

स्टील ऑथोरिटी ऑफ इंडिया लिमिटेड

(भारत सरकारका प्रतिष्ठान)

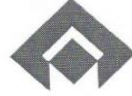
रॉ मटेरियल्स डिभिजन

मनोहरपुर ओर माइंस

पोस्ट - चिरियां, प० सिंहभूम, झारखण्ड- ८३३१०६

दुरभाष-०९३०८१२८७७६,

E-mail: momchiria@gmail.com



STEEL AUTHORITY OF INDIA LIMITED

(A Government of India Enterprise)

RAW MATERIALS DIVISION

MANOHARPUR ORE MINES

P.O. - CHIRLA, W. Singhbhum, Jharkhand-833106

P Ph. No. 09308128774,

E-mail: momchiria@gmail.com

Ref. No. MOM/PC/6/९२.

Date:22.11.2019

To,
Additional PCCF (IFS)
Ministry of Environment, Forest and Climate Change
Regional Office (ECZ)
Bungalow No. A - 2, Shyamali Colony
Ranchi - 834002.

Sub: Six Monthly Compliance of the Conditions Stipulated in Environmental Clearance of Dhobil Iron Ore Mining project for the period April-2019 to September-2019 of M/s SAIL.

Sir,

We are hereby submitting status of compliances for the above period up to 30th Sep. -2019 to the conditions stipulated in the Environmental Clearance granted by MoEF vide No:J-11015/251/2009-IA.II(M), Dated:24.01.2012 in respect of Dhobil Iron Ore Mining project of M/s SAIL for production capacity of 0.75MTPA of Iron Ore.

Thanking you.

Yours faithfully,
For Steel Authority of India Ltd.

General Manager (Mech.)
Manoharpur Ore Mines
Raw Material Division, SAIL

Copy to:

1. Director, IA, MoEF & CC, GOI, Indira Paryavaran Bhavan, Aliganj, JorBagh Road, New Delhi - 110 003.
2. Member Secretary, JSPCB, HEC, Dhurwa, Ranchi - 834 004.
3. In-charge, Eastern Zone, CPCB, Southern Conclave, Block 502,5th & 6th Floors, 1582 Rajdanga Main Road, Kolkata - 700 107 (W. B.)



**Status of Compliance to Conditions Stipulated in
Environmental Clearance granted
by
MoEFCC
Vide Order No: J-11015/251/2009-IA. II (M),
Dated: 24th January, 2012 for 0.75 MTPA
of
Dhobil Iron Ore Mining Project**

(Period: April' 2019 to September' 2019)



STEEL AUTHORITY OF INDIA LIMITED
RAW MATERIALS DIVISION
MANOHARPUR ORE MINES
P.O. – CHIRIA, PIN : 833106
DIST. : SINGHBHUM (WEST)



Environment Clearance letter No:J-11015/251/2009-IA. II(M), Dated: 24th January, 2012 of Dhobil Iron Ore Mining Project for production of 0.75MTPA (ROM) of iron ore.

Half yearly compliance report for the period: April-2019 to September-2019

A. Specific Conditions

Sl. No	Condition	Compliance Status as on September '2019
i	The project proponent shall obtain Consent to Establish and Consent to Operate from the Jharkhand State Pollution Control Board and effectively implement all the conditions stipulated therein.	Consent to Establishment was obtained from Jharkhand State Pollution Control Board for a capacity of 0.75 MPTA, vide letter no: 1398, dated: 18.05.2012. Consent to Operate has also been obtained from Jharkhand State Pollution Control Board for a capacity of 0.75 MPTA, vide letter Ref No. JSPCB/HO/RNC/CTO-2010693/2018/486, dated: 09.03.2018, with validity up to 31.03.2022. Conditions stipulated in the Consents are being complied with. Status of Conditions Compliance placed as Annexure-1 .
ii	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.	Noted.
iii	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to the project.	Provision of Wildlife (Protection) ACT 1972 is not attracted to the Project as there are no Wildlife sanctuaries, National Parks or similar places specified in the Act within 10 KM radius of the project.
iv	Environmental clearance is subject to obtaining clearance under Forest (Conservation) Act, 1980 for diversion of forest land. Mine working shall be restricted to the area for which forestry clearance has been obtained. However, As per guidelines of MOEF& CC circular No:F.No.11-599/2014-FC, Dated 01.04.2015. Net Present Value (NPV) to be paid for Total forest area covered in the mining lease.	Forest Clearance was obtained vide letter No: 8-20/98-FC, dated: 21.10.98 for mine working over 29.411 Ha. Mine working restricted within 29.411 Ha for which forestry clearance was obtained. NPV for total forest area in mining lease area of 513.036 Ha has been deposited in ad-hoc CAMPA Account No: CA 1587 of Corporation Bank, Block –II, CGO Complex, Phase –I, Lodhi Road, New Delhi-110510.
v	Necessary wildlife clearance, as applicable, shall also be obtained.	There is no wild life sanctuary, National Park, wildlife habitat within 10 KM of project site. Hence, Not Applicable.
vi	The Mining operations shall be restricted to above the groundwater table and it should not intersect the	Ground water table at Manoharpur Ore Mines, Chiria is at 400 MSL as per the exploration carried out by Mineral Exploration Corporation of India (MECL) and



Sl. No	Condition	Compliance Status as on September '2019
	groundwater table. In case of working below the groundwater table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	present working depth of the mine is 628 m AMSL and ultimate working depth of the mine is 486. Hence there is no intersecting of Mine workings with the ground water table. Due to any reason it is required to work below the groundwater table, we will obtain prior approval of the Ministry of Environment, Forest & Climate Change and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study will be carried out.
vii	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. The first order streams and the seasonal nallahs originating from the mining lease area shall be protected.	Due precautions are being taken to avoid obstructions to natural water resources by providing drains and bounds etc. at required places.
viii	The top soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	At present, the mining operations are being carried out within the existing broken area and hence no top soil is generated during this period. If any top soil encountered it will be stored separately and used for reclamation & plantation purpose.
ix	The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time and their phase-wise stabilization shall be carried out. There shall be two external over burden dumps. The stabilized dump in area of 5.23 ha shall not be used for dumping in future. The new dump created in an area of 7.9 ha shall have maximum projected height of 15 m. Proper terracing of the OB dumps shall be carried out so that the overall slope of the dump shall be maintained to 28°. The OB dump should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas	The over burden (OB) generated during the mining operations is being stored at earmarked site. Dumping of over burden & inter burden waste on stabilized dump was stopped. Terracing of the OB dump and Plantation over terracing and slope of the dump with native species was started from August'2016. Retaining wall of 804m length (325 mts concrete retaining wall & 479 mts length boulder retaining wall) was constructed around the Sub Grade dump and Fines dump. Dimensions of existing and proposed Retaining wall are 1.2 m height and 1.2 m width. Six monthly Compliance Status is being submitted to the Ministry of Environment & Forests and Climate Change its Regional Office located at Ranchi.



Sl. No	Condition	Compliance Status as on September '2019
	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.	
x	<p>Catch drains and siltation ponds of appropriate size shall be constructed around the mine working soil, mineral and OB dump(s) to prevent run off of water and flow of sediments directly into the Hamsadagaar Nallah, the koina River, the seasonal nallahs 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 the monsoon and maintained properly.</p> <p>Garland drains, setting tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, soil, mineral and over burden dumps to prevent run off of water and flow of sediments directly into the Hamsadagaar Nalla, the Koina River, the seasonal nallahs 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.</p>	<p>Retaining wall of about 804 m length was constructed around the mineral dump. Check bunds, Garland drains and siltation pond has been constructed to control surface runoff.</p> <p>Garland drains and sedimentation pits are being de-silted before onset of monsoon every year.</p> <p>Photographs showing the retaining wall, garland drain, Check Dam are placed as Annexure-2.</p> <p>Sump capacity: At present mining operations are being carried out much above the water table. During the rainy season no working will be planned from the bottom most bench of the mines. The rain water from working area will be channelized towards bottom most working bench of the Mine. Due pervious nature of the strata the water will be percolated in to the ground within few days. Necessary of pumping was not raised since opening of the mines. Hence the size of the bottom most bench is size of the sump.</p>
xi	Dimension of the retaining wall at the toe of the over burden dumps and the OB benches within the mine to check run-off and siltation shall be based on the rain fall data.	Considering the rainfall data of the area, 1.2 m height and 1.2 m width of Retaining wall of 804 m length (325 mts concrete retaining wall & 479 mts length boulder retaining wall was provided at the bottom of dumps.



Sl. No	Condition	Compliance Status as on September '2019																
xii	The void left unfilled in an area of 6 ha 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 all along the excavated area.	After exploitation of the ore or during Mine closure, the following activities will be taken for the use of public, 1. The slope of higher benches shall be made gentler and void area 6 ha will be converted into water body. 2. Plantation will be done to stabilize the slopes. 3. Peripheral fencing will be carried out all along the excavated area.																
xiii	Plantation shall be raised in an area of 126.645 ha including a 7.5 m wide green belt in the safety zone around the mining lease, over burden dumps, mine benches, around water body, along the 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. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	Total Safety Zone area is 5.5 ha and most of the Safety Zone area covered by virgin forest. Plantation is being carried out every year at low tree density of areas, road sides etc. Details of year wise afforestation during last five years are as follows: <table><tr><td>Year</td><td>No of saplings</td></tr><tr><td>2019-20 (April to Sep)</td><td>500</td></tr><tr><td>2018-19</td><td>600</td></tr><tr><td>2017-18</td><td>600</td></tr><tr><td>2016-17</td><td>600</td></tr><tr><td>2015-16</td><td>450</td></tr><tr><td>2014-15</td><td>500</td></tr><tr><td>2013-14</td><td>500</td></tr></table> 32.20 ha. area was covered for green belt development. Out of which 4.2 ha plantation area is within the mining lease and 28.00 ha of plantation area is outside the lease hold area.	Year	No of saplings	2019-20 (April to Sep)	500	2018-19	600	2017-18	600	2016-17	600	2015-16	450	2014-15	500	2013-14	500
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xiv	Effective safeguard measures, such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Regular water sprinkling is being done on haul roads, loading and unloading point by using 3 no's mobile water sprinklers. About 100 mts length fixed water sprinklers were installed on main haul road at weight bridge area. The transportation road is being maintained regularly with proper grading and repair of potholes. The transport roads are also being cleaned regularly including removal of spillages if any to keep clean & tidy. Ambient air quality monitoring is being done at regular intervals and monitoring results are ensuring as per the National Ambient Air Quality Standards.																
xv	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.	As the mine pits are located at the hill top, all the surface runoff from the mining areas have been diverted to mine pits, from where it seeps in to the ground. Check bunds, Garland drains and siltation pond has been constructed to control surface runoff.																



Sl. No	Condition	Compliance Status as on September '2019																					
		<p>Measures taken for augmentation of ground water resources:</p> <ol style="list-style-type: none"> Check bunds, Garland drains and siltation pond has been constructed to control water flow and surface runoff. As the mine pits are located at the hill top, all the surface runoff from the mining areas have been diverted to mine pits, from where it seeps in to the ground. IIT, Kharagpur, a world renowned premier mining institute of the country, was engaged for preparation of the CAT Plan. <p>The CAT Plan covers an approx. area of 11,500 Km² bounded by the west bank of river Koina in the west up to the east bank of river Karo in the east. IIT, Kharagpur submitted the final report on Comprehensive Catchment Area Treatment Plan for the Saranda forest area fed by Karo & Koina River.</p>																					
xvi	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 on 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 Forest 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.	<p>Network of 6 nos. of existing Dug Wells located around the mines have been selected for ground water level monitoring. Ground water table levels at the selected wells are being monitored at regular intervals i.e. 4 times in a year.</p> <p>The Range of water levels during pre-monsoon (May) 2019 and during monsoon (August) 2019 is as follows,</p> <table border="1"> <thead> <tr> <th>ID</th><th>Location</th><th>Water level below the Ground Surface (in meters)</th></tr> </thead> <tbody> <tr> <td>G1</td><td>Adjacent to community centre at Anqua</td><td>6.10- 6.30</td></tr> <tr> <td>G2</td><td>Opposite to community centre at Anqua</td><td>6.40-6.60</td></tr> <tr> <td>G3</td><td>Near Anqua Model Steel Village Gate</td><td>1.85-2.40</td></tr> <tr> <td>G4</td><td>Siva Mandir</td><td>3.30-3.40</td></tr> <tr> <td>G5</td><td>Near CNI Church</td><td>7.00-7.20</td></tr> <tr> <td>G6</td><td>Near Bishra Chowk</td><td>1.30-1.30</td></tr> </tbody> </table> <p>In addition to above Two piezometers one at Chiria (150 feet) and another at Dhobil Village 200 feet provided and are being monitored at regular intervals i.e. 4 times in a year. Ground water levels during pre-monsoon (May) 2019 and during monsoon (August) 2019 and piezometer photograph is placed in Annexure – 3.</p>	ID	Location	Water level below the Ground Surface (in meters)	G1	Adjacent to community centre at Anqua	6.10- 6.30	G2	Opposite to community centre at Anqua	6.40-6.60	G3	Near Anqua Model Steel Village Gate	1.85-2.40	G4	Siva Mandir	3.30-3.40	G5	Near CNI Church	7.00-7.20	G6	Near Bishra Chowk	1.30-1.30
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Sl. No	Condition	Compliance Status as on September '2019																								
xvii	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.	Regular monitoring of flow rate of water at perennial nalla i.e. Hamsadagaar Nalla, is being done and records are being maintained.																								
xviii	Regular monitoring of water quality upstream and downstream of the Hamsadagaar Nalla shall be carried out and record of monitored date should be maintained and submitted to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, the Central Groundwater Authority, the State Pollution Control Board and the Central Pollution Control Board.	<p>Water quality monitoring at both upstream and downstream of Hamsadagaar Nalla is being done on quarterly basis and results are being submitting to Ministry of Environment, Forest & Climate Change, it's Regional Office, Ranchi, Jharkhand State Pollution Control Board and other statutory authorities.</p> <p>The Range of upstream and downstream Parameters during Apl'19 to Sep'19 is as follows,</p> <table><tr><th>Parameter</th><th>Unit</th><th>Up-stream</th><th>Down-stream</th></tr><tr><td>pH</td><td>-</td><td>7.46 - 7.45</td><td>7.56 - 7.57</td></tr><tr><td>Temperature</td><td>°C</td><td>27.00 - 23.30</td><td>27.10 - 22.40</td></tr><tr><td>Conductivity</td><td>uS/cm</td><td>136.6 - 104.58</td><td>128.60 -102.64</td></tr><tr><td>Dissolved Oxygen</td><td>mg/l</td><td>6.33 - 7.50</td><td>6.59 - 7.54</td></tr><tr><td>Total Dissolved Solids</td><td>mg/l</td><td>68.50 - 51.46</td><td>64.20 - 53.85</td></tr></table> <p>Water quality data is attached in Annexure – 4</p>	Parameter	Unit	Up-stream	Down-stream	pH	-	7.46 - 7.45	7.56 - 7.57	Temperature	°C	27.00 - 23.30	27.10 - 22.40	Conductivity	uS/cm	136.6 - 104.58	128.60 -102.64	Dissolved Oxygen	mg/l	6.33 - 7.50	6.59 - 7.54	Total Dissolved Solids	mg/l	68.50 - 51.46	64.20 - 53.85
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Total Dissolved Solids	mg/l	68.50 - 51.46	64.20 - 53.85																							
xix	The Project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) required for the project.	Permission obtained from Water Resource Department, Govt. Of Jharkhand and agreement has been made with Water Ways Division, Chaibasa on 03.08.2017, for drawl of water from Hamsadagara Nalla to the tune of 0.62 MCM per annum for Manoharpur Ore Mines, Chiria.																								
xx	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	<p>As the mine pits are located at the hill top, all the surface runoff from the mining areas have been diverted to mine pits, from where it seeps in to the ground.</p> <p>Check bunds, Garland drains and siltation pond has been constructed to control surface runoff.</p>																								
xxi	Appropriate mitigative measures shall be taken to prevent pollution of the Koina River in consultation with the State Pollution Control Board.	<p>For preparation of a Comprehensive Catchment Area Treatment (CAT) Plan of the area, discussion was held with DFO (Saranda) and IIT Kharagpur, a world renowned premier mining institute of the country, was engaged for preparation of the CAT Plan.</p> <p>IIT Kharagpur, by using GIS Frame work and Remote Sensing Technology, as well as field survey, has prepared the CAT Plan. The CAT Plan covers an approx. area of 11,500 Km² bounded by the west bank of river Koina in the west up to the east bank of river Karo in the east.</p>																								



Sl. No	Condition	Compliance Status as on September '2019
		<p>The Plan has focused on the Catchment scenario of the region, river system, source of water pollution and their prevention, terrain description, soil conservation and its integration with CSR activities, mining activities in the area etc.</p> <p>As per the instruction of Jharkhand State Pollution Control Board during site visits Retaining wall, check dams, garland drains have been constructed to prevent pollution of water bodies at Dhobil Mines.</p>
xxii	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.	<p>Pollution Under Control (PUC) certificate is made compulsory for deployment of vehicles in Mines. Scheduled/Preventive maintenance of HEEM and light vehicles are under taken in Workshops/Garages to keep emissions level under control.</p> <p>The vehicles used for transportation of ore are covered with tarpaulins and ensured that there is no overloading.</p>
xxiii	No blasting shall be carried out after the Sunset. 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.	<ol style="list-style-type: none"> 1. Blasting is being done only in day time in specified time i.e. 4 – 4.30 PM. 2. Controlled blasting with slurry explosives and NONEL detonators is being done to minimize ground vibrations and to arrest fly rocks & boulders.
xxiv	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 the Ministry of Environment and Forests and its Regional Office located at Bhubaneswar.	<p>The entire mine lease is in Ankua RF of Saranda Reserve Forest. The mining and associated activities in Dhobil Iron Ore Mining Project are confined in already broken area of 29.411 ha out of total lease area of 513.036 ha.</p> <p>Land use and land cover map of Dhobil lease area have been developed by Department of Mining Engineering Indian Institute of Technology (Indian School of Mines) Dhanbad from Linear Imaging Self scanning Sensor (LISS) data obtained from Indian Remote Sensing satellites- Resourcesat-2 (LISS-IV) and Cartosat 2. The satellite images so obtained were processed applying supervised classification method has using the Erdas Imagine software.</p>



Sl. No	Condition	Compliance Status as on September '2019																		
		<p>Land use pattern of the lease area is as follows,</p> <table> <tr> <th>LU/LC classes</th> <th>Area (ha)</th> </tr> <tr> <td>Mine lease Boundary</td> <td>513.036</td> </tr> <tr> <td>Dense forest</td> <td>271.460</td> </tr> <tr> <td>Open forest</td> <td>115.196</td> </tr> <tr> <td>Built-up area Mining</td> <td>28.253</td> </tr> <tr> <td>Built-up area non mining</td> <td>0.144</td> </tr> <tr> <td>Waste Land</td> <td>57.589</td> </tr> <tr> <td>Agricultural land</td> <td>40.294</td> </tr> <tr> <td>Water body</td> <td>0.010</td> </tr> </table> <p>Report given by Department of Mining Engineering Indian Institute of Technology (Indian School of Mines) Dhanbad is given in the Annexure – 5.</p>	LU/LC classes	Area (ha)	Mine lease Boundary	513.036	Dense forest	271.460	Open forest	115.196	Built-up area Mining	28.253	Built-up area non mining	0.144	Waste Land	57.589	Agricultural land	40.294	Water body	0.010
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xxv	Drills shall either be operated with dust extractors or equipped with water injection system.	All the Drills are equipped with water injection system.																		
xxvi	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Water spraying is being done at Loading & unloading areas and at all the transfer points to control dust emissions.																		
xxvii	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	<p>Septic Tanks with soaking pits have been provided for the various accommodations. Septic Tank & Soaking Pits are being cleaned regularly and maintained.</p> <p>Since 1998, the mine is operated through Composite Mining contractor and all the HEMM and equipment were deployed by the contractor. Most of maintenance jobs are done at their work shop at Rourkela/Manoharpur.</p> <p>However, Vehicle washing facility with Oil grease traps was provided at Chiria general office for vehicles.</p>																		
xxviii	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	Pre-placement medical examination and periodical medical examination of all the workers engaged in the Mine are being carried out and records are being maintained.																		



Sl. No	Condition	Compliance Status as on September '2019
	should be drawn and followed accordingly.	
xxix	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear, Indian wolf, python etc. spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. All the safeguard measures brought out in the wildlife Conservation Plan so prepared specific to the project site shall be effectively implemented. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	<p>All precautions are under taken not to disturb the flora and fauna in the mining lease area. Necessary facilities are being extended to local forest department for their inspection and monitoring of forest area.</p> <p>Comprehensive Integrated Wildlife Management Plan (IWMP) for the West Singhbhum District has been prepared under aegis of SAIL and was submitted to Govt. of Jharkhand.</p> <p>Measures suggested by Jharkhand Govt. for the leasehold shall be suitably implemented and demand raised by the State Govt. shall be paid for implementation of the Wild Life Management Plan by the Govt. of Jharkhand.</p>
xxx	The entire mining lease area shall be fenced by erecting solar powered electric fencing all round it. The fencing so erected shall be maintained properly and the cost towards erection and maintenance of solar powered electric fencing shall be borne by the project proponent out of the project cost.	<p>As the project area falls within the RF, the matter has been discussed with forest officials. State Forest Department officials are of the opinion that Solar fencing may obstruct/ effect the movement of wild life animals.</p> <p>Accordingly, the matter is being discussed with DFO, Saranda Division and a request letter has been submitted to DFO, Saranda vide letter Ref. No. MOM/PC/6/58 dated 03.05.2018. Clarification /direction was requested from DFO, Saranda Division, Chaibasa. Based on the opinion of the State Forest Department, action will be taken for compliance of the condition.</p>
xxxi	No transportation of ore outside the mine lease area shall be carried out after the sunset.	Transportation of ore outside the mine lease area is being done only during day time i.e. 6 AM to 6 PM.
xxxii	The critical parameters such as RSPM (Particulate matter with size less than 10 um i.e. PM10) and NOx in the ambient air within the impact zone, peak particle velocity at 300 m	Regular air & water quality monitoring is being done on quarterly basis and results are being submitted to State Pollution Control Board and other statutory authorities.



Sl. No	Condition	Compliance Status as on September '2019
	distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored (TDS, DO, pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA (M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	Results of air & water quality data is being displayed at in public domain i.e the main gate of General Office of Mines.
xxxiii	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.	Not Applicable at present. Final Mine closure plan along with the fund details will be submitted to the ministry 05 years in advance.

**B. General Conditions**

Sl. No	Condition	Compliance Status as on September, 2019
i	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Mining is done as per the approved Mining Plan. No change in mining technology and scope of working has been made.
ii	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.	ROM production and total excavation are kept within permitted/approved Mining Plan. The quantity of Production from 1 st April-19 to 30 th September -19 is as follows: Lump: 155204.08 Tons Fines : 185182.44 Tons ROM: 340386.52 Tons (i.e. 0.340 Million Tons).
iii	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10µm i.e. PM10) and NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Four nos. of ambient air quality monitoring stations have been established considering the topographical features and meteorological data. Regular air & water quality monitoring is being done on quarterly basis and results are being submitted to State Pollution Control Board and other statutory authorities.
iv	Data on ambient air quality RSPM (Particulate matter with size less than 10µm i.e., PM10) & NOx should be regularly submitted to the Ministry of Environment and Forests 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 data is being submitted to MoEF & CC, New Delhi and Regional Office, Ranchi along with the compliance reports. Air Quality report for the period April 2019 & September 2019 is placed as Annexure – 6 . Air quality data is also being submitted to Jharkhand State Pollution Control Board and Central Pollution Control Board.
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.	To minimize fugitive dust emissions Water spraying on haul roads, loading and unloading and at transfer points are being done regularly. Fixed water sprayers on main haul road have also been provided. Photograph showing the water sprinkling arrangements and Trucks Covered with Tarpaulin Sheet during transportation are placed in Annexure- 7 .



Sl. No	Condition	Compliance Status as on September, 2019																								
vi	Measures should be taken for control of noise levels below 85 dB(A) in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs.	<p>Workers engaged in operations of HEMM are provided with ear plugs.</p> <p>The Range of noise level during Apl' 19 to Sep' 19 is as follows</p> <table border="1"> <thead> <tr> <th>S. No.</th><th>Location</th><th>Observed Noise level in dB(A)</th></tr> </thead> <tbody> <tr> <td>1</td><td>Near GM Office</td><td>61.3 – 62.4</td></tr> <tr> <td>2</td><td>Near Chiria Hospital</td><td>49.2 – 46.2</td></tr> <tr> <td>3</td><td>Near Mines canteen</td><td>62.9 – 69.9</td></tr> <tr> <td>4</td><td>Near Mining weigh bridge</td><td>65.9 – 67.4</td></tr> <tr> <td>5</td><td>Near Sub-grade dump</td><td>63.4 – 71.8</td></tr> <tr> <td>6</td><td>Near Ankuwa Chawk</td><td>49.7 – 53.2</td></tr> <tr> <td>7</td><td>Near Railway Siding</td><td>66.5 – 72.5</td></tr> </tbody> </table> <p>Measured noise levels in and around the mines is placed in Annexure – 8.</p>	S. No.	Location	Observed Noise level in dB(A)	1	Near GM Office	61.3 – 62.4	2	Near Chiria Hospital	49.2 – 46.2	3	Near Mines canteen	62.9 – 69.9	4	Near Mining weigh bridge	65.9 – 67.4	5	Near Sub-grade dump	63.4 – 71.8	6	Near Ankuwa Chawk	49.7 – 53.2	7	Near Railway Siding	66.5 – 72.5
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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 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	<p>Since 1998, the mine is operated through Composite Mining contractor and all the HEMM and equipment were deployed by the contractor. Most of maintenance jobs are done at their work shop at Rourkela/Manoharpur.</p> <p>However, Vehicle washing facility with Oil grease traps was provided at Chiria general office for vehicles.</p>																								
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. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	<p>Dust masks are provided to all employees engaged in dust prone areas.</p> <p>86 employees have undergone training on safety & health aspects during 2019-20 up to September.</p> <p>05 employees have undergone occupational health surveillance program during 2019-20 up to Sep.</p>																								
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.	A full-fledged Environment Management Cell (EMC) has been established to look after environment aspects headed by an experienced engineer with more than 10 years' experience in the field of environment in the rank of AGM who directly reports Head of Mines.																								



Sl. No	Condition	Compliance Status as on September, 2019																
		In addition to the EMC at Mines level an Environment & lease department at our head quarter i.e. Raw Materials Division, Kolkata headed by a qualified person (M. Tech in Environmental Engineering) and experience environmental engineers who facilitate all the RMD mines including MOM, Chiria mines in implementation and maintained of pollution contro measures.																
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 of Environment and Forests and its Regional Office located at Bhubaneswar.	<div>There will be separate budget for Environment & Lease department. The allocated budget will be exclusively used for Environment & Lease expenses only. Year wise expenditure from 2013 on Environmental protection measures is as furnished below:-</div> <table><tr><th>Year</th><th>Approximate Expenditure</th></tr><tr><td>2013-14</td><td>42.00 Lakhs</td></tr><tr><td>2014-15</td><td>25.70 Lakhs</td></tr><tr><td>2015-16</td><td>44.60 Lakhs</td></tr><tr><td>2016-17</td><td>53.02 Lakhs</td></tr><tr><td>2017-18</td><td>50.84 Lakhs</td></tr><tr><td>2018-19</td><td>48.54 Lakhs</td></tr><tr><td>2019-20 (Apl to Sep)</td><td>20.5 Lakhs</td></tr></table>	Year	Approximate Expenditure	2013-14	42.00 Lakhs	2014-15	25.70 Lakhs	2015-16	44.60 Lakhs	2016-17	53.02 Lakhs	2017-18	50.84 Lakhs	2018-19	48.54 Lakhs	2019-20 (Apl to Sep)	20.5 Lakhs
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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.	This old mine started operation in the year 1991. Hence start of land development not Applicable. However, the copy of the Environmental Clearance has been sent to the Regional Office, MoEF, Ranchi for kind information.																
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 date/information/monitoring reports.	Full co-operation is extended to the officers of the Regional Office, MoEF & CC, Ranchi, by furnishing the requisite data / information / monitoring reports.																
xiii	The project proponent shall submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry	Six monthly compliance reports on the status of implementation of environmental safeguards are being submitted to MoEF&CC, New Delhi, Regional Office – MoEF&CC, Ranchi, Central Pollution Control Board and State Pollution Control Board.																



Sl. No	Condition	Compliance Status as on September, 2019
	of Environment and Forests, its Regional Office Bhubaneswar, The respective Zonal Office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the EC 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 & Forests, Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and State Pollution Control Board.	Copy of the compliance report including environmental quality data is being uploaded to the SAIL web site i.e. www.sail.co.in .
xiv	A copy of the clearance letter shall be sent by the proponent to concerned panchayat, Zila Parishad/Municipal Corporation, 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.	The copy of Clearance letter was notified in the public places. The clearance letter has been put on the Company website i.e. www.sail.co.in .
xv	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.	-
xvi	The environmental statement for each financial year ending 31 st 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	Environmental Statement for the financial year 2018-19 ending 31 st March, 2019 has been submitted to the Jharkhand State Pollution Control Board vide reference No: MOM/PC/ 6/83, dated: 15-05-2019.



Sl. No	Condition	Compliance Status as on September, 2019
	clearance conditions and shall also be sent to the Regional office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	
xvii	The project authorities should advertise at least in two local newspapers of the District or State in 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.	Advertisement was given in two local newspapers Hindustan Times (English) and Dainik Jagaran (Local Language Hindi) within 7 days of the issue of the environmental clearance for the project.

General Manager (Mech.)
Manoharpur Ore Mines



Annexure-1

Compliance Status of CTO for Dhobil Mining lease

S. No.	A. General Conditions:				Compliance Status
1.	That, the occupier shall maintain the National Ambient Air Quality Standard given below:				Complied.
	Sl. No	Pollutant	Time Weighted Average	Industrial Residential, Rural and Other Area	Connection in Ambient Air Ecologically sensitive Area (notified by Central Govt)
	(1)	(2)	(3)	(4)	(5)
	1	Sulphur Dioxide (SO ₂), µg/m ³	Annual 24 hour	50 80	20 80
	2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual 24 hour	40 80	30 80
	3	Particulate Matter(size less than 10 µm) or PM _{2.5} , µg/m ³	Annual 24 hour	60 100	60 100
	4	Particulate Matter(size less than 2.5 µm) or PM _{2.5} , µg/m ³	Annual 24 hour	40 60	40 60
	5	Ozone(O ₃), µg/m ³	8 hours 1 hour	100 180	100 180
	6	Lead (Pb) µg/m ³	Annual 24 hour	0.50 1.0	0.50 1.0
	7	Carbon Monoxide (CO) mg/m ³	8 hours 1 hours	02 04	02 04
	8	Ammonia (NH ₃) µg/m ³	Annual 24 hours	100 400	100 400
	9	Benzene (C ₆ H ₆) µg/m ³	Annual	05	05
	10	Benzo(a) Pyrene (BaP) Particulate Phase only ng/m ³	Annual	01	01
	11	Arsenic (As) ng/m ³	Annual	06	06
	12	Nikel (Ni) ng/m ³	Annual	20	20
Note: Serial No. 1 to 4 – Mandatory Serial no. 5 to 12 As applicable for specific type of industry.					



2.	That the occupier shall maintain the emission Quality within the standard and the quantity, as follows.	Complied.															
	<table> <tr> <th>S N</th><th>Parameter</th><th>Standard</th></tr> <tr> <td>1</td><td>Particulate Matter</td><td>150 mg/ Nm³</td></tr> </table>	S N	Parameter	Standard	1	Particulate Matter	150 mg/ Nm ³										
S N	Parameter	Standard															
1	Particulate Matter	150 mg/ Nm ³															
3.	That, the occupier shall keep process effluent in close-circuit and the quality of effluent from other sources in conformity with the standard(s) and the discharge quantity as below:	The effluent discharge quality is being maintained within the prescribed standard.															
	<table> <tr> <th>S N</th><th>Parameter</th><th>Standard</th></tr> <tr> <td>1</td><td>Total Suspended Solids</td><td>100 mg/L</td></tr> <tr> <td>2</td><td>BOD</td><td>30 mg/L</td></tr> <tr> <td>3</td><td>COD</td><td>250 mg/L</td></tr> <tr> <td>4</td><td>Oil & Grease</td><td>10 mg/L</td></tr> </table>	S N	Parameter	Standard	1	Total Suspended Solids	100 mg/L	2	BOD	30 mg/L	3	COD	250 mg/L	4	Oil & Grease	10 mg/L	
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2	BOD	30 mg/L															
3	COD	250 mg/L															
4	Oil & Grease	10 mg/L															
4.	That the occupier shall dispose of solid wastes as follows:	<p>The main solid waste generated from mining operations is OB & Waste which is dumped in the yard demarcated in the approved mining plan and leveled properly. Terracing, drains around the dump control surface runoff.</p> <p>The quantity of used oil and batteries is very negligible. However used oil stored temporarily stored in sealed drums for auction to registered recycler.</p>															
	<table> <tr> <th>Sl. No</th><th>Waste Type</th><th>Mode of Disposal</th></tr> <tr> <td>1</td><td>Hazardous Carbonaceous Wastes</td><td>On Co-processing in high temperature furnaces or kilns</td></tr> <tr> <td>2</td><td>Hazardous Non-Carbonaceous Wastes</td><td>In TSDF</td></tr> <tr> <td>3</td><td>Non—Carbonaceous Non-Hazardous solid wastes/Mine Over Burden</td><td>As a substitute of Soil or Mineral</td></tr> </table>	Sl. No	Waste Type	Mode of Disposal	1	Hazardous Carbonaceous Wastes	On Co-processing in high temperature furnaces or kilns	2	Hazardous Non-Carbonaceous Wastes	In TSDF	3	Non—Carbonaceous Non-Hazardous solid wastes/Mine Over Burden	As a substitute of Soil or Mineral				
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3	Non—Carbonaceous Non-Hazardous solid wastes/Mine Over Burden	As a substitute of Soil or Mineral															
5.	That the occupier shall keep D.G Sets (s) within acoustic enclosure (s) and shall keep the height (s) of exhaust pipes (s) as per Central Pollution Control Board norm.	Complied.															
6.	That the occupier shall create and maintain Central Ground Water Board/State Ground Water Directorate approved system of rain water harvesting-cum-ground water recharge and submit the photographic view of the structures within a month.	Construction of Rain water harvesting-cum-ground water recharge is under process of construction.															
7.	That, the occupier shall grow and maintain greenery of the project in the periphery and other available spaces and shall continue enhancing its plant density and biodiversity.	<p>Complied.</p> <p>In addition to maintain earlier plantation, avenue plantation is being carried out every year.</p>															



8.	That, the occupier shall submit environmental; statement with supporting stoichiometric calculations analyses reports, every year latest by 30 th September of the next financial year.	Environmental Statement for the financial year 2018-19 ending 31 st March, 2019 has been submitted to the Jharkhand State Pollution Control Board vide reference No: MOM/PC/ 6/83, dated: 15-05-2019.
9.	That the occupier shall submit report(s) duly monitored and issued by an NABL accredited/ISO 9001:2008 and OHSAS 18001:2007 certified laboratory in compliance sub-para (2), (3), (4) and (5) of paragraph 3 of this CTO yearly at required periodicity.	Complied. Regular monitoring of the desired parameters by JSPCB.
10.	That, this CTO is valid subjected to the validity of mining Lease/Mining Plan/ecofriendly/Environmental Clearance, if applicable. In case of no renewal of Mining Lease/Mining Plan, this consent shall be treated as revoked automatically.	Noted.
11.	That, this CTO is issued from the environmental angle only and does not absolve the occupier from other statutory obligations prescribed under another law or any other instrument in force. The sole and complete responsibility to comply with these conditions laid down in all other laws for the time- being in force, rests with the industry/unit/occupier.	Noted.
12.	That, this CTO shall not in any way, adversely affect or jeopardize the legal proceeding, if any, instituted in the past or that could be, instituted against you by the State Board for violation or the provisions of the Act or the Rules made there under.	Noted
13.	That, the occupier shall comply with all applicable provisions of the water (Prevention & Control of Pollution Act, 1974; the Water (Prevention & Control of Pollution) Cess Act, 1977; the Air (prevention and Control of Pollution) Act, 1981; and the Environment (Protection) Act, 1986 and Rules made there under.	Noted

S. No.	B. Specific Conditions:	Compliance Status
i.	That, the occupier shall install comprehensive cover(s) over stock yard(s) material loading & unloading points, etc. and install systems of dust containment cum cleaning as per CPCB text(s).	Ore Transport vehicles are covered with a tarpaulin sheets to avoid fugitive dust emission. Action is being taken for the installation of closed conveyor system for evacuation of material from mine to processing plant.
ii.	That, the occupier shall do mining in broken up area 29.411 hectares only and due approval from competent authority shall be obtained, if required.	Mining operation was carried out within the broken area of 29.411 Ha as per the IBM Approved Mining Scheme.



iii.	That, the over burden dump shall be made in accordance with conditions imposed in Environmental Clearance.	Complied. The Over burden generated from mining operations is dumped in the yard demarcated in the approved mining plan and leveled properly. Terracing, drains around the dump control surface runoff.
iv.	That, the occupier shall submit a copy of six monthly report regarding compliance of conditions imposed in Environmental Clearance to Regional Office, MOEF, Govt. of India, Ranchi under intimation to the Board Head Quarter.	Complied. Six monthly Compliance Status is being submitted to the Ministry of Environment & Forests and Climate Change its Regional Office located at Ranchi.
v.	That, the mining operation shall be restricted to above the ground water table and it should be not intersect the ground water table.	Complied. Water table level at mining lease area is about 400 m AMSL and present working depth of the mine is 628 m AMSL and ultimate working depth of the mine is 486. Hence there is no intersecting of Mine workings with the ground water table.
vi.	That, the top soil, if any shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The top soil shall be used for land reclamation and plantation.	Complied. At present, the mining operations are being carried out within the existing broken area and hence no top soil is generated during this period. If any top soil encountered it will be stored separately and used for reclamation & plantation purpose.
vii.	That, the occupier shall do blasting operation only during the day time.	1. Blasting is being done only in day time in specified time i.e. 4 – 4.30 PM. 2 Controlled blasting with slurry explosives and NONEL detonators is being done to minimize ground vibrations and to arrest fly rocks & boulders.
viii.	That, the occupier shall do sprinkling of water on haul road and dusty areas.	To minimize fugitive dust emissions Water spraying on haul roads, loading and unloading and at transfer points are being done regularly. Fixed water sprayers on main haul road have also been provided.
ix.	That, the occupier shall reclaim the mined out areas after mining activities and plantation shall be done at the reclaimed site.	At present, the mining operations are being carried out within the existing broken area and hence no reclamation activity is carried out.



		After the excavation of material, the plantations will be established to reclaim the site.
ix.	That the transportation shall be done through covered vehicle to avoid fugitive dust emission.	All vehicles are covered with Tarpaulin cover to arrest the fugitive dust emission.
x.	That, the occupier shall construct garland drain, setting tanks and check dams at appropriate places to prevent runoff water and flow of sediments into the HamsadagaarNalla the Koina river and other water bodies and submit photographs to the Board Head Quarter.	Retaining wall, garland drain and check dams are provided to prevent runoff water and flow of sediments into the Hamsadagara Nalla the Koina river and other water bodies. Photographs showing Retaining wall, Garland drain is placed at Annexure-3.
xi.	That, the occupier shall construct ETP for workshop.	Since 1998, the mine is operated through Composite Mining contractor and all the HEMM and equipment were deployed by the contractor. Most of maintenance jobs are done at their work shop at Rourkela/Manoharpur. However, vehicle washing facility with Oil, grease traps collection arrangement provided at Chiria for light vehicles.
xii.	That, the CTO will be affected to the extent due to the final order in WP(C) No-5642 of 2014.	Noted.
xiii.	That, the test reports in compliance of conditions (2) to (5) shall be of NABL accredited/ISO 9001:2008 and OHSAS 18001:2007 certified laboratory which is not owned or controlled by the PP.	Noted.
xiv	That the occupier shall submit applications for renewal of consent under section 25/26 of the Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981 again 120 days prior to the date of expiry of this consent i.e. 08.03.2018 to 31.03.2022, with requisite fee and documents showing compliance of all of the above conditions.	Noted.



Annexure-2

Photographs showing the Check Dam and Retaining Wall





Annexure - 3

GROUND WATER LEVEL MEASUREMENTS**A. Ground Water levels in and around the Mines**

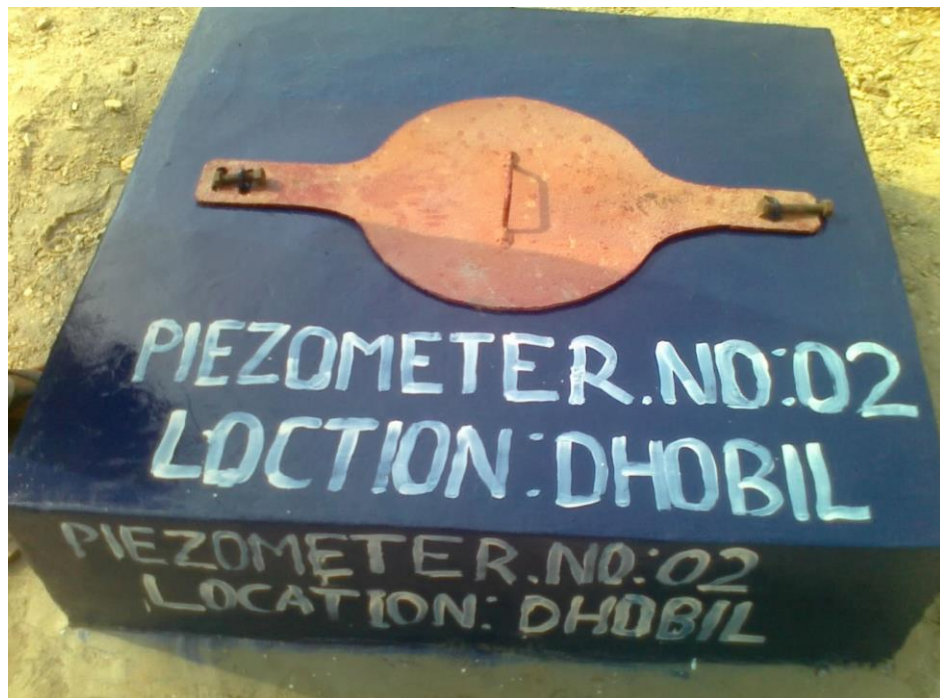
Location ID	Location of Open Wells	Water level below the Ground Surface (in meters)	
		During-monsoon (Aug. - 2019)	Pre-monsoon (May - 2019)
G1	Adjacent to community centre at Anqua	6.10	6.30
G2	Opposite to community centre at Anqua	6.40	6.60
G3	Near Anqua Model Steel Village Gate	1.85	2.40
G4	Siva Mandir	3.30	3.40
G5	Near CNI Church	7.00	7.20
G6	Near Bishra Chowk	1.30	1.30

Sl. No.	Location of Piezometer	Water level below the Ground Surface (in meters)	
		During-monsoon (Aug.- 2019)	Pre-monsoon (May -2019)
1	Chiria Village	3.70	3.90
2	Dhobil Village	3.10	3.20

Annexure-3



1. Piezometer at Chiria Village



2. Piezometer at Dhobil Village



Annexure-4

WATER QUALITY OF HAMSADAGARA NALLA
(Period: April'2019 to September'2019)

Date of Sampling		20.09.2019		
S. No	Parameter	Unit	Hamsadagara Nalla	
			Upstream of Mines	Downstream of Mines
1	pH	-	7.46	7.56
2	Temperature	⁰ C	27.00	27.10
3	Conductivity	uS/cm	136.60	128.60
4	Dissolved Oxygen	mg/l	6.33	6.59
5	Total Dissolved Solids	mg/l	68.50	64.20

Date of Sampling		03.04.2019		
S. No	Parameter	Unit	Hamsadagara Nalla	
			Upstream of Mines	Downstream of Mines
1	pH	-	7.45	7.57
2	Temperature	⁰ C	23.30	22.40
3	Conductivity	uS/cm	104.58	102.64
4	Dissolved Oxygen	mg/l	7.50	7.54
5	Total Dissolved Solids	mg/l	51.46	53.85



Annexure- 5

Dhobil ore mining lease area land use and land cover:

Dhobil ore mining lease area (513.036 ha) was classified for land use and land cover. Six classes are identified over the study area namely dense forest (271.460 ha), open forest (115.196 ha), water bodies (0.10 ha), agricultural land and plantation (40.294 ha), barren land/waste land (57.589 ha) and built-up (28.397 ha) shown in Figure-1.

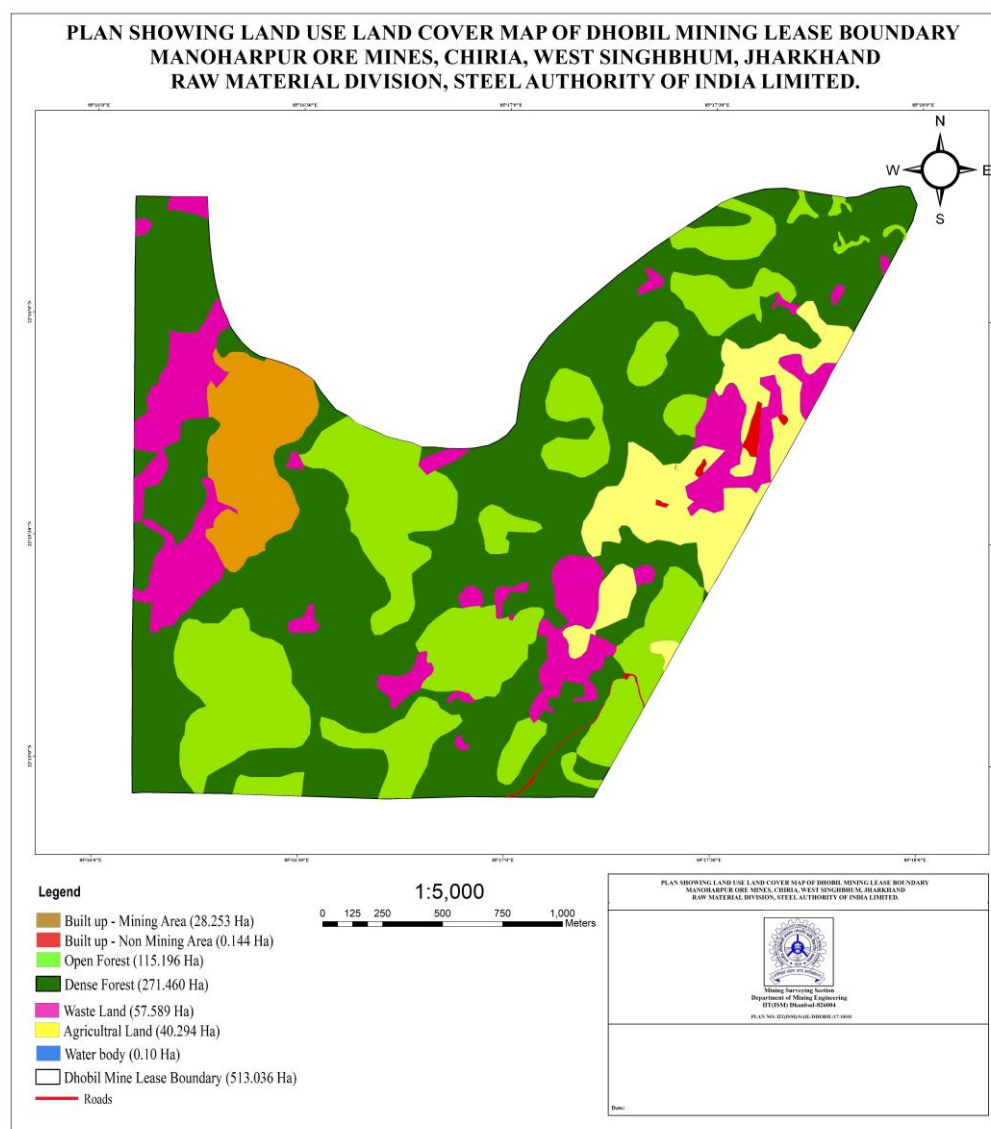


Figure: 1. Land use Land cover map of Dhobil ore mining lease area



Land Use Land Cover studies are carried out to reveal how much of a region is covered by forests, wetlands, impervious surfaces, agriculture, and other land and water types. The water types include wetlands or open water. The Land Use information describes how people use the landscape. Such uses include developmental use, conservation related use, or mixed uses.

Land use and land cover map of Dhobil Lease (Manoharpur Ore Mines, Chiria) have been developed from Linear Imaging Self scanning Sensor (LISS) data obtained from Indian Remote Sensing satellites- Resourcesat-2 (LISS-IV) and Cartosat 2. The satellite images so obtained were processed applying supervised classification method have using the Erdas Imagine software. The Land Use Land Cover has been classified in six classes which are built-up land, open forest, dense forest, agricultural land, wasted land and water body. The areas under each of these classes were estimated on the basis of the pixel grid cell process in Erdas Imagine software following the rules of NRSC/ISRO Land Use and Cover Monitoring.

The summary of the land use land cover classifications are shown below,

S.No	LU/LC	Dhobil Mine lease (in Ha)
1	Mine lease boundary	513.036
2	Dense forest	271.460
3	Open forest	115.196
4	Built-up area Mining	28.253
5	Built-up area non mining	0.144
6	Waste Land	57.589
7	Agricultural land	40.294
8	Water body	0.10



Annexure- 6

AMBIENT AIR QUALITY
(Period: April'-2019 to September'-2019)

Sampling Period		April - 2019		
S. No.	Location	RSPM PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
1	Near Dhobil Mines Canteen	90.56	11.9	12.8
2	Near GM Office	92.60	5.9	11.2
3	Near Chiria Hospital	63.85	6.6	7.9
4	Near Railway Siding	95.90	5.2	11.8
Norm as per NAAQS		100	80	80

Sampling Period		September - 2019		
S. No.	Location	RSPM PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
1	Near Dhobil Mines Canteen	81.73	5.4	10.2
2	Near GM Office	68.49	5.2	10.4
3	Near Chiria Hospital	61.34	4.7	11.1
4	Near Railway Siding	77.12	5.9	12.8
Norm as per NAAQS		100	80	80

**Annexure-7**

Fixed water sprayers have been provided on main haul road



Water spraying on haul roads



Trucks Covered with Tarpaulin Sheet during transportation



Annexure- 8

NOISE QUALITY REPORT
(Period: April'2019 to September'2019)

Period of Sampling		April - 2019	
S. No.	Location	Observed Noise level in dB(A)	Prescribed Limit (in day time)
1	Near GM Office	62.4	75
2	Near Chiria Hospital	46.2	50
3	Near Mines canteen	69.9	75
4	Near Mining weigh bridge	67.4	75
5	Near Sub-grade dump	71.8	75
6	Near Ankuwa Chowk	53.2	55
7	Near Railway Siding	72.5	75

Date of Sampling		September - 2019	
S. No.	Location	Observed Noise level in dB(A)	Prescribed Limit (in day time)
1	Near GM Office	61.3	75
2	Near Chiria Hospital	49.2	50
3	Near Mines canteen	62.9	75
4	Near Mining weigh bridge	65.9	75
5	Near Sub-grade dump	63.4	75
6	Near Ankuwa Chowk	49.7	55
7	Near Railway Siding	66.5	75