PROPOSED ToR

Generic Structure of EIA report

The generic structure of the EIA Report will be as per the MoEF, EIA Notification dated 14th September 2006, as described below: All documents will be properly referenced with index and page numbers.

CHAPTER- 1: INTRODUCTION

- Purpose of the report.
- Identification of nature, size and location of the project.
- Introduction of project proponent.
- Description of site and surrounding environment, Location maps, Importance of project to the country and region, and Scope of EIA study (as per TOR approved by MOEF).

CHAPTER- 2: PROJECT DESCRIPTION

This chapter will describes mainly the following attributes.

- Type and need of the project
- Magnitude of operation.
- Schedule for approval and implementation.
- Geology (Regional and Local)
- Reserves and quality of the ore with chemical composition (Grade or Percentage). Associated minerals, if any, should be mentioned.
- Deposit condition such as ore strength, host rock strength, shape, grade, dip, size, uniformity and depth.
- General description of the project with ancillary operations such as crushing, beneficiation etc.
- Surface geological plan in the leasehold area, transverse section of mineral deposits, contour maps at intervals of not more than 03 meters.
- Breakup of land use of leasehold area.
- Overall note on mineral reserves, rated capacity, life of the mine.

- Period of mining lease and calendar program of ore and waste production.
- Type of blasting, drilling and explosives.
- Detail of mining method, transportation and material handling with production capacity
- Plan for backfilling of mine pit
- Status and stages of other regulatory clearances like approval of mining plan, forest clearance, consent to establish from State Pollution Control Board etc.
- Energy demand/specific energy consumption
- Water requirement and reliability of its supply
- Manpower recruitment
- Location (maps showing general location, specific location)
- Layout of proposed project site and project boundary.
- Technology and Process description including drawings showing project layout, components of project etc. Schematic representations of the feasibility drawings which give important information.
- Topographical map A topographical map (1:50000) of the study area (core zone and 10 km area of the buffer zone from boundary of the core zone) delineating the major topographical features such as land use, drainage, locations of habitats, major constructions including roads, railways, pipelines, major industries if any in the area are to be mentioned.
- Contour / slope map, as required for the study of core zone and site plan of the area showing the various proposed break-up of the land. Description of the project site, geology, topography, hydrology, climate, transport and connectivity, demographic aspects, socio-cultural and economic aspects, villages, settlements, meteorological data.
- Notified restrictions and limitations from environmental considerations etc., if any.
- Environmental data relating to history of natural calamity such as cyclones, storms surges Coastal areas), tornado, flood, etc. should be discussed.

CHAPTER- 3: DESCRIPTION OF EXISTING ENVIRONMENT

- Baseline information shall include: Study area, period, components & methodology.
- Establishment of baseline for valued environmental components.

- Base maps of all environmental components.

a) Air Environment

- Climate and meteorology (temperature (max. and min.), relative humidity, and rainfall) indicate the nearest IMD meteorological station from which climatological data have been obtained.
- Wind rose (Wind directions and speeds, 24 hourly data)
- Air quality monitoring data in respect of PM10, PM2.5, SO2, NOx and CO, any other project specific pollutants. Monitoring will be covering one full season except monsoon. Frequency and methodology adopted as per CPCB/MOEF&CC guidelines.
- Monitoring stations are to be located based on dominating wind directions, habitations and terrain features in the study area. The monitoring stations should cover upwind, downwind, crosswind, core zone, habitations and sensitive areas.

b) Noise Environment

Locations of monitoring stations for noise measurements in accordance with the direction and distance from the sources and habitations.

- Day-time and night-time noise level monitoring (leq)
- Vibration and air over pressure, caused due to blasting, transport and process equipments, wherever applicable.
- **Noise Level study:** Hourly equivalent noise levels will be recorded in the study area in accordance with Noise Pollution (Regulation & Control) Rules, 2000, notified by MoEF&CC.

c) Water Environment:

Surface water quality will be monitored from available surface water resource at 2 locations maximum. In addition care will be taken that mining will not be done from the stream at any point of time, though a part of lease area falls within the stream.

- Identification of water bodies in the study area.
- Identify present and future use of water.
- Data on water table of the area.
- Ground water monitoring will be done at 6 locations depending upon the ground water contours.

d) Land Environment

- Assessment of existing land use pattern and land quality.
- Information on ecologically sensitive locations within the study area
- Places of defense installations if any.
- Reserve and protected forests if any, that falls in the study area and its direction and distance from the project site shall be noted.
- Land use pattern of the area / block to be collected from revenue records.

e) Biological Environment

Information on flora and fauna within the study area should be given separately-

Flora

- Detail description of vegetation type in core and buffer zone (include photograph)
- Assessment of plant species with respect to their dominance, density, frequency, abundance, diversity index, similarity index, importance value Index.
- Quantitative estimation of forest and non-forest flora
- Type of forest in study area and its conservation status.
- Information on the dependence of local people on minor forest products
- Location of National Parks, Sanctuary, Biosphere Reserve, Tiger Reserve,
- Elephant Reserve, wild life migratory routes in core and buffer zones

Fauna

- Assessment of fauna and avifauna.
- List out endangered and endemic species as per the schedule of the Wildlife Protection Act, 1972
- Information on breeding and hibernating sites in core and buffer zone.

f) Socio-economic Environment

- Collection of secondary data on village wise population. Sex ratio, literacy, number of households and percentage of main workers.
- Collection of primary information on infrastructure facilities in the study area.
- As a social obligation to uplift the socioeconomic condition of the people of mining affected area, a socio-economic survey would be conducted. Survey will be based on primary data collection through preparation of questionnaire and personal interview. After

the survey and data analysis, development gaps will be identified and need based plan will be prepared which will be implemented during the project period.

CHAPTER-4: ANTICIPATED IMPACTS AND MITIGATION MEASURES

This chapter will describe the likely impact on each of the identified environmental components by adopting methods such as empirical method, and reference of previous studies etc., Details of mitigation measures proposed in the project (site specific) to minimize the adverse effect, shall be discussed. The information shall cover during construction and operation of the project, as applicable.

a) Land Environment

Anticipated Impacts

- Impact on topography, drainage pattern, land use with respect to agriculture, forestry, built up area etc.
- Impact on soil quality, agriculture, soil erosion and subsidence.
- Visual Impact on surrounding environment.

Mitigation Measures

- Technological measures to prevent soil erosion.
- Plantation / Afforestation of local varieties of plants.
- Measures to control and conserve runoff from various locations.
- Landscaping, plantation, afforestation to minimize adverse visual and noise impact.

b) Air Environment

Mining is carried out by semi-mechanized opencast method, with drilling and blasting. Dust generated only due to the operation. The entire sequence of mineral production, stacking, transportation, their impacts on air quality and mitigative measures proposed are to be put in place. Impact of mineral transportation within and outside the lease. The entire sequence of mineral production, transportation, handling, transfer and storage of minerals and wastes and the impacts on air quality is to be shown in a flowchart with specific points where fugitive emissions can arise and specific pollution control / mitigative measures are proposed to be put in place. The adequacy of roads existing in the area.

Anticipated Impact

- Emission Inventory of PM_{10}, SO_2, NO_X, CO and site specific pollutants.

Mitigation Measures

- Measures to reduce the particulate emissions & vehicular emission due to mining & Transportation activity.
- Dust suppression by water sprinklers system
- Development of green belt areas in lease area, along the roadside & rehabilitated areas. if any

a) Water Environment (Surface and Groundwater)

Impact of water drawl and discharge on the hydrogeology and use of groundwater regime in the study area are to be detailed out.

Anticipated Impact

- Impact of water drawl on surface and groundwater resources.
- Impact on groundwater regime due to the proposed project, to be assessed from hydro-geological study.

Mitigation Measures

- Measures to minimize contamination of surface and groundwater.

b) Noise Environment

Anticipated Impact

- Prediction of noise levels at different representative monitoring stations.
- Impact on ambient noise level due to various noise generating sources of the mining activities.

Mitigation Measures

- Measures for noise abatement including point source and line sources.
- Lay out planning to minimize the impact on receiving environment.
- Planned preventive maintenance.
- Selection of low noise equipment.

c) Biological Environment

Anticipated Impact (Flora and Fauna)

- Impact on terrestrial biodiversity.

- Impact on flora and fauna due to air emissions, noise, vehicular movement, changes in land use, etc.

Mitigation Measures

- Green belt development plan and its raising schedule.

d) Socio- Economic Environment

Anticipated Impact

- Positive and negative impacts on present status of livelihood in the study area.
- Impact on the cropping pattern and crop productivity in the study area.

Mitigation Measures

- Employment opportunities and access to other amenities such as education, healthcare facilities to be extended to locals.

CHAPTER: 5: ANALYSIS OF ALTERNATIVES

- This should be project specific and decided during the scoping process.
- In case, the scoping exercise results in need for alternatives:
- Description of each alternative
- Summary of adverse impacts of each alternative
- Mitigation measures proposed for each alternative and
- Selection of alternative

CHAPTER- 6: ENVIRONMENTAL MONITORING PROGRAM

In order to focus on environmental management during project implementation and execution stage. Plan will be including the following:

- Monitoring of quality of water, air, noise, and occupational health status of project personnel and surrounding habitations.
- Planned monitoring program to evaluate the effectiveness of various / specific aspects of technological / mitigation measures.
- Environmental audit of various activities including budgeting and financial management with reference to environmental management plan.
- Plantation monitoring program, to ensure survival and growth rate of plantations.

- Analysis of data, its interpretation and evaluation (any additional studies to be carried out if required).

CHAPTER- 7: ADDITIONAL STUDIES

a) Public Hearing

Public hearing with the issues raised by the public and the response of the project proponent in tabular form shall be discussed.

b) Risk Assessment (RA) and Disaster Management Plan (DMP)

Risk analysis and risk mitigation shall be clearly indicated in the report. This shall include the following:

- Identification and types of risk associated with the proposed project.
- Risk assessment study will be undertaken and disaster management plan will be prepared due to the proposed activity.
- Disaster management and mitigation measures.
- Emergency response system with proper organizational setup to deal with any such disasters.
- Occupational health hazards.

CHAPTER- 8: PROJECT BENEFITS

The improvements in physical and social infrastructure, due to the proposed project of the locality, neighborhood, region and nation as a whole will be described in this Chapter. It will detail out the employment potential and other tangible benefits that shall be accrued.

CHAPTER-9: ENVIRONMENTAL COST BENEFIT ANALYSIS

If recommended at the Scoping stage

CHAPTER - 10: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

- Administrative and technical set up for Environmental Monitoring.
- Mechanism of self monitoring for compliance with environmental regulations.

- Institutional arrangements proposed with other organizations/ Govt. authorities for effective implementation of proposed environmental management plan.
- Integrating in the environmental management plan for minimizing use of natural resources – water, land, energy & etc.
- Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions.

CHAPTER- 11: SUMMARY AND CONCLUSIONS

The summary of the EIA report condensed to about ten A-4 size pages. Summary shall provide the overall justification of the project and explains how the adverse effects have been mitigated.

CHAPTER- 12: DISCLOSURE OF CONSULTANTS ENGAGED

The names of the consultants / experts engaged and involved with their brief resume and nature of consultancy rendered shall be included in this chapter.