Proposed Terms of Reference for EIA Studies

Objective of the EIA study:

In order to identify the environmental impacts due to construction and operation of the proposed expansion project and associated facilities, a study will be undertaken to establish existing base line environmental conditions, predict impacts of the proposed expansion project, suggest Environmental Management Plan and developed post project monitoring program.

The Terms of reference for conducting EIA study for the proposed expansion project is described in the following sections.

Site Selection:

Plant is located on private land. The proposed expansion land is within existing plant premises and owned by the project proponent. Environmental sensitive areas within the study area will be identified and studied.

EIA Report:

- **Executive summary**

Executive summary contains objective of the proposal, use of resources, justification, etc. In addition, it will provide a compilation of EIA report, EMP and the post-project monitoring plan in brief.

- **Project description**
  - Justification for selecting the proposed unit size.
  - Process description with process flow chart, Process and operation flow diagram
  - Land requirement for the project including break up of land requirement and its availability.
  - Quantity of fuel required, source and transportation, fuel linkage will be provided.
  - Water requirement, Source, Water allocation letter from the competent authority will be provided.
  - Water balance (water intake, use, wastewater generation) taking into account reuse and re-circulation of effluents.
  - Details of rainwater harvesting scheme.
- **Environmental Baseline Status**

The data for EIA study is proposed to be collected through field studies, literature review, and interaction with concerned departments. The study area for the EIA study shall be the area within the 10 km radius of the area acquired for the project. The data/information for Environmental Baseline Status will be collected as per the following paragraphs.

Land use

The information on Land use pattern will be collected from the Revenue Department, Census of India book, District Gazetteer, SOI toposheets and NRSC satellite imageries. The land use classification of the 10 km radius study area based on the satellite imagery will be presented in the EIA report.

Based on the remote sensing data, GIS information and satellite imagery, a detailed land use map of the study area will be prepared.

Water use

The quantity of water required for the project at various stages will be estimated. The sources for water requirement and waste disposal points shall be identified.

Water quality

- The surface and groundwater sampling will be done at various locations in the study area.
- Fields studies will be conducted for one season as a part of the EIA study.

Meteorology

Micro-meteorological station shall be set up at plant site. The parameters to be monitored shall include wind speed, wind direction, temperature, and relative humidity. The collected data shall be used for preparation of wind roses to identify predominant wind direction and air quality modeling.

Ambient Air Quality

An ambient air quality monitoring network will be designed for assessment of the baseline status of ambient air quality. The parameters to be monitored are Fine Particulate Matter (PM 2.5), Particulate

Matter (PM10), Sulphur Dioxide (SO_2), Oxides of Nitrogen (NOx), VOCs & Carbon Monoxide (CO). The frequency of sampling shall be twice a week for complete one season. Ambient air quality monitoring is proposed to be conducted for one season except monsoon.

Noise

Equivalent continuous noise level (Leq) in and around the project area will be monitored. Noise readings will be taken every hour for 24 hours at each location. The monitoring will be done for one season as a part of EIA study.

Biological Environment

Primary field study will be conducted to identify and enlist existing flora and fauna observed in the 10 km radius study area of the project. As a part of the study, secondary information on flora and fauna of the area will be collected from State Forest Department.

The publications available in the form of maps and documents will also be collected and utilized. The data on the availability of various floral and faunal species in the study area will also be collected from Department of Forests and utilized.

Socio-economic Environment

The data on demographic profile in the study area will be collected using secondary data sources. The data to be collected is as follows:

- Demography
- Caste profile
- Literacy profile
- Occupational profile

Environmental Attributes and Frequency of Monitoring

Sr. No.	Attributes	Parameters	Frequency
1	Meteorology	Wind speed and wind direction, Temperature, Relative humidity and Rainfall.	Continuous with hourly recording through setting up of automatic meteorological station at site and data from Secondary sources: i.e. nearest IMD station.
2	Ambient Air Quality	PM_{10}, $PM_{2.5}$, SO_2, NO_2, CO, VOC, NH_3. Heavy metals from particulate matter	24 hourly samples twice a week for three months identified at 8 locations. CO monitored 8 hourly samples in 24 hours.
3	Water quality	Physical and Chemical parameters.	Grab samples were collected once during study period prepared and brought to the laboratory for analysis.
4	Soil characteristics	Soil profile, characteristics, soil type and texture, heavy metals, NKP value, organic matter, CEC and exchangeable cations.	Once during study period at 8 locations within 10 km radius of study area.
5	Noise levels	Noise levels in dB(A)	At every location data monitored hourly for 24 hours, once during EIA study.
6	Land use	Land use for different categories.	Based on data collected from secondary sources like primary census abstracts of census of India 2011.
7	Geology	Geological history	Based on data collected from secondary sources.
8	Hydrogeology	Drainage pattern, nature of streams, aquifer characteristics, recharge and discharge areas	Hydro-geological data based on data collected from secondary sources
9	Biological Environment	Study of terrestrial flora and fauna diversity and aquatic ecological studies within 10 km radius	Through field visits, relevant sample collection as per standard and data collected from the District Forest Authority
10	Socio-Economic aspects	Socio-economic characteristics: infrastructure resources, health status, economic resources.	Based on data collected from secondary sources like abstracts of census of India 2011 and village directory 2001
11	Risk assessment and Disaster Management Plan	Identify the areas where disaster can occur by fires and explosions and release of toxic substances.	It is observed periodically and updated in-line with MSHIC rule 1989 (during operational phase).

- **Anticipated Environmental Impacts**

With the knowledge of the baseline conditions, project characteristics, the intensity of construction activities and current critical conditions, detailed projections shall be made of the influence of planned units of the project on all the areas of social, physical and biological environment in the area. Based on the predictions, the critically affected environmental parameters will be identified for the proposed expansion project.

The impacts on following environmental parameters will be considered during construction and operation phase of the project:

S. No.	Environmental Attributes	Activities during Operation Phase
1	Land Environment	Handling and storage of raw materials and finished products
2	Water Environment	Process effluent discharge, domestic effluent discharge, surface run-off from project area, rainwater harvesting
3	Noise Environment	Process manufacturing operations, transport vehicles, DG sets, etc.
4	Air Environment	Emissions from Raw materials handling, process manufacturing, DG sets, husk boiler.
5	Ecology	Dust deposition from plant activities and material transport, noise & light from plant operations
6	Socio-economic Environment	Improvement in infrastructure facilities, direct & secondary employment generation, CSR activities by project proponent

- **Environmental Management Plan (EMP)**

Environmental Management Plan will be developed to selectively mitigate the adverse impacts due to the construction and operation of various activities planned for the proposed expansion project. Any modification needed to make the project environmentally compatible will also be suggested. EMP will include all the aspects covered during impact assessment phase as mentioned above.

- **Analysis of alternatives**

The technology used in existing plant will be adopted.

- **Risk Analysis and Disaster Management Plan**

A detailed risk analysis study comprising of the following is to be conducted:

- Identification of potential accidents
- Consequence analysis for each identified failure will be conducted
- Assessment of what the calculated risk levels portray.

As a part of the study, a detailed onsite Disaster Management Plan shall be formulated as a part of the EIA Study.

- **Environmental Monitoring Program**
  - Appropriate monitoring network as per regulatory compliance will be suggested.
- **Conclusion and recommendations**
- **Disclosure of Consultant**