

**BY SPEED POST**

No. J-11015/197/2008-IA.II (M)  
**Government of India**  
**Ministry of Environment & Forests**

Paryavaran Bhawan,  
CGO Complex, Lodhi Road  
New Delhi-110510.  
Dated: 26<sup>th</sup> February, 2013

To

The Chief General Manager (CP&P)  
Mahanadi Coalfields Ltd.  
At/PO.: Jagruti Vihar, Burla  
Distt: Sambalpur  
Orissa - 768020

**Sub: Orient UG Mine I & II (from 0.35 MTPA to 0.87 MTPA in an ML area of 1857.24 ha) of M/s Mahanadi Coalfields Ltd., Tehsil Brajraj Nagar, Dist. Jharsuguda, Orissa (EC based on TOR granted on 11.07.2008)**

Sir,

This has reference to letter No. 43011/33/2008-CPAM dated 29<sup>th</sup> April, 2008 of Ministry of Coal forwarding the application for Terms of Reference (TOR) and this Ministry's letter dated 11.07.2008 granting TOR to the above mentioned Project and subsequent letter from M/s Mahanadi Coalfields Ltd bearing no. CIL/DLI/EMP-ToR/2011/06 dated 03.05.2011, MCL/HQ/ENVt/F-73/20013/3289 dated 30.1.2013, MCL/HQ/ENVt/F-73/20013/3303 dated 06.02.2013 and MCL/HQ/ENVt/F-73/20013/3304 dated 06.02.2013 submitting therewith the final EIA/EMP for Environmental Clearance for the above mentioned subject.

2. The Ministry of Environment & Forests has considered the application. It is noted that the application is for environmental clearance for **Orient UG Mine I & II (from 0.35 MTPA to 0.87 MTPA in an ML area of 1857.24ha) of M/s Mahanadi Coalfields Ltd., Tehsil Brajraj Nagar, Dist. Jharsuguda, Orissa.** The proponent has presented the proposal and informed that:

- i. The proposal is for expansion in production from 0.35 MTPA to 0.87 MTPA (an incremental production of 0.54 MTPA) in the existing ML area of 1857.24 ha. The Orient UGP Mine 1 & 2 would be carried beneath Orient UGP No.3, which is operating since 1942.
- ii. Of the total ML area of 1857.24 ha, 950.429 ha is forest land, 522.728 ha is agricultural land, 111.826 ha is grazing land, 17.26 ha is surface water body, and 254.998 ha is 'others' (govt. land and tenancy land).
- iii. Mining would be by Board & Pillar method with continuous miner. An additional one has been deployed for enhancing production. Depth of mining would be from 60-320m. Presently development of the mine is being carried out and depillaring is proposed to be carried out after 25 years. The predicted tensile strain of 7.98 mm/m max. was within the 20mm/m as per regulations for forest cover. The grade of coal is 'D'. Balance life of the mine is 55 years.
- iv. The drainage of the mine is controlled by River Ib, which flows from north to south. Hirakud Reservoir is at a distance of 12 km in the buffer zone. An estimated 910 m<sup>3</sup>/d of water would be

- required, which includes 110 m<sup>3</sup>/d for drinking and 800 m<sup>3</sup>/d for mining. Water table was in the range of 1.30-7.62m bgl during pre-monsoon and 1.1-5m bgl during post-monsoon. Mine water discharge was 23,445 m<sup>3</sup>/d during monsoon.
- v. Cost of the project is Rs 277.08 crores and an additional capital investment of Rs 74 crores is required for the expansion project. A provision of Rs 535.58 lakhs has been made for env. measures and an amount of Rs 2365 lakhs or Rs 5/T of coal for CSR. The project does not involve R&R.
  - vi. Coal is loaded from mine face by belt conveyors and transferred to surface bunkers and dispatched to small consumers by road and to rail way siding at a distance of 1km.
  - vii. The coal being transported by road will be dispatched by conveyor system which will be established within 2-3 years to a common CHP and loading should be by bulk loaders. The Orient U/G Mine No.1 & 2 is situated at about 800 m from the railway siding. Provision of conveyor system from the mine head to the siding was studied which reveals that it is not feasible because of small quantum of coal to be handled at the siding. Practically, one rake is being loaded every 2/3 days and transportation through conveyer from pit-head upto siding will essentially require installation of rapid train load out system. Thus, investment is not economically viable for such a small quantity handling.
  - viii. Control Measures are being adopted for reducing dust pollution generated from transportation and as well as loading and unloading. Water tankers, Avenue plantation exist on both sides of the coal transport road. One perforated pipe, overhead sprinkling arrangement, covered trucks / tippers, 20 nos. of fixed gun type water sprinklers, routine environmental monitoring is being done regularly.
  - ix. Fresh baseline data has been generated on environmental quality for air, water, noise and soil has for pre-monsoon season (March, April and May 2012). PM<sub>10</sub> and PM<sub>2.5</sub> values range from 64 mg/m<sup>3</sup> to 115 mg/m<sup>3</sup> and 19 mg/m<sup>3</sup> to 37 mg/m<sup>3</sup> respectively. SO<sub>2</sub> and NO<sub>x</sub> values varied between 11.0 to 17.0 mg/m<sup>3</sup> and 12.9 to 24.6 mg/m<sup>3</sup> respectively. All the values are found to be within the standards except PM<sub>10</sub>. As desired by Committee, ambient air quality data for PM<sub>10</sub> and PM<sub>2.5</sub> has been generated for the same season.
  - x. Inundation of the mine is not predicted due to high flood level of Ib river.
  - xi. Detailed expenditure for CSR was carried out during 2010-11 for Rs.51.04 crores and a Plan for 2011-12 has been prepared. Detailed expenditure, activity-wise, incurred in the CSR by MCL For the year 2010 – 11 was Rs 5347.38 and for the year 2011-12 was Rs 2833.76Lakhs. The proposed expenditure for 2012-13 has been estimated at Rs 215.62 Lakhs.
  - xii. Total forest land area within the mining lease hold area of Orient Mine No.1&2 is 82.213 ha. The stage -I Forest Clearance has been obtained vide its letter no. 8-82/2012-FC dated 29-01-2013
  - xiii. The Public Hearing was held on 21.04.2010. The mining plan was approved by MOC on 25.03.2009.
3. The proposal was considered in the Expert Appraisal Committee (EAC) (Thermal & Coal Mining) and recommended in its 63<sup>rd</sup> meeting held on 17<sup>th</sup>-18<sup>th</sup> December, 2012 for granting Environmental Clearance. The Ministry of Environment & Forests hereby accords environmental clearance for the above-mentioned Orient UG Mine I & II (from 0.35 MTPA to 0.87 MTPA in an ML area of 1857.24ha) of M/s Mahanadi Coalfields Ltd., Tehsil Brajraj Nagar, Dist. Jharsuguda, Orissa under the provisions of the Environmental Impact Assessment Notification, 2006 and subsequent amendments thereto subject to the compliance of the terms and conditions mentioned below:

#### A. Specific Conditions:

- (i) Coal would be transported by belt conveyor onto surface bunkers from where it would be dispatched directly to small consumers by road using 54 trucks of 18-T capacity, and to major consumers and

- basket linkage by rail from Orient Railway Siding at a distance of 1.5 km covered by road. Coal transportation should be by covered trucks
- (ii) Transport from mine to siding with covered tippers and with mine-3 coal arrangement for mechanised conveyor loading of railway wagons. The coal being transported by road will be dispatched by conveyor system which will be established within 2-3 years to a common CHP and loading should be by bulk loaders.
  - (iii) Avenue plantation should be provided with suitable width.
  - (iv) The frequency of water spraying should be increased in addition to water spraying through mobile water tanker to reduce dust pollution.
  - (v) The Social Audit should be conducted for the CSR Activity carried out in the area for the year 2011-12 other than the TISS e.g. Xavier Institute, Sambalpur University etc. The report of the same should be uploaded into the Company's website. A copy of the audit report should be circulated to all the members of Committee.
  - (vi) All the schools in MCL area should be provided with Black Boards, toilets etc. More funds should be spent on CSR activities. Financial progress and Physical progress should be monitored.
  - (vii) No mining shall be undertaken in/under the forestland until prior forestry clearance has been obtained under the provisions of FC Act 1980.
  - (viii) No additional land, manpower and equipment and water shall be used for the expansion project.
  - (ix) Mine closures activities include sealing of incline mouth dismantling of haulage system, clearing and afforestation of coal stock area, plantation on barren land and old abandoned mine.
  - (x) Mining shall be carried out as per statuette at a safe distance from river/nallah .
  - (xi) No mining should be carried out below the railway track.
  - (xii) No depillaring shall be undertaken vertically below and within 60 m of nalas and ponds within the subsidence influence area.
  - (xiii) Sufficient coal pillars shall be left unextracted around the air shaft (within the subsidence influence area) to protect from any damage from subsidence, if any.
  - (xiv) Solid barriers shall be left below the roads falling within the blocks to avoid any damage to the roads.
  - (xv) No depillaring operation shall be carried out below habitation.
  - (xvi) Depression due to subsidence resulting in water accumulating within the low lying areas shall be filled up or drained out by cutting drains. Details of extent of subsidence that has occurred and the extent of area under subsidence and measures to be taken therefore be furnished to the ministry for record.
  - (xvii) Mining shall be carried out as per statuette at a safe distance from river/nall following within adjacent to the lease boundary at the time of depillaring, protective bunds and garland drains shall be provided so that no water from the surface enters the subsidence area and the shaft.
  - (xviii) While extracting panels in the lower seam, all water bodies in the subsidence area shall be drained. Dewatering of the old grooves of the upper seam shall be continued as long as the lower seam is worked to prevent accumulation of large water bodies over working area.

- (xix) High root density tree species shall be selected and planted over areas likely to be affected by subsidence.
- (xx) Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads, and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks developed due to subsidence in underground mining shall be filled with clay and sand, suitable material. The area should be reclaimed back to the normal state.
- (xxi) Garland/surface drains (size, gradient and length) around the safety areas such as mine shaft and low lying areas and sump capacity shall be designed keeping 50% safety margin over an above the peak sudden rainfall and maximum discharge in the area adjoining the mine sites. Sump capacity shall also be provided adequate retention period to allow proper settling of silt material. Sufficient number of pumps of adequate capacity shall be deployed to pump out mine water during peak rainfall.
- (xxii) CHP shall be operated with high efficiency bag filters, water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.
- (xxiii) Drills shall be wet operated only.
- (xxiv) The major approach roads from ML used for mineral transportation shall be black topped and a 3-tier avenue plantation developed using a mix of native species.
- (xxv) An afforestation plan shall be prepared and implemented for the areas acquired under surface rights and shall include areas along roads, infrastructure, township, CHP, along ML boundary, etc, by planting native species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha.
- (xxvi) A Conservation Plan for endangered species shall be formulated in case they inhabit/visit/reported within the study area and implemented in consultation with the State Forest and Wildlife Departments. A budgetary provision shall be earmarked for its establishment and maintenance and a report thereon be submitted as part of the Monitoring Report to the MoEF RO, Bhubaneswar and also regularly (at least once a year) uploaded on the Company's website.
- (xxvii) Regular monitoring of groundwater level and quality shall be carried out by establishing a network of existing wells and construction of new peizometers. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected shall be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.
- (xxviii) Monitoring of drinking water should be carried out regularly.
- (xxix) Project specific CSR should be prepared & activities under CSR undertaken for the neighbouring villages shall be for not less than Rs 5 per tonne of coal with escalation factor every year be provided under the CSR for the life of the project and the progress made thereon shall be uploaded on the company annually on the company website. Green Belt/plantation should be provided on both side of road in Piper war area. CSR funds could be utilized for this purpose;
- (xxx) The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring shows a declining trend of ground water level. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

- (xxxix) Sewage treatment plant shall be installed in the township. ETP shall also be provided for treating workshop and CHP effluents.
- (xxxixii) For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1:5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF and its Regional office at Bhubaneswar.
- (xxxixiii) 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. Mine closure should ensure that no illegal mining begins after mine is closed
- (xxxixiv) If the water quality parameters such as F, pH, heavy metals, etc exceed the prescribed limits, suitable measures by the proponent be taken to ensure that the local communities are provided alternate source of water for their livelihood
- (xxxixv) Medical camps should be organized in the area for regular check up of workers/villagers/population. Detailed prevalent disease pattern in the area should be documented and details of medical facilities provided for the same be made available to the MoEF
- (xxxixvi) Proponent should make written submission on the compliances/clarifications to the MoEF on the above cited issues.

**B. General Conditions:**

- (i) No change in technology and scope of working shall be made without prior approval of the Ministry of Environment and Forests.
- (ii) No change in the calendar plan including quantum of mineral coal and waste being produced shall be made.
- (iii) Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, in particulates shall be carried out at least once in six months.
- (iv) Data on ambient air quality (PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> and heavy metals such as Hg, As, Ni, Cr, etc) and other monitoring data shall be regularly submitted to the Ministry including its Regional Office at Bhubaneswar and to the State Pollution Control Board and the Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EP Rules, 1986 shall be furnished as part of the compliance report.
- (v) Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs.
- (vi) Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, and treated so as to conform to the standards including for heavy metals before discharge prescribed under GSR 422 (E) dated 19<sup>th</sup> May 1993 and 31<sup>st</sup> December 1993 or as amended from time to time. Oil and grease trap shall be installed before discharge of workshop effluents.
- (vii) Vehicular emissions shall be kept under control and regularly monitored. Vehicles used for transportation of the mineral shall be covered with tarpaulins and optimally loaded.
- (viii) Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EP Rules, 1986.



- (ix) Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.
- (x) A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.
- (xi) The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its Regional Office at Bhubaneswar.
- (xii) The Project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days 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 may also be seen at the website of the ministry of Environment & Forests at <http://envfor.nic.in>
- (xiii) A copy of the environmental clearance letter shall be marked to concerned Panchayat/Zila Parishad, Municipal Corporation or Urban Local Body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on the company's website.
- (xiv) A copy of the clearance letter shall be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, District Industry Centre and Collector's Office/Tehsildar's Office for 30 days.
- (xv) The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in the public domain. The monitoring data of environmental quality parameters (air, water, noise and soil) and critical pollutants such as PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mines office and in corporate office and on the company's website.
- (xvi) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the MOEF, the respective Zonal offices of CPCB and the SPCB.
- (xvii) The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.
- (xviii) The environmental statement for each financial year ending 31<sup>st</sup> March in Form-V 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 uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MOEF by E-mail.

4. The Ministry or any other competent authority may stipulate any further condition for environmental protection.

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

6. 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. The proponent shall ensure to undertake and provide for the costs incurred for taking up remedial measures in case of soil contamination, contamination of groundwater and surface water, and occupational and other diseases due to the mining operations.

  
(Dr. Manoranjan Hota)  
Director

**Copy to:**

1. Secretary, Ministry of Coal, Shastri Bhawan, New Delhi.
2. Secretary, Department of Environment & Forests, Government of Jharkhand, Secretariat, Ranchi.
3. Chief Conservator of Forests, Regional office (EZ), Ministry of Environment & Forests, A-31, Chandrashekarapur, Bhubaneswar – 751023.
4. Member Secretary, Orissa State Pollution Control Board, Neelakanth Nagar, Unit-VIII, Bhubaneswar.
5. Chairman, Central Pollution Control Board, CBD-cum-Office Complex, East Arjun Nagar, New Delhi -110032.
6. Member-Secretary, Central Ground Water Authority, Ministry of Water Resources, Curzon Road Barracks, A-2, W-3 Kasturba Gandhi Marg, New Delhi.
7. District Collector, Chatra, Government of Jharkhand.
8. Monitoring File    9.    Guard File    10.    Record File

  
(Dr. Manoranjan Hota)  
Director