

F. No. J-11015/215/2008-IA-II (M)
Government of India
Ministry of Environment, Forest and Climate Change
Impact Assessment Division

Indira Paryavaran Bhavan
Agni Wing, 1st Floor, Aliganj,
Jor Bagh Road, New Delhi-110 003

Date: 29 July 2019

To

M/s. Tata Steel Limited
Jeevan Bharti Building, Tower I
10th Floor, 124 Cannought Circus
New Delhi-110001.

Subject: Joda East Iron Mine and Beneficiation plant of M/s. Tata Steel Limited in the mine lease area of 671.093 ha located at village-Joda, Kamarjoda, Banspani, Khutpani & Baitarni, Tehsil-Barbil, District-Keonjhar, Odisha. Amendment in existing EC under section 7 (ii) in respect of modernization of beneficiation plant-regarding.

Sir,

The proposal of M/s Tata Steel Limited is for amendments in Environmental Clearance vide no. J-11015/215/2008-IA.II (M) dated 11.03.2013 w.r.t. amendment of EC in respect of modernization of beneficiation plant in the mine lease area of 671.093 ha. The mine is located at village-Joda, Kamarjoda, Banspani, Khutpani & Baitarini, Tehsil-Barbil, District-Keonjhar, Odisha. The deposit lies between the latitude of 21°59'N and 22°03'N and longitudes of 82°25'E and 85°27'E respectively.

2. The PP submitted that total mine lease area is 671.093 ha, out of which 608.906 ha forest land and 62.187 ha non-forest land. PP further mentioned that they have forest clearance for 567.087 ha only. Therefore, the Ministry has granted Environmental Clearance vide letter no. J-11015/215/2008-IA.II(M) dated 11.03.2013 for enhancement in the production of iron ore from 6 MTPA (ROM) to 12.0 Million TPA of Iron Ore (ROM) and expansion of beneficiation plant from 6 MTPA to 12 MTPA throughout for 567.087 ha of forest land for which FC is available and 62.187 ha of non forest land, i.e. a total of 629.274 ha. Furthermore, the Ministry vide letter dated 07.09.2018, amended the EC w.r.t Run of Mine (ROM).

3. Project Proponent submitted that the Joda East Iron Ore Mine was granted EC for enhancement of Iron production from 6 MTPA to 12 MTPA (ROM) and beneficiation of 12 MTPA (5 MTPA dry processing and 7 MTPA wet processing). As per the Environmental Clearance, PP had set up the beneficiation plants for 12 MTPA, 5 MTPA ROM to be processed through a dry processing plant and 7 MTPA to be processed in a wet processing facility. PP further submitted that the Joda East iron deposit has different lithologies like hard ore, lateritic ore, friable ore, powdery ore of variable grades. Geological ore body model is the basis for evaluating the ore types using Fe & Alumina grades to determine the feed of Run of Mine (ROM) for dry and wet processing to optimize the extraction. The products of these two

plants are blended to meet the product quality requirements from captive steel plants. The flexibility to feed suitable material based on ore body model also ensures optimized extraction resulting in conservation of natural resource. Based on the disposition of the ore as per the geological model of Joda East Iron Mine, the low Fe high Alumina ores will require to be mined in future for sustained mining activity. The existing dry and wet plants cannot process these ore types due to process constraint. Tata Steel envisages to set up a wet processing facility of 4.6 MTPA capacity suitable to beneficiate such low-grade Fe and reducing the capacity of the present wet beneficiation plant to 2.4 MTPA, thereby keeping the overall wet beneficiation capacity same as approved in the EC (7 MTPA).

4. The proposal was considered in the EAC meeting held during September 28-29, 2018, deferred the proposal and requested the PP to conduct an addendum to the impact study on pollution load w.r.t. modernization of beneficiation plant.

5. PP submitted the addendum report and the proposal considered in 5th EAC Meeting held during May 29-30, 2019. PP presented the addendum report. The Committee noted that PP proposes to install new beneficiation plant with the capacity of 4.6 MTPA, so, it is not a modernization in the existing plant and it is changing the proposal plan. Thus, PP replied to the Committee that existing wet plant will be running on 2.4 MTPA capacity to process high quality grade of ROM and the low quality grade of ROM will be processed in the newly proposed wet plant capacity at 4.6 MTPA, so that the overall beneficiation capacity will not be changed (7 MTPA wet beneficiation, as per the EC). Therefore, the Committee asked the PP to submit an undertaking for the same and mentioned that the EC amendment will be restricted to original EC capacity granted vide letter dated 11.03.2013. In addition, the Committee deliberated on the water balance, reduction in water requirement due to proposed modification in the wet beneficiation process as well as the mass balance for wet and dry beneficiation plant with total processing capacity. PP submitted the required information as undertaking.

6. Furthermore, the Committee discussed the compliance of specific condition (ii) of EC dated 11.03.2013. PP replied that the conditions were imposed based on the Ministry guidelines vide letter no.11-362/2012-FC dated 01.02.2013, however, it has been suppressed by the Ministry revised guidelines vide letter no.11-599/2014-FC dated 01.02.2015. PP further submitted that, though it has been suppressed the earlier guidelines, PP applied for diversion of remaining forest land (41.819 ha) and also paid net present value (NPV) for the forest land. The supporting document in this regard was submitted, wherein forest clearance for 41.819 ha is still pending with the forest Department. Based on the presentation and submission made by PP and the discussion held, the Committee **recommend for grant of EC amendment** within the provision of Para 7(ii) of EIA Notification

7. The matter has been examined in the Ministry and is hereby included the following amendments in the EC granted to M/s. Tata Steel Limited vide letter no. J-11015/215/2008-IA.II (M) dated 11.03.2013.

- “(i) Modernization of wet beneficiation plant by installing wet beneficiation plant with capacity of 4.6 MTPA for processing low quality grade of ROM and reducing the existing wet beneficiation plant capacity to 2.4 MTPA for processing high quality grade of ROM; and keeping the overall wet beneficiation plant capacity at 7 MTPA. Furthermore, no change in the 5 MTPA beneficiation plant for dry processing, so that the total beneficiation

capacity from all three plants {old dry (5 MTPA) + old wet (2.4 MTPA) + proposed (4.6 MTPA)} should not exceed the granted EC capacity of 12 MTPA of beneficiation plant.”

8. In addition, as the Committee suggested the **following additional conditions** are included in the EC granted to M/s. Tata Steel Limited vide letter no. J-11015/215/2008-IA.II (M) dated 11.03.2013.

- (i). The mining activity will be restricted to the mine lease area for which earlier EC is granted (i.e. (567.087 ha (Forest Clearance available) + 62.187 ha = 629.274 ha). Furthermore, no mining activity will be allowed in remaining forest land (41.819 ha) till PP get the forest clearance.
- (ii). PP mentioned that the processing of ore at beneficiation plant (old and proposed) will be same as the existing EC capacity (12 MTPA). Three beneficiation units shall be operated at maximum capacity of 5 MTPA for dry processing and 7 MTPA for wet processing (i.e. existing 2.4 MTPA capacity for processing high quality grade of ROM and proposed 4.6 MTPA capacity for processing low quality grade of ROM), respectively, in order to ensure that at any given time, the total beneficiation capacity from all three plants (old dry + old wet + proposed) should not exceed the granted EC capacity of 12 MTPA.
- (iii). PP should submit an undertaking through affidavit that the total beneficiation capacity from all the three units shall not exceed the granted EC capacity of 12 MTPA at any given time. The operation of this EC amendment is subjected to submission of said affidavit.
- (iv). State Pollution Control Board should ensure that the processing capacity of beneficiation plants (all the three units) should not exceed the granted EC capacity of 12 MTPA at any given time.
- (v). **The amendment in EC shall be operational after submission of an undertaking through affidavit to MoEF&CC within 15 days of receipt of this letter, for compliance of all the conditions prescribed herein and mentioned in EC dated 11.03.2013 and 07.09.2018.**

9. Furthermore, this matter has been examined by Ministry and discussed the various specific recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and/or manganese in the State of Odisha. There are recommendations which shall be implemented by the State Govt. of Odisha and Project Proponent. Based on detailed deliberations on the recommendations of the carrying capacity study report, the Ministry has incorporated the following specific conditions viz.

- 1) Project Proponent and Department of Steel & Mines, Govt. of Odisha shall ensure the implementation of recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and/or manganese in the State of Odisha.
- 2) Department of Steel & Mines, Govt. of Odisha should prepare 5 years regional plan for annual iron ore requirement from the state, which in turn shall be met from different mines/zones (e.g. Joda, Koira.) in the state. Accordingly,

sustainable annual production (SAP) for each zone/mine may be followed adopting necessary environmental protection measures.

- 3) Project Proponent shall construct the cement concrete road from mine entrance and exit to the main road with proper drainage system and green belt development along the roads and also construction of road with minimum 300 m inside the mine. This should be done within one year for existing mines and new mine should have since beginning. The Department of Steel & Mines, Govt. of Odisha should ensure the compliance and should not issue the Mining Permits, if mine lease holder has not constructed proper cement concrete road as suggested.
- 4) The Committee observed that as per the recommendations of NEERI report the PP needs to do regular vacuum cleaning of all mineral carrying roads aiming at "zero dust re-suspension" within 3 months.
- 5) Project Proponent shall monitor the environmental quality parameters as per EC and CTE/CTO conditions, and implementation of suggested measures for control of road dust and air pollution. Odisha State Pollution Control Board has to ensure the compliance of CTE/CTO. Regional office of the MoEF&CC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional office of the Indian Bureau of Mines (IBM) shall monitor the compliance of mining plan and progressive mine closure plan. Any violation by mine lease holder may invite actions per the provisions of applicable Acts.
- 6) Project Proponent shall ensure the compliance of Suggested Ore Transport Mode (SOTM) with association of the State Government of Odisha. All existing mines should ensure adoption of SOTM within next 5 years. New mines or mines seeking expansion should incorporate provision of SOTM in the beginning itself, and should have system in place within next 5 years.
- 7) The State Govt. of Odisha shall ensure dust free roads in mining areas wherever the road transportation of mineral is involved. The road shoulders shall be paved with fence besides compliance with IRC guidelines. All the roads should have proper drainage system and apart from paving of entire carriage width the remaining right of way should have native plantation (dust capturing species). Further, regular maintenance should also be ensured by the Govt. of Odisha. Progress on development of dust free roads, implementation of SOTM, increased use of existing rail network, development of additional railway network/conveyor belt/ pipelines etc. shall be submitted periodically to Regional office of the MoEF&CC.
- 8) Project Proponent shall develop the parking plazas for trucks with proper basic amenities/ facilities inside the mine. This should be done within one year for existing mines and new mines should have since beginning.
- 9) Department of Steel & Mines shall ensure the construction of NH 215 as minimum 4 lane road with proper drainage system and plantation and subsequent regular maintenance of the road as per IRC guidelines. Construction of other mineral carrying roads with proper width and drainage

system along with road side plantation to be carried out. This shall be completed within 2 Years.

- 10) Regular vacuum cleaning of all mineral carrying roads aiming at "Zero Dust Re-suspension" shall be adopted by PWD / NHAI/ Mine Lease Holders within a time Period of 3 months for existing roads.
- 11) In case the total requirement of iron ore exceeds the suggested limit for that year, permission for annual production by an individual mine may be decided depending on approved EC capacity (for total actual dispatch) and actual production rate of individual mine during last year or any other criteria set by the State Govt., i.e. Dept. of Steel & Mines. Department of Steel and Mines in consultation with Indian Bureau of Mines-RO should prepare in advance mine-wise annual production scenario so that demand for iron ore can be anticipated, and actual production/dispatch does not exceed the suggested annual production.
- 12) R&D studies towards utilization of low-grade iron ore should be conducted through research/academic institutes like IMMT, Bhubaneswar, NML, Jamshedpur, and concerned metallurgical departments in IITs, NITs etc., targeting full utilization of low-grade iron ore (Fe content upto 45% by 2020 and upto 40% by 2025). In fact, life cycle assessment of whole process including environmental considerations should be done for techno-economic and environmental viability. R&D studies on utilization of mine wastewater having high concentration of Fe content for different commercial applications in industries such as cosmetics, pharmaceutical, paint industry should also be explored. Responsibility: IBM, Dept. of Steel & Mines, Individual Mine Lease Holders.
- 13) The mining activity in Joda-Koira sector is expected to continue for another 100 years, therefore, it will be desirable to develop proper rail network in the region. Rail transport shall not only be pollution free mode but also will be much economical option for iron ore transport. The rail network and/or conveyor belt system upto public railway siding needs to be created. The total length of the conveyor belt system/ rail network to be developed from mines to nearest railway sidings by 11 mines in Joda region is estimated to be about 64 km. Similarly, in Koira region, total length of rail network/ conveyor system for 8 mines (under SOTM 1 & 2) is estimated to be around 95 km. Further, it is suggested to develop a rail network connecting Banspani (Joda region) and Roxy railway sidings in Koira region. Responsibility: Dept. of Steel & Mines, Govt. of Odisha and Concerned Mines along with Indian Railways. Time Period: Maximum 7 years (by 2025). The Department of Steel & Mines, Govt. of Odisha should follow-up with the concerned Departments and railways so that proposed proper rail network is in place by 2025.
- 14) State Govt. of Odisha shall make all efforts to ensure exhausting all the iron & manganese ore resources in the existing working mines and from disturbed mining leases/zones in Joda and Koira region. The criteria

suggested shall be applicable while suggesting appropriate lease area and sustainable mining rate. Responsibility: Dept. of Steel & Mines, Govt. of Odisha.

- 15) **Mining Operations/Process Related:** Project Proponent shall implement the following mitigation measures: (i) Appropriate mining process and machinery (viz. right capacity, fuel efficient) should be selected to carry out various mining operations that generate minimal dust/air pollution, noise, wastewater and solid waste. e.g. drills should either be operated with dust extractors or equipped with water injection system. (ii) After commencement of mining operation, a study should be conducted to assess and quantify emission load generation (in terms of air pollution, noise, waste water and solid waste) from each of the mining activity (including transportation) on annual basis. Efforts should be made to further eliminate/ minimize generation of air pollution/dust, noise, wastewater, solid waste generation in successive years through use of better technology. This shall be ensured by the respective mine lease holders. (iii) Various machineries/equipment selected (viz. dumpers, excavators, crushers, screen plants etc.) and transport means should have optimum fuel/power consumption, and their fuel/power consumption should be recorded on monthly basis. Further, inspection and maintenance of all the machineries/ equipment/ transport vehicles should be followed as per manufacturer's instructions/ recommended time schedule and record should be maintained by the respective mine lease holders. (iv) Digital processing of the entire lease area using remote sensing technique should be carried out regularly once in 3 years for monitoring land use pattern and mining activity taken place. Further, the extent of pit area excavated should also be demarcated based on remote sensing analysis. This should be done by ORSAC (Odisha Space Applications Centre, Bhubaneswar) or an agency of national repute or if done by a private agency, the report shall be vetted/ authenticated by ORSAC, Bhubaneswar. Expenses towards the same shall be borne by the respective mine lease holders. Responsibility: Individual Mine Lease Holders.
- 16) **Air Environment Related:** Project Proponent shall implement the following mitigation measures: (i) Fugitive dust emissions from all the sources should be controlled regularly on daily basis. Water spraying arrangement on haul roads, loading and unloading and at other transfer points should be provided and properly maintained. Further, it will be desirable to use water fogging system to minimize water consumption. It should be ensured that the ambient air quality parameters conform to the norms prescribed by the CPCB in this regard. (ii) The core zone of mining activity should be monitored on daily basis. Minimum four ambient air quality monitoring stations should be established in the core zone for SPM, PM₁₀, PM_{2.5}, SO₂, NO_x and CO monitoring. Location of air quality monitoring 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 (based on Emission Load Assessment Study). The number of monitoring locations may be more for larger capacity mines and working in larger area. Out of four stations, one should be online monitoring station in the mines having more than 3 MTPA EC Capacity. (iii) Monitoring in buffer zone should be carried out

by SPCB or through NABET accredited agency. In addition, air quality parameters (SPM, PM10, PM2.5, SO₂, NO_x and CO) shall be regularly monitored at locations of nearest human habitation including schools and other public amenities located nearest to source of the dust generation as applicable. (iv) Emissions from vehicles as well as heavy machinery should be kept under control and regularly monitored. Measures should be taken for regular maintenance of vehicles used in mining operations and in transportation of mineral. (v) The vehicles shall be covered with a tarpaulin and should not be overloaded. Further, possibility of closed container trucks should be explored for direct to destination movement of iron ore. Air quality monitoring at one location should also be carried out along the transport route within the mine (periodically, near truck entry and exit gate), Responsibility: Individual Mine Lease Holders and SPCB.

- 17) **Noise and Vibration Related:** Project Proponent shall implement the following mitigation measures: (i) Blasting operation should be carried out only during daytime. Controlled blasting such as Nonel, should be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented. (ii) Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs. (iii) Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone. Further, date, time and distance of measurement should also be indicated with the noise levels in the report. The data should be used to map the noise generation from different activities and efforts should be made to maintain the noise levels with the acceptable limits of CPCB (CPCB, 2000) (iv) Similarly, vibration at various sensitive locations should be monitored at least once in month, and mapped for any significant changes due to successive mining operations. Responsibility: Individual Mine Lease Holders.
- 18) **Water/Wastewater Related:** Project Proponent shall implement the following mitigation measures: (i) In general, the mining operations should be restricted to above ground water table and it should not intersect groundwater table. However, if enough resources are estimated below the ground water table, the same may be explored after conducting detailed geological studies by GSI and hydro- geological studies by CGWB or NIH or institute of national repute, and ensuring that no damage to the land stability/ water aquifer system shall happen. The details/ outcome of such study may be reflected/incorporated in the EIA/EMP report of the mine appropriately. (ii) Natural watercourse and/or water resources should not be obstructed due to any mining operations. Regular monitoring of the flow rate of the springs and perennial nallas should be carried out and records should be maintained. Further, regular monitoring of water quality of nallas and river passing thorough the mine lease area (upstream and downstream locations) should be carried out on monthly basis. (iii) Regular monitoring of ground water level and its quality should be carried out within the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out on monthly basis. (iv) In order to optimize water requirement, suitable

conservation measures to augment ground water resources in the area should be undertaken in consultation with Central Ground Water Board (CGWB). (v) Suitable rainwater harvesting measures on long term basis should be planned and implemented in consultation with CGWB, to recharge the ground water source. Further, CGWB can prepare a comprehensive plan for the whole region. (vi) Appropriate mitigation measures (viz. ETP, STP, garland drains, retaining walls, collection of runoff etc.) should be taken to prevent pollution of nearby river/other water bodies. Water quality monitoring study should be conducted by State Pollution Control Board to ensure quality of surface and ground water sources on regular basis. The study can be conducted through NABL/ NABET approved water testing laboratory. However, the report should be vetted by SPCB. (vii) Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated in ETP so as to conform to the discharge standards applicable. (viii) Oil and grease trap should be installed before discharge of workshop effluents. Further, sewage treatment plant should be installed for the employees/colony, wherever applicable. (ix) Mine lease holder should ensure that no silt originating due to mining activity is transported in the surface water course or any other water body. Appropriate measures for prevention and control of soil erosion and management of silt should be undertaken. Quantity of silt/soil generated should be measured on regular basis for its better utilization. (x) Erosion from dumps site should be protected by providing geo-textile matting or other suitable material, and thick plantation of native trees and shrubs should be carried out at the dump slopes. Further, dumps should be protected by retaining walls. (xi) Trenches / garland drain should be constructed at the foot of dumps to arrest silt from being carried to water bodies. Adequate number of check dams should be constructed across seasonal/perennial nallas (if any) flowing through the mine lease areas and silt be arrested. De-silting at regular intervals should be carried out and quantity should be recorded for its better utilization, after proper soil quality analysis. (xii) The water so collected in the reservoir within the mine should be utilized for the sprinkling on hauls roads, green belt development etc. (xiii) There should be zero waste water discharge from the mine. Based on actual water withdrawal and consumption/ utilization in different activities, water balance diagram should be prepared on monthly basis, and efforts should be made to optimize consumption of water per ton of ore production in successive years. Responsibility: Individual Mine Lease Holders, SPCB and CGWB.

- 19) **Land/ Soil/ Overburden Related:** Project Proponent shall implement the following mitigation measures: (i) The top soil should temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long (not more than 3 years or as per provisions mentioned in the mine plan/ scheme). The topsoil should be used for land reclamation and plantation appropriately. (ii) Fodder plots should be developed in the non-mineralised area in lieu of use of grazing land, if any. (iii) Over burden/ low grade ore should be stacked at earmarked dump site (s) only and should not be kept active for long period. The dump height should be decided on case to case basis, depending on the size of mine and quantity of waste material generated. However, slope stability study should be conducted for larger heights, as per

IBM approved mine plan and DGMS guidelines. 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 should be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Proper records should be maintained regarding species, their growth, area coverage etc. (iv) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine operation, soil, OB and mineral dumps. The water so collected can be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted, particularly after monsoon and should be maintained properly. Appropriate documents should be maintained. Garland drain of appropriate size, gradient and length should be constructed for mine pit, soil, OB and mineral dumps and sump capacity should be designed with appropriate safety margin based on long term rainfall data. Sump capacity should be provided for adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de-silted at regular intervals. (v) Backfilling should be done as per approved mining plan/scheme. There should be no OB dumps outside the mine lease area. The backfilled area should be afforested, aiming to restore the normal ground level. Monitoring and management of rehabilitated areas should continue till the vegetation is established and becomes self-generating. (vi) Hazardous waste such as, waste oil, lubricants, resin, and coal tar etc. should be disposed off as per provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual Mine Lease Holders.

- 20) **Ecology/Biodiversity (Flora-Fauna) Related:** Project Proponent shall implement the following mitigation measures: (i) All precautionary measures should be taken during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. Action plan for conservation of flora and fauna should be prepared and implemented in consultation with the State Forest and Wildlife Department within the mine lease area, whereas outside the mine lease area, the same should be maintained by State Forest Department. (ii) Afforestation is to be done by using local and mixed species saplings within and outside the mining lease area. The reclamation and afforestation is to be done in such a manner like exploring the growth of fruit bearing trees which will attract the fauna and thus maintaining the biodiversity of the area. As afforestation done so far is very less, forest department needs to identify adequate land and do afforestation by involving local people in a time bound manner. (iii) Green belt development carried out by mines should be monitored regularly in every season and parameters like area under vegetation/plantation, type of plantation, type of tree species /grass species/scrubs etc., distance between the plants and survival rate should be recorded. (iv) Green belt is an important sink of air pollutants including noise. Development of green cover in mining area will not only help reducing air and noise pollution but also will improve the ecological conditions and prevent soil erosion to a greater extent. Further, selection of tree species for green belt should constitute dust removal/dust capturing plants since plants can act as efficient biological filters removing

significant amounts of particulate pollution. Thus, the identified native trees in the mine area may be encouraged for plantation. Tree species having small leaf area, dense hair on leaf surface (rough surface), deep channels on leaves should be included for plantation. (v) Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value. (vi) Details of compensatory afforestation done should be recorded and documented by respective forest divisions, and State Forest Department should present mine-wise annual status, along with expenditure details. Responsibility: Individual Mine Lease Holders and State Forest & Wildlife Department.

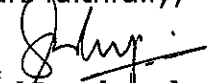
- 21) **Socio-Economic Related:** Project Proponent shall implement the following mitigation measures: (i) Public interaction should be done on regular basis and social welfare activities should be done to meet the requirements of the local communities. Further, basic amenities and infrastructure facilities like education, medical, roads, safe drinking water, sanitation, employment, skill development, training institute etc. should be developed to alleviate the quality of life of the people of the region. (ii) Land outtees and land losers/affected people, if any, should be compensated and rehabilitated as per the national/state policy on Resettlement and Rehabilitation. (iii) The socio-economic development in the region should be focused and aligned with the guidelines/initiatives of Govt. of India/ NITI Aayog around prosperity, equality, justice, cleanliness, transparency, employment, respect to women, hope etc. This can be achieved by providing adequate and quality facilities for education, medical and developing skills in the people of the region. District administration in association with mine lease holders should plan for "Samagra Vikas" of these blocks well as other blocks of the district. While planning for different schemes in the region, the activities should be prioritized as per Pradhan Mantri Khanij Kshetra Kalyan Yojna (PMKKKY), notified by Ministry of Mines, Govt. of India, vide letter no. 16/7/2017-M.VI (Part), dated September 16, 2015. Responsibility: District Administration and Individual Mine Lease Holders.
- 22) **Road Transport Related:** Project Proponent shall implement the following mitigation measures: (i) All the mine lease holders should follow the suggested ore transport mode (SOTM), based on its EC capacity within next 5 years. (ii) The mine lease holders should ensure construction of cement road of appropriate width from and to the entry and exit gate of the mine. Further, maintenance of all the roads should be carried out as per the requirement to ensure dust free road transport. (iii) Transportation of ore should be done by covering the trucks with tarpaulin or other suitable mechanism so that no spillage of ore/dust takes place. Further, air quality in terms of dust, PM10 should be monitored near the roads towards entry & exit gate on regular basis, and be maintained within the acceptable limits. Responsibility: Individual Mine Lease Holders and Dept. of Steel & Mines.
- 23) **Occupational Health Related:** Project Proponent shall implement the following mitigation measures: (i) 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 periodically.

(ii) Occupational health surveillance program for all the employees/workers (including casual workers) should be undertaken periodically (on annual basis) to observe any changes due to exposure to dust, and corrective measures should be taken immediately, if needed. (iii) Occupational health and safety measures related awareness programs including identification of work related health hazard, training on malaria eradication, HIV and health effects on exposure to mineral dust etc., should be carried out for all the workers on regular basis. A full time qualified doctor should be engaged for the purpose. Periodic monitoring (on 6 monthly basis) for exposure to respirable minerals dust on the workers should be conducted, and record should be maintained including health record of all the workers. Review of impact of various health measures undertaken (at an interval of 3 years or less) should be conducted followed by follow-up of actions, wherever required. Occupational health centre should be established near mine site itself. Responsibility: Individual Mine Lease Holders and District Administration (District Medical Officer).

10. All other terms and conditions mentioned in the Ministry's EC Letter no. J-11015/215/2008-IA.II (M) dated 11.03.2013 and amended EC letter with respect to run of mine (ROM) vide even no dated 07.09.2018 shall remain the same.

11. This issues with the approval of Competent Authority.

Yours faithfully,



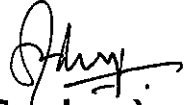
(Sundeep)

Director/Scientist 'F'

Copy to:

1. **The Secretary**, Ministry of Mines, Government of India, Shastri Bhawan, Dr. Rajendra Prasad Road, New Delhi-110 001.
2. **The Chief Secretary**, Government of Odisha, Secretariat, Bhubaneswar.
3. **The Secretary**, Department of Environment, Government of Odisha, Secretariat, Bhubaneswar.
4. **The Secretary**, Department of Mines and Geology, Government of Odisha, Secretariat, Bhubaneswar.
5. **The Secretary**, Department of Forests, Government of Odisha, Secretariat, Bhubaneswar.
6. **The Secretary**, Department of Steel and Mines, Government of Odisha, Secretariat, Bhubaneswar.
7. **The Member Secretary**, Odisha State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.
8. **The Additional Principal Chief Conservator of Forests (C)**, Ministry of Environment, Forest and Climate Change, Regional Office (EZ), A/3, Chandrasekharpur, Bhubaneswar – 751023.
9. **The Chief Wildlife Warden**, Prakruti Bhawan, 5th floor, BDA Apartment Nilakanthanagar, Nayapalli, Bhubaneswar-751012, Odisha

10. **The Chairman**, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
11. **The Controller General**, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440 001.
12. **The Member Secretary**, Central Ground Water Board Ministry of Agriculture and Irrigation, 12/1 Jam Nagar House, Shahjahan Road, New Delhi 110011.
13. **The District Collector, Keonjhar** District, Government of Odisha.
14. **Guard File.**
15. **PARIVESH PORTAL.**



(Sundeep)

Director/Scientist 'F'