

## **CHAPTER 4 - ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY**

### **4.0 Impact Assessment Methodology**

#### **4.1 Basic Approach of EIA.**

The proposed Project Road takes off at 76.400km of NH-54 at Lawngtlai Town, running towards South and joins Kaletwa (Myanmar) to River Zocha road sector at Indo Myanmar border road. The Projected length of the road from Lawngtlai to the Indo Myanmar border is 99.830 Km. The Projected road alignment passes through frequently cultivated jhum land. It also crosses Lawngtlai to Diltlang Parva road which runs towards south west of Lawngtlai town. It also crosses Nalkawn Chamdul Valley road at four points. The road also passes through the villages of Saizawh east and Zochachhuah . The height of the road at various locations varies from 56 m near River Zocha to 780 m Lawngtlai Town, above mean sea level (MSL).

The proposed alignment of the project passes through Lawngtlai District in North-South direction. The whole length of the project will be fresh cutting of mountainous as steep terrain with broken contours. The alignment of the project road traverses through frequently cultivated jhoom lands where the cycle of cultivation by cutting and burning of trees and bamboos is 4 – 5 years. At some places the project corridor is within few kilometers of natural forest and virgin land of thick undergrowth of evergreen bushes and creeping plants.

With the improvement of the road better connectivity will be ensured. Agriculture products can be transported quicker through the improved road. Increased trade and commerce activities are expected. Vehicle Operating costs and vehicle damage in the area will be reduced.

However, there would be an increase in vehicular pollution-air and noise, in the vicinity of the road with the increase in vehicular density but the effect is not significant. Linear development along the road in the commercial area is expected.

The EIA for this road widening and development aimed at determining the environmental impacts on the study area of the project, which encompasses all areas falling within a radius of 7.5 Km around the project site. Considering the magnitude of impacts due to this project a rapid EA study has been considered for this project.

The major environmental components considered for the EA study include geology, geomorphology, drainage, soil, soil erosion, meteorology, land use and water use, surface and ground water quality, air quality, noise quality, terrestrial and aquatic ecology (including flora and fauna), and socio economic conditions. EIA Report presented here consists of field data generated for the above components considering the scoping from the screening report.

#### **4.2 Environmental Considerations Incorporated in the Feasibility Study**

The environmental assessment for the project began with the adoption of an environmental and social screening procedure during the feasibility stage. The purpose of the screening was to identify at the outset, key environmental and social parameters likely to be impacted by the project. The information gathered on these issues during the screening was subjected to detail assessment during the EIA study. The features studied included settlement facilities, land use, drainage pattern of the area, flora, fauna, ecosystems within ROW of the alignment, river crossing, crossroads, etc. The study of the above helped in enumerating areas of concern and identifying critical issues.

### **4.3 Environmental Assessment**

The methodology adopted for the EA is as follows:

#### **4.3.1 Reconnaissance Surveys**

These were undertaken by all members of the Environmental & Social teams initiating with a joint reconnaissance with the representatives of the NHAI, to find out different Environmental & Social issues related to this project.

#### **4.3.2 Screening & Scoping**

A separate screening report has been prepared for the project. Scoping is the outcome of the environmental and social screening report. It is a process used to determine the anticipated range of issues to be addressed by, and the depth of study required for environmental analysis. In accordance with the basic approach to environmental investigations, the scoping process was reiterative, i.e. the scope and depth of the analysis was refined and deepened as additional information came to light.

#### **4.3.3 Assembling and Analysis of Data**

This included both published and other recorded environmental data. Review of literature were undertaken and relevant agencies (e.g., the Departments of Forest, the State Pollution Control Boards, and the Archaeological Survey of India) were contacted and appraised of the proposed project. Standard statistical methods were used for analysis of the socio-economic data, tree count etc. Laboratory tests carried out for the primary data (on air, water, soil and noise and planktons) collected in the field. In addition to this forecast of future impact on air, water, soil and noise being carried out with the help of different mathematical simulation models.

#### **4.3.4 Documentation of Baseline Environmental Conditions**

A 7.5 Km wide strip on both side of the bypass alignment was defined as potentially impacted area (PIA) as per MOEF guidelines and other conditions into account. Both secondary and

primary data were collected for various baseline environmental parameters. A detail baseline conditions within the defined area were documented and discussed later in Chapter 5.

#### **4.3.5 Assessment of Potential Impacts**

Potentially significant impacts were identified on the basis of analytical review of baseline data, review of land uses and environmental factors, analytical review of the underlying socio-economic conditions, within the PIA and review of assessment of potential impacts as identified by previous highway projects. This has been discussed in detail in chapter 6 of this report.

#### **4.3.6 Integration of Environmental Assessments in the Design Process: "Mainstreaming the Environmental Component"**

Environment and Social issues were integrated in design and decision making process for finalization of the alignment, by pass, finalization of the location of underpass, overpass and padestrian crosdsings, shifting of cultural properties ,biological resources and other amenities along the alignment.

#### **4.3.7 Assessment of Alternatives**

Alternatives were continuously assessed throughout the process. A more formal assessment of different alternatives (like alternative alignment, material sources etc.) were also undertaken as a part of the environmental assessment process on the basis of field investigation, secondary data and public consultation.

#### **4.3.8 Identification of Environmental Enhancement Measures**

Positive actions were undertaken not only to avoid adverse environmental impacts, but to capitalize on opportunities to correct environmental degradation or improve environmental conditions.

#### **4.3.9 Community Consultations**

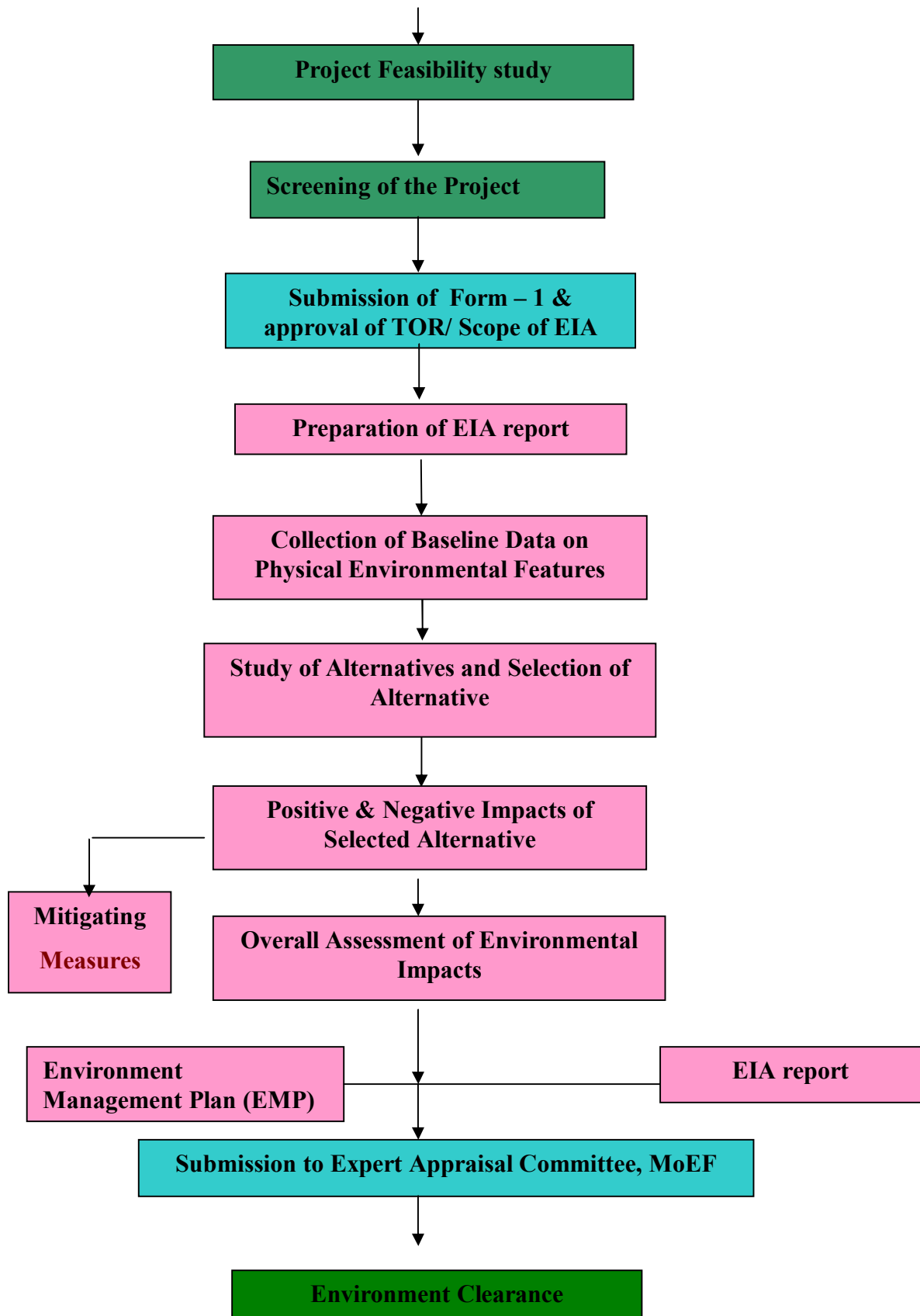
Consultations with concerned officials; agencies and potentially affected persons (PAPs) continued throughout the process and will continue as the project proceeds. The issues raised by the communities and the various stakeholders were incorporated in the design and construction/operation plan of the project highway improvement.

Public Hearings, as stipulated by the Environmental Impact Notification, 2006 are to be conducted by the SPCB and the relevant issues to be raised in the hearings are to be incorporated in the project design and EA report if deemed to be necessary.

#### **4.3.10 Preparation of the Environmental Management Plans (EMP)**

An EMP for each of the contract packages is to be prepared to specify the steps necessary to ensure that the mitigation measures have been and will be taken. This includes the monitoring plan and gives details of the resources budgeted and the implementation arrangements.

**Project Planning**



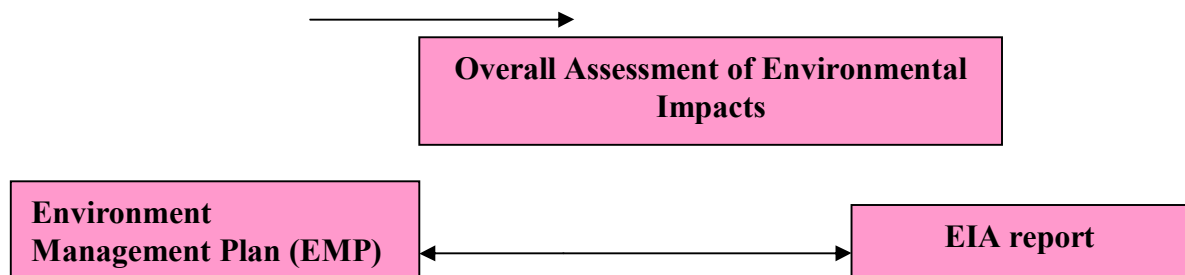


Figure : 4.1 Steps of Environment Clearance for the project