPs have already been installed in the colony and there is plan to install more STPs in coming years. For waste water from Equipment & Maintenance Workshop, oil and grease separation pits are provided. Further, no waste water is generated from the mining and plant operations are discharged beyond the lease boundary and hence require no treatment. Photoprahgs of STP and Oil & Grease separation facilities are attached as **Annexure-XII.**
33	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubneswar.	Digital processing of the entire lease area using remote sensing technique was carried out by engagement of the expertise of Ecomen Laboratory Pvt. Ltd., Lucknow. The copy of the land use pattern is attached as **Annexure-XIII.**
34	Regular monitoring of ambient air quality including free silica shall be carried out and records maintained.	Ambient air quality is regularly monitored and records maintained. The results are being sent to Jharkhand State Pollution Control Board monthly. Analysis of free silica and the complete chemical analysis of dust are also being carried out. Results of the analysis have been shown in **Annexure-I & IV.**
35	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Pre-placement medical examination and periodical examination of the workers engaged 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. 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. Total 184 company employees have undergone PME and 2082 contractor employees have undergone IME during

Sl. No.	Condition	Compliance
		FY'16. There is no occupational disease found related to work area of Noamundi Iron Mine in PME & IME.
36	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna such as wolf, elephant, sloth bear, rhesus macaque etc. spotted in the core and buffer zone of the mine and contribute towards the cost of implementation of the plan and/or Regional Wildlife Management Plan for conservation of flora and fauna so prepared by the State Forest and Wildlife Department. The amount so contributed shall be included in the project cost. A copy of action plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months.	Tata Steel is taking all the precautionary measures towards conservation and protection of endangered flora and fauna. As per the demand of DFO, South Division, Chaibasa, within whose jurisdiction Noamundi Iron mine falls, the Steel Company has deposited Rs. 59,85,000/- towards implementation of the wildlife management plan in order to protect them within our mine and its periphery. Further, Company has submitted an undertaking to bear the proportionate cost towards the execution of comprehensive Wildlife Management plan in the area to be prepared by the state Govt. As required, a site specific wild life conservation plan has also been submitted to the Ministry and its Regional Office, Bhubaneswar vide letter No. MD/ENV/ 409A/101/2011, dated: 21.10.2013.
37	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	A progressive mine closure plan approved by IBM is in place. The final mine closure plan along with details of Corpus fund will be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

General 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.
2	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 the limits specified in Mining Plan as well as EC and CTO granted capacity. The production achieved (in Lakh Tonn) during 2016-17 till Sep'16 is as given below.

	Plan	Actual
ROM	50.00	16.45
OB, Waste	4.50	1.71
Sub-Grade	7.25	2.54
Total Excavation	61.75	20.70

Sl. No.	Condition	Compliance
3	At least four ambient air quality-monitoring should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOX monitoring. Location of the stations should be decided based on the meteorological data, topographical features and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. The data so recorded should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board /Central Pollution Control Board once in six months.	Ambient Air Quality monitoring is being regularly carried out at four different stations within the core zone, which were located in consultation with the visiting officers of State Pollution control Board, Jharkhand. The Ambient Air Quality reports are being submitted to Regional office, MoEFCC, Ranchi half yearly and to SPCB, Jharkhand monthly. Ambient Air Quality report is attached as **Annexure-IV.**
4	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM etc. should be provided with ear plugs / muffs.	Suitable measures are being taken for control of noise levels below 85 dBA in the work environment. High noise areas are earmarked and people working there are provided with ear protection equipment. All the HEMM's cabins are air conditioned so that there won't be any noise pollution. Regular noise monitoring is being done. People engaged in noisy operations are administered audiometric test annually. Photographs of Noise pollution prevention measures and Noise monitoring data are attached as **Annexure-XIV & Annexure-XV.**
5	There will be zero waste water discharge from the plant.	Oil & Grease separation pits have been provided to take care of effluents from the workshop. The water quality of the workshop effluent is monitored regularly and the parameters meet the prescribed standard. Photographs of Oil & Grease Separation pit are attached as **Annexure-XII** and the result of workshop effluent is enclosed as **Annexure-XVI.** There is no waste water generation from the mines.
6	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.	Adequate dust masks are provided to employees engaged in dusty areas. 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 & SA 8000 systems.
7	Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Periodical Medical Examination of employees and contractor workers are organized regularly to observe any contractions due to exposure to dust and other occupational hazards. Further, employees undergo Lung Function Tests during the Periodical Medical Examination.

Sl. No.	Condition	Compliance
8	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive who will report directly to the Head of the Organization.	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 the General Manager i.e. the regional head of the organization. Further all environmental issues are being monitored and dealt at SHE committee, which is being chaired by Managing Director.
9	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 2015-16 an amount of Rs. 3205.87 lakhs (approx.) was spent towards environmental protection measures at Noamundi Iron Mine. Expenditure details are attached as **Annexure-XVIII.**
10	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	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, MoEFCC, Ranchi for necessary information.
11	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports.	We extend full co-operation to the officers of the Regional Office during their visit and furnish the required data, information and monitoring reports.
12	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	Six monthly compliance reports are being submitted regularly on the status of implementation of the stipulated environmental safeguards to the MoEFCC, its Regional Office Ranchi, Central Pollution Control Board Kolkata and State Pollution Control Board Jharkhand. Further, the six monthly compliance reports along with the monitoring results is being uploaded on Tata Steel's website www.tatasteel.com and updated periodically.
13	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/	A copy of Environment Clearance has been sent to the nearby Panchayats & Zila Parisad, Chaibasa. Further,

Sl. No.	Condition	Compliance
	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.	copy of EC letter has also been uploaded on the Tata Steel website www.tatasteelindia.com.
14	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Complied from State Pollution Control Board, Jharkhand.
15	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, Bhubaneswar by email	The environmental statement for financial year 2016-17 has been submitted to the State Pollution Control Board on vide letter no. MD/ENV/393/120/16, dated: 29.09.2016 and the same has been hosted on Company's website www.tatasteelindia.com. Further, compliance status on environmental clearance conditions was also sent to the Regional Office of the Ministry of Environment and Forests, Ranchi by e-mail on 21.10.2016.
16	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Details of Environment Clearance with regard to Noamundi Iron Mine were published both in English and Hindi in local newspapers named "The Hindustan Times" and "Dainik Jagran" respectively on 15th June, 2013. The copy of the newspaper advertisement was sent to the Regional Office, MoEF, Bhubaneswar vide our letter no. MD/ENV/245A/101/ 2013, dated. 19th June'2013.

Annexure-I: Mineralogical Composition report of NIM for the period April'2016 - Sep'2016

Sl. No.	Parameter	Apr'16	May'16	June'16	July'16	Aug'16	Sep'16
1	Silica (%)	0.42	0.42	0.40	0.50	0.44	0.46
2	FeO (%)	0.65	0.65	0.65	0.48	0.32	0.24
3	CaO (%)	0.044	0.044	0.042	0.030	0.24	0.018
4	Al_2O_3 (%)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Lab-in-charge

Annexure-II: Green Covered Material Transportation Conveyor

Annexure-III: Effective safeguard measures of Air Quality

Mobile Water Sprinkler

Stationary Water Sprinkler

Water Jet System at Unloading Point

Water Mist System

Wet Drilling

Covered Conveyor

Annexure-IV: Ambient Air Quality Report of Noamundi Iron Mine (April'2016-September'2016)

(Core Zone)

Month	Industrial area										Residential area									
	MRSS Building					Bottom Bin					G.M's Office					Near Hospital				
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
Apr'16	47.63	29.13	4.85	10.18	0.14	63.00	36.13	6.19	12.18	0.16	45.38	25.13	4.64	9.80	0.15	43.38	22.38	4.51	9.51	0.13
May'16	48.00	31.00	4.95	10.36	0.15	57.00	31.13	5.63	11.63	0.17	46.00	26.50	4.74	9.85	0.16	43.88	23.25	4.61	9.61	0.15
Jun'16	48.57	30.57	5.06	10.50	0.14	56.57	32.43	5.60	11.47	0.16	47.00	28.14	4.86	10.04	0.16	45.14	26.00	4.71	9.80	0.15
Jul'16	42.71	21.29	4.61	9.90	0.14	45.86	24.43	4.99	10.27	0.14	39.71	18.57	4.31	9.46	0.14	38.29	19.00	4.17	9.41	0.15
Aug'16	39.86	20.71	4.43	9.46	0.13	42.14	23.14	4.70	9.71	0.14	38.29	19.00	4.43	9.37	0.14	35.86	16.71	4.16	9.33	0.14
Sep'16	38.86	20.71	4.46	9.36	0.13	41.71	23.43	4.69	9.59	0.14	38.29	19.00	4.49	9.31	0.15	34.71	15.71	4.17	9.00	0.14

(Buffer Zone)

Month	Kankura					Kitabeda					Mirelbera					Balita				
	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
Apr'16	58.00	31.60	4.60	10.80	0.16	46.60	24.65	4.00	10.00	0.14	50.05	26.70	4.00	9.75	0.13	50.15	26.50	4.10	10.50	0.13
May'16	58.05	31.10	4.50	10.50	0.17	47.90	25.25	4.00	9.80	0.14	48.10	24.80	4.00	9.65	0.14	48.10	24.65	4.00	9.75	0.13
Jun'16	49.30	24.25	4.10	10.05	0.14	44.10	21.80	4.00	9.10	0.12	46.00	23.05	4.00	9.25	0.13	47.60	23.65	4.00	9.40	0.14
Jul'16	29.85	13.80	4.00	9.00	0.12	31.70	14.40	4.00	9.00	0.11	34.40	16.55	4.00	9.00	0.12	35.60	17.00	4.00	9.00	0.12
Aug'16	27.15	13.20	4.00	9.00	0.10	28.65	13.95	4.00	9.00	0.10	29.00	13.85	4.00	9.00	0.10	29.40	14.20	4.00	9.00	0.10
Sep'16	27.15	13.20	4.00	9.00	0.10	28.65	13.95	4.00	9.00	0.10	29.00	13.85	4.00	9.00	0.10	29.40	14.20	4.00	9.00	0.10

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

Lab-in-charge

Annexure-V: Rain Water Harvesting Structures

RWH at Balijore camp

RWH at Central camp

Annexure-VI: Ground Water Quality Report (As per BIS 10500:1991) (April'2016 - September'2016)

Visiontek Consultancy Services Pvt.Ltd.

(An Enviro Engineering Consulting Cell)

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

Ref.: VCSPL/16/R-514 Date.: 07.07.2016

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

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Noamundi Basti;**
   GW-2: Near Railway Station.
3. Date of sampling : 30.06.2016
4. Date of analysis : 01.07.2016 to 05.07.2016
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No	Parameter	Testing Methods	Unit	Standard as per IS - 10500:1991	Analysis Results	
					GW-1	GW-2
Essential Characteristics						
1	Colour	APHA 2120 B, C	Hazen	**5**	CL	CL
2	Odour	APHA 2150 B	--	**U/O**	U/O	U/O
3	Taste	APHA 2160 C	--	**Agreeable**	AL	AL
4	Turbidity	APHA 2130 B	NTU	**5**	<2	<2
5	pH Value	APHA 4500H^+ B	--	**6.5-8.5**	7.5	7.3
6	Total Hardness (as $CaCO_3$)	APHA 2340 C	mg/l	**300**	142.0	150.0
7	Iron (as Fe)	APHA 3500Fe, B	mg/l	**0.3**	0.24	0.28
8	Chloride (as Cl)	APHA 4500Cl B	mg/l	**250**	22.0	24.0
9	Residual, free Chlorine	APHA 4500Cl, B	mg/l	**0.2**	ND	ND
Desirable Characteristics						
10	Dissolved Solids	APHA 2540 C	mg/l	**500**	230.0	226.0
11	Calcium (as Ca)	APHA 3500Ca B	mg/l	**75**	39.3	41.7
12	Magnesium (as Mg)	APHA 3500Mg B	mg/l	**30**	10.7	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**	9.4	8.6
16	Nitrate (as NO_3)	APHA 4500 NO_3^- E	mg/l	**45**	6.7	6.2
17	Fluoride (as F)	APHA 4500F C	mg/l	**1.0**	0.42	0.5
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 Coli form	APHA 9221 B	MPN/100 ml	**Not more than 10MPN/100 ml**	<2	<2

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

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

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

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Annexure-VI: Ground Water Quality Report (As per BIS 10500:1991) (April'2016 - September'2016).....cont.

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

Ref.: VCSPL/16/R-961 Date.: 03.10.2016

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

1. Name of Industry : **Noamundi Iron Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Noamundi Basti; GW-2: Near Railway Station.**
3. Date of sampling : 16.09.2016
4. Date of analysis : 17.09.2016 to 23.09.2016
5. Sample collected by : VCSPL Representative in presence of TATA Representative

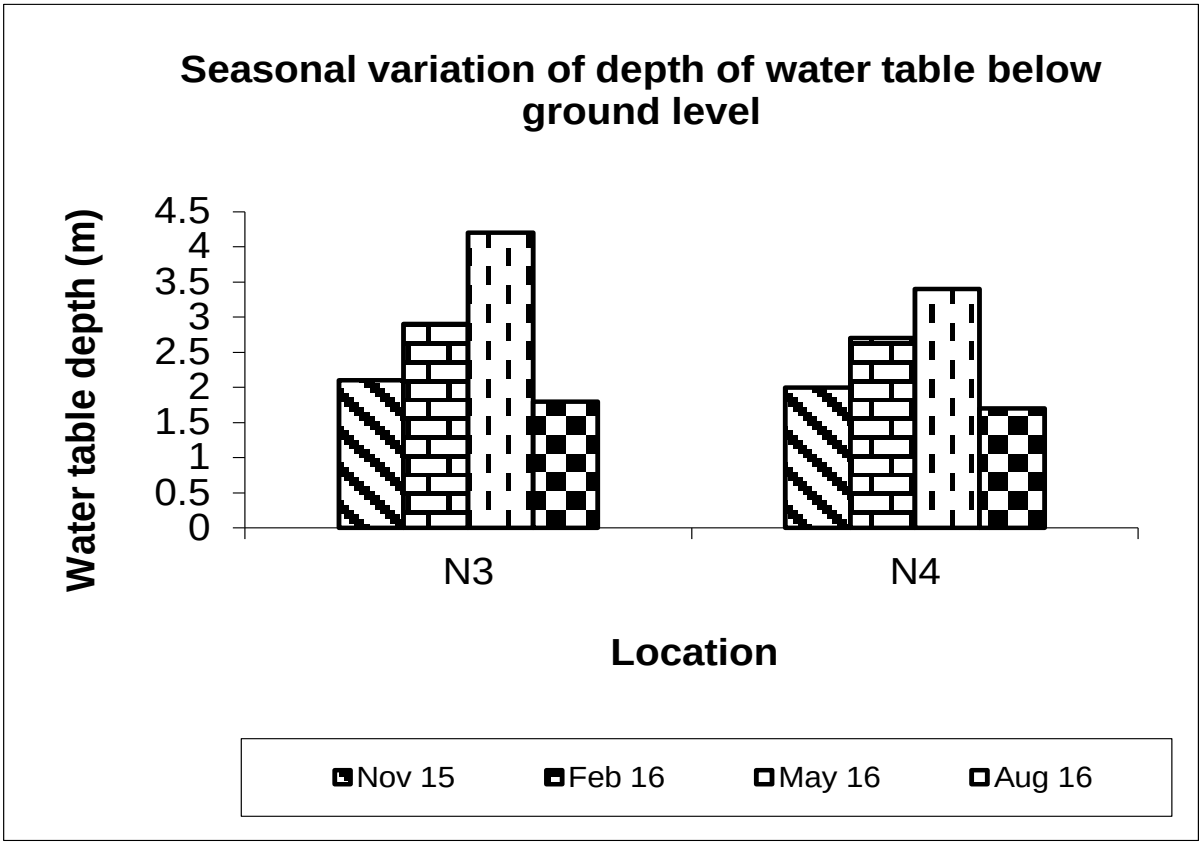
Sl. No	Parameter	Testing Methods	Unit	Standard as per IS - 10500:1991	Analysis Results	
					GW-1	GW-2
Essential Characteristics						
1	Colour	APHA 2120 B, C	Hazen	**5**	CL	CL
2	Odour	APHA 2150 B	--	**U/O**	U/O	U/O
3	Taste	APHA 2160 C	--	**Agreeable**	AL	AL
4	Turbidity	APHA 2130 B	NTU	**5**	<2	<2
5	pH Value	APHA 4500H^+ B	--	**6.5-8.5**	7.2	7.4
6	Total Hardness (as $CaCO_3$)	APHA 2340 C	mg/l	**300**	148.0	154.0
7	Iron (as Fe)	APHA 3500Fe, B	mg/l	**0.3**	0.25	0.26
8	Chloride (as Cl)	APHA 4500Cl B	mg/l	**250**	40.0	35.0
9	Residual, free Chlorine	APHA 4500Cl, B	mg/l	**0.2**	ND	ND
Desirable Characteristics						
10	Dissolved Solids	APHA 2540 C	mg/l	**500**	234.0	230.0
11	Calcium (as Ca)	APHA 3500Ca B	mg/l	**75**	40.5	42.5
12	Magnesium (as Mg)	APHA 3500Mg B	mg/l	**30**	11.4	11.7
13	Copper (as Cu)	APHA 3111 B,C	mg/l	**0.05**	<0.05	<0.05
14	Manganese (as Mn)	APHA 3500Mn B	mg/l	**0.1**	<0.005	<0.005
15	Sulphate (as SO_4)	APHA 4500 SO_4^{2-} E	mg/l	**200**	6.6	6.2
16	Nitrate (as NO_3)	APHA 4500 NO_3^- E	mg/l	**45**	2.5	2.4
17	Fluoride (as F)	APHA 4500F^- C	mg/l	**1.0**	0.38	0.44
18	Phenolic Compounds (as C_6H_5OH)	APHA 5530 B,D	mg/l	**0.001**	<0.001	<0.001
19	Mercury (as Hg)	APHA 3500 Hg	mg/l	**0.001**	<0.001	<0.001
20	Cadmium (as Cd)	APHA 3111 B,C	mg/l	**0.01**	<0.001	<0.001
21	Selenium (as Se)	APHA 3114 B	mg/l	**0.01**	<0.001	<0.001
22	Arsenic (as As)	APHA 3114 B	mg/l	**0.05**	<0.001	<0.001
23	Cyanide (as CN)	APHA 4500 CN^- C,D	mg/l	**0.05**	ND	ND
24	Lead (as Pb)	APHA 3111 B,C	mg/l	**0.05**	<0.01	<0.01
25	Zinc (as Zn)	APHA 3111 B,C	mg/l	**5**	<0.05	<0.05
26	Anionic Detergents (as MBAS)	APHA 5540 C	mg/l	**0.2**	<0.2	<0.2
27	Chromium (as Cr^{+6})	APHA 3500Cr B	mg/l	**0.05**	<0.05	<0.05
28	Mineral Oil	APHA 5220 B	mg/l	**0.01**	<0.01	<0.01
29	Alkalinity	APHA 2320 B	mg/l	**200**	134.0	136.0
30	Aluminium as(Al)	APHA 3500Al B	mg/l	**0.03**	<0.001	<0.001
31	Boron (as B)	APHA 4500B, B	mg/l	**1**	<0.01	<0.01
32	Poly Aromatic Hydrocarbon as PAH	APHA 6440 B	µg/l	--	<0.0001	<0.0001
33	Pesticide	APHA 6630 B,C	mg/l	**Absent**	Absent	Absent
34	Total Coli form	APHA 9221 B	MPN/100 ml	**Not more than 10MPN/100 ml**	<2	<2

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

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

VISIONTEK CONSULTANCY SERVICES PVT. LTD.

Annexure-VII: Ground Water Level (Noamundi Iron Mine) (April'2016-September'2016)



N3–Well near Railway Station **N4–Well at Noamundi Basti**

Lab-in-charge

Annexure-VIII: Flow Rate of Balijhor Nallah (Oct'2015-March'2016)

ANALYSIS OF WATER QUALITY (Sample collected from Balijhore Nalla)

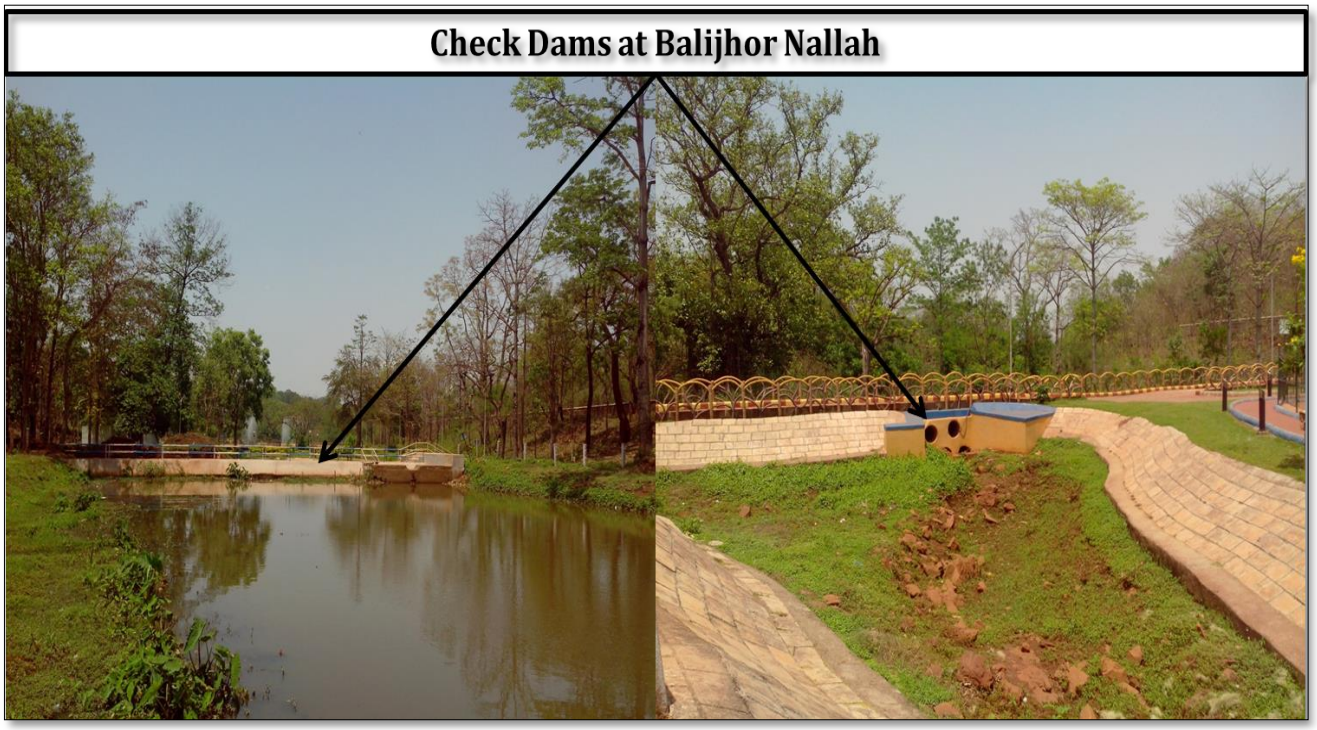
Parameters	Apr'16	May'16	Jun'16	Jul'16	Aug'16	Sep'16	Limit
BOD mg/l	1.30	1.25	1.15	1.25	1.60	1.30	20
TSS mg/l	12.05	15.50	14.70	29.70	31.65	51.55	100
Flow Rate Cum/hr	30.00	38.50	35.50	66.00	69.00	80.50	

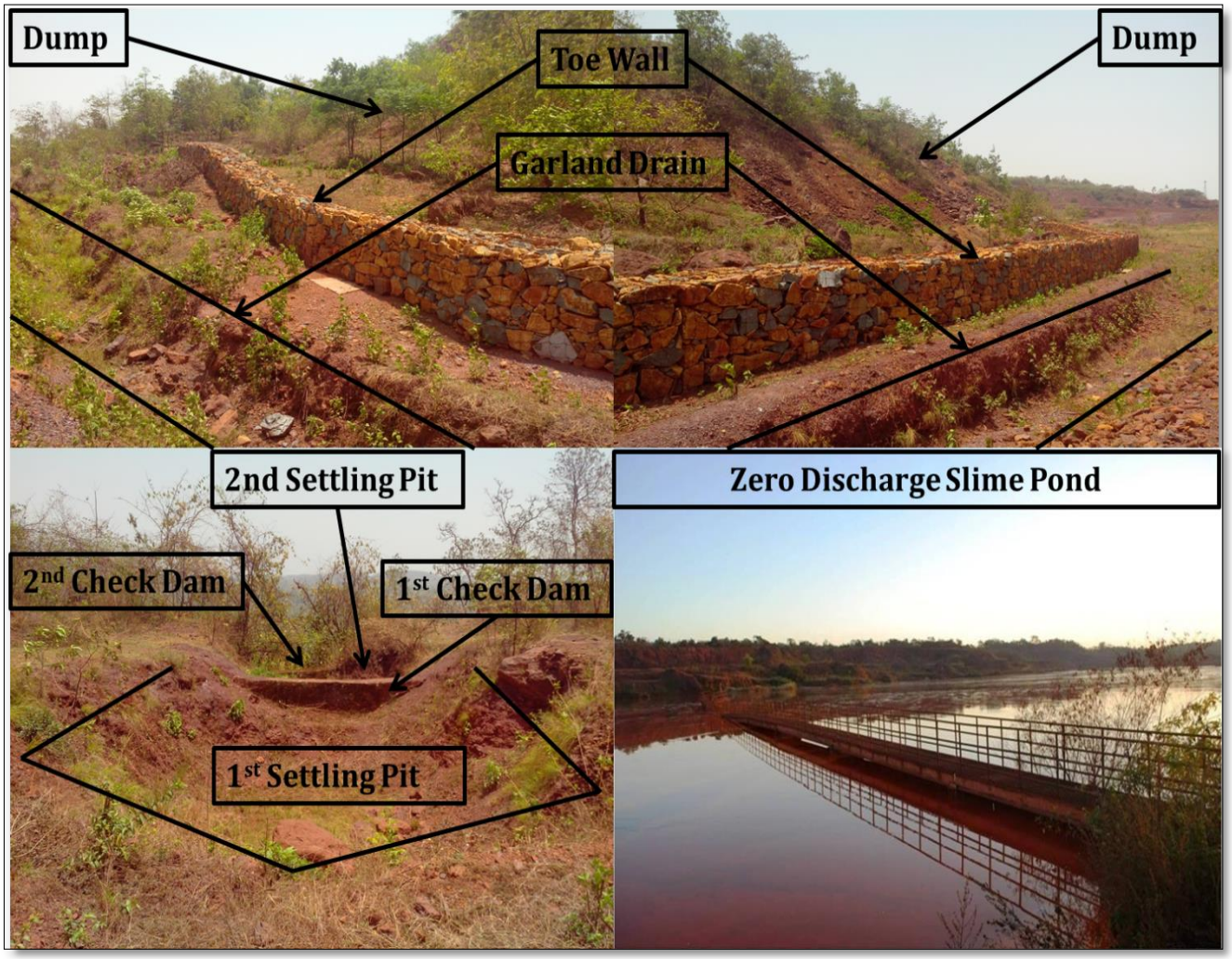
*There is no any industrial effluents discharge from the mine.

Lab-in-charge

Annexure-IX: Dump Plantation

Annexure-X: Toe Wall, Garland Drain, Settling Pit, Check Dams





Annexure-XI: Water Sprinkling, Water Mist System, Water Jet System

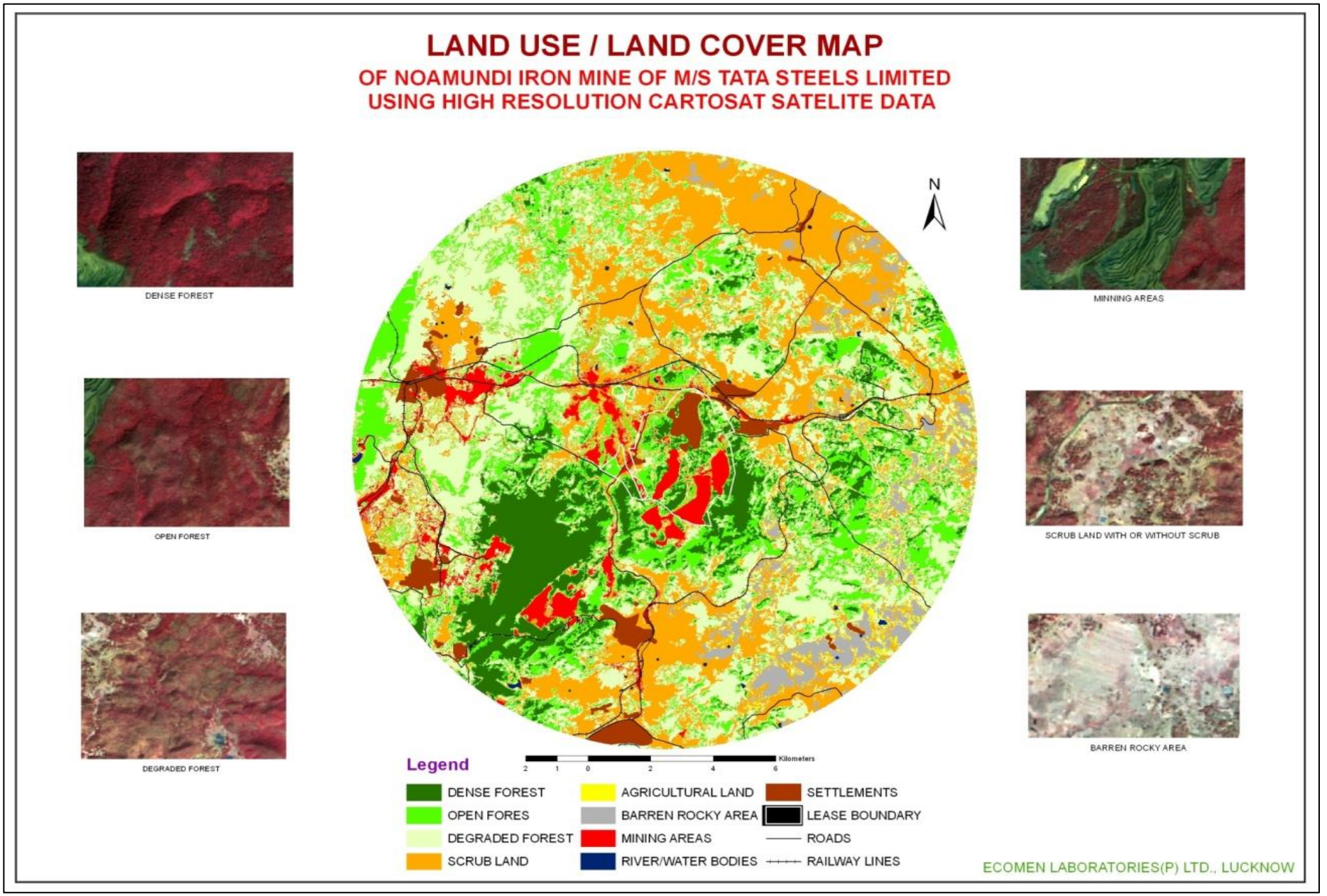
Mobile Water Sprinkler	Water Mist at Primary Crusher
	
Stationary Water Sprinkler	**Water Mist Jet at Loading Point**
	

Annexure-XII: Sewage Treatment Plant and Oil & Grease Separation Pit

Sewage Treatment Plant

Oil & Grease Separation Pit

Annexure-XIII: Digital processing of Land Use



Annexure-XIV: Noise Pollution Control Measures

Sound Proof Cabins in HEMMs

Acoustic Enclosures of DG sets

Annexure-XV: Ambient Noise Quality at Noamundi (April'16-September'16)

	Location	Day Time 8.00 am to 10.00 pm	Limits in dB(A) Leq	Night Time 8.00 am to 10.00 pm	Limits in dB(A) Leq
Residential area	Hospital Premises	49.87	55.00	36.72	45.00
	Training Centre	49.82		37.38	
	GM's Office	50.32		35.68	
	Township	51.30		39.20	
Industrial area	Mining area	68.60	75.00	60.73	70.00
	Plant area	73.05		66.37	

Lab-in-charge

Annexure-XVI: Workshop Effluent Quality at Noamundi (April'16-September'16)

Parameter	Noamundi Central Workshop		Limit
	Washing Yard	MOR section	
pH	5.89	5.81	5.5 – 9.0
Suspended Solids mg/l	65.33	66.37	100.00
Oil & Grease mg/l	7.60	7.60	10.00

Lab-in-charge

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

Sl. No.	Jobs	Expenditure (in lakhs)	
		Capital	Recurring
1	Operation of Mobile Water Sprinkling	0.00	144.00
2	Permanent Water Sprinkler	0.00	29.73
3	Diesel Additive to reduce HSD consumption and emission	0.00	10.00
4	Optimizing of blasting parameter to reduce Sp. Explosive consumption	30.00	0.00
5	Vibration Study	0.00	4.00
6	Maintenance of capacity enhancement of tailing dam	0.00	20.00
7	Cleaning of Settling Pit & Garland Drain	0.00	15.00
8	Water cooling system replaced with Air cooling system in HP300	5.00	0.00
9	Channel lubrication system implemented to reduce oil spillage	0.10	0.00
10	Hood provided in crusher hopper at secondary	0.50	0.00
11	Three cabins provided for operators	2.00	0.00
12	Operation & Maintenance of water mist gun	0.00	3.00
13	Muck Cleaning from Check Dam and Water Tank & other sources	0.00	50.00
14	Water recycling Operation from HRT	0.00	106.75
15	Water recycling Operation from slime dam and check dam	0.00	48.80
16	Water recycling Operation from mine	0.00	52.08
17	Use of releaser and binder for water recovery for recycling	0.00	50.00
18	Modification of wire meshes Rinse Screen with PU screen mat to reduce noise.	50.00	0.00
19	Installation of on-line process water filtration system at Slime dam.	21.00	0.00
20	Study for Iron Ore recovery from Slime	100.00	0.00
21	Retrofitting of Crusher "C" hydraulic system to reduce HSD consumption & Emission	500.00	0.00
22	Primary Scraper at belt conveyors	14.00	0.00
23	Rubber liner in Scrubber "B"	40.00	0.00
24	Replacement of screw classifier by high frequency screen at hydro-cyclone plant to reduce slime loss	50.00	0.00
25	Installation od UMPS to reduce HSD consumption & emissions	300.00	0.00
26	Replacement of Oil type transformers to Air Type transformers	23.00	0.00
27	Installation of capacitor banks at Jig and NDCMP to reduce power loss	35.00	0.00
28	Installation of transformers oil filtration unit to reduce Used Oil generation	31.00	0.00
29	Fixing of flow meter to monitor and reduce water consumption	42.50	0.00
30	Water Supply distribution network maintenance	0.00	5.00
31	Operation & Maintenance of Dry for system	0.00	136.60
32	Spillage material recovery from conveyor belt and inside plant	0.00	80.00
33	Upkeep of dry fog system at 1000 TPH Plant	0.00	3.38

Sl. No.	Jobs	Expenditure (in lakhs)	
		Capital	Recurring
34	Water sprinkling job at B.BIN	9.65	0.00
35	Mechanised up keeping of B/BIN area	0.00	7.46
36	Monthly filtration of oil	0.00	1.99
37	AMC for centralised lube oil system.	0.00	14.26
38	Housekeeping of RLS Stacker & Drains.	0.00	46.27
39	Three cabins provided for operators	2.00	0.00
40	Covering of Product Fines	0.00	7.64
41	AMC for conveyor belt maintenance	0.00	68.85
42	Housekeeping of OLCS area	0.00	38.55
43	2 rest shelter with septic tank and soak pit	26.00	0.00
44	One rest shelter with Septic tank and soak pit	13.00	0.00
45	Bio-toilets at various locations	6.15	0.00
46	Septic tank at Ladies rest shelter	0.00	0.50
47	Garbage dump at Bottom Bin canteen	0.00	0.15
48	Parking Lot paver block	0.00	1.00
49	One ladies Toilet at UMPS	0.00	2.50
50	Foundation for bag filter at Primary crsher	0.00	25.00
51	MCC area concreting	0.00	8.00
52	NDCMP screen house concreting	0.00	2.00
53	Noamundi Hill 5 Toe wall	0.00	25.00
54	Lease line fencing NIM	0.00	6.00
55	Lease Pillar NIM	0.00	1.50
56	Katamati Toe wall	0.00	25.00
57	Tent for parking at Dhyan singh gate	0.00	2.00
58	Tent for parking at Bottom Bin gate	0.00	0.50
59	Sewer cleaning in Operational area	0.00	15.00
60	Waste oil pit at Equipment Maintenance	0.00	3.50
61	Shed for storing Oil drum	0.00	2.00
62	Waste oil pit at Old DB swimming pool	0.00	9.00
63	Equipment flooring	0.00	15.00
64	Maintenance of Solid Waste Management Township	0.00	73.00
65	Providing PCC road in camp area	0.00	6.00
66	Water Supply (148 nos): Deep Bore well, wells, tube wells, Pipeline	117.40	0.00
67	Livelihood through promotion of agriculture (800 farmers): Irrigation infrastructure, Support of farm inputs (seeds, agro equipment), Training on agricultural practices	188.50	0.00

Sl. No.	Jobs	Expenditure (in lakhs)	
		Capital	Recurring
68	Enhancing Irrigation facility through construction of irrigation infrastructure: 1. Construction of sluice gate & canal at kundrujhor (1 No.) 2. De-silting and slope stabilization of Katikoda reservoir (1 No.) 3. Installation of deep bore well with submersible pump at Toretopa LI project (1 No.) 4. Desilting and beautification of Oriya pond, Mohudi Lakhansai (1 No.)		0.00 0.00 0.00 0.00
69	Solid Waste management	0.00	16.60
70	Operation of Incineration	0.00	2.37
71	Environmental Monitoring (S S Environics)	0.00	9.80
72	Display Board AMC	0.00	0.97
73	Plantation	0.00	112.56
74	CAAQMS Installation	50.00	0.00
75	Water Supply distribution network maintenance (including pipeline maintenance, camp maintenance & overhead tank cleaning)	0.00	35.00
76	Operation & maintenance of water treatment plant (including cost of chemicals, quality testing by third party & stamping of flow meters)	0.00	35.90
77	Operation & maintenance of sewage treatment plant	0.00	20.60
78	Mobile Water Sprinkling Maintenance	0.00	37.75
79	100% Change over from DG set power to OSEB Power at Katamati	0.00	10.00
80	Replacement of 250W HPSV Light with 120W LED Light (100 Nos.)	0.00	12.10
81	Replacement Of Conventional Light Fittings By Led Lights	0.00	26.41
82	Undergrounding Of Oh Lines	0.00	48.65
83	Replacement Of Bare Oh Conductor By Ab Cable	0.00	3.00
84	Provision Of Solar Lights (2nos)	0.00	2.00
85	Provision Of Timers To Control Outdoor Light Timing	0.00	0.60
86	Fixing Of Energy Meter In The Houses To Monitor & Control Energy	0.00	8.11
87	Installation Of Dry Type Transformer In Place Of Oil Cooled Transformer	0.00	0.65
	Total =	**1656.80**	**1549.07**