



# *Environmental Impact Assessment, Guidelines for Preparation of (MOE Decree No. 14 ,1994)*

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## DECREE CONCERNING GENERAL GUIDELINES FOR THE PREPARATION OF ENVIRONMENTAL IMPACT ASSESSMENT

**Minister of State for the Environment  
Decree Number Kep-14/Menlh/3/1994  
THE MINISTER OF STATE FOR THE ENVIRONMENT**

**Considering:**

that for the implementation of [Government Regulation No. 51 of 1993](#) regarding Environmental Impact Assessment it is necessary to stipulate a Decree of the Minister of State for the Environment Regarding General Guidelines for the Preparation of Environmental Impact Assessments.

**In View of:**

1. Law No. 4 of 1982 regarding Basic Provisions for the Management of the Living Environment (State Gazette No. 12, 1982, Supplement to State Gazette No. 3215);
2. Law No. 24 of 1992 regarding Spatial Use Management (State Gazette No. 115, 1992, Supplement to State Gazette No. 3501);
3. [Government Regulation No. 51 of 1993](#) regarding Environmental Impact Assessment (State Gazette No. 84, 1993, Supplement to State Gazette No. 3538);

4. Decree of the President of the Republic of Indonesia No. 23 of 1990 regarding the Environmental Impact Management Agency;
5. Decree of the President of the Republic of Indonesia No. 44 Of 1993 regarding Position, Basic Tasks, Function, Organizational Structure and Administration of Ministers of State;
6. Decree of the President of the Republic of Indonesia No. 96/M of 1993 regarding the Establishment of Development Cabinet VI.

**HAS DECIDED TO STIPULATE:**  
**General Guidelines for the Preparation of**  
**Environmental Impact Assessments**

**Firs**

The definitions of Terms of Reference for an Environmental Impact Statement, Environmental Impact Statement, Environmental Management Plan and Environmental Monitoring Plan shall be as provided in [Government Regulation No. 51 of 1993](#) Regarding Environmental Impact Assessment.

**Second**

The terms of reference for an environmental impact statement shall be prepared with reference to the general guidelines for the preparation of the terms of reference for an environmental impact statement as set forth in [Appendix I](#) hereto.

**Third**

1. General guidelines for the preparation of an environmental impact statement shall be as provided in [Appendix II](#) hereto;
2. Technical guidelines for the preparation of an environmental impact statement shall be issued by the Minister of Head of the non-departmental government agency concerned, with reference to the general guidelines as referred to in Item 1 above;
3. In the event that technical guidelines as described in Item 2 above have not yet been issued, the environmental impact statement shall be prepared with reference to the general guidelines as referred to in Item 1 above.

**Fourth**

The environmental management plan shall be prepared with reference to general guidelines for the environmental management plan as set forth in [Appendix III](#) hereto.

## **Fifth**

The environmental monitoring plan shall be prepared with reference to general guidelines for the environmental monitoring plan as set forth in [Appendix IV](#) hereto.

## **Sixth**

This Decree shall take effect as of the date of promulgation, and if any error is found in the future, a revision shall be made accordingly.

Promulgated in Jakarta on 19 March 1994  
The Minister of State for the Environment  
(signed) Sarwono Kusumaatmadja

### **APPENDIX I GENERAL GUIDELINES FOR THE PREPARATION OF THE TERMS OF REFERENCE FOR AN ENVIRONMENTAL IMPACT STATEMENT (KA- ANDAL)**

#### **A. GENERAL**

##### **1. Definition**

The **Terms of Reference** is the scope of study for the Environmental Impact Statement (ANDAL), which results from the scoping carried out as per [Article 1 of Government Regulation No. 51 of 1993](#).

##### **2. Function of the General Guidelines for the preparation of the KA-ANDAL**

a. The general guidelines for the preparation of the KA-ANDAL shall be used as a reference in preparing technical guidelines for the preparation of the KA-ANDAL, and as the basis for the preparation of a KA-ANDAL in the event that such technical guidelines for the particular business or activity have not yet been promulgated.

b. The general guidelines on the preparation of the KA-ANDAL shall also be applicable to the environmental impact assessment process for integrated/multisectoral activities, estates (kawasan) and regional development areas (AMDAL Regional).

##### **3. Objectives and Function of KA-ANDAL**

The objectives of preparing a KA-ANDAL are as follows:

- a. To establish/formulate the scope and depth of the Environmental Impact Statement (ANDAL) study.

- b. To provide direction for the ANDAL study in order that it may be carried out in an effective and efficient manner in accord with the available funds, manpower and time.

The Functions of KA-ANDAL Document are as follows:

- a. As an important reference for the proponent and those agencies responsible for supervision of the business or activity in question, and for the compilers of the ANDAL study with regard the scope and depth of the ANDAL study to be undertaken.
- b. As a reference for the evaluators of the ANDAL document in carrying out the evaluation of the ANDAL study.

#### **4. Basic Consideration in the Preparation of the KA-ANDAL**

- a. **Diversity.** The objective of an ANDAL is to predict the possible occurrence of impacts on the environment from a proposed business or activity. In general, the proposed business or activity and the environment are quite diverse. Business or activities vary widely in terms of their form, objectives, targets, etc.

Similarly, the profile of the environment will vary greatly depending on the geography, diversity of environmental factors, human influences, etc. Therefore, the inter-relationships between the two will also vary greatly.

The possibility of environmental impacts will also vary. Thus, the KA-ANDAL is needed to provide direction as to which components of the business or activity should be studied and which environmental components should be observed during the preparation of the ANDAL.

- b. **Resources Limitations.** Preparation of the ANDAL frequently faces limitations in resources, time, funds, manpower, methods, etc. The KA-ANDAL will clarify how to adjust the desired objectives and outcomes within these limitations without reducing the ANDAL's quality.

The KA-ANDAL sheds light on the efforts to determine which priority must be given precedence so that the objectives of ANDAL can be fulfilled within the limited resources.

- c. **Efficiency.** The collection of data and information for the ANDAL needs to be limited to those factors directly related to the needs of the study. In this way, the ANDAL can be prepared efficiently.

The requirements for input of the most relevant data and information are subsequently compiled and formulated in the KA-ANDAL.

## 5. The Involvement of Relevant Parties in Preparing the KA-ANDAL

Those parties directly involved in the preparation of a KA-ANDAL are the proponents, responsible agencies, and (prospective) compilers of the ANDAL study. However, in practice, the preparation of the KA-ANDAL (the scoping process) shall always involve relevant experts and the community concerned, as provided in [Article 22 of Government Regulation No. 51 of 1993](#) regarding Environmental Impact Assessment (AMDAL).

The KA-ANDAL is a very important in providing a reference as to depth of the ANDAL study.

## 6. ANDAL Users and Their Relation to the Preparation of the KA-ANDAL

As provided for in [Article 6 of Government Regulation No. 51 of 1993](#) the Environmental Impact Assessment process constitutes an integral part of the feasibility study for a proposed business or activity.

The results of the feasibility study shall not only be useful for the proponent, but also for decision-makers. Therefore, in compiling the KA for an ANDAL it is necessary to understand that the outcome thereof will form part of the feasibility study which will be used by decision-makers and planners.

However, unlike those parts of the feasibility study which deal with the positive and negative economic and technological aspects of a business or activity, the ANDAL deals more with the prediction of impacts on the environment which may be produced by the business or activity.

Therefore, the compilers of the KA-ANDAL should follow the attached chart of ANDAL compilation, in order to produce those inputs which are needed by planners and decision-makers:

Data and information collection concerning

- Proposed business or activity
- Initial environment profile

Prediction of changes in the environment profile due to the proposed business or activity

Determination of significant environment impacts produced by the proposed business or activity

Evaluation of significant environment impacts

Recommendations/suggestions for decision-makers, planners and environment managers regarding:

- Business or activity alternatives
- Environmental Management Plan
- Environmental Monitoring Plan

## **7. The Concept of KA-ANDAL**

The KA-ANDAL Document shall clearly and specifically reflect the environmental orientation to be reflected in the construction of a proposed business or activity. In this regard, there are several factors to be considered:

- a. The KA-ANDAL document shall accommodate the various aspirations regarding matters considered important by all parties involved to be necessary analysis in the ANDAL study.
- b. In view of the fact that the environmental impact assessment process is part of the feasibility study, the ANDAL study must investigate and evaluate alternatives for the proposed business or activity which are considered feasible from environmental, technical, or economic points of view, in order to prevent more serious negative impacts.
- c. In view of the fact that development activities in general will alter the environment, it is important to pay due attention to environmental components having the following characteristics:
  1. Environmental components for which the functions must be maintained, safeguarded and preserved, such as:
    - protection forests, conservation forests, and biosphere reserves
    - water resources
    - biological diversity
    - air quality

- natural and cultural heritage
  - environment quality
  - environmentally-oriented cultural values
2. Environmental components which may undergo fundamental change(s), along with such change(s) as are considered important by the community in the area of the proposed business or activity, for instance:
- land ownership and control
  - employment and business opportunities
  - living standards of the community
  - public health
- d. Basically, environmental impacts produced by a proposed business or activity do not stand alone, but are interrelated and interdependent. The causal relationships need to be understood early in the process of KA-ANDAL compilation in order that the ANDAL study can be carried out in a more directed and systematic fashion.

The four factors above shall be an integral part in KA-ANDAL compilations, particularly in the scoping process.

## **8. Scoping Process**

Scoping is the initial process in determining the scope of the issues and identifying the hypothetically significant impacts related to the proposed business or activity.

Scoping is the most important part of the process of preparation of the KA-ANDAL as it will provide:

- a. The significant environmental impacts which are considered relevant for study in detail in the ANDAL, by eliminating those matters or environmental components which are considered less important;
- b. The scope of the study area for the ANDAL, based on several considerations: the project boundaries, ecological boundaries, social boundaries and administrative boundaries;
- c. The depth of the ANDAL study, which among others includes the methods to be used, number of samples to be analyzed, and required experts, corresponding to the resources available (funds and time).

The better the scoping results, the clearer and firmer is the direction of the ANDAL study.

a. **Scoping of Significant Impacts.** Scoping of significant impacts is done through a set of processes as follows:

1. **Identification of Potential Impacts.** At this stage, the scoping activity is aimed at identifying all environmental impacts (primary, secondary, and so on) which potentially will arise due to the proposed business or activity. This stage will only take inventory of the potential impacts which are likely to arise, without considering the magnitude or importance of the impacts. Thus, at this stage, there is no effort to evaluate whether or not the potential impacts are significant.

The identification of potential impacts can be done through a series of consultations and discussions with relevant experts, the proponent, responsible agencies and the relevant community. In addition, the identification of potential impact can also be carried out using impact identification methods such as:

- checklists (simple lists, questionnaires, descriptive lists)
- simple interaction matrices
- flowcharts
- literature studies
- field observations
- content analysis
- group interactions (meetings, workshops, brainstorming, etc.)

For clarification of the scoping process, consult **Scoping Guidelines for Preparation of KA-ANDAL** in the Decree of the Minister of State for Population and Environment No. KEP-30/MENKLH/7/1992.

2. **Evaluation of Potential Impacts.** Scoping at this stage is aimed at eliminating or excluding those potential impacts which are considered irrelevant or unimportant, in order to produce a list of the possible significant impacts which are considered important and relevant for study in detail in the ANDAL. The list of significant impacts is prepared based on the matters considered important by communities in the vicinity of the business or activity, responsible agencies and experts. At this stage, the list of possible significant impacts is not yet organized systematically.



The methods used at this stage include group interactions (meetings, workshops, brainstorming). The identification of significant impacts is made primarily by the proponent of the business or activity (who in this regard can be represented by ANDAL consultants), paying due attention to the results of consultations and discussions with responsible agencies and the relevant community.

3. **Focusing on Significant Impacts.** The scoping at this stage is aimed at grouping or organizing the significant impacts, which have been formulated in the previous stage, in order to specify the primary environmental issues which fully and completely reflect or describe the situation regarding:
  - the relationship between the proposed business or activity and the environment components which experience fundamental changes (the significant impacts);
  - inter-relationships among the various significant impact components.

The primary environmental issues are formulated in 2 (two) stages. First, all significant impacts are grouped according to their relationships to one another. Second, the grouped impacts are then arranged in their order of economic, social or ecological importance.

- b. **Study Area Scoping.** Scoping of the study area is aimed at limiting the extent of the ANDAL study area according to the designated significant impacts, and with regard to the resource limitations in terms of time and manpower.

The ANDAL study areas is defined based on the following spatial boundary considerations:

1. **Project Boundaries.** The project boundaries refer to the space within which the business or activity will carry out its pre-construction, construction and operational activities. It is from this location of the business or activity, or from any alternatives thereto, that the impacts on the surrounding environment will arise.
2. **Ecological Boundaries.** The ecological boundaries refer to the area of distribution of the impacts of the proposed business or activity, with regard to the waste transportation media (water, air) in which

the ongoing natural processes are expected to experience fundamental changes. This shall include the areas around the proposed business or activity which ecologically have impacts on the business or activity.

3. **Social Boundaries.** The social boundaries refer to the area around the proposed business or activity where social interactions, including certain established norms and values (including social systems and structures), take place according to the dynamic social processes of the community group which is expected to undergo fundamental change as a result of the business or activity.

The social boundaries are highly important for the parties involved in the ANDAL study in view of the existence of community groups whose social, economic and cultural life will undergo fundamental changes as a result of the business or activity.

As the environmental impacts produced by a business or activity will be unevenly distributed, the social boundaries shall cover the community groups affected both by positive and negative impacts.

4. **Administrative Boundaries.** The administrative boundaries refer to the area where the community can freely conduct its socio-economic and social-cultural activities according to the prevailing laws and legislation.

The boundaries of that space could be in the form of governmental administrative boundaries or those of a resource management concession of a business or activity (such as, a forest concession (HPH), or mining operation rights).

Due attention to the above mentioned boundaries and the technical constraints (funds, time and manpower) will indicate a viable scope for the study area, which can be defined on a map of appropriate scale.

5. The boundaries of the ANDAL study area will include the total of the four areas above; however, this will be decided on the basis of the usual capabilities of the implementor (based on the resources available such as time, money, manpower, technology and research methods).

Hence the study area boundaries start with the area of the proposed business or activity and extend to the wider ecological, social and administrative boundaries.

## **B. PREPARATION OF THE TERMS OF REFERENCE**

## **I. Introduction**

### **1.1 Background**

Brief description of the background of why the ANDAL study must be carried out, in view of:

- a. prevailing legislation;
- b. environmental management policies;
- c. relationship of the business or activity with the significant impacts which are likely to arise.

### **1.2 Study Objectives and Purpose**

The objectives of the ANDAL study are:

- a. to identify the proposed business or activity which will potentially produce significant impacts on the environment;
- b. to identify the environment, particularly those aspects which will be affected by the significant impacts;
- c. to estimate the impacts and evaluate the significant environmental impacts.

The purpose of the ANDAL study is:

- a. to assist decision-makers in selecting the best alternatives for the environmental aspects;
- b. to integrate environmental considerations in the detailed planning stages of a business or activity;
- c. to serve as a guide to environmental management and monitoring.

## **II. Scope of Study**

### **2.1 Scope of the Proposed Business or Activity to be Studied**

- brief description of the business or activity causing the impacts;
- business or activity components to be analyzed relation to the produced impacts.

### **2.2 Scope of the Initial Environment Profile**

- brief description of the environmental components affected;
- affected environmental components to be analyzed.

### **2.3 Study Area Scope**

This area includes the project, ecological, social and administrative areas, the sum of which is the technical area which constitutes the ANDAL study area.

## **III. Study Method**

### **3.1 Data Collection and Analysis Methods**

This part describes the collection of valid and reliable primary and secondary data and the analysis methods to be used in:

- a. analyzing, measuring and observing those environmental components which are likely to experience significant impacts;
- b. analyzing, measuring and observing those components of the business or activity which are likely to experience significant impacts from the surrounding environment.

### **3.2 Methods for the Prediction of Impacts and Determination of Significant Impact**

This part will describe those methods applied in the ANDAL study to estimate the magnitude of the environmental impacts and determine the significant impacts. The use of formal and informal methods for prediction of significant impacts must be clearly described for each component of the environment which is predicted to experience significant impacts.

### **3.3 Impact Evaluation Methods**

This part will contain the customary methods applied in the ANDAL study to evaluate the significant impacts of the business or activity on the overall environment, which will be used:

- a. as the basis for the analysis of the environmental feasibility of various alternatives to the business or activity;
- b. in the management of the significant environmental impacts produced.

## **IV. Study Implementation**

### **4.1 Study Team**

This part will list the numbers and disciplines of the experts required for the ANDAL study, according to its scope.

### **4.2 Costs**

This part describes the details of costs required for carrying out the ANDAL study.

#### **4.3 Time Frame**

This part provided the time frame for implementation of the ANDAL study, from the preparation stage through to report submission to the responsible agencies.

### **V. Bibliography**

This part lists the references or literature used in compiling the KA-ANDAL

### **VI. Appendices**

If considered necessary, important items from the consultations and discussions with the relevant parties involved in the preparation of the KA-ANDAL may be appended to KA-ANDAL document. It shall also contain the biodata for the personnel who will prepare the ANDAL.

#### **APPENDIX II**

### **GENERAL GUIDELINES FOR THE PREPARATIONS OF THE ENVIRONMENTAL IMPACT STATEMENT (ANDAL)**

#### **A. GENERAL EXPLANATION**

##### **1. Definition**

An **Environmental Impact Statement (ANDAL)** is a through and in depth study of the significant impacts of a proposed business or activity ([Government Regulation No. 51 of 1993, Article 1](#)).

##### **2. Function of Guidelines for ANDAL Document Preparation**

a. The general guidelines for ANDAL preparation are used as reference for the writing of ANDAL technical guidelines, or as a basis for the preparation of an ANDAL in the event that technical guidelines for ANDAL compilation have not yet been prepared for the relevant business or activity.

b. The general guidelines for ANDAL preparation shall also be applicable to the environmental impact assessment (AMDAL) proses for integrated/multi-sectoral activities (AMDAL Kegiatan Terpadu), industrial and tourism estates (AMDAL Kawasan) and regional development areas (AMDAL Regional).

#### **B. COMPOSITION OF THE ENVIRONMENT IMPACT STATEMENT (ANDAL) DOCUMENT Summary**

The summary of the Environmental Impact Statement (ANDAL) needs to be written in such a way that it will be able to:

1. Immediately present important information which will be useful for decision-makers, planners and managers of the proposed business or activity.
2. Be easily understood by all parties, including the community at large, and easily summarized for publication in the mass media, if considered necessary.
3. Contain brief descriptions of:
  - a. The proposed business or activity, along with the various significant impacts, whether in the pre-construction, construction or post-construction (operation and management) phases.
  - b. A description of possible disparities in the data and weaknesses and limitations in the data encountered during preparation.
  - c. Other matters deemed important to include in the summary.

## Chapter I Introduction

The introductory chapter shall cover:

1. **Background.** A brief description of the background of ANDAL preparation, in view of:
  - a. Prevailing legislation.
  - b. Basic environmental policies.
  - c. Relationship of the proposed business or activity to the significant impacts which will arise.
2. **Study Objectives**
  - a. **Objectives.** The objectives of the ANDAL study are:
    1. To identify proposed business or activities which will produce significant impacts on the environment.
    2. To identify which environmental components will be affected by the significant impacts.
    3. To predict and evaluate proposed businesses or activities which will produce significant impacts on the environment.
  - b. **Use.** The uses of the ANDAL study are:
    1. as input into regional development planning.
    2. assisting the decision-making process regarding the environmental feasibility of the proposed business or activity.

3. providing input in the preparation of the detailed technical design for the proposed business or activity.
4. providing input in the preparation of the environmental management and monitoring plans for the proposed business or activity.
5. providing information to the community to enable them to benefit from positive impacts and avoid negative impacts of a proposed business or activity.

## **Chapter II Study Methods**

The methodology chapter shall cover the significant impacts studied, the study area, methods for data collection and analysis and methods for prediction and evaluation of significant impacts.

All topics described in this chapter should be written with reference to those aspects contained in the Terms of Reference document.

### **1. Significant Impacts to be Studied**

- a. Briefly review the business or activity producing the impacts, particularly components directly related to those impacts.
- b. Briefly describe the environment affected, particularly those components directly affected.
- c. The aspects reviewed as described in points a. and b. above will refer to the results of the scoping as provided in the Terms of Reference document (KA-ANDAL).

2. **Study Area.** Include a brief description of the study area, referring to that prescribed in the Terms of Reference for the ANDAL study and the result of the field observations. The boundaries of the ANDAL study area should be described using maps of an appropriate scale.

### **3. Data Collection and Analysis Methods**

- a. Since the ANDAL study is an in-depth review of the significant impacts on the environment of the business or activity, the primary and secondary data collected must be valid and reliable and acquired using valid methods and instruments.
- b. Clearly describe the methods or instruments used and the data collection sites for the various environmental components as mentioned in Section 1.b above. The data collection sites shall be indicated on a map of appropriate scale.

- c. Data collection on demography, socio-economics, culture and public health shall as far as possible use a combination of three methods (triangulation method, consisting of literature study, secondary data survey and observation/analysis) in order to acquire highly reliable data.
  - d. A clear description of the methods or equipment used in data analysis.
4. **Methods for the Prediction of Significant Impacts.** Provide a clear description of the methods used to predict the magnitude of the impacts on the environmental components as a result of the business or activity, as provided in Section 1.b above. Formal and non-formal methods for prediction of significant impacts should be used to clearly explain each environmental component which is predicted to experience significant impacts.
5. **Methods for the Evaluation of Significant Impacts.** A brief description of the impact evaluation methods, based on the [Decree of the Head of BAPEDAL Number Kep-056 of 1994](#) Concerning Guidelines for the Determination of Significant Impacts, which are used to study in a holistic way the significant impacts of the business or activity on the environment, as the basis for determining the environmental feasibility of alternative businesses or activities.

### **Chapter III Proposed Business or Activity**

1. **Identity of Proponent and ANDAL Compilers.** The description of the identities of the proponent and ANDAL compilers shall consist of:
  - a. **Proponent**
    1. Full name and address of the agency/company which is the proponent of the proposed business or activity.
    2. Full name and address of the officer in charge of the proposed business or activity.
  - b. **ANDAL Compilers**
    1. Full name and address of the institution/company including its qualifications and references.
    2. Full name and address of the person in charge of compiling the ANDAL.



**2. Objectives of the Proposed Business or Activity.** Statement of the aims and objectives of the proposed business or activity. The objectives should be stated systematically.

**3. Use and Importance of Proposed Business or Activity.** A description of the uses of and needs for implementations of the proposed business or activity, from the point of view of both the proponent and development programs.

**4. Work Plan and Component Activities.** A description of:

- a. The boundaries of the land to be directly used in the proposed business or activity. These shall be indicated on a map of appropriate scale, showing the inter-relationships and layout of the proposed site and other businesses or activities, such as settlements (man-made environment in general) and the natural environment surrounding the proposed business or activity. Protection forests, nature reserves, wildlife reserves, wildlife sanctuaries, springs, rivers and other protected areas located close to the site of the proposed business or activity shall be specially indicated on the map.
- b. Relationships between the proposed business or activity and the distance and availability of water sources, energy resources, biological natural resources, non-biological natural resources and human resources required for the proposed business or activity during the operational phase. These relationships need to be indicated on a map of appropriate scale.
- c. Alternatives to the business or activity based on the feasibility study (for example, alternative locations, construction or auxiliary facilities layout or production process technologies). If in the feasibility study there are several alternative locations for the business or activity, describe each of the alternative locations as outlined in points a. and b. above.
- d. Layout of the business or activity, shown on a map of appropriate scale, indicating information on the location of the buildings and other structures to be constructed at the site of the proposed business or activity, as well as the relationship between the buildings and structures and any pre-existing structures (main roads, railways, ports, etc.). If there are several alternatives for the layout of the buildings and structures, clearly indicate those alternatives on a map of appropriate scale.
- e. Implementation stage of the proposed business or activity. The implementation schedule for the business or activity, from the construction phase through operation to the post-operation phase.

1. **Pre-Construction or Preparation Phase.** Description of the proposed business or activity and its time schedule in the pre-construction phase. The detailed description shall focus on those businesses or activities producing significant impacts on the environment.
2. **Construction Phase**
  - a. Description of the proposed business or activity and its time schedule during the construction phase. The detailed description shall on those businesses or activities producing significant impacts on the environment. For example:
    1. Labour recruitment plan, including numbers of workers, source of workers and educational qualifications.
    2. Construction activities for facilities and infrastructure (roads, power, water, etc.) for the proposed business or activity.
    3. Stockpiling of materials which are likely to produce impacts on the environment.
  - b. A description of procedures or activities in constructing the impact control units or facilities (i.e., waste treatment facility), if such units or facilities are planned to be constructed by the proponent. In addition, describe the procedures, if any, to manage various environmental problems which may arise during the construction phase.
3. **Operation Phase**
  - a. Description of the proposed business or activity and its implementation schedule during the operation phase.

The detailed description shall focus on those businesses or activities having significant impacts on the environment. For example:

1. Amount and type of raw materials used in the production process which may produce significant impacts on the environment (i.e., pesticides and other toxic and hazardous materials). Also describe the water balance in the case of businesses or activities which require large quantities of water.

2. The proposed size, source and educational qualifications of the work force which will be directly employed by the proposed business or activity during operation phase.
    3. Emergency response plan for the operation phase, including both physical and social aspects.
  - b. Plans for land reclamation and rehabilitation which will be implemented during operation. Included in this are the operating plans for impact control units which have been built during the construction phase.
4. **Post-Operation Phase.** A description of the proposed business or activity and a schedule for activities in the post-operation phase. For example:
  - a. Clean-up and recycling plans for stockpiles of materials, workshops, warehouses, temporary roads, etc.
  - b. Land reclamation and rehabilitation plans which will be implemented after the completion of operations.
  - c. Plans for the return of the site to other uses when the proposed business or activity is fully completed.
  - d. Plans for the handling of the discharged workforce after the completion of operations of the business or activity.

#### **Chapter IV Environmental Profile**

In this chapter the environmental information concerning the following shall be provided in as complete a form as possible:

1. A description of the environment in the study area for the proposed business or activity, which must describe in depth those environmental components which have the potential to experience significant impacts from the business or activity. In this regard, those environmental components having ecological and economic value require particular attention.
2. The qualitative and quantitative conditions of the various natural resources within the study area for the proposed business or activity, whether already in use or planned for use as well as those having potential for utilization. The condition of the natural resources must be presented in maps or tables at an appropriate scale, and, if necessary, diagrams, figures, graphics or photographs should be provided.

3. Data and information on environmental conditions. A brief description of the environmental conditions in the study area for the proposed business or activity. The description in this section is to be limited to those environmental components related to or potentially affected by the significant impacts.

The following are some examples of the environmental components which may be selected for study according to the results of the scoping in the Terms of Reference for the ANDAL. If deemed necessary on the basis of the results of the field evaluation in the ANDAL study, the ANDAL compilers may study other environmental components in addition to those listed in this example.

- a. **Physical-Chemical**

1. **Climate**

- a. Those climatic components which should be observed include, among others, the climate type, temperature (maximum, minimum, average), precipitation, humidity, number of days with precipitation, wind (direction and speed) and the intensity of solar radiation.
    - b. Data on periodic disasters (annual, five-yearly, etc.) in the study area for the proposed business or activity, such as the frequency of hurricanes, annual floods and flash floods.
    - c. Available data from meteorological and geophysical stations representative of the study area.
    - d. Air quality both at the source and around the study area for the proposed business or activity.
    - e. Micro-climatic patterns and pollutant distribution patterns, both under normal conditions as well as unfavourable weather conditions.
    - f. Noise and vibration sources, noise levels as well as periods of occurrence.

2. **Physiography**

- a. Topography of the land forms (morphology), geological structures and soil types.
    - b. Environmental indicators related to geology and soil stability shall be clearly and precisely described (i.e.,

landslides, earthquakes, land faults, volcanic activity, etc.), with special emphasis if there is a tendency towards instability.

- c. Unique geological features and sensitive land and rock formations.

### 3. **Hydrology**

- a. Physical characteristics of rivers, lakes, swamps (tidal swamps, freshwater marshes).
- b. Monthly, annual and ten-year averages of water discharge (debit).
- c. Sediment (mud) content and erosion rates.
- d. Physical conditions in the surface water and groundwater catchment areas.
- e. Groundwater fluctuations and groundwater potential (shallow and deep).
- f. Water supply and demand/utilization levels for drinking, bathing and washing.
- g. Water supply and demand/utilization levels for other needs, such as agriculture, industry, etc.
- h. Physical, chemical and microbiological quality of water with reference to the water quality standards and parameters for the wastes which will be discharged.

4. **Hydro-oceanography.** Marine hydrodynamic patterns in the study area, such as tides, currents and wave action, shoreline morphology and naturally-occurring shoreline erosion and accretion.

### 5. **Space, Land and Soil**

- a. Inventory of land use and other resource at the time the proposed business or activity is submitted, and their possible potential for future development.
- b. Regional development plans and other natural resource plans for the study area for the proposed business or activity which have been either officially or unofficial issued by the government, whether at the district, province or national level.
- c. Possible conflicts or limitations between currently prevailing land use and other natural resource plans

which may arise due to the ownership or site designation for the proposed business or activity.

- d. Inventory of esthetic values and scenic beauty as well as recreation sites existing in the study area for the proposed business or activity.

**b. Biology**

**1. Flora**

- a. Map of biogeoclimatic zones for the natural vegetation, covering the vegetation types, characteristics and sensitivities within the study area for the proposed business or activity.
- b. Description of the types of vegetation and ecosystems found in the study area for the proposed business or activity, which are protected by law.
- c. Description of unique vegetation and ecosystems in the study area for the proposed business or activity.

**2. Fauna**

- a. Estimates of the abundance and diversity of fauna, habitat, distribution, migration patterns and population of domestic animals and wildlife, and their habitats which are protected by law, found in the study area for the proposed business or activity.
- b. Estimates of the distribution and population density of invertebrates which are considered important as food or as sources of pests and diseases.
- c. The behaviour of the above mentioned important fauna, including their breeding methods, life cycles, spawning, egg laying, reproduction, nursing habits and their territorial behaviour.

- c. **Social Aspects.** The social components which are important to study include, among others:

**1. Demography**

- a. Population structure by age group, sex, occupation, education and religion.
- b. Population density and distribution.
- c. Productive work force.

- d. Birth rate.
- e. Gross mortality rate.
- f. Infant mortality rate.
- g. Population growth patterns.

## 2. Economics

- a. Employment and business opportunities.
- b. Natural resources ownership and control patterns.
- c. Income levels.
- d. Economic infrastructure and facilities (roads, markets, ports, banks, shopping centres).
- e. Natural resources utilization patterns.

## 3. Culture

- 1. Community-based social groups or institutions.
- 2. Prevailing traditional customs and behaviour.
- 3. Social processes (cooperation, accommodation, conflict) in the community.
- 4. Acculturation, assimilation and integration of various community groups.
- 5. Social groups and organizations.
- 6. Social strata within the community.
- 7. Ongoing social changes with the community.
- 8. Community attitudes and perceptions regarding the proposed business or activity.

## 4. Public Health

- 1. Incidence and prevalence of diseases related to the proposed business or activity.
- 2. Environmental sanitation, particularly fresh water supply (service area).
- 3. Nutritional status and food sufficiency.
- 4. Health facilities, type and numbers.
- 5. Physician and paramedic service coverage.

## Chapter V Prediction of Significant Impacts

This chapter shall cover:

- 1. A comprehensive and accurate prediction of the impacts on the environment of the business or activity during its pre-construction,

- operation and post-operation phases. This review is carried out by analyzing the differences between the predicted environmental quality with the implementation of the proposed business or activity and the predicted environmental quality without business or activity, using an impact prediction method.
2. Determination of the significance of the predicted changes in the quality of the environment for the community in the study area, and for the government, by referring to the Guidelines for the Determination of Significant Impacts.
  3. In undertaking the review as referred to in items 1 and 2 above, it will be necessary to pay due attention to the direct and indirect impacts. Direct impacts are impacts directly caused by the business or activity while indirect impacts are those produced by changes in an environmental component and/or primary activity of the proposed business or activity. In this regard, it is necessary to take into consideration the mechanisms for distribution of impacts among the various environmental components as follows:
    - a. Activities which produce direct, significant impacts on social components.
    - b. Activities which produce direct, significant impacts on the physical/chemical components, and then cause a series of further impacts on the biological and social components.
    - c. Activities which produce direct, significant impacts on physical/chemical aspects, which then generate impacts on the social components.
    - d. Significant impacts occurring subsequently among the social components themselves.
    - e. Significant impacts as defined in items a., b., c. and d. above which will produce further impact on the business or activity.
  4. Since the business or activity is still at the stage of selecting alternatives (locations or applicable technologies), and because the AMDAL is a component of the feasibility study, the review as contemplated in Sections 1 and 2 above shall therefore be carried out for each of the alternatives.

## **Chapter VI Evaluation of Significant Impacts**

This chapter should contain the results of the research on the significant impacts of the proposed business or activity. The results of this evaluation shall furthermore become input to the responsible agencies in deciding on the



environmental feasibility of the proposed business or activity, according to the provisions of PP 51/1993.

### 1. Analysis of Significant Impacts

- a. A holistic analysis of the various environmental components predicted to experience fundamental changes, as discussed in [Chapter V](#), through application of criteria provided in the Guidelines for the Determination of Significant Impacts as stated in the [Decree of the Head of BAPEDAL Number Kep-056 of 1994](#).
- b. **Holistic impact evaluation** means a comprehensive study of the various significant environmental impacts listed in [Chapter V](#), in terms of the business or activity sources which produce the impacts. The various environmental components affected by the significant impacts (whether positive or negative), are analyzed as an inter-related unit, so that the "balance" between the significant positive and negative impacts may be described.
- c. The significant impacts resulting from the evaluation are presented as the significant impacts to be managed.

### 2. Basic Management Studies

- a. Cause and effect relationships between the proposed business or activity and the existing environment and the positive and negative impacts which may occur. For example, significant impacts on the environment may result from the proposed business or activity, because that business or activity is being implemented in a densely populated area, or where the level of income and education is very low or the form of technology is not appropriate, and so forth.
- b. Characteristics of these significant impacts also must be clearly explained, in the sense that the significant impacts (whether positive or negative) may take place during the proposed business or activity or later on. Between one impact and another there may also be antagonistic or synergistic relationships. Wherever needed, explain when threshold limits for the significant impacts may be reached following implementation of the proposed business or activity or at any time during the period from pre-construction to completion of the proposed business or activity or even, for example, after more than one generation.
- c. Community groups which may experience positive or negative impacts. Identify the discrepancy between the desired changes and

those which may result from development of the business or activity.

- d. The extent of areas which may be potentially affected by these significant impacts, whether these impacts will be experienced locally, regionally, nationally or even internationally in areas beyond the boundaries of Indonesian territory. Thus, the proposed effort to manage these impacts should be clearly described, taking into consideration the government's capability, at district, municipal, provincial, national and international levels, to deal with the negative impacts and to enhance the positive impacts.
- e. Emergency planning and risk analysis for cases in which the proposed business of activity is in or near an area suffering from natural disasters.

## **Chapter VII Bibliography**

This chapter should contain references for the data and important findings, supported with up-to-date scientific literature, and presented as a list in standard bibliographic format.

## **Chapter VIII Appendices**

This chapter should list the materials appended:

1. Licenses, permits or recommendations already obtained by the proponents prior to the preparation of the ANDAL.
2. Letters of introduction, decisions, qualification and references of the compilers, researchers and writers of the environmental impact statement (ANDAL).
3. Photographs showing the initial environmental conditions for the proposed business or activity in order to provide better understanding of the mutual relationships and the possible significant impacts which may be produced.
4. Diagrams, maps, drawings, figures, graphics and tables which are not included in the document.
5. Other materials considered necessary or relevant for attachment.

### **APPENDIX III GENERAL GUIDELINES FOR THE PREPARATIONS OF THE ENVIRONMENTAL MANAGEMENT PLAN (RKL) A. GENERAL EXPLANATION**

#### **1. Scope of the Environmental Management Plan**

The Environmental Management Plan (RKL) is a document which sets forth those practices which will be implemented to prevent, control and mitigate significant negative environmental impacts arising as a consequence of a proposed business or activity.

Under such a definition, the environmental management practices consist of four categories of activities, namely:

- a. Environmental management aimed at avoiding or preventing negative environmental impacts through the selection of an alternative site layout (micro spatial plan) and project design.
- b. Environmental management directed at mitigating, minimizing or controlling negative impacts whether arising during the business or activity, or after completion (for example, project site rehabilitation).
- c. Environmental management in terms of enhancing the positive impacts so that the activity may yield greater benefits both to the proponent and others, particularly the public which shares in the benefits of those positive impacts.
- d. Environmental management in terms of providing an environmental economic basis for compensation (whether socio-economic or ecological) for irrecoverable, lost or damaged resources resulting from the business or activity.

## **2. Depth of the Environmental Management Plan**

In view of the fact that the AMDAL documents from part of the feasibility study, the RKL document shall only provide the basic direction, principles or requirements for the prevention/mitigation/control of impacts. Whenever deemed necessary, it may specify literature references as to the designs for impact prevention/mitigation/control. This is because:

- a. In the feasibility study phase, the information on the proposed business or activity (project) is still of a relatively general nature, providing little detailed technical specifications, and having several alternatives. At this stage, the intent is to study the extent to which the project is considered reasonable or feasible to undertake, viewed from the technical and economic aspects, before more investment, energy and time are spent. The limitations in the data and information relating to the business or activity will certainly influence the type of management activities to be described in the RKL document.
- b. The basic direction, principles or requirements for environmental management, as stated in the RKL document, will subsequently be

integrated with or become considerations for the engineering consultant in compiling the detailed engineering design.

In addition, it is also important to remember that the environmental management plan as stated in the RKL document must be related to the ANDAL document, in the sense that the environmental components to be managed are only those which may experience fundamental changes as determined in the ANDAL document.

### **3. Environmental Management Plan**

The environmental management plan may take the form of prevention and mitigation of negative impacts as well as the enhancement of positive strategic impacts. An environmental management plan must be presented clearly and systematically, and contain those primary features as follows:

- a. The environmental management plan shall set forth the basic direction, principles guidelines or requirements to prevent, mitigate, control or enhance the strategically significant impacts, whether negative or positive. Wherever needed, it shall include literature references pertaining to the design of mitigation of the relevant impacts.
- b. The environmental management plan must be formulated in such a way that it may function as a consideration in the preparation of the detailed engineering design and as the basis for implementing environmental management.
- c. The environmental management plan must also include those practices which will increase the knowledge and capability in environmental management of the employees of the proponent, through courses and training. It should also state the types of training and courses needed by the proponent together with the numbers and qualifications of the employees to be trained.
- d. The environmental management plan shall also include the establishment of a unit in the organization responsible for environment, which would implement the RKL. Those aspects necessary for specification in this regard include the organizational structure, scope of tasks and authority of the unit, as well as the number and qualifications of its personnel.

### **4. Environmental Management Approach**

To deal with the significant impacts predicted in the ANDAL study, one or more environmental approaches may be used, whether technological, socio-economic or institutional.

a. **Technological Approach.** This approach includes the methods or technology applied to manage the significant environmental impacts. For example:

1. In terms of controlling toxic and hazardous waste materials, methods which may be used include:

1.1 Limitation or isolation of the wastes:

1.2 Recycling of the wastes;

1.3 Neutralizing the wastes by adding certain chemical agents to render them harmless to people and other living organisms.

2. in terms of preventing, reducing or rehabilitating damaged natural resources, methods can include:

1.1 Building terraces or planting land covers to prevent erosion;

1.2 Reclaiming land formerly mined by redistributing the topsoil and planting land covers.

3. Enhancement of the positive impacts through increasing their value can be achieved through the improvement of the positive impacts and increasing their efficiency.

b. **Socio-Economic Approach.** This approach can include those steps to be taken by the proponent to control the significant impacts through socially and economically-motivated actions. For example:

1. Involving the community in the vicinity of the proposed business or activity in active participation on environmental management activities.

2. Requesting assistance from the government in mitigating the significant environmental impacts, in cases of limited capabilities of the proponent.

3. Application for elimination of import duty for pollution control equipment.

4. Giving priority in employment to local workers, in accordance with their skills and capabilities.

5. Paying compensation for public land needed for the proposed business or activity under the principle of mutual benefit.

6. Providing general support facilities to the community in the vicinity of the proposed business or activity, in accordance with the capabilities of the proponent.

7. Building harmonious social interactions with the surrounding community, in order to prevent social jealousy.
- c. **Institutional Approach.** This approach includes the institutional mechanisms to be adopted by the proponent in controlling significant environmental impacts. For example:
1. Cooperating with competent and relevant agencies for environmental management.
  2. Supervising the environmental management performance of the authorities.
  3. Periodic reporting to relevant parties on the results of environmental management.

## **5. Format of the Document**

Since the RKL document is prepared in conjunction with the ANDAL and RPL documents, and all three will be evaluated together, the RKL document format shall directly correspond to the four main principles of environmental management as stated in [Section 1](#) above.

### **B. COMPOSITION OF THE ENVIRONMENTAL MANAGEMENT PLAN DOCUMENT**

#### **I. Environmental Management Background**

1. Statement regarding the background of the need to undertake environmental management, viewed from the interests of the proponent, from relevant parties as well as the wider interests within the framework of supporting development programs.
2. Systematic, brief and clear description of the objectives of the environmental management to be undertaken by the proponent relating to the proposed business or activity.
3. Description of the benefits of undertaking good environmental management, for the proponent, for relevant parties as well as for the public at large.
4. Brief description of the area, community groups or ecosystems in the vicinity of the proposed business or activity which are sensitive to changes arising from the existence of the business or activity, based on the results of the AMDAL study.
5. Maps (administrative, topographic, etc.) at an appropriate scale which clearly indicate information pertaining to:

1. Geographical location of the business or activity;
2. Rivers, lakes, swamps;
3. Road network and settlements;
4. Administrative boundaries of the local government;
5. The areas, community groups or ecosystems in and around the site of the proposed business or activity which are sensitive to change.

The map presented shall refer to the ANDAL study results.

## **II. Environmental Management Plan**

A brief but clear description of each type of impact caused by one or more activities, under the following order of discussion:

### **1. Significant Impacts and Significant Impact Sources**

- a. A brief and clear explanation of the environmental components or parameters predicted to experience fundamental changes, pursuant to the ANDAL results. It must be stressed that the description should only involve those environmental components or parameters which are affected by significant impacts. A brief explanation should be provided concerning the extent of development of the proposed business or activity at the time the RKL is being compiled (feasibility study, detailed engineering design or construction phase).

Environmental components or parameters, which may experience fundamental changes as predicted by the ANDAL study will need to be examined. For that purpose, some of the strategic points for management should be based on the following considerations:

1. The significant impacts which are to be managed particularly concern those environmental components that, according to the scoping process (within the framework for preparation of the Terms of Reference for the ANDAL), form the main issues for the proposed business or activity;
2. The significant impacts to be managed are those classified as producing many indirect significant impacts (secondary, tertiary, etc.);
3. The significant impacts to be managed shall be those impacts which when prevented or mitigated will lead to subsequent effects on their indirect significant impacts.

In addition, state those indirect significant impacts which will be affected as a consequence of the management of the strategically significant impacts.

b. **Impact Source.** State briefly the source of the significant impacts:

1. If the significant impact arises as a direct result of the business or activity, describe briefly the type of business or activity which causes the significant impact.
  2. If the significant impact appears as a result of the change in other environmental components, describe briefly those environmental components which cause the important impact.
2. **Impact Criteria.** Describe the impact criteria that will be used to measure the environmental components affected by the proposed business or activity, in light of quality standards (as stipulated by law) and scientifically-acceptable expert opinion, which are commonly practiced and/or stipulated by the responsible government agencies. The criteria stated shall be those used in the ANDAL document
3. **Objective of the Environmental Management Plan.** Specify and describe the objectives of managing the strategically significant impacts as well as their indirect impacts which will be consequently prevented/mitigated/controlled.

For example, the strategic impact to be managed in a proposed pulp and paper plant is the quality of wastewater and the specific objectives of the environmental management practices are: "To control the quality of the wastewater discharged into the XYZ River, particularly BOD5, COD, Total Suspended Solids and Ph. to ensure that they do not exceed the wastewater quality standards as stipulated in KepMen 03/1991 Regarding Wastewater Quality Standards for Existing Operations".

4. **Environmental Management.** Describe in detail those environmental management practices which can be carried out through the technological, socio-economic and/or institutional approaches as explained in [Section 4 of Part A: General Explanation](#).

The defined environmental management practices will also include the operational practices or impact control facilities as described on the ANDAL document for the proposed business or activity.



5. **Environmental Site Management.** State the planned location of any environmental management activities with due attention to the distribution of the significant impacts to be managed. As far as possible, provide maps/sketches/drawings.
6. **Duration of Environmental Management.** Briefly describe when and how long the environmental management activities will be carried out, with due attention to the nature of the significant impacts to be managed (duration, cumulative nature, reversibility or irreversibility) and the capabilities of the proponent (in terms of personnel, funds).
7. **Environmental Management Funding.** The funding for the implementation of the RKL shall be the task and responsibility of the proponent concerned.

The funding will, among others, include:

- a. Investment costs, such as the cost for the purchase of environmental management equipment and the cost of other technical activities.
  - b. Personnel and operating costs.
  - c. Costs for education and operational skills training.
8. **Environmental Management Institutions.** For every proposed environmental management practice, list the agency or institution tasked with, involved in and related to that environmental management activity pursuant to the prevailing laws, national or local. The laws regulating environmental management as set forth in Article 18 of Law Number 4 of 1982 include:
    1. Regulations issued by the Minister of State for the Environment.
    2. Regulations issued by the Environmental Impact Management Agency.
    3. Regulations issued by the responsible sector.
    4. Decrees of the provincial Governor, Bupati and/or Walikota.
    5. Other regulations pertaining to the establishment of environmental management institutions.

The environmental management institutions to be listed include:

1. **Executing Agencies for Environmental Management.** Name those executing agencies which are responsible for implementing and paying for the environmental management activity. If in

implementing the environmental management activities the proponent will delegate to or cooperate with any other party, name that party.

2. **Environmental Management Supervisory Bodies.** List those agencies which will serve in a supervisory role in the implementation of the RKL. There may be one or more agencies involved In supervision, depending on the scope of authority and responsibility, and also the prevailing laws.
3. **Environmental Management Reporting.** List the agencies to be periodically reported to regarding the result of the environmental management activities, in accordance with the scope of the prevailing laws and the responsibilities of the agencies concerned.

### **III. Bibliography**

In this section, list the sources of data and information used in the preparation of the RKL, whether in the form of books, magazines, essays or survey reports. The literature is to listed in accordance with standard bibliographic procedures.

### **IV. Appendices**

This section should include:

- a. A summary of the document in the form of a table with the following column titles: Type of Environmental impact, Objective of Environmental Management, Duration of Environmental Management and Environmental Management Agency.
- b. Important data and information supporting the RKL document which results from the ANDAL study, such as maps (of activity locations, environmental monitoring sites, etc.) engineering designs and matrices, as well as primary data concerning the proposed environmental management practices.

## **APPENDIX IV GENERAL GUIDELINES FOR THE PREPARATION OF THE ENVIRONMENTAL MONITORING PLAN (RPL) A. GENERAL EXPLANATION**

### **1. Scope of the Environmental Monitoring Plan**

Environmental monitoring can be used to understand the phenomena occurring at various levels, from project site (in order to understand the, "behaviour" of the impacts of the business or activity), up to the regional level, depending on the degree of concern regarding the issue in question.

In addition to the degree of concern, there are two key words which distinguish monitoring from random or cursory observation: i.e., it is a planned and systematic data collection activity, carried out repeatedly.

## **2. Depth of Coverage of Environmental Monitoring Plan**

There are several factors to be noted in preparing an RPL document, including:

- a. The environmental components/parameters being monitored shall only include those experiencing fundamental changes or affected by significant impacts. That is, not all of the environmental components should be monitored. It is unnecessary to monitor anything deemed unimportant or irrelevant.
- b. Linkages should be established among the ANDAL, RKL and RPL documents. The aspects to be monitored should be defined with due regard to the significant impacts as stated in the ANDAL and to the nature of the management of the environmental impacts as formulated in the RKL document.
- c. The sources of the impacts and/or the environmental components/parameters affected by the impacts can be monitored. By monitoring both of these aspects simultaneously, the effectiveness of environmental management activities undertaken may also be evaluated or tested.
- d. Environmental monitoring should be economically feasible. Although the aspects to be monitored have already been limited to only those considered significant (as provided for in items a. through c. above), it is still necessary to consider the costs to be incurred for monitoring, in view of the fact that monitoring activities will be carried out throughout the life of the business or activity.
- e. The plan for the collection and analysis of the monitoring data shall cover:
  1. Type of data to collect;
  2. Monitoring site;
  3. Monitoring frequency and duration;
  4. Data collection methods (including equipment and instruments used for data collection); and
  5. Data analysis methods.
- f. The RPL document shall list the parties concerned with environmental monitoring. These include the sponsor of the monitoring program, monitoring operators, users of monitoring results, and supervisors of monitoring activity. It is important that inter-institutional coordination and cooperation is built in, in order that the data and information

obtained and subsequently distributed to the various users, will be effective, efficient, timely and reliable.

## **B. COMPOSITION OF THE ENVIRONMENTAL MONITORING PLAN (RPL) DOCUMENT**

### **I. Background of Environmental Monitoring**

1. A statement regarding the background of the need to implement the environmental monitoring plan in the context of supporting development programs, viewed from the perspectives of the proponent, interested parties, as well as the public.
2. A systematic, brief and clear description of the purposes and objectives of the environmental monitoring to be undertaken by the proponent in connection with the management of the proposed business or activity.
3. A description of the benefits for the proponent of the business or activity, for interested parties and for the community at large in implementing environmental monitoring.

### **II. Environmental Monitoring Plan**

Briefly and clearly describe the type of each impact caused by one or more activities, with the following order of discussion.

1. **Significant Impacts Monitored.** Include briefly:
  - a. Environmental components or parameters deemed strategic for monitoring.
  - b. Indicators of components of the significant impacts monitored. An Indicator is a means of monitoring which indicates or gives information on a condition. For example, relevant: indicators for the quality of wastewater and river water, with respect to the characteristics of a proposed business or activity, are pH, BOD, temperature, colour, odor, oil and heavy metal content.
2. **Impact Sources.** Describe briefly those sources which produce significant impacts:
  - a. In the event that significant impacts arise as a direct result of the proposed business or activity, describe briefly the type of business or activity which causes the significant impact.

- b. In the event that a significant impact arises due to changes in other environmental components, briefly describe the environmental components or parameters which produce this significant impact.
3. **Environmental Parameters to be Monitored.** Describe clearly the environmental parameters to be monitored. These parameters can be biological, chemical, physical socio-economic and/or cultural.
4. **Purpose and Objectives of the Environmental Monitoring Plan.** Describe clearly the purpose/objective of monitoring significant environmental impacts, with due attention to those significant impacts to be managed, the form of the environmental management plan, and any indirect significant impacts.

For example the strategic impact to, be managed for a proposed pulp and paper plan is the quality of waste water and the specific objectives of the environmental monitoring plan are:

- a. To monitor the quality of wastewater discharged into XYZ River, particularly the parameters BOD5, COD, Total Suspended Solids and pH.
  - b. To monitor the quality of XYZ River water, particularly the parameters BODE, COD, Total Suspended Solids and pH.
5. **Environmental Monitoring Methods.** Briefly describe methods to be used for monitoring the indicators of significant impacts, including:
  - a. **Methods for Data Collection and Analysis.** Briefly and clearly describe the methods to be used in data collection, including the type of equipment, instruments or questionnaire forms. Also, state the accuracy of the instruments used in data collection, with respect to the accuracy specified in the Environmental Quality Standards.

In addition, also describe the methods used for analyzing the resulting data. State the type of equipment, instruments and formulae used in the process. Describe the criteria used to assess environmental quality, and the feedback to the environmental management activities.

Keep in mind that the data collection and analysis methods should be as far as possible consistent with the methods used in the preparation of the associated ANDAL.

- b. **Environmental Monitoring Sites.** List the precise locations for impact monitoring and also furnish maps of appropriate scale showing the monitoring locations. Keep in mind that the monitoring sites should be as far as possible consistent with the data collection sites used for the preparation of the ANDAL.
  - a. **Monitoring Duration and Frequency.** Describe the duration or length of the monitoring period, as well as the frequency per time unit. The monitoring duration and frequency shall be set with due attention to the nature of the significant impacts being monitored (intensity, duration of impact and cumulative nature of the impacts).
6. **Environmental Monitoring Institutions.** Each environmental monitoring plan should list those institutions or agencies dealing with, having an interest in or related to environmental monitoring activities, in accordance with prevailing national and provincial regulations. Regulations concerning environmental monitoring as stated in Article 18 of Law Number 4 of 1982, include the following:
- a. Regulations issued by the Minister of State for the Environment.
  - b. Regulations issued by the relevant sectors.
  - c. Regulations issued by the provincial government.
  - d. Decrees of the provincial Governor, Bupati or Waiikota
  - e. Other regulations related to the establishment of environmental monitoring institutions.

The environmental monitoring institutions to be listed include:

- a. **Environmental Monitoring Implementation.** State the institutions responsible for the implementation and funding of the environmental monitoring activities.
- b. **Environmental Monitoring Supervision.** State the agencies which will serve as supervisors of the implementation of the RPL. More than one agency may be involved in the supervision, in accordance with the scope of their authority and responsibility as well as the prevailing regulations.
- c. **Reporting of Environmental Monitoring Results.** State those agencies to which the results of the environmental monitoring activities will be periodically or regularly reported, according to the task and scope of those relevant agencies.

### III. Bibliography

In this section, list the sources of data and information used in preparation of the RPL, whether in the form of books, magazines, papers, articles or research/survey reports. The literature is to listed in accordance with standard bibliographic procedures.

#### **IV. Appendices**

This section should include:

- a. A summary of the RPL document in the form of a table with the following column titles: Significant Impacts Monitored, Impact Sources. Objective of Environmental Monitoring. Environmental Monitoring Plan (which Includes data collection methods, environmental monitoring sites. environmental monitoring duration and frequency and analytical methods) and Environmental Monitoring Institutions.
- b. Data and information deemed important for inclusion in support of the contents of the RPL document.

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*Acknowledgement:* Text from "Himpunan Peraturan Tentang Pengendalian Dampak Lingkungan, Seri II", published by BAPEDAL (1996).

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*last updated 1st August 1998*

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