

By Speed Post

**No. J-11015/96/2011-IA.II (M)**

Government of India  
Ministry of Environment & Forests

Paryavaran Bhavan,  
C.G.O. Complex, Lodi Road,  
New Delhi-110 003  
Dated the 6<sup>th</sup> September, 2013

To

**Chief Resident Executive,  
Tata Steel Limited,  
Jeevan Bharati Building,  
Tower 1, 10<sup>th</sup> Floor,  
124, Connaught Circus,  
New Delhi – 110 001**

**Subject: Renewal of mine lease, expansion of Chrome Ore, Beneficiation Plant and Pyroxenite ore capacities and change of mining & beneficiation technologies of M/s Tata Steel Ltd. located at Sukinda P.O. Kalarangiatta, District Jajpur, Odisha - environmental clearance - regarding.**

Sir,

This has reference to your letter No. TSLDEL/19/2011 dated 11<sup>th</sup> April 2011 and subsequent letters dated 10.01.2013, 01.04.2013 and 18.04.2013 on the subject mentioned above. The project was earlier prescribed Terms of Reference (TORs) by the Ministry of Environment and Forests on 29.07.2011 for undertaking detailed EIA study for the purpose of obtaining environmental clearance. The Project was considered in EAC meetings held during 13-15<sup>th</sup> March 2013 and 16-18<sup>th</sup> April 2013 and was recommended for environmental clearance.

2. The proposal is for renewal of mine lease, which fell due on 11<sup>th</sup> January, 2013 and for enhancement of production of chrome ore from 0.95 to 2.4 million TPA and Pyroxenite ore mining from 0.25 to 0.5 million TPA (ROM) and enhancement of chrome beneficiation production from 0.1 to 0.65 million TPA (throughput) Mine working will be by mechanized opencast and underground mining methods involving drilling and blasting. Earlier environment clearance was obtained on 27.01.1998.

3. The total project area is 579.685 ha. This includes 406 ha of mine lease area (73.697 ha of forest land and 332.303 ha of non-forest land), 100 ha of forest land for overburden dump and 73.685 ha of forest land for proposed tailing dam outside the mine lease area. The co-ordinates of the mine lease area are 85°44'27.10"E- 85°46'22.37"E and Latitude 21°00'39.60"N - 21°02'5.81"N. The co-ordinates of area of 100 ha for OB dump are 85°45'22.09"E- 85°46'51.42"E and Latitude 21°00'27.41"N - 21°01'1.68"N and the co-ordinates for area of 73.685 ha for tailing dam

**For TATA STEEL LTD.**

✓ By their Constituted Attorney



(GANESH PRASAD SAHU)  
Head (Ferro Alloys Production)  
Ferro Alloys & Minerals Division

are 85°46'46.84"E- 85°46'51.42"E and Latitude 20°59'34.88"N - 21°00'51.00"N. Forest clearance for the entire forest land of 73.697 ha and 100 ha was granted to the project vide letter no. 8-78/96-FC dated 27.01.1998 and letter no. 8-28/2004-FC dated 11.05.2005 respectively. Area proposed for mining is 201.5 ha, an area of 135.55 ha is kept for over burden dumps, an area of 70 ha for tailing pond, 37.63 ha for infrastructure & mineral storage, 24.285 ha for roads, 18.38 ha for mineral separation plant and 36.18 ha is township area. Out of 392.65 ha of utilized area for opencast mining and overburden dumping, 384.44 ha will be reclaimed and rehabilitated during the next 20 years lease renewal period by backfilling and plantation over the existing open pit quarries and overburden dumps, indicating around 91% of the active mining land that will come back to normal form. The Damsala Nallah, Karchamula Nallah and a pond near Ragada village are in the buffer zone of the mine reported to be located at a distance of 0.7 km, 5.3 km and 4.2 km respectively from the mine lease boundary. The Brahmani River is located at a distance of 15.0 km from the mine lease. No national park/wildlife sanctuary/biosphere reserve/tiger reserve/elephant reserve etc. is reported to be located in the core and buffer zone of the mine. Extreme end of the Mahagiri DPF, consisting of mostly degraded forest land falls within the project area. The Ranjagarh, Birasal Reserve Forests and Daitari, Dhalparha Protected Forests are adjoining the mine lease.

4. The total water requirement is estimated as 7,500 kld, out of which 2100 kld for domestic and drinking purposes will be obtained from river Damsala Nala and 5400 kld will be sourced from mine sump. The external transportation of the ores and beneficiated ore/ concentrates to the nearest railway siding, nearby plants and ports is also by road. Solid waste in form of 86.733 million m<sup>3</sup> will be generated of which 41.04 million m<sup>3</sup> will be used for backfilling, remaining OB will be stacked in form of 5 dumps with maximum height of 110 m and over all slope of 28°.

5. The public hearing of the project was held on 14.12.2012, for production of 2.4 million TPA (ROM) of chrome ore, beneficiation plant production capacity of 0.65 million TPA and production of 0.5 million TPA of pyroxenite ore. The Indian Bureau of Mines has approved the mining scheme of the project vide no. 314(3)/2011-MCCM(CZ)/MP-37 dated 22.05.2012 over an area of 406 ha. The capital cost of the project is Rs.910 Crores and total capital cost and annual recurring cost for environmental protection measures is Rs. 960 lakhs and Rs. 310 lakhs respectively.

6. The ore will be beneficiated by wet process. 1.00 million TPA (dry basis) ROM will be beneficiated. Further, 0.546 million TPA (dry basis) of the fresh tailings generated from the old plant together with the old accumulated chrome ore tailings will undergo re-treatment in the new

beneficiation facility involving floatation & magnetic separation technology to further recover the chrome values. The final tailings or slimes with less than 10% Cr<sub>2</sub>O<sub>3</sub> shall be dried by filtration to form cakes with the help of parallel plate filters. The solid tailings in the form of cakes shall be then transported to the new tailing dam area identified in dumpers for its safe storage. There will be zero waste water discharge from the plant and the water shall be recycled for reuse in the wet processing of the mineral. The existing opencast workings have already intersected the ground water table. The project proponent has undertaken hydrogeological investigations as part of its feasibility study for underground mining.

7. The Ministry of Environment and Forests has examined the application in accordance with the EIA Notification, 2006 and hereby accords environmental clearance under the provisions thereof for enhancement of production of chrome ore from 0.95 to 2.4 million TPA and Pyroxenite ore mining from 0.25 to 0.5 million TPA (ROM) and enhancement of chrome beneficiation production from 0.1 to 0.65 million TPA (throughput) of M/s Tata Steel Ltd. located at Sukinda, District Jajpur, Odisha over the total project area of 579.685 ha. Mine lease area is 406 ha which includes 332.303 ha non-forest area and 73.697 ha of forest area. TWP has been given for 69.587 ha broken-up forest area (73.697 ha - 4.11 ha that has been reclaimed through plantation). EC for mining over 401.89 ha (i.e. 332.303 ha non-forest area + 69.587 ha forest area) is valid till TWP is available for forest area or FC of forest area is available. Project area also includes an area of 100 ha of forest land for over burden dump outside the mine lease area for which FC is available and proposed tailing dam area of 73.685 ha, of which 65.315 ha is non-forest area and 8.37 ha is forest area for which application for diversion has been submitted. Till all the clearances are obtained for the proposed tailing pond/dam the project would only use existing tailing dam. The environmental clearance is subject to implementation of the following conditions and environmental safeguards.

#### **A. Specific Conditions**

- i. No mining activities will be allowed in forest area for which the Forest Clearance is not available.
- ii. The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide there letter F. No. 11-362/ 2012-FC, failing which the mining lease area will be reduced to the non forest area plus the forest area for which the project proponent has been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.
- iii. Till all the clearances are obtained for the proposed tailing pond/dam the project would only use existing tailing dam.

- iv. Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the Standing Committee of National Board for Wildlife, as may be applicable to this project.
- v. The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.
- vi. Environmental clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.
- vii. As part of ambient air quality monitoring during operational phase of the project, the air samples shall also be analysed for their mineralogical composition as may be so prescribed or notified by this Ministry and records maintained.
- viii. The ores and minerals shall be covered by tarpaulin or by such other means when transported out of the mine by road. The vehicles shall not be overloaded.
- ix. Effective safeguard measures such as conditioning of ore with water, regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- x. The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
- xi. Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.
- xii. The maximum height of the overburden dumps from its toe to the top of the dump on sloping ground shall not be more than 110 m. The dump slope shall be suitably terraced by leaving berms of adequate width in between lifts such that the overall slope angle (i.e. angle between the line joining the crest to the toe of the dump

and across all such lifts with the horizontal) does not exceed 28 degrees.

- xiii. The individual slopes and berms of each lift or bench of the overburden dump when completed shall be provided with adequate drainage arrangements or shall be suitably stabilized by such other means to prevent erosion due to surface run-offs.
- xiv. Adequate precautionary measures shall be taken for strengthening the dump foundation. Particularly while dumping over soft ground, the toe region all along the extremities of such dumps shall be suitably buttressed with hard rocky boulders after excavating the topsoil and soft ground. Dumping operations shall commence only after such preparatory work for the dump foundation is completed in order to prevent its failure, which may trigger a slide of the entire dump.
- xv. All external over burden dumps at the end of the mine life shall be reclaimed and rehabilitated by afforestation. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.
- xvi. Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and OB dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 20 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.
- xvii. Retaining wall having adequate dimensions shall be constructed at the toe of the over burden dumps to check run-off and siltation.
- xviii. Plantation shall be raised in an area of 384.44 ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of excavated void etc. after the completion of opencast mining activity by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.

- xix. Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- xx. Mine water discharge and/or any waste water shall be properly treated in an ETP/s for the removal of hexavalent chromium and to meet the prescribed standards before reuse/discharge. The run off from OB dumps and other surface run off shall be analyzed for hexavalent chrome and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.
- xxi. The decanted water from the beneficiation plant shall be recirculated within the plant and there shall be zero discharge.
- xxii. Regular monitoring of water quality upstream and downstream of Damsala Nallah shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.
- xxiii. Appropriate mitigative measures shall be taken to prevent pollution of Damsala Nallah, if any, in consultation with the State Pollution Control Board.
- xxiv. The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water for the project.
- xxv. Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.
- xxvi. Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall not be overloaded.
- xxvii. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.
- xxviii. Drills shall either be operated with dust extractors or equipped with water injection system.
- xxix. Mineral handling plant shall be provided with either adequate number of high efficiency dust extraction system or water injection system. Loading and unloading areas including all the transfer

points should also have efficient dust control arrangements. These should be properly maintained and operated.

- xxx. Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine.
- xxxi. Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.
- xxxii. Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubneswar.
- xxxiii. Regular monitoring of ambient air quality including free silica shall be carried out and records maintained.
- xxxiv. 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.
- xxxv. The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna such as elephant etc. spotted in the buffer zone of the mine and contribute towards the cost of implementation of the plan and/or Regional Wildlife Management Plan for conservation of flora and fauna so prepared by the State Forest and Wildlife Department. The amount so contributed shall be included in the project cost. A copy of action plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months.
- xxxvi. 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.

## **B. General Conditions**

- (i) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.
- (ii) The calendar plan including excavation, quantum of chrome ore, beneficiated chrome concentrates, pyroxenite ore and waste shall not be exceeded.
- (iii) At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM<sub>10</sub>) and NO<sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally

and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. The data so recorded should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.

- (iv) 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.
- (v) There will be zero waste water discharge from the plant.
- (vi) 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.
- (vii) 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.
- (viii) 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.
- (ix) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.
- (x) 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.
- (xi) The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.
- (xii) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal

Officer of Central Pollution Control Board and the State Pollution Control Board.

- (xiii) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.
- (xiv) The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.
- (xv) The environmental statement for each financial year ending 31<sup>st</sup> March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.
- (xvi) The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <http://envfor.nic.in> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.

8. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

9. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.

10. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other

orders passed by the Hon'ble Supreme Court of India/ High Court of Odisha and any other Court of Law relating to the subject matter.

11. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

  
(Dr. Saroj)  
Director

**Copy to:**

- (i) The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
- (ii) The Secretary, Department of Environment, Government of Odisha, Secretariat, Bhubaneshwar
- (iii) The Secretary, Department of Mines and Geology, Government of Odisha, Secretariat, Odisha
- (iv) The Secretary, Department of Forests, Government of Odisha, Secretariat, Bhubaneshwar.
- (v) The Chief Conservator of Forests, Ministry of Environment & Forests, Regional Office (EZ), A/3, Chandra Shekar, Bhubaneswar - 751023
- (vi) The Chairman, Central Pollution Control Board, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi - 110032
- (vii) The Chairman, Odisha State Pollution Control Board, Parivesh Bhawan, A/118, Nilakantha Nagar, Unit -VIII, Bhubaneshwar - 751012.
- (viii) The Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi - 110 001
- (ix) The Controller General, Indian Bureau of Mines, Indira Bhawan, Civil Lines, Nagpur - 440001
- (x) The District Collector, District-Keonjhar, Government of Odisha.
- (xi) Guard File

  
(Dr. Saroj)  
Director

or TATA STEEL LTD.  
by their Constituted Attorney

  
(GANESH PRASAD SAHU)  
Head (Ferro Alloys Production)  
Ferro Alloys & Minerals Division