CASE STUDIES--1 ROAD PROJECT IN MALAYSIA

An EIA for a proposed new road project As a case study of an EIA study conducted in Malaysia, reference is made to a study performed for a proposed road linking Cameron Highlands to Kuala Lipis in the state of Pahang in West Malaysia This road linkage would greatly reduce travel distance and time between the two areas. However, the proposed road need to traverse through forested areas and relatively hilly terrain along certain stretches.

Existing environment :-A thorough understanding and appreciation of the existing undisturbed environment is necessary for an EIA exercise as it will be the basis for the prediction of possible impacts. Information and data were gathered directly from field surveys or collected from secondary sources. The elements which have been addressed include the following:

Physical environment and land resources :-The proposed project area lies mostly in forested hilly terrain such that there would be a considerable conservation interest due to the need for forest clearance. The geology and soil characteristics of the proposed project area are typical of a hilly terrain in a tropical region. For this condition erosion is a problem during the construction stage and during the operational stage the safety of slopes requires attention. Appropriate preventive and protection measures should be provided during the construction period. Climatic and hydrological conditions :-The climatic conditions along the proposed route were obtained from climatic and rainfall stations. The climatic components which are of relevance include rainfall, temperature, relative humidity, sunshine, evaporation and wind conditions. The river system and drainage pattern for the proposed project area was also studied. The extend of catchment areas were determined.

Noise levels and air and water quality:- These parameters were obtained through sampling techniques and direct measurement on-site. Water quality parameters for selected rivers flowing within the study area were determined for the existing conditions.

Flora and fauna:- As the proposed road traverse through forested areas, an indepth study was made to determine the types of flora and fauna within the study area and

in its vicinity. Both terrestrial and aquatic flora and fauna were identified. An inventory of the existing flora and fauna was established.

Principal project activities and possible environmental impacts:- The principal project activities were grouped into different project phases and those activities which may have impacts on the existing environment were highlighted and discussed. The project phases is defined as the preconstruction, construction and operational phases. The major activities within the pre-construction phase include the following; project planning, site surveys, land acquisition and construction of access road and tracks. Only the last activity has any significant impact on the environment as trees are cleared and bare lands are exposed. As to the construction phase, the major activities are as follows; land clearing operations, burning, labour recruitment and base camp construction, earthworks, slope stabilisation, stream crossings, piling, road construction, transportation of construction materials and waste disposal. Most of these activities have significant impacts on the environment. For the operational or post-construction phase, the major activities addressed include the following; road traffic operations and maintenance of pavement and road shoulder, slopes, bridges and drainage systems.

Potential environmental impact and assessment.

An evaluation and assessment of the environmental components likely to experience significant impacts either positively or negatively together with the magnitude and nature of the impacts were performed. The evaluation of impacts are based on accepted and established methodology and guidelines given in the Handbook of El A Guidelines [2] were adhered to. The main points to be noted are: Physico-chemical aspects Soil erosion and sedimentation will mainly be significant during the construction period and with proper management the impact can be minimised. The hydrological regime is not expected to be significantly affected by the project. The quality of air and water and noise pollution will be an environmental concern in the operational stage. This aspect and the solid waste can be tackled with proper management. Biological In general, due to the fact that the affected land is restricted to a strip of land along the stretch of the proposed road, the impact on the flora and fauna is somehow limited. During the construction stage disturbance to the flora and fauna can be controlled. However, the fauna can be susceptible to danger in the long run as the area is more accessible. Human

Socio-economic aspects considered include land use and employment issues. In general, the impacts on human are beneficial or positive. The project will enhance the economic potential of the whole area. Existing economic activities can be upgraded with the presence of the new road and new economic activities can be generated. Apart from this, with the new road greater accessibility and improved communication facilities are expected to be of benefit to the area.

Mitigation measures and environmental monitoring

After determining the types and nature of possible impacts due to the proposed road project, various mitigation measures were considered and evaluated and consequently proposed for implementation so as to reduce the adverse environmental impacts that may occur. Any negative impacts could be substantially mitigated by sound engineering practise and stringent control of the various activities.

The monitoring objectives are to collect long-term data and regulate the changes caused by the project and shall include climatic, water quality, air quality, stream flow, fauna and floristic monitoring and traffic accidents.

Enforcement of El A recommendations

Road construction is unique in a sense that the project proponent is normally either the state or the federal governments agencies. Theoretically, enforcement of EIA recommendations for these projects should be simple as it simply require coordination and cooperation of the relevant governmental bodies. However, in actuality it may turn out to be more complicated. For road constructions, the disturbance to the physical environment mainly affect a strip of land along the corridor of the road. Issues like soil erosion will be critical during the construction period and monitoring by the Department of Environment could be facilitated by its inclusion in some of the site meetings. Recent reports suggest that the DOE is more willing to penalise offenders. However, the main obstacle to effective monitoring by them is lack of manpower. The risk and impact of surface erosion, one of the main environmental concerns, have generally been adequately assessed by environmental impact assessors. They have also suggested a range of mitigation measures which can bring this problem within a manageable level. However, it is up to the developer or the project initiator to assess the effectiveness of any

measure undertaken. The DOE should be furnished with evidence that appropriate measures are taken and they are effective. The DOE should be in a position to request a redo of any mitigating measures considered ineffective. Further, as indicated , there could be problem as vegetation cover on slopes may not be effectively established. The other physical impact is the stability of cut and embankment slopes. Instrumentation and monitoring of these slopes should be given a higher consideration. Instrumentation of certain stretches which are considered of a higher risk should be made mandatory. This will require a new legislation but is necessary to help the enforcement of EIA recommendations as the developer should be required to furnish monitoring data indicating that the slopes are safe

However, the protection of the wildlife is a more serious matter in the long term as the road will improve accessibility to the whole area. More people will and it will be more difficult for the DOE to manage the enforcement issue long term protection is less straightforward. Certain issues may not come directly under the subject of environmental quality. Here the recommendation may have to be enforced under a different legislation and hence becomes the responsibility of other agencies.

Conclusions

The following conclusions can be drawn from the above discussions:

(i). In the case of new roads traversing through forested hilly terrains, there are several physio-chemical and biological aspects that require appropriate attention to minimise possible impacts due to the development of the project. However, the considerations in implementing such a project should take into account the benefits as a whole.

(ii). In order for the legislations relating to the environmental issues to be effective, the Department of Environment should have the capability to enforce the recommendations of the environmental consultants preparing the environmental impact assessment report. The issue of trained and adequate manpower for enforcement of EIA recommendation should be given due consideration.

(iii). As the environment is a multi-aspects issue the enforcement of EIA recommendations require a multi-agencies approach.