

No. J-11015/409/2008-IA.II(M)

Government of India
Ministry of Environment and Forests
IA Division

Paryavaran Bhawan
CGO Complex, Lodhi Road,
New Delhi-110 003

Dated the 18th February, 2010

To

M/s The Orissa Mining Corporation Ltd.
P.O. Jajpur Road,
District Jajpur,
Orissa-758 036
E-mail; info@orissamining.com

Subject: Expansion of Sukurangi Chromite Mining Project of M/s The Orissa Mining Corporation Ltd. located in Village(s) Sukurangi, Saruabil and village limits of Ostapal, Kamarda and Talangi, Tehsil Sukinda, District Jajpur, Orissa- environmental clearance regarding.

Sir,

This has reference to your letter No. 18921/OMC/F&E/09 dated 31.10.2009 and subsequent letters dated 10.12.2009 and 23.12.2009 on the subject mentioned above. The Ministry of Environment and Forests had prescribed additional Terms of Reference (TORs) to the project on 22.12.2008 for incorporating in the already prepared EIA report. The proposal is for renewal of mine lease which fall due since 2000 and enhancement of production of chrome ore to 1,30,000 tonnes per annum (TPA). The total mine lease area of the project is 382.709ha, out of which 47.92ha is an agricultural land, 177.76ha is forestland, 106.92ha is wasteland, 26.569ha is grazing land, 8.19ha is surface water bodies and 15.35ha is others (settlements). Area proposed for mining is 73.10ha, an area of 76.48ha is kept for OB dumps, 61.46ha for mineral storage, 8.26ha for roads, 26.25ha for green belt, 19.96ha for township and 117.199ha is others. The Damsal Nalla flows through the Northern part of the lease. In addition, there are few additional seasonal drainage channels in the lease which drain into the Damsal Nallah. No national park/wildlife sanctuary/biosphere reserve/tiger reserve/elephant reserve etc. are reported to be located in the core and buffer zone of the mine. In support of this a letter from the DFO cum Wildlife Warden, Cuttack dated 04.11.2008 provided along with a duly authenticated map. According to the Wildlife Warden, the lease area adjoins the elephant movement area (elephant corridor) of Mahagiri DPF, which is about 3km towards East from the mine lease. The mine working will be opencast by semi-mechanized method involving drilling and blasting. The targetted production capacity of the mine is 1,30,000 TPA of chromite and the life of mine is 30 years. Approximately 400 TPD of mineral will be transported through the road. The mine lease is located at the foot of the Mahagiri hill range and slopes from South-East to

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North-West. The South-East corner of the lease hold is marked by a steep hill rising up to 254m RL. Subsequently, the slope becomes gentler. The North-Western corner of the lease is at about 130m RL. In the North-Western part of the lease, there is a small mound rising to 154m RL. In general, lease area has more or less flat topography ranging from 140m-160m RL and slopes from North to South. The mine has three quarries namely Quarry AC, Quarry DE and Quarry F. It has been mentioned that quarry AC and DE will merge into one pit and thus only two pits will remain finally. The ultimate working depth of mine will be 62m AMSL in quarry AC, 64m AMSL in Quarry DE and 102m AMSL in Quarry F. The groundwater table reported to vary between 111m-126m AMSL. The mine working will intersect the groundwater table. It has been envisaged that about 1000m³ per day will be mine discharge during the lean period, out of which 47m³ per day will be re-used. Hydro-geological report for South Kaliapani, Kaliapani and Sukurangi Chromite Mine has been provided combinedly. The peak water requirement of the project is estimated as 306m³ per day, out of which 80m³ per day will be obtained from the ground water, 147m³ per day from mine discharge water and 79m³ per day from the recycled water. It has been reported that one village comprising a population of 720 people is in the core zone of the mine, however, displacement of population and R&R has not been envisaged. It is estimated that 15.332million m³ of over burden will be generated during the expansion phase. About 4.487million m³ of over burden has already been accumulated in the over burden dumps. The Dump-1 is active now and will continue till 2020. The Dump-2 will merge with dump-1 during the year 2019 and cease in 2024. The dump-3 will commence in 2024 and will continue till end of the project. The maximum height of dump-3 will be 60m having 3 lifts. Out of the total excavated area of 73.1ha, an area of 57.21ha will be developed as water body and in remaining 15.89ha of the upper benches of the quarry plantation will be carried out. Plantation will be raised in an area 204.7ha at the end of the mine life and an area of 57.21ha will be developed as water body during the post mining stage. The State Pollution Control Board, Orissa had issued Consent to Establish to the project on 05.11.2008 for enhancing production from 36,000TPA to 1,27,000TPA over an area of 382.709ha. The public hearing of the project was held on 09.09.2009 as per the EIA Notification, 2006 for enhancement of chromite production from 63,226TPA to 0.13million TPA over an area of 382.709ha. The Ministry of Environment and Forests conveyed its approval under Section-2 of Forest (Conservation) Act, 1980 for diversion of 41.34ha of already broken up forestland for renewal of mining lease for a period of ten years on 05.02.2001. Subsequently, the Ministry of Environment and Forests had agreed in principle for diversion of 104.79ha (including 18.94ha of broken up forestland and 23.85ha of fresh forestland) of forestland on 29.03.2006. The Indian Bureau of Mines had approved the scheme of mining including progressive mine closure plan of the project on 28.07.2006 for lease area of 382.709ha. The capital cost of the project is Rs.3000Lakhs. The capital cost for environmental protection measures is proposed as Rs.63.72Lakhs and the annual recurring cost towards the environmental protection measures is proposed as Rs.38Lakhs. It has been stated by the proponent that there is no litigation pending against the project.

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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 Sukurangi Chromite Mining Project of M/s The Orissa Mining Corporation Ltd. for an annual production capacity of 1,30,000 tonnes of chrome ore by the opencast semi-mechanised method involving total mining lease area of 382.709ha, subject to implementation of the following conditions and environmental safeguards.

A. Specific conditions

- (i) The project proponent shall obtain fresh Consent to Establish for envisaged production capacity of 1,30,000TPA of chrome ore and Consent to Operate 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 177.76ha 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 41.34ha already broken up forestland for which approval under Section-2 of the Forest (Conservation) Act, 1980 was granted by the Ministry of Environment and Forests on 05.02.2001. Environmental clearance is subject to grant of 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 project proponent shall develop fodder plots in the non-mineralised area in lieu of use of grazing land.
- (v) 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.
- (vi) Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.
- (vii) The project proponent shall obtain prior clearance from the Chief Wildlife Warden due to proximity of mine to the elephant corridor.
- (viii) The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. The first order streams, the seasonal nallahs and Damsal Nallah passing through the mine lease shall not be disturbed and these shall be protected by providing garland drains.

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- (ix) The top soil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for a period more than 3 years. The topsoil should be used for land reclamation and plantation.
- (x) The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time and their phase-wise stabilization shall be carried out. The project proponent shall carry out slope stability study through an expert organization like Central Institute of Mining and Fuel Research, Dhanbad for attaining the proposed height of dump as 60m in three lifts of 20m each and submit report to the Ministry and its Regional Office, Bhubaneswar within three months. The proponent shall ensure that the overall slope of dumps be maintained to 28 degree. OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. The waste dumps shall be stabilized using coir matting or any similar mechanism to avoid gully formation in the waste dumps. 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.
- (xi) Catch drains and siltation ponds of appropriate size shall be constructed for the working pits, soil, OB and mineral dumps to prevent run off of water and flow of sediments directly into the Damsal Nallah and other water bodies. The water so collected should be utilized for watering the mine area, roads, plantation etc. The drains should be regularly desilted 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 dumps to prevent run off of water and flow of sediments directly into the Damsal 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 should be constructed at the corners of the garland drains and desilted at regular intervals.

Storm water return system should be provided. Storm water should not be allowed to go to the effluent treatment plant during high rainfall / super cyclone period. A separate storm water sump for this purpose should be created.

- (xii) Dimension of 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 rainfall data.

- (xiii) Mine water discharge and/or any waste water shall be properly treated to meet the prescribed standards before reuse/discharge. The run off from OB dumps and other surface run off should be analyzed for Cr^{+6} and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.
- (xiv) Effluents containing Cr^{+6} shall be treated to meet the prescribed standards before reuse/discharge. Effluent Treatment Plant shall be provided for treatment of mine water discharge and wastewater generated from the workshop and mineral separation plant.
- (xv) Separate impervious concrete pits for disposal of sludge shall be provided for the safe disposal of sludge generated from the mining operations.
- (xvi) Regular monitoring of water quality upstream and downstream of Damsal 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.
- (xvii) The project proponent shall ensure that the quality of decanted effluents from the tailing pond, if any, conform to the prescribed standards before discharge. The decanted water from the tailing pond shall be re-circulated within the mine and there shall be zero discharge from the mine.
- (xviii) The project proponent shall explore the possibility to reduce concentration of Cr^{+6} in the tailing pond, if any, in consultation with an expert scientific institution like NEERI.
- (xix) Plantation shall be raised in an area of 204.7ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around ML area, over burden dumps, mine benches, roads etc. in consultation with the local DFO/Agriculture Department. The tree density should be two thousands trees per hectare. At least 1500 trees per year shall be planted. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.
- (xx) The void left unfilled in an area of 57.21ha shall be converted into the water body. The higher benches of excavated void/mining pit shall be terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out all along the excavated area.

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- (xxi) Effective safeguard measures including metalling of haul road shall be undertaken for control of dust level in the area. Other safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on haul roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- (xxii) 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.
- ✓ (xxiii) 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 Bhubneswar, 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.
- ✓ (xxiv) 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.
- (xxv) 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.
- (xxvi) Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.
- (xxvii) Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.
- (xxviii) 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.

- (xxix) Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubneswar.
- (xxx) Drills shall either be operated with dust extractors or equipped with water injection system.
- (xxxi) 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.
- (xxxii) Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.
- (xxxiii) 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.
- (xxxiv) The critical parameters such as RSPM (Particulate matter with size less than 10micron i.e., PM₁₀), NO_x in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA: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.
- (xxxv) A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.

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 chrome ore and waste should be made.
- (iii) Conservation measures for protection of flora and fauna in the core & buffer zone should be drawn up in consultation with the local forest and wildlife department and effectively implemented.

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- (iv) 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 10micron i.e., PM₁₀), 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.
- (v) Data on ambient air quality RSPM (Particulate matter with size less than 10micron i.e., PM₁₀), & NO_x should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.
- (vi) 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.
- (vii) 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.
- (viii) 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.
- (ix) 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.
- (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.
- (xi) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry of Environment and Forests and its Regional Office located at Bhubneswar.
- (xii) The project authorities should inform to the Regional Office located at Bhubneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

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- (xiii) The Regional Office of this Ministry located at Bhubneswar 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.
 - (xiv) The project proponent shall submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubneswar, the respective Zonal Office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board.
 - (xv) 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.
 - (xvi) 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.
 - (xvii) The environmental statement for each financial year ending 31st 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 EC conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Bhubneswar by e-mail.
 - (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 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 Bhubneswar.
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.

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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.

18/2/2010
(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.
- (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 Chandrashekharapur, Bhubaneswar-751023.
- (viii) The Chairman, Orissa State Pollution Control Board, Parivesh Bhawan, A/118 Nilkantha 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, Jajpur District, Orissa.
- (xi) EI Division, Ministry of Environment & Forests, EI Division, New Delhi.
- (xii) Monitoring File.
- (xiii) Guard File.
- (xiv) Record File.