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No. J-11015/128/2007-IA.II(M)  
Government of India  
Ministry of Environment & Forests

Paryavaran Bhawan,  
CGO Complex, Lodi Road,  
New Delhi-110003.

To

Dated : 28<sup>th</sup> March 2007

CGM(CP&P),  
M/s Mahanadi Coalfield Ltd.,  
Bhubaneswari OCP,  
At/P.O: Jagriti Vihar, BURLA,  
Dist.: Sambalpur-2542808, ORISSA.

Sub: Bhubaneswari OCP of M/s Mahanadi Coalfields Ltd. – Terms of Reference (TOR) – reg.

Sir,

This is with reference to the meeting of EC held on 14.03.2006 wherein the aforesaid proposal was considered.

The EC recommended the following TOR for the EIA-EMP Study :

- i) EIA-EMP should be for the incremental project only, i.e. From 10 MTPA to 20 MTPA (i.e. use the env. Data for the 10 MTPA project as the baseline).
- ii) A map specifying locations of the State District and Project location.
- iii) The EIA-EMP report should cover the impacts and management plan for the incremental project specific activities on the environment of the region, and the environmental quality-air, water, land, biotic community, etc. through collection of data and information, generation of data on impacts including prediction modeling for the incremental effects.
- iv) A Study area map of the core zone (existing and expansion) and 10km area of the buffer clearly delineating the major topographical features such as the land use, drainage, locations of habitats, major construction including railways, roads, pipelines, major industries/mines and other polluting sources, migratory corridors of fauna, and areas where endangered fauna and plants of medicinal and economic importance are found in the area.
- v) A recent satellite imagery of the study area may also be provided with explanatory note of the land use.
- vi) Map showing the core zone (existing and the extension project) delineating the agricultural land (irrigated and irrigated, uncultivable land (as defined in the revenue records), forest areas (as per records).
- vii) Contour map along with Site plan of the mine showing the various proposed break-up of the land for mining operation (existing and expansion) such as the quarry area, OB dumps, green belt, safety zone, buildings, infrastructure, CHP, ETP, Stockyard, township/colony (within and adjacent to the ML), undisturbed area and if any natural topography such as existing roads, drains/ natural water bodies are to be left undisturbed along with any natural drainage adjoining the lease and modification of thereof in terms of construction of embankments/bunds, proposed diversion, rechanneling of the water courses, etc., approach roads, major haul roads, etc.
- viii) Break up of lease area (existing and expansion) as per different land uses and their stage of acquisition.
- ix) Break-up of lease area (existing and expansion) as per mining operations.
- x) Impacts of additional changes, if any, in the land use in particularly agricultural land for mining operations.
- xi) Collection of one season(non-monsoon) primary baseline data (env. Status of the 10 MTPA project) on environmental quality air (SPM, RPM SO<sub>x</sub> and NO<sub>x</sub>), noise, water (surface and groundwater), soil.
- xii) Map of the study area (core and buffer zone) clearly delineating the location of various stations

- superimposed with location of habitats, wind roses, other industries/mines, pouting sources. The stations should be selected on the basis of the proposed impacts in the downwind/downstream/groundwater regime. One station should be in the upwind/upstream/non-impact non-pouting area as a control station. Wind roses to determine pollutant dispersion will be drawn and Prediction Modelling of AAQ will be carried out. The monitoring should be as per CPCB guidelines. Parameters for water testing for both ground and surface as per ISI.
- xiii) Study on the existing flora and fauna in the study area carried out by an institutions of relevant discipline and the list of flora and fauna duly authenticated separately for the core and buffer zone and a statement clearly specifying whether the study area forms a part of the migratory corridor of any endangered fauna.
  - xiv) Details of mineral reserves, geological status of the study area and the seams to be worked, ultimate working depth and progressive stage-wise working scheme until end of mine life should be reflected on the basis of the approved rated capacity and calendar plans of production from the approved Mining Plan. Geological maps should be included.
  - xv) Impact of mining on hydrology, modification of natural drainage, diversion and channeling of the existing rivers/water courses flowing through the ML and adjoining the lease and the impact on the existing users and impacts of mining operations thereon.
  - xvi) Impact of mining and water abstraction use in mine on the hydrogeology and groundwater regime within the core zone and 10km buffer zone including long-term modeling studies on. Details of rain water harvesting and measures for recharge of groundwater should be reflected.
  - xvii) Detailed water balance should be provided. The break up of water requirement for the existing and expansion projects should be given separately. Source of water for use in mine (existing and expansion), sanction of the competent authority in the State Govt. and impacts vis-à-vis the competing users. Water requirement furnished in the pre-feasibility report needs to be rechecked as it appears to be low for a high capacity mine.
  - xviii) Treatment of effluents from workshop, township, domestic waste water, mine water discharge, etc. Details of STP in colony and ETP in mine Recycling of water to the max. possible extent.
  - xix) Details of mining methods, technology, equipment to be used, etc. and the potential impacts. Impact of use of HEMM machinery dragline, bigger shovel/dumper and the consequent change in fleet size and trips and impact on air quality/OB dumping, mineral transportation, etc.
  - xx) Impact of blasting, noise and vibrations.
  - xxi) Impacts of incremental mining using the AAQ predictive modeling.
  - xxii) Impacts of mineral transportation within and outside the lease. Impacts of transportation, handling, transfer of mineral and waste on air quality, generation of effluents from workshop, management plan for maintenance of HEMM, machinery, equipment. Details of various facilities to be provided in terms of parking, rest areas, canteen, and effluents/pollution load from the activities. Examine whether existing roads are adequate to take care of the additional load of mineral and OB transportation their impacts.
  - xxiii) Examine the efficiency of mobile/static water sprinkling system and also the frequency of their use in impacting air quality.
  - xxiv) Impacts of construction of CHP
  - xxv) Details of waste generation-OB, topsoil-as per the approved calendar programme, and their management in maps as well explanatory chapter with tables giving progressive development and mine closure plan, green belt development, backfilling programme and conceptual post mining land use. OB dump heights and terracing should be done slope stability studies with a max of 28° angle as the ultimate slope. Sections of dumps (ultimate) both longitudinal and cross section) with relation to the adjacent area should be shown.
  - xxvi) Topsoil management in breaking additional land in the extension project.
  - xxvii) Progressive green belt development plan. Conceptual mine closure plan along with the fund requirement for the detailed activities proposed there under.
  - xxviii) Occupational health issues. Besides data on the health of the population and measures for occupational health and safety of the personnel and manpower for the mine (incremental).
  - xxix) Including cost of EMP (capital and recurring) in the project cost and for progressive and final mine closure plan.
  - xxx) Integrating in the Env. Management Plan measures for minimising use of natural resources – water, land, energy, raw materials/mineral etc.
  - xxxii) Detailed R&R Plan with data on the existing socio-economic status of the population in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternate livelihood concerns/employment for the displaced people, civic and housing amenities being offered, etc. and the schedule of the implementation of the R&R plan and status of

implementation.

- xxxii) Disaster Management Plan
- xxxiii) Public Hearing should cover the details of notices issued in the newspaper, proceedings/minutes of public hearing the points raised by the general public and commitments made in a tabular form. If the Public Hearing is in the regional language, an authenticated English Translation of the same should be provided.
- xxxiv) Compliance report of the EC conditions stipulated for the Bhubaneswari (10 MTPA) Project.
- xxxv) In built mechanism of self monitoring of compliance of environmental regulations.
- xxxvi) Status of any litigations/court cases filed/pending on the project.

The following general points should be noted :

- i) All documents should be properly indexed, page numbered.
- ii) Period/date of data collections should be clearly indicated.
- iii) Authenticated English translation of all material provided in Regional languages.

After the preparation of the draft EIA-EMP Report as per the aforesaid TOR, the proponent shall get the public hearing conducted as prescribed in the EIA Notification 2006 and take necessary action for obtaining environmental clearance under provisions of the EIA Notification 2006.

Yours faithfully,

Sd/-  
(Dr.T.Chandini)  
Director