

No.J-11015/1154/2007-IA.II (M)

Government of India
Ministry of Environment & Forests

Paryavaran Bhawan,
C.G.O. Complex, Lodi Road,
New Delhi – 110 003

Dated the 17th March, 2009

To

M/s Jindal Steel & Power Ltd.
T.R.B Iron Ore Mine
P.O. Tensa
District- Sundergarh
Orissa – 770 042
E-mail:trbmine@jindalsteel.net

Subject: Expansion of Tantra, Raikela & Bandhal (TRB) Iron Ore Mining Project of M/s Jindal Steel & Power Ltd. located in Village(s) Tantra, Raikela and Bandhal, Tehsil Bonai, District Sundergarh, Orissa -environmental clearance regarding.

Sir,

This has reference to your letter No. JSPL/Mine/2008-1130 dated 10.12.2008 and subsequent letters dated 24.12.2008 and 12.01.2009 on the subject mentioned above. The Ministry of Environment and Forests had earlier prescribed terms of reference (TORs) to the project on 18.05.2008 for undertaking a detailed EIA study. The proposal is for enhancement of production of iron ore from 2.2 million tonnes per annum (million TPA) to 3.11million TPA. The project was earlier granted environmental clearance by the Ministry on 29.09.2005. The total mine lease area of the project is 297.848ha, out of which 296.713ha is forestland (141.705ha + 155.008ha wasteland coming under DLC) and 1.135ha is others (tenanted land). Area proposed for mining is 57.883ha, an area of 0.16ha is kept for storage of top soil, 14.2ha for overburden dump, 6.047ha for mineral storage, 4ha for infrastructure, 4.215ha for roads, 4.738ha for green belt/safety zone, 0.75ha for crushing plant, 3ha for colony, 62.07ha for plantation, 50.724ha is undistributed area and 90.061ha is surrendered forest area. The surface and geological plan of the mine shows presence of seasonal drains within the lease area. The Sarkunda Nadi and the Kurarhi Nadi are located in the buffer zone of the mine at a distance of 5.6km South and 6km West respectively from the mine lease boundary. The Samij Nallah is flowing adjoining the mining lease. In addition three Nallahs namely the Kara Nallah, the Gera Nallah and the Tehrai Nallah are flowing in the buffer zone of the mine at a distance of 1km SE, 4km NW and 9km NE respectively from the mine lease boundary. It has been envisaged that there will be no modification/diversion in the existing

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natural drainage pattern at any stage. 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 and that the area does not report to form corridor for Schedule-I fauna. The Karo Karampada Elephant Corridor is reported to be located at a distance of 21.3km from the mine lease boundary. In support of this, a letter No. 3017/1WL(C)FC-60/08 dated 06.05.2008 from the Conservator of Forests (Wildlife), Government of Orissa alongwith an authenticated map from the DFO cum Wildlife Warden, Bonai Division and an approved site specific conservation plan has been provided. Six reserve forests namely the Torha RF, the Sarkunda RF, the Kathamala RF, the Karo RF, the Khajurdihi RF and the Mendhamaruni RF are located in the buffer zone of the mine at a distance of 1.5km NW, 2.8km S, 5.5km NE, 6.5km N, 7.63km ES and 8.42km NE respectively from the mine lease boundary. The mine working will be opencast by mechanized method involving drilling and blasting. The targetted production capacity of the mine is 3.11million TPA of iron ore and the life of mine is 6years. Approximately 10,367TPD of mineral will be transported through the road. The topography of the area is undulated and hilly at an elevation above mean sea level ranging from 840m to 590m. The Present working depth of mine is 748m RL and the ultimate working depth of mine will be 688m RL. The groundwater table in the core zone reported to vary from 589m RL(post-monsoon) to 579m RL(pre-monsoon). The mine working will not intersect the groundwater table. The water requirement of the project is estimated as 300m³ per day, which will be obtained from the Samij Nallah and the groundwater. There is no population in the core zone, therefore, displacement of population and R&R has not been envisaged. Approximately 36m³ per month of top soil and 58,703m³ per month of over burden(OB) will be generated, which will be disposed off in the earmarked areas. It is estimated that a total of 2.778million m³ of OB has already been accumulated and another 0.39million m³ of OB is proposed to be generated during the entire life of the mine. It is proposed that out of the 2.778million m³ of accumulated OB, about 75% i.e. 2.0835million m³ and the entire quantity of 0.39million m³ of likely to be generated OB during the mine life will be backfilled. Backfilling will commence from the year 2010 and there will be one external OB dump at the end of the mine life in an area of 14.2ha having maximum height of 33m. Plantation will be raised in an area of 103.168ha at the end of the mine life and there will be no water body created during the post mining stage. The Public hearing of the project was held on 23.10.2008, as per the EIA Notification 2006, for enhancement of production of iron ore from 2.2MTPA to 3.11MTPA. The Indian Bureau of Mines had approved the modified mining plan along with progressive mine closure plan of the project on 19.12.2007 over an area of 297.848ha. The Ministry of Environment and Forests conveyed its approval under Section-2 of the Forest (Conservation) Act, 1980 for diversion of 90.505ha forestland for renewal of mining lease for mining of iron ore on 08.08.2006. The capital cost for the environmental protection measures is proposed as Rs.1216.91Lakhs and the annual recurring cost towards the environmental protection measures is proposed as Rs.352.75Lakhs.

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2. 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 to the above mentioned Tantra, Raikela & Bandhal (TRB) Iron Ore Mining Project of M/s Jindal Steel & Power Ltd. for an annual production capacity of 3.11million tonnes of iron ore by opencast mechanized method involving total mine lease area of 297.848ha, subject to implementation of the following conditions and environmental safeguards.

A. Specific Conditions

- (i) The project proponent shall obtain Consent to Establish from the State Pollution Control Board, Orissa and effectively implement all the conditions stipulated therein.
- (ii) Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 296.713ha forestland involved in the project shall be obtained before starting mining operation in that area. Till such time mining activities shall be restricted to an area of 90.505ha for which approval under Section-2 of the Forest (Conservation) Act, 1980 was granted by the Ministry of Environment and Forests on 08.08.2006. Environmental clearance is subject to grant of forestry clearance. No mining shall be undertaken in the forest area without obtaining requisite prior forestry clearance.
- (iii) The environmental clearance is subject to approval of the State Land Use Department, Government of Orissa for diversion of agricultural land for non-agricultural use.
- (iv) The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.
- (v) The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. Adequate measures shall be taken for conservation and protection of seasonal streams passing through the mine lease area during the course of mining operation.
- (vi) The top soil 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.


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- (vii) The over burden (OB) generated during the mining operation shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time and its phase-wise stabilization shall be carried out. Backfilling shall commence from the year 2010 onwards. There shall be only one external over burden dump having maximum height of 33m. Proper terracing of OB dump shall be carried out so that the overall slope of dump shall not exceed 28° . The over burden dump shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. Monitoring and management of rehabilitated areas 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.
- (viii) Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and OB dumps to prevent run off of water and flow of sediments directly into the Sarkunda Nadi, the Kurarhi Nadi, the Samij Nallah, the Kara Nallah, the Gera Nallah, the Tehrai 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 the 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 the over burden dump to prevent run off of water and flow of sediments directly into the Sarkunda Nadi, the Kurarhi Nadi, the Samij Nallah, the Kara Nallah, the Gera Nallah, the Tehrai Nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.

- (ix) Dimension of the retaining wall at the toe of the over burden dump and the OB benches within the mine to check run-off and siltation shall be based on the rainfall data.
- (x) Plantation shall be raised in an area of 103.168ha including a 7.5m wide green belt in the safety zone around the mining lease, over burden dump, backfilled and reclaimed area, mine benches, roads etc. by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.

- (xi) 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 RSPM such as haul road, loading and unloading point and all 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.
- (xii) 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.
- (xiii) Regular monitoring of water quality upstream and downstream of the Samij Nallah, the Kara Nallah, the Gera Nallah and the Tehrai Nallah shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment and Forests, its Regional Office, Bhubneswar, the Central Groundwater Authority, Regional Director, the Central Ground Water Board, the State Pollution Control Board and the Central Pollution Control Board.
- (xiv) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
- (xv) 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 constructing 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 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.
- (xvi) Appropriate mitigative measures should be taken to prevent pollution of the Sarkunda Nadi and the Kurarhi Nadi in consultation with the State Pollution Control Board.
- (xvii) The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) required for the project.
- (xviii) Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.

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- (xix) 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. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded. No transportation of ore outside the mine lease area shall be carried out after the sunset.
- (xx) The project proponent shall black top all the service roads.
- (xxi) Mine water discharge and/or any waste water should be properly treated to meet the prescribed standards before re-use/discharge.

Run-off from OB dump and other surface run-off should be analyzed for iron and incase its concentration found higher than the permissible limit, the water should be treated before discharge/re-use.

- (xxii) No blasting shall be carried out after the sunset. Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.
- (xxiii) Drills shall either be operated with the dust extractors or equipped with water injection system.
- (xxiv) Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
- (xxv) Consent to operate shall be obtained from the State Pollution Control Board, Orissa prior to start of enhanced production from the mine.
- (xxvi) Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.
- (xxvii) 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.
- (xxviii) The project proponent shall take all precautionary measures 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 prepared shall be implemented in consultation with the State Forest and Wildlife Department. All the

safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to this project site shall be effectively implemented. 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. A copy of action plan shall be submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar.

(xxix) 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 removed after the completion of the project.

(xxx) 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) No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.
- (iii) Atleast four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM, SPM, SO₂ & NO_x 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.
- (iv) Data on ambient air quality (RSPM, SPM, SO₂ & NO_x) 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.
- (v) Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.
- (vi) Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.

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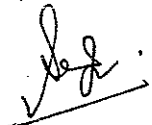
- (vii) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.
- (viii) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.

- (ix) A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.
- (x) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.
- (xi) The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
- (xii) The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.
- (xiii) The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bhubneswar, Central Pollution Control Board and State Pollution Control Board. The project proponent shall upload the status of compliance of the environment clearance conditions on their website and update the same periodically.
- (xiv) A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal. The clearance letter shall also be put on the web site of the company.

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- (xv) The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.
- (xvi) The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <http://envfor.nic.in> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.
3. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.
4. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
5. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made thereunder and also any other orders passed by the Hon'ble Supreme Court of India/ High Court of Orissa and any other Court of Law relating to the subject matter.
6. Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Authority Act, 1997.



(SATISH C. GARKOTI)
Additional Director (S)

Copy to:

- (i) The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
- (ii) The Secretary, Department of Environment, Government of Orissa, Secretariat, Bhubaneswar.
- (iii) The Secretary, Department of Mines and Geology, Government of Orissa, Secretariat, Bhubaneswar.

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- (iv) The Secretary, Department of Forests, Government of Orissa, Secretariat, Bhubaneswar.
- (v) The Chief Wildlife Warden, Government of Orissa, Bhubaneswar.
- (vi) The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.
- (vii) The Chief Conservator of Forests, Regional Office (EZ), Ministry of Environment and Forests, A-3 Chandrashekharpur, Bhubaneswar-751023.
- (viii) The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.
- (ix) The Member Secretary, Central Ground Water Authority, A2, W3 Curzon Road Barracks, K.G. Marg, New Delhi-110001.
- (x) The District Collector, Sudnergarh District, Government of Orissa.
- (xi) EI Division, Ministry of Environment & Forests, EI Division, New Delhi.
- (xii) Monitoring File.
- (xiii) Guard File.
- (xiv) Record File.