



STEEL AUTHORITY OF INDIA LTD.
(A Govt. of India Enterprise)
Regd. Office: Ispat Bhawan,
Lodhi Road, New Delhi - 110 003

RAW MATERIALS DIVISION
MEGHAHATUBURU IRON ORE MINE
P.O. MEGHAHATUBUTU - 833 223
DIST. SINGHBHUM (W), JHARKHAND
PHONE : 06596 244229
FAX : 06596 244220

Ref. No. : KIOM-MIOM/E&L/2019-20/5595

Date : 30.10.2019

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

Sub: Six Monthly Compliance of the Conditions stipulated in Environmental Clearance of Kiriburu- Meghahatuburu Iron Ore Mines for the period April-2019 to September '2019.

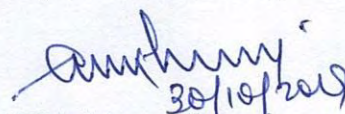
Sir,

We are hereby submitting status of compliance for the period upto 30th September 2019 to the conditions stipulated in the Environmental Clearance granted by MoEF vide No-J-11015/272/2007-IA.II (M) dated 23.09.2014 for Kiriburu- Meghahatuburu Iron Ore Mines for production capacity of 16 MTPA (ROM) of Iron Ore.

A Soft copy of compliance report in a form of CD is also enclosed.

Thanking you.

Yours faithfully,
For Steel Authority of India Limited,


(C. Mukhopadhyay)
Chief General Manager (Mines)
MIOM, RMD-SAIL

Encl : Compliance Report & Annexure

C. MUKHOPADHYAY
C.G.M. (M) MIOM

Copy:

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.)

YAYHDAPOHKUM.C
MOIM (M) M.C.C

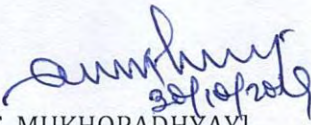
Status of Compliance to Conditions Stipulated in Environmental Clearance granted by MoEF&CC, New Delhi Vide order no. J-11015/272/2007-IA.II (M) dated 23.09.2014 for 16 MTPA of Kiriburu – Meghahatuburu Iron Ore Mines (Area- 2897.499 ha) Located at Singhbhum (West), Jharkhand

(Period of EC Compliance: April, 2019 to September, 2019)

LIST OF ANNEXURES

Sl.	Annexure No	Details
1	Annexure - 1	Photographs of the financial assistance to children for self-employment
2	Annexure -2	Photographs showing providing clean drinking water, tube wells with hand pumps to the surrounding villages of Mines
3	Annexure -3	Photograph showing the dust suppression through Water Sprinklers at Mines.
4	Annexure - 4	Photograph showing plantation & coir matting on Mines OB Dumps
5	Annexure - 5	Photographs of ETPs consisting oil & grease traps & treated effluent collection system at Mines.
6	Annexure - 6	Photographs of Workers/employee wearing PPEs for maintaining safety norms
7	Annexure -7	Implementation of Environment Management Policy
8	Annexure - 8	Photographs showing the facility of rainwater harvesting measures adopted at Mines
9	Annexure -9	Photographs showing the CSR activities undertaken by the Kiriburu – Meghahatuburu Iron Ore Mines
10	Annexure - 10	Photographs showing the collection of silt in this monsoon.
11	Annexure -11	Water quality monitoring data for the period of April-19 to September 19
12	Annexure -12 (a) & (b)	Air Quality monitoring data for the period April- 19 to September-19
13	Annexure – 13 (a) & (b)	Quality monitoring data of the overflow from the Tailing Pond
14	Annexure -14	Copies of the EC advertisements made in the News Papers

Date: 30.10.2019


[C. MUKHOPADHYAY]

Chief General Manager (Mines)
Meghahatuburu Iron Ore Mines
SAIL_Raw Materials Division
P.O. Meghahatuburu – 833 223
Dist. : Singhbhum(West)

State- Jharkhand

चंचल मुखोपाध्याय

CHANCHAL MUKHOPADHYAY

मुख्य महाप्रबंधक (खान) CGM (Mines)

मेघाहातुबुरु लौह अयस्क खदान

Meghahatuburu Iron Ore Mines

पो. मेघाहातुबुरु 833223 / Meghahatuburu 833223

जिला- सिंगभूम (प.) झारखंड / Dist. Singhbhum (W) Jharkhand

CHANCHAL MUKHOPADHYAY
 (CM) (M)
 (C) (M)
 (C) (M)

**Status of Compliance to Conditions Stipulated in
Environmental Clearance
granted by MoEF&CC, New Delhi
Vide order no. J-11015/272/2007-IA.II (M)
dated 23.09.2014 for 16 MTPA
of
Kiriburu – Meghahatuburu Iron Ore Mine
Located
at
Singhbhum (West), Jharkhand
(Period of EC Compliance: April, 2019 to September, 2019)**

STEEL AUTHORITY OF INDIA LIMITED
RAW MATERIALS DIVISION
KIRIBURU – MEGHAHATUBURU IRON ORE MINES
P.O. – KIRIBURU, PIN :833222
DIST. : SINGHBHUM (WEST)
JHARKHAND STATE

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu - Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

**Status of Compliance to Conditions Stipulated in Environmental Clearance
(EC order no. J-11015/272/2007-IA.II (M), dt.23.09.2014)
Kiriburu - Meghahatuburu Iron Ore Mines, RMD, SAIL
(Period: April, 2019 to September, 2019)**

A. Specific Conditions

Cond. No.	Condition Stipulated	Compliance Status as on September'19
(i)	Environment clearance is subjected to obtaining clearance, if any, under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	No notified National Park / Wildlife Sanctuary / Biosphere Reserve / Tiger Reserve are located within 10 kms from the Mining Lease boundary. Hence it is not applicable to this mining project.
(ii)	No Mining activities will be allowed in forest area for which the Forest clearance is not available.	Mining activities have been restricted to 726.09 ha for which forest clearances have been obtained from MoEF&CC.
(iii)	The Project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from the two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide their letter F. No 11-362/2012-FC, failing which the mining lease area will be reduced to the non-forest area plus the forest area for which the project proponent has been able to obtain the FC at the end of this period. The case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.	MoEF&CC vide F.No.11-599/2014-FC, dated 01.04.2015 has issued revised guidelines by suppression of the guideline issued vide F. No. 11-362/2012-FC, dated 01.02.2013. AS per these revised guidelines, in case of existing mining leases in part or in full, where approval under Section 2 of FC Act for a part of the forest land has only been obtained, Central Government accorded general approval under Section 2(iii) of the FC Act for the remaining area of the forest land falling within such mining leases and directed State Governments to realize NPV from the user agency within a period of one year from the date of issue of this letter for entire forest land falling in the mining lease, in case NPV of such forest land has not already been realised. Subsequently, MoEF&CC vide guidelines dated 31.03.2016, extended the dead line for payment of NPV up to 30.09.2016. These guidelines are being followed.
(iv)	The project proponent shall complete all the tasks as per the action plan submitted with budgetary provisions during the public hearing held on 24.11.2012. Major	Kiriburu-Meghahatuburu Iron Ore Mines have taken up the task for engaging tribal from local villages through 4 nos. of registered Co-operative Labour Societies at mines.

Period: April, 2019 to September, 2019

2 | Page

YAYHADPOHUM C
MOIM (M) M.G.C

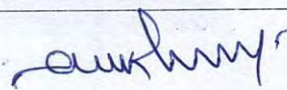
C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu - Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	issues raised during public hearing were related to employment of tribal villagers on priority basis, financial assistance to village women so that they can be self-employed, clean water availability, construction of a bridge over Koina River at Kumdi village, environmental protection measures, construction of Pucca road for villagers and repair of roads in the region.	The Self Employment Centers i.e. KIRAN at Kiriburu and "SOUBHAGYA" at Meghahatuburu have expanded its coverage and marketing tie-ups with other units of SAIL and Jharcraft to make the market sustainability of products manufactured. Training of about 50 women at the self-employment centers during the period for 2019-20. For employment generation under Skill development programme 12 and 10 students from KIOM have been sponsored for ITI course for 2 years 2018-20 & 2019-21 respectively to ITI Rourkela (Cost to company / Expenditure -Rs.45000/ per student per year- valuing Rs.9.90 Lakh/year ;Costing Rs 4.95 Lakh in six month), (Similarly 08 and 10 students from MIOM have been sponsored for ITI course for 2 years 2018-20 & 2019-21 respectively to ITI Rourkela (Cost to company / Expenditure -Rs.45000/ per student per year- valuing Rs.8.10 Lakh/year ;Costing Rs 4.05 Lakh in six month), Total- Rs.9.00 Lakh Photographs of the financial assistance to children so that they can be self-employed attached) - Annexure-1 For clean drinking water, tube wells with hand pumps have been provided at the surrounding villages- Annexure-2.
(v)	The Project proponent shall obtain necessary prior permission of the competent authority for drawl of requisite quantity of surface water and ground water for the project.	Kiriburu-Meghahatuburu Iron Ore Mines are using only surface water for domestic & industrial purposes. Permission exists for water drawl from Karo River. Water drawl permission from River Koina has been obtained from Water Resource deptt . Government of Jharkhand dated 20.09.2017 Letter No.- 2/PMC/WS-549/2017-448. Water drawl agreement signed between SAIL and Govt. of Jharkhand.
(vi)	Implementation of the site specific conservation plan for the core & buffer zone and Integrated Wild Life conservation plan which is being prepared by the Dept. of Forest, Govt of Jharkhand. Abiding the guidelines of this Integrated Wild Life Conservation Plan and accordingly contribute proportionately in	As per prevailing practice of the state forest department a scheme for Protection & Conservation of Forest and Wild life habitat including Anti-Depredation measures and Eco-development activities for villagers for a period of ten years in the district of Singhbhum (West) and applicable for Kiriburu-Meghahatuburu group of Mines was prepared by Chief Wildlife Warden, Govt. of Jharkhand. For implementation of the above scheme for

Period: April, 2019 to September, 2019

3 | Page



C. MUKHOPADHYAY
C.G.M. (M) MIOM

C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	the preparation and implementation of the Plan.	Kiriburu-Meghahatuburu mines, SAIL has deposited an amount of Rs.6, 21, 44,836.00 for implementation of the scheme as per demand raised by Divisional Forest Officer, Saranda Forest Division. In addition to the above, an Integrated Wildlife Management Plan for West Singhbhum covering all the mining leases has been prepared under aegis of SAIL by a team of experts constituted by Jharkhand State Govt. Final report on Comprehensive Integrated Wildlife Management prepared by the Expert Committee has been approved by Govt. of Jharkhand, which is under review by MOEF & CC for implementation. SAIL has already submitted an undertaking to abide by the guidelines and contribute fund for implementation of Integrated Wildlife Management Plan in entire lease hold area, on pro rata basis.
(vii)	The Mining operation shall be restricted to above ground water table and it should not intersect ground water table. In case of working below ground water table, prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	Water table level at Kiriburu – Meghahatuburu mining lease area is in the range of 537 m AMSL and present working depths at Kiriburu and Meghahatuburu Mines are 750 m above MSL and 782 m above MSL respectively. Hence there is no intersecting of Mine workings with the ground water table. Due to any reason if 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.
(viii)	The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUC only will be allowed to ply. The mineral transportation shall be carried out through trucks only and the vehicles carrying the mineral shall not be overloaded. Project should obtain 'PUC' certificate from all the vehicles from	Ore transportation through closed conveyers within the leasehold area at the Ore Processing Plant and final dispatch to Steel Plants through rakes has been adopted to minimize the pollution from the transportation of ore. Transportation of ore from mine face to ore processing plant is being done by high capacity Shovel (9.5 Cu.M)-Dumper (100 T) combination to reduce nos. of vehicle plying and thus reduce generation of dust through Mine haul roads. Besides this 28 KL High Pressure Water Sprinklers are being used for effectively controlling haul road dust emission at the both the mines. All these

Period: April, 2019 to September, 2019

4 | Page

[Signature]
22/10/2019

YAYHQA9HXM C
MOIM (M) M.G.C

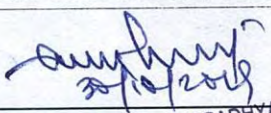
C. MUKHOPADHYAY
C.G.M. (M) MOIM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	authorized pollution testing center.	vehicles are being maintained in good condition to control vehicular emissions. PUC certificate has been obtained from authorized Pollution testing center for different categories of Vehicle running within the lease. Moreover permanent Water sprinkling arrangement in permanent haul road installed at MIOM –KIOM is being operated . Photograph showing the dust suppression through Water Sprinklers are placed at Annexure – 3 .
(ix)	Plantation on the OB dump slopes has to be increased and manage properly. House-keeping should be improved in processing area.	During the year 2019-20, 1000 nos. of saplings were planted and maintained on OB dump, Backfilled area and lease area & watered regularly. To prevent soil erosion and effective plantation over the dump slopes. Housekeeping at the ore processing plants have been improved at both the mines through adoption of regular cleaning of spillages at various points, timely repair & maintenance of rollers / conveyer belts, awareness training on housekeeping practices, etc. Photograph showing plantation & coir matting on OB Dumps are placed in Annexure – 4 .
(x)	There are about 850 households in the township for both MIOM and KIOM mines. A full-fledged sewage treatment plant should be set up by the project in the colony. The oil & grease trap at the workshop at both the mines should have a covered shed. A separate pit should be constructed to retain the treated water which should be reused for washing purpose instead of discharging into natural course.	Oxidation ponds for treatment of the sewerage from the township of MIOM and KIOM colonies have been provided. Installation of full-fledged Sewage Treatment Plants covering both MIOM and KIOM is under progress. ETPs consisting oil & grease traps have been provided to arrest oil from the workshop effluents. These ETP areas have been covered with sheds. The treated effluent from these ETPs are being collected and used for plantation / dust suppression at haul roads. (Photographs of ETPs consisting oil & grease traps& treated effluent collection system attached)- Annexure—5 .
(xi)	Project shall identify the causes for the higher particulate matter and take appropriate mitigative measures. Project shall start monitoring PM2.5.	All the dust generating sources have been identified at both Kiriburu and Meghahatuburu Mines. The existing dust control measures at these dust prone areas have been augmented for controlling the fugitive dust emissions. The following measures have been augmented for controlling fugitive dust emissions: ➤ Dry fog dust suppression systems at ore unloading

Period: April, 2019 to September, 2019

5 | Page

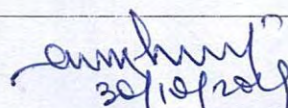

C. MUKHOPADHYAY
C.G.M. (M) MIOM

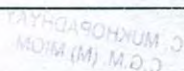
**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
		hoppers have been revamped through replacing nozzles. ➤ Additional dry-fog dust suppression systems have been provided at transfer points and screening areas. ➤ Wet drilling facilities with the Drill Machines have been revamped. ➤ Increased frequency of Haul Road Sprinkling based on the weather conditions. ➤ Additional permanent water sprinkling arrangement has also been provided in permanent haul roads of Meghahatuburu Mines near hopper to reduce fugitive dust. In addition to the above, new dust suppression systems at Tertiary Crushers, Screens, ore handling areas, etc., are under progress at both Kiriburu and Meghahatuburu mines. <u>Monitoring PM2.5 in ambient air has already been started. The PM2.5 in the ambient ranges from 14.25 to 16.44 ug/m³.</u>
(xii)	Project should ensure that all the workers wear safety devices.	Safety device like Safety Shoe, certified helmet & ear muff etc. are provided to all workers making the workplace safe includes providing instructions, procedures, training and supervision to encourage people to work safely and responsibly. Wearing safety devices including personal protective equipments (PPEs) for all the workmen is being ensured. Necessary instructions have also been displayed at prominent areas in the mines. All the Heads of the Departments (HODs) have been instructed to ensure wearing of safety devices by workmen in their respective departments. The same is being reviewed in the review meetings held on monthly basis. (Photographs of Workers/employee wearing PPEs enclosed at Annexure-6)
(xiii)	The project proponent shall obtain consent to operate from the state pollution control board, Jharkhand and effectively implement all the conditions	Consent to operate (CTO) 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 has been obtained on 31.12.2016 for

Period: April, 2019 to September, 2019

6 | Page


C. MUKHOPADHYAY
C.G.M. (M) MIOM


C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	stipulated therein.	16 MTPA capacities vide letter no. JSPCB/HO/RNC/CTO-1024701/2016/1091 with validity up to 31.12.2019. The conditions stipulated in CTO are being complied. CTO application for the period 2020-2024 applied online.
(xiv)	Implementation of Environment Management Policy of the company w.r.t. judicious use of Mineral resources for growth & development synchronizing mining and environment with prosperity.	SAIL has always been an environmentally conscious and responsible company. Way back in 1996, it was a pioneer in adopting a Corporate Environmental Policy. In view of the rapid technological advancements in the past two decades and growing stringency of regulatory requirements, SAIL has revised its Environmental Policy and made "Corporate Environmental Vision, Policy and Responsibility", which is under implementation and copy of the same is attached in Annexure – 7. For effective implementation of corporate environmental policy, EMS linked with ISO 14001:2015 has been implemented and maintained at both Kiriburu and Meghahatuburu Iron Ore Mines. This has resulted in continual improvement in environmental aspects and helped in conservation of resources.
(xv)	There shall be planning, developing and implementing facility of rainwater harvesting measures on long term basis in consultation with Regional Director, Central Ground water Board resources in the area in consultation with Central Ground Water Board.	To augment ground water resources, a huge water pond (Size: 150 m X 100 M) has been made to receive storm water from the township and recharge ground water. Photographs enclosed at Annexure-8. The pond is being regularly de-silted before monsoon to maintain capacity. As the mine pits are located at the hill top, all the surface runoff from the mining areas have been diverted to mine pits and stored at bottom most pits, from where it seeps in to the ground. Technical feasibility study of rainwater harvesting cum ground water recharge system development has been done through consultant M/s Think Innovative Solution, Ranchi. The Technical Feasibility Report has been submitted to Central Ground Water Board, Mid-Eastern Region, Patna vide letter No. KIOM/GM/15-16, dated 22.07.2015. The report was reviewed by CGWB and recommended for implementations vide letter No. CGWB/MER/CGWA/2015-840, dated 13.08.2015. Various rainwater harvesting schemes suggested under the Technical Feasibility report are under consideration

Period: April, 2019 to September, 2019

7 | Page

YAYUTAS, MIOM, J
MOIM (M) M.D.O

[Signature]
29/10/2019
C. MUKHOPADHYAY
C.G.M. (M) MIOM

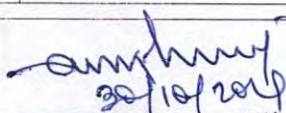
**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu - Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
		for implementation.
(xvi)	Regular monitoring of ground water table to be carried out at the upstream and depth of water available in the dug well is to be measured. Monitoring to be done by establishing a network of existing wells and constructing new piezometers.	Network 2 nos. of existing Dug Wells located around the mines has 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. Action is being taken for installing piezometers by establishing network with the existing dug wells.
(xvii)	Monitoring of Ambient Air Quality to be carried out based on the Notification, as amended from time to time by the Central Pollution Control Board.	Four ambient air quality monitoring stations at Kiriburu Mines and four more ambient air quality monitoring stations at Meghahatuburu Mines have been established based on the topography and meteorological conditions of the area. Regular ambient air quality monitoring of key parameters to mining industries as per the guidelines of MoEF&CC and CPCB is being done.
(xviii)	Water Sprinkling should be increased at places loading and unloading points & transfer point to reduce fugitive emission.	Dry fog dust suppression systems have been provided at the mineral handling plants of both Kiriburu & Meghahatuburu Mines. These systems are being operated and maintained. Water spray nozzles have been provided at transfer points / junction houses. Frequency of haul road water sprinkling through 28 KL high pressure water sprinklers has been increased at both the mines for control of dust emission from haul roads inside leasehold area. Permanent water sprinkling arrangement has also been provided in permanent haul roads of Kiriburu & Meghahatuburu Mines near hopper to reduce fugitive dust.
(xix)	The up-liftment of scheduled caste/schedule tribe population, specific programmes have been taken in to consideration specially with respect to education, health care, livelihood generation, infrastructure development & promotion of sports & culture for SC/ST population and that these will be intensified in future.	The Kiriburu - Meghahatuburu mines are located in economically backward tribal regions. Being fully aware of SAIL's social responsibilities, KIOM / MIOM Mines under Raw Materials Division has taken a giant leap in corporate social responsibility (CSR) by providing Health and Hygiene Improvement, Education, Income generation through self-reliant economic activities, Sports & Entertainment, etc., to improve the quality of life of the scheduled caste / tribe populace living in the villages surrounding the mines. These CSR activities are intensified for further increasing quality of life of tribal population.

Period: April, 2019 to September, 2019

8 | Page

FATHA90HUM 2
MOIM (M) M.D.O

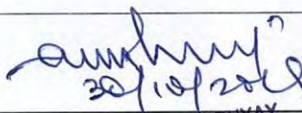

C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
		During 2019-20 (up to September'19), an amount of Rs. 43.43 lakhs (KIOM- Rs 34.80 lakhs and MIOM- Rs 8.63 lakhs) has been spent under CSR activities by the Kiriburu – Meghahatuburu Iron Ore Mines. (Photographs of CSR is enclosed at Annexure-9)
(xx)	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations.	No natural watercourse / water resources obstructed due to any mining operation at Kiriburu – Meghahatuburu Iron ore Mines.
(xxi)	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. 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. The maximum height of the dumps shall not exceed 8m and width 20m and overall slope of the dumps shall be maintained to 45°. The OB dumps should be scientifically vegetated with situated native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should 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.	No top soil is generated from existing operations, as the mines have been in operation since 1960 within the already broken area. However, top soil generated during opening of South and Central blocks shall be stacked separately and will be used for reclamation works. Top soil generated in future during the expansion of the mine pits to virgin areas, if any, will be stored temporarily at earmarked site and will be used for plantation /dump reclamation. Presently entire OB generated at both Kiriburu – Meghahatuburu Mines is being used for backfilling of mined out areas. During 2019-20 (up to September'19), about 7,55,190 T of OB at KIOM & 15,80,526 T , OB at MIOM has been used for back filling the mined out area. The existing inactive dumps at both Kiriburu & Meghahatuburu Mines have already been stabilized through plantation covering an area of 20 ha. For further stabilization, additional 1000 nos. had been planted in 2019-20 for which regular maintenance & watering job is carried out during 2019-20. Geo-textiles have also been used to cover the some portion of OB dump slopes for effective stabilization. Six monthly Compliance Status is being submitted to the Ministry of Environment, Forest & Climate Change and its Regional Office located at Ranchi.
(xxii)	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and OB dumps to prevent run off of water and	Catch drains and siltation ponds have been constructed at strategic locations. The drains/sediment ponds/ check dams are cleaned periodically. All OB dumps of the mines are either already stabilized and vegetated or

Period: April, 2019 to September, 2019

9 | Page


20/10/2019
C. MUKHOPADHYAY
C.G.M. (M) MIOM

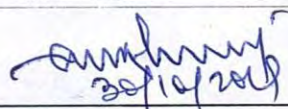
YAYHAGHUM 3
MOMIMI 123

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area, road, green belt development etc. the drains shall be regularly de-silted particularly after monsoon and maintained properly. The drains settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of sediments directly into the river and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of these garland drains and de-silted at regular intervals.	being stabilized by vegetation. Toe walls, garland drains and sedimentation pits were constructed around the OB dumps to control surface runoff. IIT Kharagpur has assessed the need of construction of the additional check dams and sedimentation traps to arrest silt from surface runoffs from mine working and OB dumps. Based on the recommendations of the IIT, 13 nos (5 nos at MIOM & 8 nos at KIOM) of boulders check dams have been constructed in consultation with DFO Saranda. De-silting of these check dams and siltation ponds are being done regularly. Approximate cost involved Rs.10.00 Lakh De-silting has been carried out at various locations in lease area. Additional Garland drain construction completed.. Sump has been provided allowing settling of silt at corner of garland drains. The photograph is annexed at Annexure-10 showing collection of silt this monsoon.
(xxiii)	Dimension of the retaining wall at the toe of over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall date.	Toe walls, garland drains and siltation pond at the OB Dumps have been constructed to control the surface runoff from the OB dumps. Based on the rainfall of the region, 0.50 m width and 2.0 m height toe walls and 0.50 m width and 0.50 m depth garland drains provided at both the mines.
(xxiv)	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM2.5 such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution	Dry fog dust suppression systems have been provided at the mineral handling plants of both Kiriburu & Meghahatuburu mines. Water spray nozzles have been provided at transfer points / junction houses. 28 KL High Pressure Water Sprinklers are regularly deployed for control of dust emission from haul roads inside leasehold area. Permanent water sprinkling arrangements have been provided in permanent haul road of Mines near hopper.

Period: April, 2019 to September, 2019

10 | Page


29/10/2019

C. MUKHOPADHYAY
C.G.M. (M) MIOM

C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	Control Board in the regard.	All these fugitive dust control measures are being operated and maintained effectively to maintain air quality parameters below the prescribed standards.
(xxv)	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.	Water flow monitoring at Ghagirathi nallah and Pardih nallah are being carried out on monthly basis and records are being maintained.
(xxvi)	Regular monitoring of water quality upstream and downstream of water bodies viz. Karo River and Koina River shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment and Forests, its Regional office, Bhubaneswar, Central Ground water Authority, Regional Director, Central Ground Water Board, State pollution Control Board and Central Pollution Control Board.	All the natural nallahs originated from leasehold area as well as surface runoff / effluents from the mines are draining to the river Koina, which controls drainage pattern of the area and is located on western side of the leasehold. No discharge from Kiriburu / Meghahatuburu mines is drained to Karo River. Hence, quality of water of Koina River at upstream and downstream of mines is being regularly monitored and reports are being submitted. Water quality data for the period of April-19 to September-19 is placed in Annexure -11.
(xxvii)	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 construction new piezometers during the mining operation. The monitoring shall 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 Ministry of Environment and Forests and its Regional office, Bhubaneswar, Central Ground water Authority and Regional Director, Central Ground Water Board.	Network 2 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.
(xxviii)	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures to control of ground vibrations	Blasting is carried out in a notified fixed day time only (1.00 PM – 2.00 PM). Controlled blasting with slurry explosives and NONEL detonators is being done to minimize ground vibrations and to arrest fly rocks.

Period: April, 2019 to September, 2019

11 | Page

C. MUKHOPADHYAY
C.G.M. (M) MIOM

C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	and to arrest fly rocks and boulders should be implemented. Drills shall either be operated with dust extractors or equipped with water injection system.	Further, TLD & DTH are also used to control ground vibration, fly rock. All the drills at both Kiriburu & Meghahatuburu Mines have been equipped with wet drilling facility to prevent dust generation during drilling.
(xxix)	Pre- Placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Periodical Medical Examination (PME) of all workmen working in the mines is being done at our Occupational Health Centre once in every five years/three/one year depending on category. Additional PME is also conducted as per the recommendation of Xth & XIth Conference of Safety, DGMS, Dhanbad.
(xxx)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely leopard, elephant 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.	The Integrated Wild Life Management Plan (IWLMP) prepared by the expert committee under the aegis of SAIL has addressed the issue w.r.t all precautionary measures during mining operation for conservation and protection of endangered fauna and necessary allocation of funds for implementation of the conservation plan. After approval of the IWLMP the proportionate contribution will be made for implementation of the above plan as per the demand raised by the State Forest Department. All the measures suggested will be implemented at the project cost. It is undertaken that a copy of action plan will be submitted to the MOEF&CC and its Regional office.
(xxxi)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, Safe drinking water, medical health care, crèche etc. the housing may be in the form of temporary structures to be	Most of the construction labour are hired from the local villagers and only few are being hired from outside, for which housing facilities along with necessary infrastructure are being provided at the existing colony of the mines.

Period: April, 2019 to September, 2019

12 | Page

YAVINORPOHUM C
MOIM (M) M.G.C

C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	removed after the completion of the project.	
(xxxii)	A Final Mine Closure Plan along with details of corpus fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	A Final Mine Closure Plan along with details of corpus fund will be submitted to MoEF&CC, New Delhi 5 years in advance of final mine closure for approval.

B. General Conditions

Cond. No.	Condition Stipulated	Compliance Status as on September'19
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Mining is being done as per the approved Mining Plan/ Scheme of Mining approved by Indian Bureau of Mines. No change in mining technology and scope of work.
(ii)	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.	ROM production at both the Kiriburu & Meghahatuburu Mines are kept within permitted capacity in the EC / approved Mining Plan. The quantity of ROM Production during the year 2019-20 (upto September 2019) is as follows, Kiriburu Iron Ore Mine : -19,48,320 Te (ROM) Meghahatuburu Iron Ore Mine: 19,90,980 Te(ROM) Total ROM Production(KIOM+MIOM): 39,39,300 Te against EC of 16 MTPA during 2019-20 (up to September'19)
(iii)	The critical parameters such as PM10 (size less than 10 micro meter), PM 2.5 (size less than 2.5 micro meter), NOx in the ambient air within the impact zone, peak particle velocity at 300 m 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	Critical parameters i.e. PM10, NOx and SO ₂ in ambient air and relevant parameters in the effluents are being monitored regularly. The monitored data is being displayed in General Offices of both Kiriburu & Meghahatuburu Mines. Copy of EC compliance along with environmental quality data is being uploaded to the company website www.sail.co.in .

Period: April, 2019 to September, 2019

13 | Page

YAYHQA90HKUM 0
MOIM (M) M.2 0

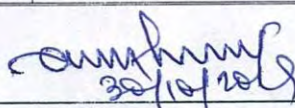
C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	as well as displayed on a board at the project site at a suitable location near the main gate of company in public domain. The circular No. J-20012/1/2006-IA.II (M), dated: 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	
(iv)	Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for PM 10, PM 2.5, SO ₂ & NO _x monitoring. Location of the stations should be decided based on the meteorological, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. Data on ambient air quality should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board/Central Pollution Control Board once in six months.	Four ambient air quality monitoring stations at Kiriburu Mines and four more ambient air quality monitoring stations at Meghahatuburu Mines have been established based on the topography and meteorological conditions of the area. Regular ambient air quality monitoring of key parameters (PM₁₀, SO₂ and NO_x) to mining industries as per the guidelines of MoEF&CC and CPCB is being done.. Monitoring by PM_{2.5} is being carried out. 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 to September' 2019 is placed as Annexure—12 (a) &(b)-. Air quality data is also being submitted to Jharkhand State Pollution Control Board and Central Pollution Control Board.
(v)	Fugitive dust emission 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.	Adequate nos. of fugitive dust emission control measures have been provided at the mines. Dry fog dust suppression systems at the mineral handling plants and water sprinklers at haul roads / transfer points have also been provided. These systems are being operated and maintained. Details of major fugitive dust control measures at various main unit operations are as follows: Drilling – Wet drilling is being practiced. Blasting – Controlled blasting by using slurry explosives & NONEL technology is being followed to control the dust generation during blasting.

Period: April, 2019 to September, 2019

14 | Page



C. MUKHOPADHYAY
C.G.M. (M) MIOM

C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
		Haulage – Haul roads are regularly sprinkled with water by four (Two at each mine) mobile pressurized water sprinklers of 28KL capacity each. Permanent water sprinkling arrangement has also been provided in permanent haul roads of Meghahatuburu Mines near hopper to reduce fugitive dust. Crushing/Screening– Dry-fog dust suppression systems for unloading, crushing & screening, transfer points have been provided at both the mines.
(vi)	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged operations of HEMM, etc. should be provided with ear plugs/muffs.	Regular maintenances and periodic checks of the HEMM are being carried out to control noise below 85 dB (A) in the work environment. The operators engaged in blasting/ drilling operations and operator of HEMM are provided with protective ear plug/ ear muffs with helmet. Use of these protective measures is ensured by educating the workers on ill effect of the prolonged excessive exposure to high Noise levels and daily checks by shift mining engineers regarding usage of ear plug/ear muffs. Regular noise survey is also carried out by trained technician of OHS & by JSPCB on quarterly in the mines as per mines rules and parameters are found within norms. Measured noise levels at the mines during April '2019 to September '2019 are within permissible limit below 75 dB(A) except at Hopper level where people are using Ear Plug on regular basis. (Range-57.8 dB(A) to 76.2 dB(A))
(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.	ETPs consisting oil & grease traps have been provided at the mines for treating the effluents from garages. The treated water from these ETPs are being used for plantation / dust suppression. Effluents generated from the beneficiation plants are being treated in Thickeners followed by Tailing Ponds. The clear water to the tune of 60% is being recycled and the underflow from thickener is discharged into Tailing Dam. Presently the recirculation facility at the rate of 160 cubic meter/ hr is carried out as per the

Period: April, 2019 to September, 2019

15 | Page

YAYHQA90HXUM.3
MOIM (M) .M.2.0

(Signature)
30/09/2019
C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu - Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
		requirement of ore processing System for recovery & recycling of clear water from the Tailing Pond is under stabilization at Kiriburu Mines. Quality of the overflow from the Tailing Pond is given in the Annexure -13 (a) & (b).
(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.	Dust masks have been provided to personnel working in dusty areas i.e. drilling, excavation, unloading & loading areas, crushing & screening areas. Training on safety and health aspects is being imparted on regular basis. A full-fledged Occupational Health Centre is run by the mines for regular health surveillance. Use of dust masks is ensured by daily checks by shift in-charges of the respective departments.
(ix)	Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Periodical Medical Examination (PME) of all workmen working in the mines is being done at our Occupational Health Centre once in every five years/three/one year depending on category. Additional PME is also conducted as per the recommendation of 10 th & 11 th conference of Safety, DGMS, Dhanbad.
(x)	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Separate Environmental Management Deptt. have been established at both Kiriburu and Meghahatuburu mines and headed by Sr. Officers, who reports directly to the Head of Mines.
(xi)	The funds earmarked for environmental protection measures should be kept in separate account and should not be divided for the purpose. Year wise expenditure should be reported to the Ministry and its Regional office located at Bhubaneswar.	During the year 2019-20, (Up to September -2019) an amount of Rs. 18.39 lakh at MIOM & Rs. 29.72 Lakh at KIOM for Garbage cleaning/ sewerage line maintenance & upkeep; Rs 6.03 lakhs for Cleaning of Ghagirathi, Sankohja Adm and different drain at Plant office in KIOM, Rs 6.24 lakh for maintenance of tree plantation, Coir mat & grass seedling along with organic manure and its maintenance at MIOM has been spent, Maintenance of garden - Rs27.63 Lakh & Rs 9.75 Lakh nursery for improving greenery & eco-tourism at MIOM & KIOM. Maintenance of water pipe line laying work of Rs 24 Lakh at MIOM-KIOM respectively, Spillway repair at Tailing dam MIOM- Rs 3.55 Lakh for control of silt, R&M of RRM walls at MIOM & culvert at various location - Rs17.00 Lakh as

Period: April, 2019 to September, 2019

16 | Page

(Signature)
20/10/2019

C. MUKHOPADHYAY
C.G.M. (M) MIOM

YAYHQA9OHXUM
MIOM (M) M.G.C

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu – Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
		environmental protection measures
(xii)	The project authorities should inform to the Regional office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	The Kiriburu and Meghahatuburu Iron Ore Mines are working mines operating since 1960 and 1985 respectively. Installation of various facilities under the 16 MTPA expansion are under progress. Will be informed in due time after installation of the facilities.
(xiii)	The Regional office of the Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional office by furnishing the requisite data/information/monitoring reports.	Full co-operation is extended to the officers of the Regional Office, MoEF&CC, Bhubaneswar / Ranchi, by furnishing the requisite data/ information / monitoring reports.
(xiv)& (xv)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulate environmental safeguards to the Ministry of Environment and Forest, its Regional Office, Bhubaneswar, Central Pollution Control Board and State pollution Control Board.	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. Copy of the compliance report including environmental quality data is being uploaded to the SAIL web site i.e. www.sail.co.on.
(xvi)	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.	A copy of the environmental clearance letter has already been sent to the Panchayat. The clearance letter has been put on the Company website i.e. www.sail.co.on.
(xvii)	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collectors office/Tehsildar's office for 30 days.	-
(xviii)	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	Advertisement was published in two local newspapers widely circulated, one of which was in the vernacular language (Hindi in Dainik Jagran on 27.09.2014) and other in English (in Telegraph on 27.09.2014) i.e. within stipulated time by informing that the project has

Period: April, 2019 to September, 2019

17 | Page

(Signature)
30/10/2019

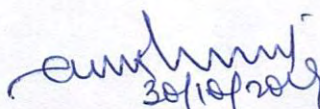
C. MUKHOPADHYAY
C.G.M. (M) MIOM

**Six Monthly Environmental Clearance (EC) compliance report for the period April'2019 to September '2019 of
Kiriburu - Meghahatuburu Iron Ore Mines, located at Singhbhum (West), Jharkhand**

Cond. No.	Condition Stipulated	Compliance Status as on September'19
	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 the Ministry located Bhubaneswar.	been accorded environmental clearance. Copies of the advertisements made in the News Papers are placed at Annexure - 14. A copy of the clearance letter was also made available to the State Pollution Control Board and Regional Office of MoEF&CC at Bhubaneswar.

Date: 30.10.2019

Place: Meghahatuburu



[C. MUKHOPADHYAY]

Chief General Manager (Mines)
Meghahatuburu Iron Ore Mines
SAIL_Raw Materials Division
P.O. Meghahatuburu - 833 223
Dist.: Singhbhum (West)

State- Jharkhand

चंचल मुखोपाध्याय
CHANCHAL MUKHOPADHYAY
मुख्य महाप्रबंधक (खान) CGM (Mines)
मेघाहातुबुरु लोह अयस्क खदान
Meghahatuburu Iron Ore Mines
पो. मेघाहातुबुरु 833223 / Meghahatuburu 833223
जिला-सिंहभूम (प.) झारखण्ड / Dist.: Singhbhum (W) Jharkhand



STEEL AUTHORITY OF INDIA LIMITED
RAW MATERIALS DIVISION
KIRIBURU-MEGHAHATUBURU IRON ORE MINES

ANNEXURE – 11

RIVER WATER QUALITY

(A) Koina River – Upstream of Mines

Period	pH	Turbidity	TDS	SS	Iron	Manganese
Unit	-	NTU	mg/l	mg/l	mg/l(as Fe)	mg/l (as Mn)
Desirable Limit *	6.5-8.5	5	500	-	0.3	0.1
Permissible Limit **	6.5-8.5	10	2000	-	1.0	0.3
April'19	6.8	2.6	102		0.1	0.03
May'19	6.7	2.5	104		0.1	0.03
June'19	6.9	2.6	104	-	0.1	0.03
July'19	6.8	2.7	1.7		0.1	0.03
August'19	6.7	2.8	1.9		0.1	0.04
September'19	6.8	2.7	2		0.1	0.04

* Requirement (Desirable limits) as per Drinking Water Specification IS : 10500

** Permissible limit in absence of alternate source as IS : 10500

(B) Koina River – Downstream of Mines

Period	pH	Turbidity	TDS	SS	Iron	Manganese
Unit	-	NTU	mg/l	mg/l	mg/l(as Fe)	mg/l (as Mn)
Desirable Limit *	6.5-8.5	5	500	-	0.3	0.1
Permissible Limit **	6.5-8.5	10	2000	-	1.0	0.3
April'19	6.7	3.1	96	-	0.13	0.04
May'19	6.6	3	95	-	0.12	0.03
June'19	6.7	3.2	97	-	0.11	0.04
July'19	6.8	3.5	99	-	0.11	0.04
August'19	6.8	3.6	91	-	0.14	0.03
September'19	6.6	3.4	100	-	0.11	0.04

* Requirement (Desirable limits) as per Drinking Water Specification IS : 10500

** Permissible limit in absence of alternate source as IS : 10500

Manoj Kumar
17/07/19

Manoj Kumar
Asstt. General Manager (E&L)
SAIL, RMD, MIOM



STEEL AUTHORITY OF INDIA LIMITED
RAW MATERIALS DIVISION
KIRIBURU-MEGHAHATUBURU IRON ORE MINES

ANNEXURE – 12 (b)

AMBIENT AIR QUALITY REPORT

Period : April'19- September'19
Instrument : Respirable Dust Sampler, Photometer SQ – 118.
Locations : **MEGHAHATUBURU IRON ORE MINE**
Location – 1 : Dumper Shop.
Location – 2 : Mining Field Office.
Location – 3 : Hopper
Location – 4 : Township

Month	Sampling location	SPM($\mu\text{g}/\text{m}^3$)	RPM ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)
Permissible Level		500	100	80	80
APRIL'19	Location – 1	111.24	42.65	BDL	BDL
	Location – 2	125.48	35.39	BDL	BDL
	Location – 3	127.58	45.14	BDL	BDL
	Location – 4	73.31	34.39	BDL	BDL
MAY'19	Location – 1	110.65	42.94	BDL	BDL
	Location – 2	125.98	35.27	BDL	BDL
	Location – 3	123.42	43.33	BDL	BDL
	Location – 4	71.62	33.23	BDL	BDL
JUNE'19	Location – 1	102.39	37.93	BDL	BDL
	Location – 2	128.99	36.50	BDL	BDL
	Location – 3	125.77	44.00	BDL	BDL
	Location – 4	73.7	34.29	BDL	BDL
JULY'19	Location – 1	96.5	35.97	BDL	BDL
	Location – 2	125.78	35.28	BDL	BDL
	Location – 3	121.88	42.64	BDL	BDL
	Location – 4	71.72	34.62	BDL	BDL
AUGUST'19	Location – 1	Due to heavy rain & fog sampling could not be done			
	Location – 2				
	Location – 3				
	Location – 4				
SEPT'19	Location – 1	93.94	37.08	BDL	BDL
	Location – 2	118.05	32.98	BDL	BDL
	Location – 3	100.49	39.88	BDL	BDL
	Location – 4	67.7	32.23	BDL	BDL

Note : SO₂ : BDL (Below Detectable Limit) : 4 $\mu\text{g}/\text{m}^3$
NO₂ : BDL (Below Detectable Limit) : 10 $\mu\text{g}/\text{m}^3$



Manoj Kumar
Asstt. General Manager (E&U)
SAIL, RMD, MIOM



STEEL AUTHORITY OF INDIA LIMITED
RAW MATERIALS DIVISION
KIRIBURU-MEGHAHATUBURU IRON ORE MINES

ANNEXURE – 12 (a)

AMBIENT AIR QUALITY REPORT

Period : APRIL'19- SEPTEMBER'19
Instrument : Respirable Dust Sampler, Photometer SQ – 118.
Locations : **KIRIBURU IRON ORE MINE**
Location – 1 : Mining Field Office
Location – 2 : Hopper
Location – 3 : Hospital
Location – 4 : Township

Month	Sampling location	RPM ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO _x ($\mu\text{g}/\text{m}^3$)
Permissible Level		100	80	80
APRIL'19	Location – 1	42	16	16
	Location – 2	43	14	14
	Location – 3	19	BDL	BDL
	Location – 4	18	BDL	BDL
MAY'19	Location – 1	46	15	14
	Location – 2	45	17	14
	Location – 3	19	BDL	BDL
	Location – 4	17	BDL	BDL
JUNE'19	Location – 1	45	17	15
	Location – 2	43	15	16
	Location – 3	19	BDL	BDL
	Location – 4	20	BDL	BDL
JULY'19	Location – 1	NIL	NIL	NIL
	Location – 2			
	Location – 3			
	Location – 4			
AUGUST'19	Location – 1	NIL	NIL	NIL
	Location – 2			
	Location – 3			
	Location – 4			
SEPT'19	Location – 1	NIL	NIL	NIL
	Location – 2			
	Location – 3			
	Location – 4			

Note : SO₂ : BDL (Below Detectable Limit) : 4 $\mu\text{g}/\text{m}^3$
NO₂ : BDL (Below Detectable Limit) : 10 $\mu\text{g}/\text{m}^3$


Manoj Kumar
Asstt. General Manager (E&L)
SAIL, RMD, MIOM

STEEL AUTHORITY OF INDIA LIMITED
RAW MATERIALS DIVISION
KIRIBURU-MEGHAHATUBURU IRON ORE MINES

Annexure-13 (a)

MONITORING OF MINE EFFLUENT STANDARDS

Mineral: IRON ORE
Period: April'19 to Sept'19
Name of the Mine: Kiriburu Iron Ore Mines
Agent: Sri D.K.Barman; CGM(Mines)
Agency: Environment Laboratory, KIOM-MIOM
Instrument-: Photometer SQ-118
Unit: Concentration in Mg/L except pH & Turbidity.
Location: Karampada Dam

Sl. No.	Parameter	Norm	April'19	May'19	June'19	July'19	August'19	SEPT'19
1	pH	5.5- 9.0	6.2	6.0	6.0	6.1	6.0	6.1
2	Temprature	**	16	22	17.5	18.5	17.5	17
3	Suspended Solid	100.0	62	61	58	59	61	59
4	Ammonical Nitrogen	50.0	0.20	0.20	0.15	0.13	0.13	0.12
5	Phenolic Compound	1.0	N/D	N/D	N/D	N/D	N/D	N/D
6	BOD	30.0	N/D	N/D	N/D	N/D	N/D	N/D
7	COD	250.0	N/D	N/D	N/D	N/D	N/D	N/D
8	Cyanide	0.2	N/D	N/D	N/D	N/D	N/D	N/D
9	Flouride	2.0	N/D	N/D	N/D	N/D	N/D	N/D
10	Arsenic	0.2	N/D	N/D	N/D	N/D	N/D	N/D
11	Lead	0.1	N/D	N/D	N/D	N/D	N/D	N/D
12	Mercury	0.01	N/D	N/D	N/D	N/D	N/D	N/D
13	Hexavalent Chromium	0.1	N/D	N/D	N/D	N/D	N/D	N/D
14	Nickel	3.0	N/D	N/D	N/D	N/D	N/D	N/D
15	Iron	3.0	0.11	0.13	0.10	0.11	0.11	0.10
16	Zinc	5.0	N/D	N/D	N/D	N/D	N/D	N/D
17	Cadmium	2.0	N/D	N/D	N/D	N/D	N/D	N/D
18	Manganese	2.0	0.04	0.04	0.04	0.04	0.04	0.04
19	Oil& Grease	10.0	N/D	N/D	N/D	N/D	N/D	N/D
20	Sulphide	2.0	0.02	0.02	0.02	0.03	0.03	0.03

** Temprature Difference
BDL Below Detection Limit
N/D Not Detected

SAIL-KIRIBURU IRON ORE MINES

Manoj Kumar
Asstt. General Manager (E&E)
SAIL, RMD, MIOM

STEEL AUTHORITY OF INDIA LIMITED
RAW MATERIALS DIVISION
KIRIBURU-MEGHAHATUBURU IRON ORE MINES

Annexure-13 (b)

MONITORING OF MINE EFFLUENT STANDARDS

Mineral: IRON ORE
Period: April'19 to Sept'19
Name of the Mine: Meghahatuburu Iron Ore Mines
Agent: Sri C.Mukhopadhyay; CGM(Mines)
Agency: Environment Laboratory, KIOM-MIOM
Instrument-: Photometer SQ-118
Unit: Concentration in Mg/L except pH & Turbidity.
Location: Rangring Dam

Sl. No.	Parameter	Norm	April'19	May'19	June'19	July'19	August'19	SEPT'19
1	pH	5.5- 9.0	5.9	6.2	5.9	6.1	6.1	6.0
2	Temprature	**	20	22.5	18	18.5	17	17
3	Suspended Solid	100.0	60	60	60	59	60	61
4	Ammonical Nitrogen	50.0	N/D	N/D	N/D	N/D	N/D	N/D
5	Phenolic Compound	1.0	N/D	N/D	N/D	N/D	N/D	N/D
6	BOD	30.0	N/D	N/D	N/D	N/D	N/D	N/D
7	COD	250.0	N/D	N/D	N/D	N/D	N/D	N/D
8	Cyanide	0.2	N/D	N/D	N/D	N/D	N/D	N/D
9	Flouride	2.0	N/D	N/D	N/D	N/D	N/D	N/D
10	Arsenic	0.2	N/D	N/D	N/D	N/D	N/D	N/D
11	Lead	0.1	N/D	N/D	N/D	N/D	N/D	N/D
12	Mercury	0.01	N/D	N/D	N/D	N/D	N/D	N/D
13	Hexavalent Chromium	0.1	N/D	N/D	N/D	N/D	N/D	N/D
14	Nickel	3.0	N/D	N/D	N/D	N/D	N/D	N/D
15	Iron	3.0	0.11	0.12	0.11	0.11	0.11	0.11
16	Zinc	5.0	N/D	N/D	N/D	N/D	N/D	N/D
17	Cadmium	2.0	N/D	N/D	N/D	N/D	N/D	N/D
18	Manganese	2.0	0.02	0.02	0.02	0.04	0.03	0.02
19	Oil & Grease	10.0	N/D	N/D	N/D	N/D	N/D	N/D
20	Sulphide	2.0	0.03	0.02	0.03	0.03	0.03	0.03

** Temprature Difference
BDL Below Detection Limit
N/D Not Detected

SAIL-KIRIBURU IRON ORE MINES

Manoj Kumar
Asstt. General Manager (E&E)
SAIL, R.D. (R.D.)