

PETRONAS TECHNICAL STANDARDS

HEALTH, SAFETY AND ENVIRONMENT

CATEGORY 3 ENVIRONMENTAL IMPACT ASSESSMENT (CAT 3 EIA)

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Issue Approval

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PREFACE

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this document is to provide guidance on the conduct of Category 3 EIA as specified under the Group Minimum Environmental Management Standards (MEMS).

1.2 Scope

- This guide is applicable to all PETRONAS Operating Units (OPU)
- This guide shall be used to conduct Category 3 EIA as prescribed under the Group Project EIA List.

1.3 Reference Documents

- User Guide for Identifying Environmental Aspects and Evaluating Environmental Impact (June 2004)
- Environmental Assessment Guide (PTS60.3201 Rev. 1, June 2006)
- PCSB Environmental Impact Assessment (EIA) Guide Rev. 2, August 2003
- PETRONAS Group Minimum Environmental Management Standards, Rev. 1, June 2007

1.4 MEMS Requirements on Environmental Impact Assessment (EIA)

PETRONAS Group of Companies is currently operating in more than 30 countries across the globe where environmental-related national regulations and practising standards differ. Some of its OPUs are more established than others in terms of environmental management and the environmental management practices differ in one way or another.

In 2007, the Group established a set of “Minimum Environmental Management Standards” (MEMS) for its operations worldwide as one of its strategic approaches to sustainable development. Many of the elements of MEMS are not new to PETRONAS OPUs, for example conducting Environmental Impact Assessment (EIA) for project development. The implementation of MEMS shall ensure a consistent approach for all PETRONAS OPUs to meet a common and minimum standard.

As part of the MEMS, new projects commencing development in FY 2007/08 will be required to conduct Environmental Impact Assessment (EIA) and establish Environmental Management Plan (EMP)

- in accordance to PETRONAS Group MEMS and;
- in compliance with host country's requirements

Refer to **Appendix 1** for the PETRONAS Group Project EIA List

2.0 CATEGORY 3 EIA

2.1 PETRONAS Group Project EIA

EIA is defined as a process of identifying, predicting, evaluating and mitigating the bio-physical, social, health and other relevant effects of development proposals prior to decisions being taken and commitments made. PETRONAS uses EIA as a planning tool to aid project managers in identifying environmental impacts, evaluate their significance and plan for the appropriate mitigation and control measures before proceeding with the project.

PETRONAS has adopted three (3) categories of EIA for project development.

- **Category 1 EIA** is required for a project that is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. It is almost certain that legislative approval is required for Category 1 EIA.
- **Category 2 EIA** is required for a project that has potential adverse environmental impacts on human population or environmentally-important areas - including wetlands, forests, grasslands, and other natural habitats - but are less adverse than those of Category 1 projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category 1 projects. Category 2 EIA usually requires legislative approval.
- **Category 3 EIA** refers to a project that is likely to have minimal or no adverse environmental impacts. This category usually requires only a desktop assessment to identify the environmental aspect, evaluate impact and put in place mitigation and control measures. Most Category 3 EIA reports do not require legislative approval.

If the results of Category 3 EIA revealed significant impact or issues, a Category 2 or 1 EIA may be initiated, in which case the project proponent is required to register with GHSED* using the registration form as attached in Appendix 2.

Diagram 1 represents the process of identifying the type of EIA required for a project.

The subsequent part of this document will focus on Category 3 EIA.

*GHSED shall liaise with the corporate office of each Business Unit on EIA registration.

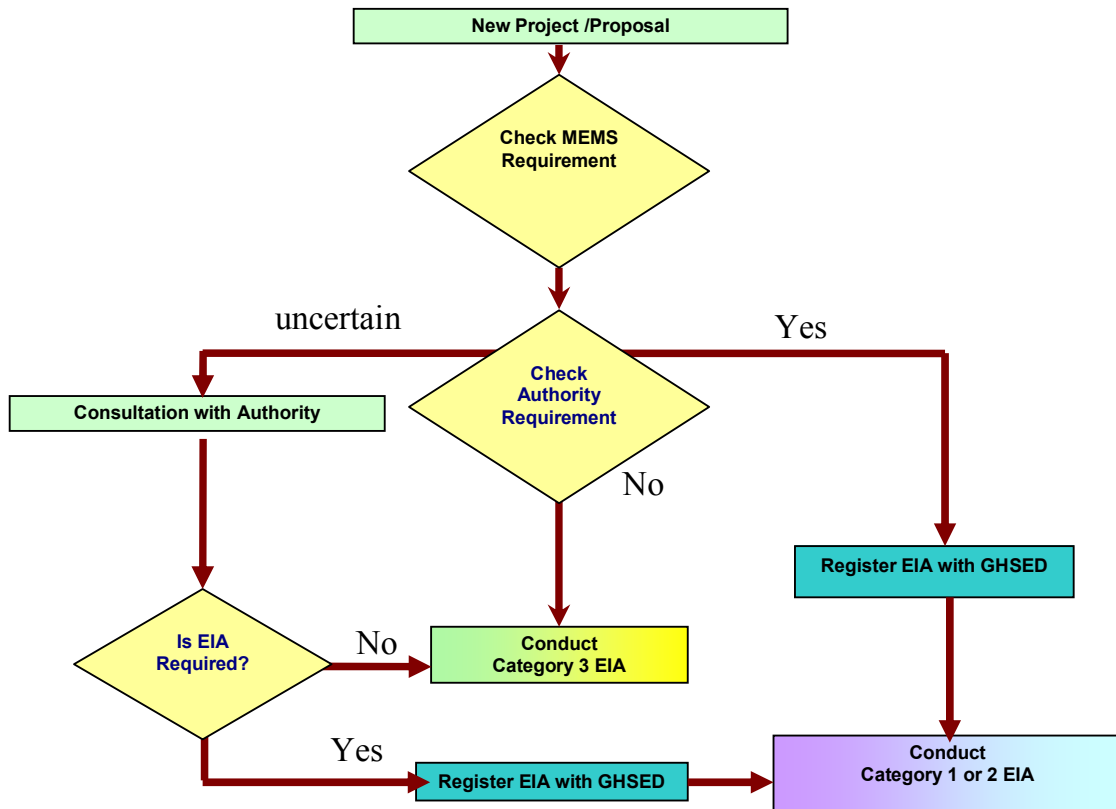


Diagram 1: Process of identifying the type of EIA required for a project

2.2 Objectives of Category 3 EIA

The objectives for conducting a Category 3 EIA study are:

- Identify potential environmental aspect and impact resulting from the project activities, and
- Develop and implement mitigation and control measures to reduce the environmental impact to as low as reasonably practicable (ALARP).

2.3 Management of Category 3 EIA Study

The Project Manager will call for the formation of the EIA study team, preferably using internal resources. The recommended study team composition is shown below:

Team member	Competency level	Main roles & responsibility
HSE Executive or Managers	• Minimum three years practising environment management or HSE. • Completed Category 3 EIA Workshop or L3 EIA Training Course. • Completed L2 EM Training Course.	• EIA study team leader • Assemble team members with necessary skills and competency • Assign members to conduct parts of assessment • Lead the identification of aspect/impact and evaluation of significance • Prepare EIA Cat 3 report
Project Engineer	Familiar with project activities	• Project resource person • Contribute in the identification of aspect/impact, evaluation of significance and mitigation/control measures
Environmental Management Technical Professional(EM TP)	Staff EM TP and above	• Technical advisor • Contribute in the identification of aspect/impact, evaluation of significance and mitigation/control measures • Conduct peer review

The study team shall use their diligence, knowledge, skill and professional judgment in the conduct of Category 3 EIA. The team is advised to use Category 3 EIA format provided in this guideline.

Upon completion of the study, the Team Leader shall organise a peer review with at least one other EM TP within the Group. Any comment arising from the review shall be discussed together with the team and amendments be made, if appropriate, to the Category 3 report. After completion of review, the Team Leader shall seek endorsement from the Project HSE Manager*.

(*note: functional role of HSE Management for the project)

The implementation process of a Category 3 EIA is illustrated in **Diagram 2**.

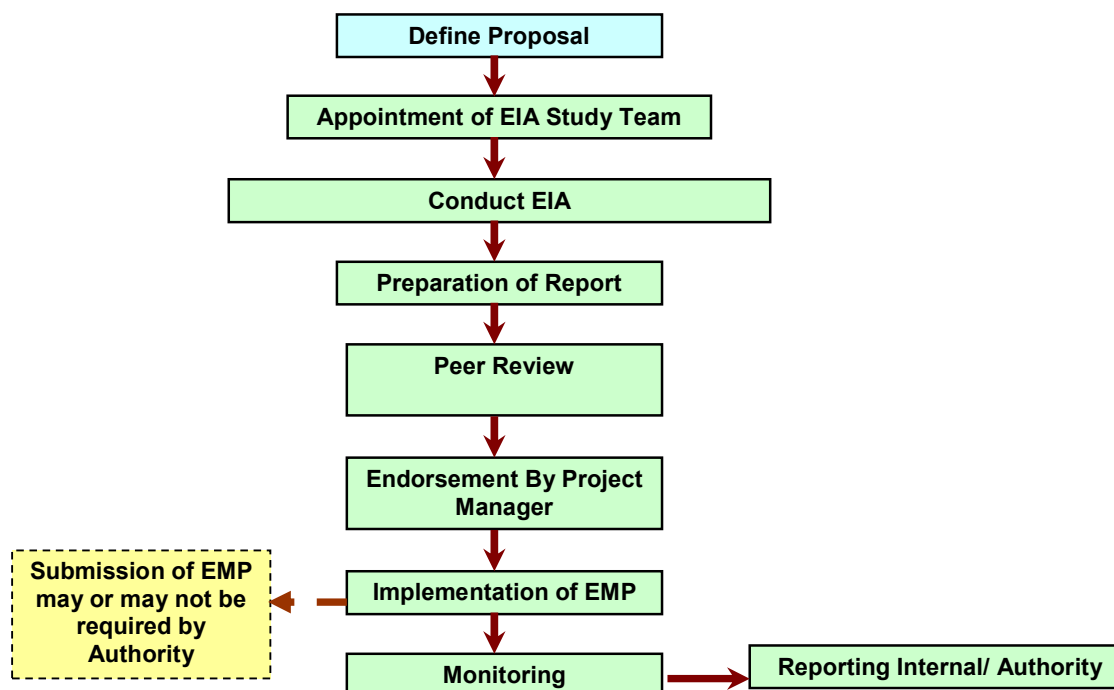


Diagram 2: Implementation Process of Category 3 EIA

3.0 CONDUCTING A CATEGORY 3 EIA

3.1 Introduction to Environmental Aspect Impact (EAI)

EAI is the fundamental building block of the Category 3 EIA. Almost all activities, products and services have some impact on the environment which may occur at any or all stages of the activities, products or services life cycle. Therefore, identifying environmental aspects and associated impacts is necessary in order to determine where control or improvement is needed, and to set priorities for management action.

Diagram 3 below represents common environmental issues associated with the activities of manufacturing operations.

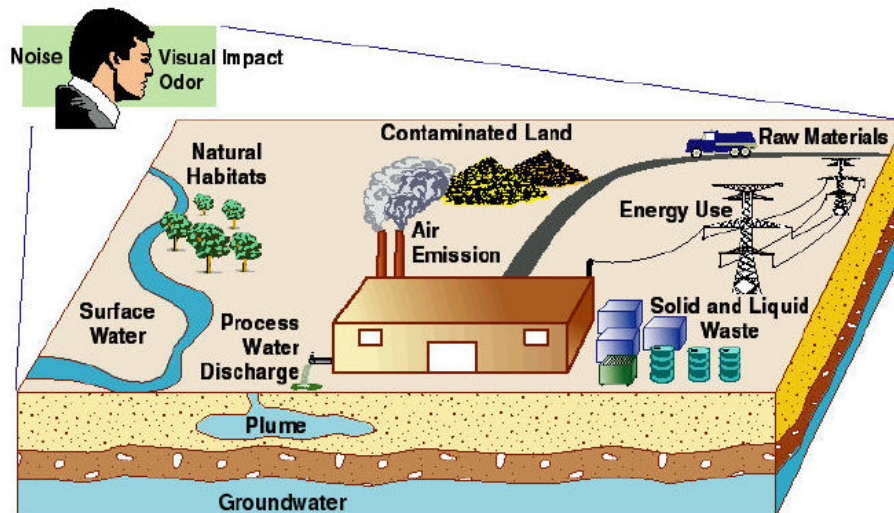


Diagram 3: Common environmental issues for manufacturing operations

Activities, product and services include the following examples;

- On-site activities such as manufacturing, office, maintenance
- Contracted activities such as cafeteria, janitorial, landscaping
- Packaging and transportation of products
- Consumption of products
- Disposal of waste or by-products

Environmental aspect is an element of project activities, products and services that can interact with the environment. These elements include those that can be controlled as well as those that can be influenced. Examples include consumption of raw material, energy consumption, generation of emission and effluent and generation of noise and wastes.

Environmental aspects are to be identified accordingly with respect to normal, abnormal and emergency conditions.

- **Normal** environmental aspects are those associated with day to day project operating activities that are carried out smoothly and uninterrupted.
- **Abnormal** environmental aspects are those associated with any deviation from the normal operating activities, and it usually has infrequent occurrences. Examples are shut-down, start-up and accidental spill of spent lubricant oil during equipment maintenance.
- **Emergency** environmental aspects are those associated with unplanned situation of operating activities that requires immediate attention and if otherwise may endanger human life, the environment or have an adverse effect on project

or public assets. Examples are major spills, fire, flood and uncontrolled release of crude oil due to leakage.

- **Environmental impact** is any changes to the environment, either adverse or beneficial, that results wholly or partially from environmental aspect. Such impact may be local, regional or global, short or long term, with varying levels of significance. Resources that are often impacted as a result of a project activity are;
 - Biological Resources
 - Land Use and Planning
 - Water Resources/Hydrology
 - Transportation
 - Geology and Soils
 - Visual Resources
 - Air Quality
 - Noise
 - Socioeconomic Resources
 - Public Services and Utilities
 - Health and Safety
 - Cultural Resources

Examples of environmental impacts are air pollution, water pollution, depletion of natural resources and aesthetics degradation.

3.2 Identification of environmental aspects

The starting point to identifying the environmental aspects of a project is to list all the activities associated inputs and outputs. Inputs can include resource used and energy usage while outputs include air emission, noise, waste and products.

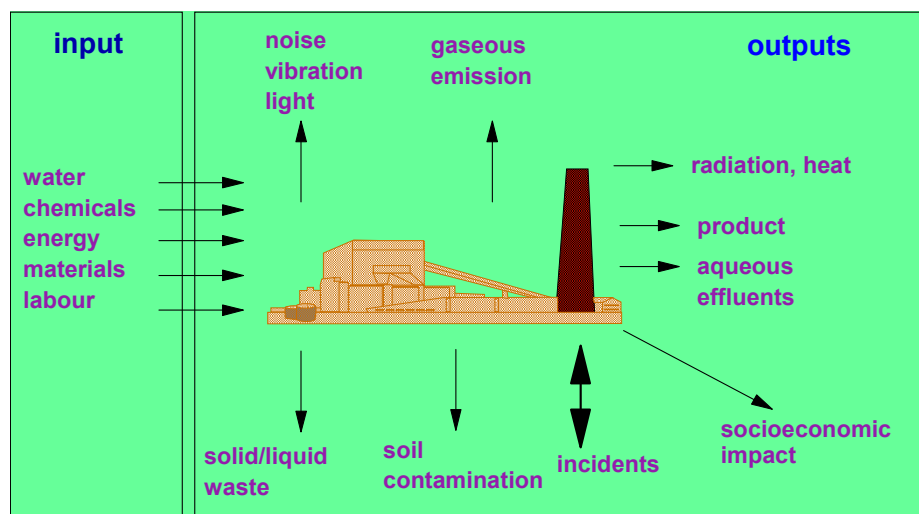


Diagram 4: Input-output approach in identifying environmental aspects

More examples on environmental aspects are shown below;

Generic environmental aspect	Specific environmental aspects
Energy consumption	- Electricity consumption - Fuel oil consumption - Natural gas consumption - Gasoline consumption - Steam consumption - Coal consumption - Fuel cells consumption
Water consumption	- Consumption of JBA water - De-ionised water consumption - Bottled water consumption
Chemical consumption	- Solvents consumption - Adhesives consumption - Fluxing agents consumption - Compressed gases consumption - Oxidizers consumption - Paints, inks consumption - Resins consumption - Consumption of water treatment chemicals - Pesticides, fertilisers consumption
Spillage or leakage	Spillage of hydrocarbon products