

# ENVIRONMENTAL IMPACT ASSESSMENT: REVIEW OF ECOLOGY INPUT IN THE EIA REPORT AND IMPLICATIONS FOR THE ENVIRONMENT QUARRYING ACTIVITIES

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**Abstract**— Environmental Impact Assessment (EIA) has been introduced in Malaysia as mandatory since 1988 as a measurement tool to achieve sustainable development. Quarry operations has raised some environmental implications of the ecological system, especially the environment. This is accomplished through the review of the EIA report by the assessment of ecological inputs to determine the adequacy and compliance and observation at the project site to review the implications that arise. In the assessment of the ecological input 12 ecological criteria. Results show that, the EIA report has shortages in the supply of information to the ecology and insufficient input to the EIA procedure. In addition to these important steps to mitigate the implications of the proposed quarry activities on the environment.

**Key words**- EIA, implications quarrying operation, the natural surroundings

## I. INTRODUCTION

In Malaysia, the Environmental Impact Assessment (EIA) was used as a tool to incorporate environmental considerations in the process of sustainable development and management development. This development is associated with the law and new regulations introduced in any development that takes into account the interests and environmental conservation. EIA is also a form of a report that will be reviewed and evaluated to ensure that reports prepared in compliance with the guidelines set forth.

For this study, researchers will demonstrate compliance and inadequate ecological input to the legal in the EIA for the quarry and the implications of the study area as a result of quarrying activities. The EIA report is a document provided to ensure the ongoing development plan complies with the guidelines and do not ignore the environment. But the damage to the ecological system in the area of the quarry shows the EIA report prepared to ignore these issues and demonstrate the weaknesses of the report with respect to the various impacts that still arise in ecological systems.

## II. AIMS AND OBJECTIVES.

- 1) Assessing the ecological input in the EIA report
- 2) Looking at the implications of the nature surrounding quarrying activity.

### A. Material And Methods

Compliance in the EIA for quarrying activities using guidance contained in A Handbook of Environmental Impact Assessment Guidelines (Department Of Environment 2000) [1] and the EIA Guidelines for Mines and Quarries (Department Of Environment 1995) [2] by the Department of Environment. Recommendations in the review package also conducted by researchers to aspects that need to be left in the evaluation and the ecological input for quarrying activities. These guidelines are used to evaluate the EIA report of the activities of a quarry operation in Labu, Negeri Sembilan to see whether the

financial statements comply with legal and regulatory requirements that have been provided. It also serves as a basis for assessing whether sufficient ecological inputs or vice versa.

Overall, the process of gathering materials and level of research conducted through the review and the review methodology. Through a review of the results to be obtained to determine the extent of compliance of the EIA report and the adequacy of the provision of ecological input to the EIA report based on 12 criteria (Table 1)

As for the review is carried out in the vicinity of the project site to look at the implications of the proposed quarry to environmental exposures. This survey was conducted at the project site are the chosen quarry in Labu, Negeri Sembilan.

**Table 1: The 12 categories of criteria for review and appropriate.**

Number	Criteria
1	Description of project development
2	Description of existing biological environment
3	Forecasting the ecological impacts
4	Significantly impact assessments
5	Size mitigation and reduction
6	residual impact
7	Monitoring and auditing
8	checklist
9	communication reports
10	summary
11	reference
12	negotiator

For a review of assessment methods penganalisan ecological EIA input through the use of the package review. Through this review of the EIA report review to determine the adequacy of the information ecology and see to what extent the proposed project complies with the procedures prescribed by the authorities. For information that is provided in the form of the answer "Yes" or "No" for information that is not included. From the measurements obtained, the determination is made by measuring the adequacy of the scoring for the answer YES (Table 2)

**Table 2 Score scoring an overall assessment**

Number	Criteria
1	Relevant information is well documented, no important tasks left incomplete.
2	Generally satisfactory and complete, only a few did not complete.
3	Can only be said to be quite satisfactory and there is incomplete.
4	Part of this is quite good but overall not satisfactory because too many incomplete.
5	Not satisfactory, significant omissions.
6	Very unsatisfactory, important tasks are not well made or not made at all.

The result of this review the EIA report, the information used to conduct compliance reviews on the site and look at the implications arising out of the operation of the quarry. All information presented through tables and commenting as guest explanation easy to understand. Results of this review will be assessed and recorded on the collation sheet to see compliance and adequacy of ecological inputs provided.

### III. DISCUSSION

#### A. Ecological Assessment of Input

Assessment of ecological input is an important aspect to be considered in the development involving diverse biological environment. Ecological input for proposed development projects have been criticized for lacking scientific emphasis and its failure to predict and assess ecological impacts (Trewick 1996) [3]. Failure in identification of ecological inputs will affect the benefits of protected areas and environmentally sensitive (Fortlage 1990) [4]. Preliminary studies previously examining and researching ecological input content for the initial assessment of the EIA of the proposed quarry in Malaysia also revealed many weaknesses of EIA reports prepared (Rahimah Wahid et al. 2010) [5].

For an overall assessment of the EIA guidelines, the Department of the Environment requires the input of ecological assessment in relation to the existence, sensitivity and value of ecosystems, habitats, communities, populations and species.

Ecological content in the initial assessment of the EIA reviewed in this article to examine the adequacy of compliance with the completeness of the information in the input information ecology, and any strengths and weaknesses are identified. Reviews for criteria description and characterization of the project can provide valuable insights into the development proposals for the urgent need to make reliable forecasts of ecological inputs. This aspect is also to comply with the manual and additional guidelines of the Department of Environment - *Environmental Impact Assessment: Guidelines for Mines and Quarries*.

Criteria development project description is the description to determine the species of plants and animals, particularly protected and cared for from the beginning and now the development of tolerance (Jain et al. 2001) [6]. Criteria for review of the description of the proposed project are summarized in Table 3.

From the initial assessment of the EIA review, this report has a detailed description of the project activities that satisfy and justify the selection of projects, but there is a lack of clear statement.

**Table 3 Summary category reviews for the description of the proposed development proje**

Number	Aspects to be considered
1	Does it represent the total area of the project?
2	Does it explain the vast amount of land that is being developed?
3	Does it clearly show the project site in the map?
4	Does it explain the use of the land is now to be developed?
5	Are otherwise no geographical boundaries and ecology?
6	Does it represent the total area of the project?

Description of site conditions will determine the significance and focus on determining the impact on

For a review of existing biological environment description, include a description of existing biological environment and focus on species abundance and status of the species at the site only. From the reports reviewed, it states the conservation status of the species being monitored, but only entered the list of species, the status of the species as rare, endemic, endangered, protected and used there, has been given in the reports reviewed.

In addition, the status of the species is given only to the fauna and flora of the mainland while rocks and aquatic life are important even if they are not given the status classified as sensitive (Department Of Environment 1997) [8]. Tendency to evaluate terrestrial fauna and flora may be due to more research about them made here, so they are more robust species diversity (Latiff & Zakri, 1998) [9].

Apart from providing conservation status, there is also a need to develop a distribution of the species involved. Of the review, there is no indication of the distribution of species affected by the impact of the initial assessment of the EIA report (Table 4). Geographical information system (GIS) is one of the methods that can be used to determine the distribution of a species.

**Table 4 Abundance and status of the species**

Number	Aspects to be considered
1	Quantity number of species on the site
2	Perpetuation of the status of the species
3	Distribution/ species critical habitat
4	Quantity number of species on the site

Through the forecasting ecological impacts, according to the EIA guidelines, using a matrix environment as references, discussions related to the prediction of ecological impacts should state:

- The essential effect
- Sources of impact
- The essential impact
- Why say significant impact (significant) or unknown
- In the case of an unknown impact kesignifikannya, any action that is considered to evaluate the impact

Table 5 shows the aspects that are considered in this review. The results show an initial assessment of this EIA has included a section on the impact of forecasting, but the prediction of ecological impacts can not otherwise make forecasting methods involved.

**Table 5 Summary of the impact of ecological forecasting.**

Number	Aspects to be considered
1	forecasting methods
2	basic forecasting
3	State reaction or uncertainty
4	cumulative impact
5	Indirect impact
6	Impact of long-term / short

**Table 8 Landscaping is proposed according to the three categories in the report that is reviewed and the measures proposed**

Number	Aspects to be considered
prevention	Avoid the main area
	controlling access
	reduce the area that needs to be cleaned
	avoid clearing trees, uncontrolled
	limiting quarry operations
	protecting the flora of dust
Reduction / control	relocation of species
	installing pollution control devices
	controlling sediment traps
	avoid interference
	regulation and supervision of an expert
Repairer	sediment
	Landscaping
	habitat restoration
	replanting of trees
	resettlement habitat
	replacement habitat

Cumulative impacts are described in this report, while the impact of long-term/short-reviewed reports were not disclosed. Here is a description of the cumulative impact of the report:

- 'site clearing for the siting of base camp, access road, overburden developing site and fixed plant facilities will involve partial removal of the terrestrial vegetation in the form of rubber trees and secondary plant species'*
- any clearing activities and drilling operations, and the noise and vibration associated with these activities have resulted in some disturbance to the wild life and localized destruction of the floral habitat, particularly in areas of drilling operation'*

Attempts to assess the significance of ecological impacts can be found in the report under review. Table 6 shows the significance of the impact of the proposed assessment. EIA is to identify impacts significantly as the foundation of the project is environmentally sensitive place rocks and forest heritage. Another report indicated that the impact is not significant with the introduction of mitigation measures do not refer to case studies or expert opinion (which is required) in making their conclusions, and they only list the reasons are not supported. Among them is shown by the following statement from the report:

- the environment impact generated by these activities are related to air pollution, noise and increase in surface run-off, erosion, siltation, waste generation from vegetation clearing and construction works. Need mitigation measures to control these impacts.*

**Table 6 Summary of assessment of the significance of the impact**

Number	Aspects to be considered
1	Rating the impact of tremor
2	Quantify the impact of significant
3	Are all the issues that are expected to impact has been assessed?
4	Uncertainty in the assessment of the significance of the impact
5	Does it represent the impact of the unknown?

As part of the mitigation measures, the EIA report is required to address all design steps that have been taken in the design of the project to reduce or eliminate significant environmental impact as possible. Table 7 shows the summary of the review of the mitigation measures as recommended in the initial assessment of the EIA.

**Table 7 Summary of review mitigation measures**

Number	Aspects to be considered
1	Does it describe the mitigation measures?
2	Does it describe in detail the following?
3	Does it explain the rationale for the mitigation measures?
4	Are mitigation measures appropriate to have a significant impact identified earlier?
5	Are called the feasibility of mitigation measures?

Generally, this report has identified the ecological impacts that may have included a section on mitigation measures (Table 8).

Among the mitigation measures proposed in the report of the review is limiting the area of operations in a particular time and is not made in mitigating the impact of these measures remain ecology and ecological systems affect the activity, but continued and there is no guarantee of control over your environment. This measure is also used to reduce the sound at a specific time and reduce migration wildlife such as birds. Examples of these measures are set out as follows:

- the contractor should ensure that the vehicles and machinery used are properly maintained with regular servicing to ensure that they are operating efficiently without emitting excessive noise. The hours of operation of noise equipment must be restricted, preferably to day light hours only*

Landscaping measures are also mentioned in the report under review, as a reserve to cover the landscape of the area destroyed by quarrying activities. This proposal becomes less efficient as the visual perception changed completely after taking the rock executed. Statement of proposed mitigation measures are set out in the report include the following:

- 'Mining cliff of a hill crowned affect views (aesthetic) in the surrounding area. Methods to reduce visual disturbance should be considered in the early planning stages of the project. Conservation measures should be progress'*

For residual impact, the report is reviewed, it has been pleasing fact be entering the ecological impact residual (Table 9). However this report only include a statement sake only and not for ecological impact. According to the guidelines, the residual impact refers to the surrounding impact which may, after the implementation of the mitigation measures. In addition to further studies, if the monitoring program required the project proponent shall describe the monitoring program.

**Table 9 Summary of residual impacts review**

Number	Aspects to be considered
1	Stating about the residual impact
2	Residual impact of Information and justification if there
3	Justification for the absence of residual impact
4	Further studies are needed

Environmental monitoring is an essential criterion to be a key component to the success of any development proposals that mitigation measures can be developed and issues are identified and corrected after development (Thompson et al. 1997) [10]. For this purpose, an Environmental Management Plan is required. Additional guidelines also state monitoring process should be supported by the provision of adequate, qualified staff and procedures for reporting and enforcement

Found in the review report mentions the monitoring program (Table 10). But in the report, nor demonstrate a commitment to monitor the environment. This can be seen through a description of the monitoring program (Table 10 2). The report does not state budget, personnel involved in monitoring, location and schedule for monitoring to report.

The most widely reported is the parameter for monitoring the physical and schedule for monitoring, but both of these aspects are not included in the report that is reviewed by the monitoring program, all of this just shows a lack of commitment on the part of the project proponent to monitor.

Scrutiny reveals this report are stated in respect of monitoring for chemical factors, physical (such as water turbidity, levels of noise pollution, dust and vibration), but did not specify on the monitoring of ecological aspects such as eutrophication and others. This happens because of the possibility of monitoring ecological change is not as easy as the others (Treweek 1999) [11].

**Table 10 Summary review of environmental monitoring**

Number	Aspects to be considered
1	State monitoring program
2	Description of the monitoring program in relation to: <ul style="list-style-type: none"> <li>• Expenditure</li> <li>• Staff</li> <li>• The location of monitoring points</li> <li>• Parameter monitoring</li> <li>• Schedule monitoring</li> <li>• Schedule reports</li> </ul>

Additional guidelines for the operation of the quarry activities have included a checklist for the same activity, which is made in the form of a questionnaire format. This is a basic checklist scope documentation that lists all known issues on a project. According to the guidelines, if a thing or questions can not be answered with 'No', it needs to be addressed in the EIA. The information in the checklist can be used to prepare Terms of Reference (TOR) and also for review by officers reviewers Department of Environment. 1994) [12]. Checklists need to identify major impacts and ensuring that developers are not excessive, especially in the scope.

Preliminary assessment EIA for the proposed quarry activities should include a checklist in their report. This situation is also due to quarrying activities scheduled activities which most contributed destruction of ecosystems, especially for wildlife in the area of rock and forest. While the checklist is considered small compared to other parts of the report, but it must be followed because it will reflect the transparency of the parties involved in the environmental assessment.

There are 8 communication aspects of the report have been examined. Generally, the content of the report that is reviewed communication is not so satisfactory. This is

**Table 11 Summary review of effective communication**

Number	Aspects to be considered
1	Clarity
2	Balance
3	Executive Summary clear
4	Effective presentations
5	Technical definition
6	Abbreviation
7	Notification

Summary conclusion is important, because it reflects the overall report and reflect transparency in the summary of conclusions and a summary of the biological component of the report whether they are consistent with the results in the report. This review shows only a summary of the conclusions that easy and not so stressed ecological aspects and special effects

For reference criteria in the report is important in reviewing 12 criteria. Individual or agency negotiated for special knowledge or information used in the report should be referred in the text as documented in the reference section. Of the review, this report does not have section, although many references were found in the text.

In Malaysia, the EIA consultants play a most important role in preparing the report. Therefore, an attempt is made to examine this aspect in the initial assessment EIA review. According Vanclay and Bronstein (1996) [13] in the context of this EIA consultant responsible for evaluating the impact of the forecasting performance impact without court forecasting or position.

Not an expert in this field among consultants can impair the report prepared. In the review of this report, there are reports provide records pertaining to the teams involved in the preparation of the report. However, in this report it is not really using ecological expertise. Ecological content in the EIA better connected with the presence of a multidisciplinary team comprising expert broad field of discipline.

*B. implications of operation through the quarry assessment review of study area*

Apart from commenting on the EIA report prepared by the researcher, surveys and visits to the project area are also performed. The purpose of the review to the surrounding areas of quarrying activities this site is to look at the implications arising from the operation of the quarry activities and compliance with the guidelines provided.

In addition to ensuring that what is stated in the report that reviews conducted at the site. This survey will also be able to see more closely the implications or effects of quarrying activity development on the environment and local communities directly. This survey was conducted for the Labu, Negeri Sembilan.

Based on a survey carried out in the quarry, dust pollution and dust. In the report reviews contamination only be focused on the project site and not to the area around the site is impressed indirectly. While the guidelines have emphasized the effects of the immediate vicinity of the site.

This pollution also contaminate the surrounding area and affect the health of the population. Mitigation measures to address water quality issues are set out in the report but it is not exploited to the fullest. If this situation continues undoubtedly worsen water quality and destroy ecologies in flows.

Moreover, the implications of which exist also leave scars on the rocks. In addition, other consequences of quarrying activities on the environment are as follows:

- The existing Forest quarried destroying a large part of forest ecology.
- Lorry pickup that produces noise pollution.
- Contamination of dust and dirt in the driveway of the project site and stone separation process.
- Sediment pile of rocks blocking the flow of water causes air pollution.
- Sediment cause slow flow of the river and threaten the habitat area deign

#### IV. CONCLUSIONS

Overall, this study answers some questions according ecological context in the early EIA inventory valuation. The study reveals that there are a number of critical deficiencies regarding ecological input to the initial assessment EIA.for quarrying activities.

Environmental implications of that seen in the project area and the inadequacy of the ecological input is referred to the shortcomings in the provision of information described in this study. Through the assessment and recommendations expressed in this alignment sustainable development will be established and monitored effectively by all parties.

#### V. RECOMMENDATIONS

1. Authorities should be monitored at the site.
2. Review package proposed for the 12 criteria can be used in conjunction with the Department of Environment guidelines.
3. Authorities should identify the proposed project did not follow the prescribed EIA prosedue and legal action may be.

#### VI. REFERENCES

- [1] Department of Environment. *A handbook environmental impact assessment guidelines*. Ed. ke-3. Ministry of Natural Resources & Environment: Department of Environment. 2000.
- [2] Department of Environment. *Guidelines EIA for mines & quarries*. Ministry of Natural Resources & Environment: Department of Environment. 1995.
- [3] Treweek, J. Ecology and environmental impact assessment. *Journal of Applied Ecology* 33:191-199. 1996
- [4] Fortlage, C. A. *Environmental Assessment A Practical Guide*. Hants: Gower. 1990.
- [5] Rahimah Wahid, Abdul Latiff Mohamad & Mohd Pauzi Abdullah. Input ecology in Environmental Impact Assessment (EIA) for the mitigation measures for the quarry in Malaysia. *Journal of Environmental Management* 11(2): 45-56. . 2010
- [6] Jain, R., Urban, L.V., Stacey, G. S., & Balbach, H. *Environmental Assessment*. Ed. ke-2. New York: McGraw-Hill. 2001.
- [7] Therivel, R & Morris, P. *Method of Environmental impact assessment*. Spon Press: London. 1995.
- [8] Department Of Environment. *Environmental quality report*. Malaysia: Ministry of Natural Resources and Environment Department of the Environment. 1997
- [9] Latiff, A. & Zakri, A. H. Environmental and conservation issues in Malaysia. In: Ghazally Ismail & Murtedza Mohamad (ed). *Biodiversity conservation in ASEAN: Emerging issues and regional needs*, hlm.38-164. London: ASEAN Academic Press. 1998.
- [10] Thompson, S., Treweek, J. R. & Thurling, D. J. The ecological component of environmental impact assessment: a critical review of British environmental statements. *Journal of Environmental Planning and Management* 40 (2):157-171. 1997.
- [11] Treweek, J. *Ecological impact assessment*. Oxford: Blackwell Science Ltd. 1999.
- [12] Department of Environment. *Environmental impact assessment (EIA) procedure needs in Malaysia*. Ministry of Natural Resources and Environment Department of the Environment. 1994.
- [13] Vanclay, F. & Bronstein, D. A. *Environmental and social impact assessment*. John Wiley & Sons. 1996.