Regd Post with A/D

Ref.No.: MGM/P&E/407/19 Date: 30/05/2019

To,

The Additional Director,
Ministry of Environment and Forest & Climate Change
Eastern Region Office,
A/3, Chandrasekharpur,
Bhubaneswar-751023

Sub: Submission of Six-monthly EC compliance report on implementation of safeguards in respect of Malda Manganese Mine, M/s TATA Steel Ltd. for the period October 2018 to March 2019.

Dear Sir,

We are submitting herewith six-monthly EC compliance report on implementation of safeguards in respect of Malda Manganese Mine, M/s TATA Steel Ltd. for the period October 2018 to March 2019 as per EIA notification 2006. The same is also attached in Soft copy to your good office on e-mail to roez.bsr-mef@nic.in for your ready reference.

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

This is for your kind perusal.

Thanking you,
Yours faithfully,
F: TATA STEEL LTD.

Amit Kumar Dubey

Agent, Malda Manganese Mine &
Head, Manganese Gr. of Mines
Ferro Alloys & Minerals Division,
Joda.

Encl: as above.

Copy to :

1. Zonal Office Kolkata, Central Pollution Control Board, Southernd Conclave, Block 502, 5th and 6th Floors, 1582 Rajdanga Main Road, Kolkata, West Bengal 700107.
2. The Member Secretary, State Pollution Control Board, A/118, Nilakantha Nagar, Bhubaneswar, Odisha-751012.
3. The Regional Officer, State Pollution Control Board, Rourkela Town Engineering Office Premises, Sector-5, Rourkela-769002, Odisha.

TATA STEEL LTD.
Ferro Alloys & Minerals Division, Manganese Group of Mines, At/P.O.: Bichhakundi, Via: Joda,
Dist: Keonjhar Odisha – 758 034 Tel.: 9238101370, e-mail : mnminesadmin@tatasteel.com
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COMPLIANCE REPORT PERIOD : Oct'18 to March'19

ENVIRONMENTAL CLEARANCE TO MALDA MANGANESE MINE OF TATA STEEL LIMITED VIDE MoEF's LETTER NO. J-11015/103/2006-1A.II(M) DATED 13.04.2007 COMPLIANCES SUBMITTED TO THE MINISTRY OF ENVIRONMENT & FORESTS, GOVERNMENT OF INDIA

Present Status of the Project: -

The Scheme of Mining and Progressive Mine Closure Plan for Malda Manganese Mine over an area of 822 ha was submitted under Rule No.12, MCDR 1988 for the period 2015-16 to 2019-20 and was approved by IBM vide letter no. MS/OTFM/33-ORI/BHU/2014-15 dated 06.04.2015.

Sl. No	A : Specific conditions	Compliance status
(i)	The Env. Clearance is subject to grant of forest clearance. The project proponent shall obtain necessary forestry clearance under the forest (Conservation)act ,1980 for the diversion of 239.408 ha forest land before starting mining operation in that area.	4th renewal forest diversion proposal was submitted on 17.07.2008 over an area of 555.066 ha. It was scrutinized by CCF, Nodal, O/o PCCF, Orissa. CCF, Nodal asked to comply the deficiencies vide Letter. no.30/9F(MG)-58/2008, dt.02.01.2009. In response, we have re-submitted the 3rd forest diversion proposal over an area of 541.425 ha and subsequently allotted with State Sl.No.327/09, dt.08.07.2009. We have submitted 4th renewal forest diversion proposal on 06.08.2009 over an area of 541.425 ha. as per clause no. 4.17 of the Guidelines and clarification issued by MoEF under FC Act & Rules. Stage I clearance over an area of 77.241 ha has been granted by MoEF vide letter no. F.NO .8-37/1996-FC dated 21st June 2012. We have also submitted compliance of stage I to DFO, Bonai vide our letter no. MMM/F-68/37/14 dated 26.12.2014. Stage II Forest Clearance is awaited from MoEF&CC. Mining operation activities were discontinued since 27th Feb'2011 due to want of Forest Clearance.

(ii)	Mining will not intersect groundwater. Prior permission of the MOEF and CGWA shall be taken to mine below water table.	Mining is not intersecting the ground water as the Ground water being at lower level in comparison to existing maximum quarry depth.
(iii)	The project proponent shall ensure that no natural watercourse shall be obstructed due to any mining operations.	As per field observation, Sona River passes 715m to west from Block - I, 158m to west from Block-II and 818m east from Block - III. Similarly, a small perennial nallah passes 258m east from Block - V. There are no natural water courses that are passing within or near to the safety zone.
(iv)	Topsoil should be stacked properly with proper slope at earmarked site(s) with adequate measures and should be used for reclamation and rehabilitation of mined out area.	Since Mine is not in operation, No Topsoil has been generated during the period Apr'18 to March'19.
(v)	The OB shall be stacked at earmarked dump sites only and should not be kept active for long periods of time. The Maximum height of the dump should not exceed 30 mtrs having 3 terraces of 10 mtrs. each. The overall slope angle shall not exceed 27°. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion & surface run-off. In critical areas , use of Geo textiles shall be undertaken for the stabilization of the dump .Monitoring & management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the MoEF & its regional office located at Bhubaneswar on six monthly basis.	Mining operation activities were discontinued since 27th Feb'2011 due to want of Forest Clearance. During the year 2018-19, we have planted 11,100 nos. of tree sapling of local species (Gambhari, Chakunda, Mahanimba, Kala Sirs, Sisu etc) in passive dumps. As such, there are no presences of critical areas at OB dumps, so conventional plantation is being done for stabilization of dumps. The retaining wall and garland drain with sedimentation pit at corners near toe of OB dump. Their dimensions are matching the requirements to arrest effectively the run off.
(vi)	The void left unfilled in an area of 110.045ha 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 slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.	The proposal for confirmatory exploration has been planned over the broken-up area of 77.241 Ha to ensure the area is entirely barren. In case of occurrence of any ore body, the same shall be excavated prior to the reclamation and rehabilitation of the area. Stage –I approval under FC Act, 1980 has been granted over the 77.241 Ha area to carry out the above-mentioned activities. Further proposal for development of the water body as a reclamation measure shall be taken up after the completion of the above mentioned planned activities.
(vii)	Catch drains and siltation ponds of appropriate size should be constructed	Existing catch drains and garland drains are covering the entire dump slope at low lying

	to arrest silt and sediment flows from mine working, soil, OB dumps and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly. Garland drain (size, gradient and length) shall be constructed for both mine pit and OB dumps and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	part. The catch drains and sedimentation pits are periodically de-silted and maintained properly. Size, gradient and length of the drains will be adequate to take care of the peak flow.
(viii)	Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.	In order to prevent the siltation and to check the run-off it is proposed that toe walls and garland drains are being provided. <u>Dimension of the Retaining Wall</u> : Height – 1 to 1.2 mtr. Width – 1 mtr. <u>Dimension of the Garland Drain</u> : Depth – 1.20 to 1.5 mtr. Width – 1 to 1.2 mtr.
(ix)	Plantation shall be raised in an area of 396.62 ha including a green belt of adequate width by planting the native species around ML area, OB dumps, roads, etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 2000 plants per ha.	Plantation program have been drawn regularly in consultation with the local DFO and OSPCB. We have planted 3,38,749 nos. of saplings of local species over an area of 96.42 ha in passive dump and as avenue plantation till 2018-19. During the FY 2018-19, we have planted around 11,100 nos. of forest variety saplings. Tree density is maintained at the rate of more than 2500 saplings per ha. by considering the rate of survival.
(x)	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.	Agreed.
(xi)	Regular monitoring of ground water level and quality should be carried out	Presently, there is discontinuation of development of the mine and dispatch of ore

	by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year - pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MoEF and its regional office, CGWA and Regional Director, CGWB.	since 27th Feb'2011 due to want of Forest Clearance. However, ground water level, ground water quality and trace metals in ground water at lower elevations is being monitored at existing tube well and open well. The monitoring results are enclosed as **Annexure VII and III** respectively. Similarly, surface water quality is being monitored on monthly basis and abstract of the same is enclosed as **Annexure – I**.
(xii)	Appropriate mitigative measures should be taken to prevent pollution of Suna river in consultation with the State Pollution Control Board.	Toe Wall and garland drains have been provided along the waste dump to prevent the pollution of Sona river due to direct flow of wash-off.
(xiii)	Permission from the competent authority should be obtained for drawl of water from Suna river and also ground water, if any, required for the project.	Application for allocation of water is in process and pending with water allocation committee. Water drawl charge is being paid regularly as per demand of irrigation department. Presently, there is discontinuation of development of the mine and dispatch of ore since 27th Feb'2011 due to want of Forest Clearance.
(xiv)	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	Rainwater harvesting is being affected due to more geological disturbance. However, trials shall be carried out for rainwater harvesting in association with R & D group of company.
(xv)	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	Presently, Mining activities were discontinued since 27th Feb'2011 due to want of Forest Clearance. We will comply with the condition when mine will be in operation.
(xvi)	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be Implemented.	Presently, Mining activities were discontinued since 27th Feb'2011 due to want of Forest Clearance. We will comply with the condition when mine will be in operation
(xvii)	Drills shall either be operated with dust extractors or equipped with water Injection system	The said condition would be strictly adhered to after resumption of mining operation.

(xviii)	Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneshwar.	In pursuance to the Circular No 02/2010, Dt.06.04.2010 passed by Indian Bureau of Mines, Govt. of Odisha has authorized Orissa Remote Sensing Application Centre (ORSAC) to carry out the DGPS survey work for its compliance. Accordingly, we have requested ORSAC to conduct the survey work of mine lease boundary for super imposition over the vectorised village map & Cartosat-2 and LISS-IV (Scale-1: 5,000) satellite image. In the meantime, the DGPS survey of lease boundary has been completed and we had further requested ORSAC for preparation of land use map on 11.10.2011 to comply this condition. The proposed survey work has been completed by ORSAC and the plan has been submitted by 30th June'13 to Ministry of Environment and Forest and its regional office. It may please be noted that, no further land degradation due to discontinuation of development of the mine since 27.02.2011, hence the land use within the lease area of 822 ha submitted on 11.10.2011 is same as of now.
(xix)	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	"Consent to operate" Order No.118 vide letter No. 8006 / IND-I-CON-191 Dt 11.05.2011 valid up to 31.03.2016. We had applied application for CTO renewal on time vides our online application no. 410153. However, State Pollution Control Board, Odisha has directed us to re-approach SPCB, Odisha after grant of Forest Clearance.
(xx)	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated during mining operation.	Sanitary sewage generated from staff quarters, offices & canteen waste water will continue to be discharged to septic tank/ soak pit. The service vehicles are being maintained at workshop of Joda West Mn. Mine, where effluents are channelized to oil separation pit & the oil free water is being recycled.
(xxi)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna such as elephant, leopard, Indian python etc. spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in	Agreed. All precautionary measures will be taken when mine come in production again. However, 3rd and 4th renewal forest diversion proposal has been submitted to State Govt. On receipt of demand from DFO, Bonai Division, we have paid Rs. 3,53,46,000/- towards implementation of Regional Wild Life

	consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan and/or Regional Wildlife Management Plan of the State Government shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	Management Plan as prepared for Bonai & Keonjhar Forest Division. Further, Site specific wildlife management plan has been prepared and approved by Principal Chief Conservator of Forest (WL) & Chief Wildlife Warden, Odisha. vide letter no- 2375/1 WL-SSP-70/2015; dated- 11th March 2015 . Further we had paid Rs 6076800/- towards implementation of SSWLMP to Forest Department vide UTR No- SNINR52018030900004212,Dt-09-03-2018.
(xxii)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	The final mine closure plan along with details of Corpus fund will be submitted to the Ministry of Environment & Forests in advance of final mine closure for approval. A progressive mine closure plan along with Scheme of Mining & Mining Plan has been approved by IBM. Implementation of same is being carried out as per plan.
Sl.No.	**B: General conditions**	**Compliance Status**
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	No change in mining technology and scope of working has been made at the mine. If any changes proposed in technology and scope of workings, prior approval shall be sought from MoEF. Presently, Mining activities were discontinued since 27th Feb'2011 due to want of Forest Clearance.
(ii)	No change in the calendar plan including excavation, quantum of mineral manganese ore and waste should be made.	Plan for production of Manganese Ore and excavation of waste has been prepared and it will be strictly adhered after resumption of mining operation.
(iii)	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RPM, SPM, S02, NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Five ambient air quality monitoring stations have been established out of which 2 nos. in core zone (Near Dispensary close proximity to residential and mining area at Block-I Pit) and 3 nos. in buffer zone (at Chormalda, Kundrapani and Kolha Roida). Ambient Air samples are being drawn at a regular interval for analysis of PM_{10}, $PM_{2.5}$, $S0_2$, NOx.

(iv)	Data on ambient air quality (RPM, SPM, S02, NOx) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central Pollution Control Board once in six months.	Samples are drawn twice in a week in core zone and once in a quarter in buffer zone to ascertain the 24hour monitoring average for $PM_{10,}$ $PM_{2.5}$, SO_2 & NOx, CO & Mn. Data on ambient air quality monitoring for every month is being submitted to State Pollution Control Board. Abstract of the monthly monitoring data on ambient air quality is enclosed as **Annexure–IV.** It was observed that the result of environmental monitoring parameters is within the permissible limit.
(v)	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.	No fugitive dust monitoring has been carried out during the period Oct'18 to March'19 as the mining operations were discontinued since 27th Feb'2011 due to want of Forest Clearance.
(vi)	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 earplugs / muffs.	Mining operations were discontinued since 27th Feb'2011 due to want of Forest Clearance. Noise monitoring done during the period Oct'18 to March'19 is attached in **Annexure VII.**
(vii)	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.	The services vehicles deployed in the mine are being maintained in Central Garage located at our Joda West Mn.Mines which is under same management control. The oil separation system has been provided at workshop at Joda West and working effectively.
(viii)	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.	Mining operations were discontinued since 27th Feb'2011 due to want of Forest Clearance. We will provide Suitable dust masks to employees (departmental & contractual) engaged in dusty operations when mine will resume. It is also ensured that they use the same. Employees are undergoing Periodical Medical Examination which is inclusive of lungs function test and audiometry. All the personnel are trained on safety in work place and continuous awareness programs are being conducted for all employees to avert manganese poisoning.
	Occupational health surveillance program of the workers should be undertaken periodically to observe any	Periodical Medical Examination of employees (departmental & contractual) are conducted as per prescribed norms of Mines Rule, 1955. The

	contractions due to exposure to dust and take corrective measures, if needed.	initial and periodical examination includes blood hematology, blood pressure, detailed cardiovascular assessment, neurological examination etc. All chest radiographs are being classified for detection of pneumoconiosis, diagnosis and documentation made in accordance to ILO classifications. During FY 2018-19, total 50 contractual employees have undergone PME. There are no findings of pneumoconiosis and manganese poisoning which is classified as occupational disease.
(ix)	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.	The department is in place and the Head of the department is reporting to General Manager of the division. The organizational structure in place is enclosed as **Annexure-IX.**
(x)	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 FY 2018-19, Rs 3,78,125 was allotted for Afforestation of dumps Rs 2,00,910 was spent. The amount was less due to unavailability of mature dumps. The budget kept for Environmental Monitoring was Rs. 1,70,000 out of which Rs. 9,28,335 was spent. Mining operations were discontinued since 27th Feb'2011 due to want of Forest Clearance.
(xi)	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.	The date of financial closure will be intimated to the Regional Office located at Bhubaneswar prior to date of closure of this project.
(xii)	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 *I* information / monitoring reports.	We shall extend to full co-operation to the officers of the Regional Office by furnishing the requisite data / information / monitoring reports.

(xiii)	The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board.	Half yearly compliance status for the specific and general conditions pertaining to the Environment Clearance is being submitted to Regional Office, MoEF, Bhubaneswar within scheduled time and uploaded in company website: http://www.tatasteelindia.com/corporate-citizen/environment-compliance-reports.asp
(xiv)	A copy of clearance letter will be marked to concerned Panchayat /local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Copy of the clearance letter marked to Sarpanch, Malda gram Panchayat on 12.06.2007.
(xv)	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	This is applicable to State Pollution Control Board, Orissa.
(xvi)	The project authorities 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 Bhubneshwar.	Details of Env. Clearance with respect to Malda Manganese mines published in the below mentioned newspapers - New Indian express (Daily English) dated 22nd Apr'07 & - Samaja (Daily Odiya) dated 22nd Apr'07
3	The Ministry or any other competent-authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.	Noted.
4	Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Noted.
5	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under.	Noted

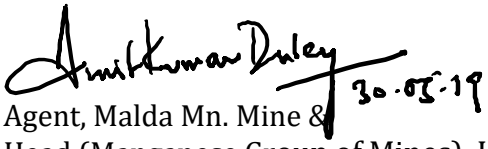
Additional Conditions as per MoEFCC Letter No. 106-9/11/EPE dt. 02.12.2014 issued to all Non-Coal Mining Projects.

S.No.	Stipulated Condition	Compliance Status
1.	The project authority shall adopt best mining practices for given conditions in the mining area, adequate number of check dam, retaining wall/ structure, garland drains and settling ponds should be provided to arrest the wash off with rain water in catchment area.	Currently Mining operations were discontinued since 27th Feb'2011 due to want of Forest Clearance. However, when mine will resume we will comply with the conditions and Existing retaining wall/ structure, garland drains and settling ponds etc were maintained regularly.
2.	The natural water bodies and or stream which are flowing in and around the village should not be disturbed. The water table should be nurtured so as not go down below the pre-mining period. In case of any water scarcity in the area, the project authorities have to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug well.	No natural water bodies and or stream which are flowing in and around the village were disturbed. However, ground water level, ground water quality and trace metals in ground water at lower elevations is being monitored at existing tube well and open well. The monitoring results are enclosed as Annexure VII and III respectively.
3.	The illumination and sound at night at project sites disturb the village in respect of both human and animal population. Consequent sleeping disorder and stress may affect the health in the village located close to mining operation. Habitations have a right to darkness and minimal noise level at night. The Project Proponents must ensure that the biological clock of the village is not disturbed by orienting the floodlights mask way from the village and keeping the noise levels well within prescribed limits for day/ night hours.	Noted and we will take care when mine production resume.
4.	The project Authority shall make necessary alternative arrangement, where required, in consultation with state Government to provide alternative areas for livestock grazing. In this case context, the Project Authority should implement the direction of Hon'ble Supreme Court with regard to acquiring grazing land. The sparse tress on such grazing ground, which provides mid-day shelter from the scorching sun, should be scrupulously guarded felling lest the cattle abandon the grazing ground or return home by noon.	Not Applicable. There is no grazing land within the M.L. area.
5.	Where ever blasting is undertaken as part of mining activity, the Project Authority shall carry out vibration studies well before approaching any such habitats or other building to evaluate the zone	Currently, Mining operations were discontinued since 27th Feb'2011 due to want of Forest Clearance.

	of influence and impact of blasting on neighbourhood. Within 500 meters of such sites vulnerable to blasting vibration, avoidance of use of explosives and adoption of alternative means of mineral extraction such as ripper/dozer combination/ rock breakers/ surface mineral etc should be seriously considered and practiced wherever practicable. A provision for monitoring of each blast should be made so that impact of blasting on nearby habitation and dwelling unit could be ascertained. The covenant of lease deed under rule 31 of MCR 1960 provided that no mining operation shall be carried out within 50 meters of public works such as public roads and building or inhabited sites except with prior permission from the competent Authority.	We will comply whenever mine in Operation.
6.	Main haulage road in the mines should be provided with permanent water sprinkler and other road should be regularly wetted water tanker fitted with sprinkler. Crusher and material transfer points should be invariably be provided with bag filter and or dry fogging system. Belt conveyor fully covered to avoid air borne dust.	We Will comply.
7.	The project Authority shall ensure that productivity of agriculture crops is not affected due to the mining operation. Crop Liability Insurance Policy has to be taken by PP as a precaution to compensate for the crop loss. The impact zone shall be 5 Km from the boundary of mine lease area for insurance policy. In case, several mines are located in cluster mines, formed inter – alia, to sub serve such and objective shall be responsibility for securing such Crop Liability Policy.	Not Applicable. There is no crop land nearby the M.L. area.
8.	In case any village is located within the mining leasehold which is not likely to be affected due to mining activities during the life of mine, the Expert Appraisal Committee (EAC) should consider the proposal of Environmental Clearance (EC) for reduced mining area. The mining lease may be executed for the area for which EC is accorded. The mining plan also accordingly revised and required stipulation under the MMDR Act 1957 and MCR 1969 met.	Not Applicable
9.	Transportation of minerals by road passing through the village shall not be allowed. A "bypass" road should be constructed (say leaving a gap of at least 200 m) for the purpose of transportation of minerals so that the impact of sound, dust and accidents could be mitigated. The PP shall bear the cost towards the widening and strengthening of existing public road network in case same is	There is no transportation road passing through any village and also currently Mining operations were discontinued since 27th Feb'2011 due to want of Forest Clearance.

	proposed to be used for the project. No road movement should be allowed on existing village road network without appropriately increasing carrying capacity of such road	
10.	Likewise, alteration or re-routing of foot paths, pagdandies, cart road and village infrastructure/ public utilities or roads (for purpose of land acquisition for mining) shall be avoided to extent possible and in such case acquisition is inevitable, alternative arrangements shall be made first and the only the area can be acquired. In these types of cases Inspection reports by site visit by expert may be insisted upon which should be done through reputed Institutes.	Not Applicable
11.	The CSR activates by companies including mining establishment has become mandatory up to 2% their financial turn over, socio Economic Development of neighbourhood. Habitats could also be planned and executed by the PPs more systemically based on need based door to door survey by established Social Institute/ Workers on the lines as required under TOR. " R&R Plan// compensation details for Project Affected People (PAP) should be furnished. While preparing the R&R plan, the relevant State/ national Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs and STs and weaker section of society in study, a need bashed sample survey, family-wise, should be undertaken to assess their requirement, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line department of State Government. It may be clearly brought out whether the village including their R&R and socio-economics aspect should be discussed in EIA report.	Tata Steel has taken up many social initiatives for the upliftment of the education, health and other socio-economic development of the neighbouring villages. TSRDS (Tata Steel Rural Development Society) has been pioneering the initiatives through CSR activities. R&R policy has not been applicable for the PP till now.

Yours faithfully
F: TATA STEEL LTD.



Agent, Malda Mn. Mine &
Head (Manganese Group of Mines), Joda

TATA STEEL LIMITED

MALDA MANGANESE MINE

ANNEXURE-1: SURFACE WATER QUALITY ANALYSIS REPORT OCTOBER-18 to MARCH-19

Sampling Location:SW-1: Kundra Nallah entering Malda
SW-2:Kundra Nallah leaving Malda

Sl. No	Parameter	Unit	Standard as per IS:2296:1992, Class'C'	Oct-18		Nov-18		Dec-18		Jan-19		Feb-19		Mar-19	
				SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2
1	Dissolved Oxygen (minimum)	mg/l	**4**	5.9	6.1	5.7	7.8	5.4	5.8	5.7	5.3	5.4	5.1	6.1	7
2	BOD (3) days at 270C (max)	mg/l	**3**	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
3	Total Coli form	MPN/100 ml	**5000**	360	410	360	410	378	321	359	313	320	280	380	310
4	pH Value		**6.0-9.0**	7.36	7.56	7.35	7.57	7.45	7.89	6.89	7.59	7.11	7.46	7.38	7.72
5	Colour (max)	Hazen	**300**	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL	CL
6	Total Dissolved Solids	mg/l	**1500**	178	181	180	210	132	135	124	136	126	130	138	146
7	Copper as Cu (max)	mg/l	**1.5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8	Iron as Fe (max)	mg/l	**0.5**	0.28	0.32	0.28	0.32	0.45	0.47	0.45	0.56	0.41	0.52	0.42	0.56
9	Chloride (max)	mg/l	**600**	34	38	32	37	25	25	29	21	32	26	36	44
10	Sulphates (SO4) (max)	mg/l	**400**	3.9	4.2	3.1	4.2	4.8	4.7	4.6	4.8	4.8	4.6	5.6	6.2
11	Nitrate as NO3 (max)	mg/l	**50**	1.05	1.21	1.18	1.05	1.4	1.7	1.4	4.5	3.9	4.5	1.8	2.4
12	Fluoride as F (max)	mg/l	**1.5**	0.012	0.014	0.023	0.031	0.041	0.034	0.059	0.24	0.052	0.21	0.046	0.038
13	Phenolic Compounds as C6H5OH (max)	mg/l	**0.005**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
14	Cadmium as Cd (max)	mg/l	**0.01**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15	Selenium as Se (max)	mg/l	**0.05**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
16	Arsenic as As	mg/l	**0.2**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Cyanide as CN (max)	mg/l	**0.05**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
18	Lead as Pb(max)	mg/l	**0.1**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Zinc as Zn(max)	mg/l	**15**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Hexa Chromium as Cr +6	mg/l	**0.05**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Anionic Detergents (max)	mg/l	**1**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

ANNEXURE-II-DRINKING WATER QUALITY ANALYSIS REPORT OCTOBER-2018

Sampling Location: Near Office

MICROBIOLOGICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl No.	Test Parameters	Norms as per IS:10500-2012	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19
1	Total Coliform Organism MPN/100ml	**Shall not be dectable in any 100ml sample**	<2	<1.8	<1.8	<1.8	<1.8	<1.8
2	Faecal Coliforms	**Shall not be dectable in any 100ml sample**	Absent	<1.8	<1.8	<1.8	<1.8	<1.8
3	E. Coli	**Shall not be dectable in any 100ml sample**	Absent	Absent	Absent	Absent	Absent	Absent

CHEMICAL ANALYSIS OF WATER AS PER IS: 10500 - 2012

Sl No.	Test Parameters	Norms as per IS: 10500-2012		Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19
		Desirable Limit	Permissible Limit						
1	Colour (Hazen Unit)	**5**	**15**	CL	CL	CL	CL	CL	CL
2	Odour	**Agreeable**	**Agreeable**	U/O	Agreeable	Agreeable	U/O	U/O	Agreeable
3	Taste	**Agreeable**	**Agreeable**	AL	Agreeable	Agreeable	AL	AL	Agreeable
4	pH value (250C)	**6.5 - 8.5**	**No Relaxation**	7.62	7.52	7.11	7.45	7.51	7.46
5	Turbidity in NTU	**1**	**5**	<2.0	<1	<1.8	< 2.0	< 2.0	2.2
6	Total Dissolved Solids in mg/l	**500**	**2000**	51	130	70	62	68	90
7	Aluminium (as Al) in mg/l	**0.03**	**0.2**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
8	Anionic Detergents (as MBAS) in mg/l	**0.2**	**1**	ND	<0.2	<0.2	<0.2	<0.2	<0.2
9	Boron (as B) in mg/l	**0.5**	**1**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
10	Calcium (as Ca) in mg/l	**75**	**200**	7.9	14.2	19	16	18.2	24.2
11	Chloride (as Cl) in mg/l	**250**	**1000**	11.5	24	10	9	9.8	18
12	Copper (asCu) in mg/l	**0.05**	**1.5**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
13	Fluoride (as F) in mg/l	**1**	**1.5**	<0.01	0.018	<0.01	<0.01	<0.01	<0.01
14	Residual Free Chlorine in mg/l	**0.2(Min.)**	**---**	ND	ND	ND	ND	ND	ND
15	Iron (as Fe) in mg/l	**0.3**	**1**	0.031	0.22	0.04	0.56	0.41	0.052
16	Magnesium (as Mg) in mg/l	**30**	**100**	1.7	8.6	2.1	2.2	9.6	12.8
17	Manganese (as Mn) in mg/l	**0.1**	**0.3**	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
18	Mineral Oil mg/l	**0.01**	**0.03**	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01
19	Nitrate (as NO3) in mg/l	**45**	**No Relaxation**	1.02	0.22	0.81	0.56	0.42	0.82
20	Phenolic Compounds (as C6H5OH) in mg/l	**0.001**	**0.002**	1.11	<0.001	<0.001	<0.001	<0.001	<0.001
21	Selenium (as Se) in mg/l	**0.01**	**No Relaxation**	<0.001	<0.05	<0.001	<0.001	<0.001	<0.001
22	Sulphate (as SO4) in mg/l	**200**	**400**	1.35	4.7	1.4	1.6	2.1	2.2
23	Alkalinity (as CaCO3) in mg/l	**200**	**600**	24.6	30.2	30	32	36	40
24	Total Hardness(as CaCO3) in mg/l	**300**	**600**	31.5	74	31	29	32.6	46
25	Cadmium (as Cd) in mg/l	**0.003**	**No Relaxation**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Cyanide (as CN) in mg/l	**0.05**	**No Relaxation**	ND	ND	ND	ND	ND	ND
27	Lead (as Pb) in mg/l	**0.01**	**No Relaxation**	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Mercury (as Hg) in mg/l	**0.001**	**No Relaxation**	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
29	Arsenic (as As) in mg/l	**0.01**	**0.05**	<0.001	<0.05	<0.001	<0.001	<0.001	<0.001
30	Zinc (as Zn) in mg/l	**5**	**15**	<0.05	0.42	<0.05	<0.05	<0.05	<0.05
31	Chromium (as Cr+6) in mg/l			<0.01	<0.05	<0.05	<0.05	<0.05	<0.05
32	Poly Aromatic Hydrocarbon as PAH	**<0.0001**	**--**	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
33	Pesticide	**Absent**		Absent	Absent	Absent	Absent	Absent	Absent

ANNEXURE-III: Ground Water Analysis Report

Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)

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

Ref.: Envlab/19/R-195 Date: 02/01/19

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

1	Name of Industry	:	Malda Manganese Mines (M/s TATA Steel Limited)
2.	Sampling Location	:	GW-1:Panchyat Office BW GW-2: Nimera Village OW
3.	Date of sampling	:	11.12.2018
4.	Date of analysis	:	12.12.2018 To 18.12.2018
	ollected by	:	VCSPL Representative in presence of TATA Representative

Sl. No	Parameter	Unit	Standards as per IS: 10500, 2012	Analysis Results 11.12.2018	
				GW-1	GW-2
Essential Characteristics					
1	Colour	Hazen	5	CL	CL
2	Odour	--	Agreeable	Agreeable	Agreeable
3	Taste	--	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	1	<1.0	<1.0
5	pH Value	--	6.5-8.5	7.56	7.84
6	Total Hardness (as $CaCO_3$)	mg/l	200	158.0	166.0
7	Iron (as Fe)	mg/l	0.3	0.34	0.42
8	Chloride (as Cl)	mg/l	250	24.6	46.0
9	Residual, free Chlorine	mg/l	0.2	ND	ND
Desirable Characteristics					
10	Dissolved Solids	mg/l	500	192.0	258.0
11	Calcium (as Ca)	mg/l	75	36.2	44.8
12	Magnesium (as Mg)	mg/l	30	12.8	13.2
13	Copper (as Cu)	mg/l	0.05	<0.05	<0.05
14	Manganese (as Mn)	mg/l	0.1	0.032	0.054
15	Sulphate (as SO_4)	mg/l	200	4.2	5.6
16	Nitrate (as NO_3)	mg/l	45	3.6	2.8
17	Fluoride (as F)	mg/l	1	0.021	0.056
18	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	<0.001	<0.001
19	Mercury (as Hg)	mg/l	0.001	<0.001	<0.001
20	Cadmium (as Cd)	mg/l	0.003	<0.001	<0.001
21	Selenium (as Se)	mg/l	0.01	<0.001	<0.001
22	Arsenic (as As)	mg/l	0.01	<0.001	<0.001
23	Cyanide (as CN)	mg/l	0.05	ND	ND
24	Lead (as Pb)	mg/l	0.01	<0.001	<0.001
25	Zinc (as Zn)	mg/l	5	<0.05	<0.05
26	Anionic Detergents (as MBAS)	mg/l	0.2	<0.2	<0.2
27	Chromium (as Cr^{+6})	mg/l		<0.05	<0.05
28	Mineral Oil	mg/l	0.5	<0.01	<0.01
29	Alkalinity	mg/l	200	132.0	128.0
30	Aluminium as(Al)	mg/l	0.03	<0.001	<0.001
31	Boron (as B)	mg/l	0.05	<0.01	<0.01
32	Poly Aromatic Hydrocarbon as PAH	µg/l	--	<0.001	<0.001
33	Pesticide	mg/l	Absent	Absent	Absent

For Visiontek Consultancy Services Pvt. Ltd.

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Visiontek Consultancy Services Pvt. Ltd.

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

Ref.: Envlab/19/R-1582(I)

Date: 03/04/19

GROUND WATER QUALITY ANALYSIS REPORT FOR THE MONTH OF MARCH-2019

1. Name of Industry : **Malda Manganese Mines (M/s TATA Steel Limited)**
2. Sampling location : **GW-1: Malda Camp TW**
   GW-2: Rani Saha OW
3. Date of sampling : 09.03.2019
4. Date of analysis : 11.03.2019 TO 16.03.2019
5. Sample collected by : VCSPL Representative in presence of TATA Representative

Sl. No	Parameter	Testing Methods	Unit	Standard as Per IS 10500:2012	Analysis Results	
					GW-1	GW-2
1	Color	APHA 2120 B, C	Hazen	**5**	CL	CL
2	Odour	APHA 2150 B	--	**Agreeable**	Agreeable	Agreeable
3	Taste	APHA 2160 C	--	**Agreeable**	Agreeable	Agreeable
4	Turbidity	APHA 2130 B	NTU	**1**	1.6	0.82
5	pH Value	APHA 4500H+ B	--	**6.5-8.5**	7.48	7.52
6	Total Hardness (as $CaCO_3$)	APHA 2540 C	mg/l	**300**	124.0	132.0
7	Iron (as Fe)	APHA 3500Al B	mg/l	**0.3**	0.36	0.38
8	Chloride (as Cl)	APHA 5540 C	mg/l	**250**	36.0	42.0
9	Residual, free Chlorine	APHA 4500B, B	mg/l	**0.2**	ND	ND
10	Dissolved Solids	APHA 3500Ca B	mg/l	**500**	196.0	224.0
11	Calcium (as Ca)	APHA 4500Cl- B	mg/l	**75**	42.0	44.2
12	Magnesium (as Mg)	APHA 3111 B,C	mg/l	**30**	19.6	20.2
13	Copper (as Cu)	APHA 4500F- C	mg/l	**0.05**	<0.05	<0.05
14	Manganese (as Mn)	APHA 4500Cl, B	mg/l	**0.1**	0.028	0.036
15	Sulphate (as SO_4)	APHA 3500Fe, B	mg/l	**200**	4.0	4.6
16	Nitrate (as NO_3)	APHA 3500Mg B	mg/l	**45**	2.1	2.9
17	Fluoride (as F)	APHA 3500Mn B	mg/l	**1**	0.024	0.048
18	Phenolic Compounds (as C_6H_5OH)	APHA 5220 B	mg/l	**0.001**	<0.001	<0.001
19	Mercury (as Hg)	APHA 4500 NO_3^- E	mg/l	**0.001**	<0.001	<0.001
20	Cadmium (as Cd)	APHA 5530 B,D	mg/l	**0.003**	<0.001	<0.001
21	Selenium (as Se)	APHA 3114 B	mg/l	**0.01**	<0.01	<0.001
22	Arsenic (as As)	APHA 4500 SO_4^{2-} E	mg/l	**0.01**	<0.01	<0.001
23	Cyanide (as CN)	APHA 2320 B	mg/l	**0.05**	ND	ND
24	Lead (as Pb)	APHA 2340 C	mg/l	**0.01**	<0.01	<0.001
25	Zinc (as Zn)	APHA 3111 B,C	mg/l	**5**	1.42	1.68
26	Anionic Detergents (as MBAS)	APHA 4500 CN- C,D	mg/l	**0.2**	<0.2	<0.2
27	Chromium (as Cr^{+6})	APHA 3111 B,C	mg/l		<0.05	<0.05
28	Mineral Oil	APHA 3500 Hg	mg/l	**0.01**	<0.01	<0.01
29	Alkalinity	APHA 3114 B	mg/l	**200**	74.0	126.0
30	Aluminium as(Al)	APHA 3111 B,C	mg/l	**0.03**	<0.01	<0.01
31	Boron (as B)	APHA 3500Cr B	mg/l	**0.5**	<0.5	<0.5
32	Poly Aromatic Hydrocarbon (as PAH)	APHA 6440 B	µg/l	**<0.0001**	<0.0001	<0.0001
33	Pesticide	APHA 6630 B,C	mg/l	**Absent**	Absent	Absent

Note: CL: Colourless, ND: Not Detected.

For Visiontek Consultancy Services Pvt. Ltd.

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ANNEXURE-IV : Ambient Air Quality (Core Zone) (Malda Iron and Manganese Mines Quarterly Report Oct'18 to March'19)

Month	Location	Concentration of Pollutants												
		PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	Benzo(a) pyrene (ng/m^3)	Mn ($\mu g/m3$)
Oct-18	Near Dispensary	41.66	18.20	4.05	9.50	< 4.0	0.13	< 20.0	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
	Mine Pit	42.60	18.66	4.10	9.47	<4.0	0.18	< 20.0	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
Nov-18	Near Dispensary	46.87	22.08	4.25	9.70	< 4.0	0.26	21.55	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
	Mine Pit	51.10	23.50	4.2	9.33	<4.0	0.25	< 20.0	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
Dec-18	Near Dispensary	50.43	22.55	4.26	9.64	< 4.0	0.25	22.43	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
	Mine Pit	52.31	26.00	4.25	9.40	<4.0	0.39	< 20.0	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
Jan-19	Near Dispensary	54.1	24.0	4.6	9.8	< 4.0	0.6	24.8	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
	Mine Pit	55.6	26.8	4.6	10.0	4.7	0.5	24.7	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
Feb-19	Near Dispensary	52.6	22.5	5.2	10.3	< 4.0	0.6	23.3	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
	Mine Pit	55.0	27.0	4.9	10.8	5.0	0.5	24.8	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
Mar-19	Near Dispensary	44.29	21.59	4.82	10.13	4.30	0.29	23.14	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001
	Mine Pit	70.62	26.89	4.41	9.69	4.69	0.43	22.56	< 0.001	< 0.01	< 0.001	< 0.001	< 0.002	< 0.001

Malda Manganese Mines

ANNEXURE-V: AMBIENT AIR QUALITY MONITORING REPORT (BUFFER ZONE)

Month	Location	Parameters					
		PM10	PM2.5	SO2	NOx	CO	HC
Dec-18	Jaganathpur	47.20	25.40	<4	<9	0.56	<0.001
	Bandhubaria	47.80	26.40	<4	<9	0.32	<0.001
	Raikara	54.30	24.50	<4.0	<9.0	0.50	<0.001
Mar-19	Jaganathpur	50.60	32.80	5.20	9.80	0.62	<0.001
	Bandhubaria	52.20	33.20	5.60	9.60	0.66	<0.001
	Raikara	58.00	35.60	5.20	9.40	0.58	<0.001

ANNEXURE-VI: Ground water Analysis Report

Visiontek Consultancy Services Pvt. Ltd.

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

Ref.: Envlab/19/R-194 Date: 02/01/18

GROUND WATER LEVEL MONITORING REPORT FOR DEC-2018

1. Name of Industry : **Malda Manganese Mines (M/s TATA Steel Limited)**
2. Date of Recording : 11.12.2018
3. Monitored by : VCSPL Representative in presence of TATA Representative

		DEC	DOS		11.12.2018	
SL.NO	**Monitoring Date**	Analysis Result (MT/BGL)				
1	Rani saha OW	7.6 m				
2	Kolaroida OW	6.3 m				

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

Ref.: Envlab/19/R-1583(F) Date: 03/04/19

GROUND WATER LEVEL ANALYSIS REPORT FOR THE MONTH OF MARCH-2019

1. Name of Industry : **Malda Manganese Mines (M/s TATA Steel Limited)**
2. Sampling location : **GWL-1: Rani Saha OW**
   GWL-2: Kolaroida OW
3. Date of sampling : 09.03.2019
4. Sample collected by : VCSPL Representative in presence of TATA Representative

SL.NO	Sample Location	Analysis Result (m/bgl)
1	GWL1: **Rani Saha OW**	7.0
2	GWL2: **Kolaroida OW**	6.1

For Visiontek Consultancy Services Pvt. Ltd.

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ANNEXURE-VII: Noise Monitoring Data

Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)

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

Ref.: Envlab/19/R-197 Date: 02/01/19

NOISE MONITORING REPORT FOR DEC-2018

1. Name of Industry : **Malda Manganese Mines (M/s TATA Steel Limited)**
2. Date of Recording : 18.12.2018
3. Monitored by : VCSPL Representative in presence of TATA Representative

AAQ				Day time Equivalent	Night time Equivalent
Sl. No	Date	Name of Location	Unit	Result	
1	18.12.2018	Town ship	db	54.2	43.6
2		Hospital		68.7	49.5
3		Mines Area		72.3	51.2
CPCB Standard				75	

For Visiontek Consultancy Services Pvt. Ltd.

Visiontek Consultancy Services Pvt. Ltd.

(An Enviro Engineering Consulting Cell)

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

Ref.: Envlab/19/R-1589 Date: 03.04.19

NOISE MONITORING REPORT FOR MARCH-2019

1. Name of Industry : **Malda Manganese Mines (M/s TATA Steel Limited)**
2. Date of Recording : 18.03.2019
3. Monitored by : VCSPL Representative in presence of TATA Representative

Sl. No	Date	Name of Location	Unit	Day time Equivalent Result	Standard As per CPCB	Night time Equivalent Result	Standard As per CPCB
1	18.03.2019	Town ship	dB	54.2	75	43.6	70
2		Hospital		40.8	50	34.8	40
3		Mines Area		69.9	75	51.2	70
4		Office Area		51.8	75	40.2	70

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ANNEXURE-VIII

LIST OF ENVIRONMENTAL MONITORING EQUIPMENT

Malda Manganese Mine, M/S TATA STEEL LIMITED

LIST OF ENVIRONMENTAL MONITORING EQUIPMENT		
Ambient Air Quality		
Sl.No.	Name of the Instrument	Parameter
1	Respirable Dust sampler	PM_{10}
2	Fine Particulate Sampler	$PM_{2.5}$
3	Spectrophotometer UV-Visible range	SO_2,NO_x
4	NDIR	CO
5	AAS	Manganese
Other Paraphernalia for analysis of air quality are also available in the laboratory.		
Water Quality		
Sl.No.	Name of the Instrument	Parameter
1	Analytical weighing Balance	Used for weighing the chemicals
2	Micro Balance	Used for weighing CRMs
3	AAS with VGA and Hallow cathode lamps	All Heavy metals (Arsenic, Mercury, Selenium, Cadmium, Chromium, Cobalt, Iron, Lead, Manganese, Zinc, Aluminium, etc..)
4	Spectrophotometer UV-Visible range	Nitrate, Nitrite, Sulphate, Chromium(VI),Fluoride, Cyanide, Phenolic compounds
5	Flame Photometer	Sodium ,Potassium
6	Ion Analyzer	Fluoride
7	BOD Incubator	BOD
8	COD Digester	COD
9	Furnace	Total volatile solids, Fixed solids
10	Hot Air Oven	Total Suspended Solids, Total Dissolved Solids
11	pH meter	pH
12	Conductivity meter	Conductivity
13	Turbidity Meter	Turbidity
14	Bacteriological Incubator	Total coli form and fecal coli form
15	Autoclave	sterilization
16	Microscope	Bacteriological colony count
17	Magnetic stirrer	Stirring purpose
18	Vacuum filtration unit	Rapid filtration
19	Water Bath	Boiling and evaporation purpose
20	Cadmium reduction column	Nitrate
21	Fluoride distillation unit	Fluoride
22	Kjeldal flask	Ammonia and Organic Nitrogen
23	Hot Plate	Digestion
24	Pizometer	Water level monitoring
25	Aquarium	Bio assay test

ANNEXURE-IX

ORGANIZATION STRUCTURE

Malda Manganese Mine, M/S TATA STEEL LIMITED