

CHAPTER 9

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

9.1. INTRODUCTION

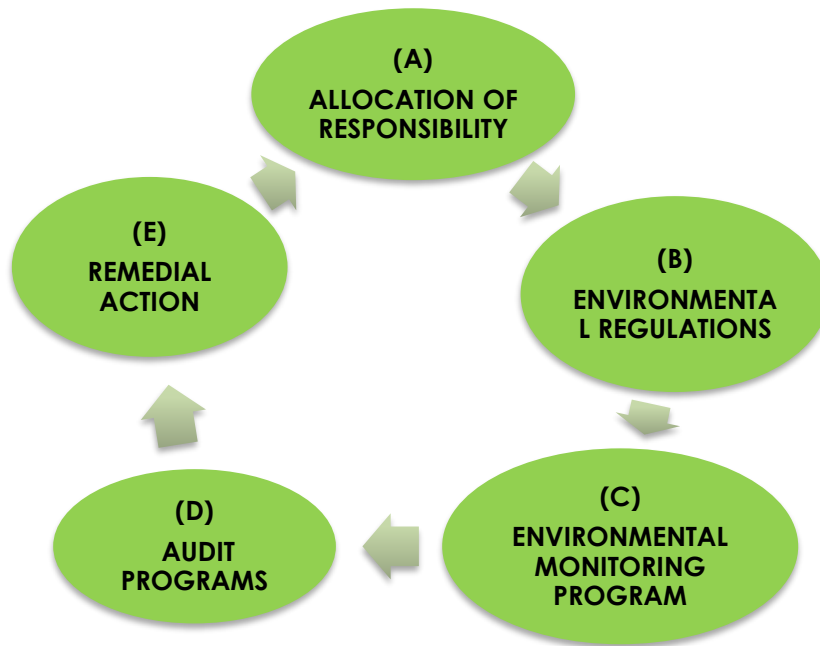
The formulation of the Environmental Management Plan (EMP) is a crucial step to ensure that any adverse impacts to the existing environment can be controlled. The EMP provides a framework for dealing with the pollution risks associated with the project site preparation and operation to ensure that appropriate measures are taken to handle issues that have been identified as significant and most likely to arise throughout the whole development. It functioned as an effective tool to minimize the environmental impacts that are imposed by the logging activities.

The EMP comprise a structured plan for mitigation of predicted environmental impacts, and for Environmental Monitoring and Environmental Auditing. It will be then applicable to all contractors and their employees working in the project site.

The objectives of the EMP are as follows:

1. To manage the environmental impacts arising during the proposed project activities
2. To ensure the effectiveness of environmental protection/conservation measures proposed
3. To ensure the project compliance with overall project environmental objectives

These objectives will be achieved by means of in-place operational controls, environmental monitoring, inspections and auditing. The following are the specific components of the EMP:



(A) Allocation of Responsibility

This section describes all the roles and responsibilities of top level management and officers. They are responsible in managing the environmental issues of the proposed project site. It will cover the responsibilities of project proponent, project developer and project consultant.

(B) Environmental Regulations

While in this section, it describes all about the rules and regulations involved, which the project proponent has to abide by pertaining to the project. It will cover water quality, atmospheric emissions, wastewater discharges, noise level, air, solid wastes and landscaping.

(C) Environmental Monitoring Program

The main purposes of the environmental monitoring program is to provide a database aligned with any short or long term environmental impacts of the project that can be determined and to provide an early indication should any of the environmental control measures or practices fail to achieve the acceptable standard.

Environmental monitoring comprises three (3) types of monitoring namely:

- Performance Monitoring (PM)
- Compliance Monitoring (CM)
- Impact Monitoring (IM)

(D) Audit Program

Audit program represent the efforts of the project proponent with the intention of monitoring the implementation of environmental protection measures by the contractors as specified in the construction specifications and contract documents. An audit checklist shall be developed and distributed. It will be then briefed to the contractors and all personnel that are responsible for the environmental protection activities. Independent specialist groups should engaged to closely monitor the Project development and to carry out the audits.

(E) Remedial Action

Below this section, it is outlined a specific construction activities in the proposed project site and address work specifications and codes, and adherence to specific work practices and ethics to avoid or minimize any damage and interference to watercourses or drainage systems, utilities, structures, roads or other properties, public or private vehicular or pedestrian access, and trees or any exclusive areas such as graves, monuments, altars etc.

9.2. MAINSTREAMING OF ENVIRONMENTAL AGENDA AND SELF-REGULATION CULTURE

Self-regulation has been adopted by the Department of Environment (DOE) as a long-term goal to be achieved and a culture to be inculcated within the regulated sectors through mainstreaming of environmental agenda. Environmental Mainstreaming has been integrated into all the recent regulations of the DOE. On a wider perspective, self-regulation which complements the existing command and control approach of the DOE, would result in cultivating environmental ownership and excellence in environmental commitment from the regulated sectors.

This section is dedicated to the discussion of the roles, functions and core duties of the various players involved in the project: the Project Proponent, the EIA Consultant, and the Environmental Officer (EO). The project organization charts are presented in **Chapter 1, Figure 1.1.1**. The organization chart presents the organization structure and line the responsibility of the key personnel and organization for the environmental management of the project.

9.2.1. General Considerations

Legal responsibility rests on the shoulders of the Project Proponent hence he shall be totally committed towards ensuring regulatory compliance of his project with the EIA procedure at all stages of project planning and implementation. The Project Proponent is the key driver for ensuring the success self-regulation approach in environmental management through the mainstreaming of environmental agenda throughout this project implementation phases. The project proponent shall ensure top-down organizational commitment to environmental regulatory compliance to all personnel, at all levels of the organization, including the registered EIA consultant, the EO, the contractors, and other parties involved in the project implementation.

To exercise quality control and ensure regulatory compliance, the following general considerations shall be taken:

- a) In a situation where the service of an EIA consultant firm is required, the Project Proponent may appoint a DOE-registered EIA consultant firm to provide advice on the EIA procedure and to act on his behalf for communication with the DOE. The consultant firm is composed of EIA team members who are registered with the Department of Environment. The members comprise various EIA subject matter consultant (SMC) who are relevant to the project proposal.

- b) During the stage of pre-submission of EIA Report, the Project Proponent is responsible to ensure a proposed project is screened to determine whether an EIA is necessary, since the project may fall under a 'prescribed activity' classified either under the First Schedule or the Second Schedule of the Environmental Quality (Prescribed Activity) Environmental Impact Assessment Order 2015.
- c) In the course of EIA Report preparation, the Project Proponent shall take into consideration of the alternatives, demonstrate commitment to ensuring the successful conduct of the EIA study and implementation of measures to mitigate the significant impacts as recommended by the EIA Consultant. This is accomplished by allocating sufficient funds for the above purposes. The funds shall cover the cost required for all activities associated with the EIA study, and preparation and implementation of environmental management plan (EMP) and pollution prevention and mitigation measures (P2M2).
- d) In the conduct of EIA study, a comprehensive site survey and investigation of the existing site conditions shall be made to provide crucial data of the study area which are necessary for planning considerations, formulating scope of work, and ensuring effective selection and design of pollution prevention and mitigation measures (P2M2).
- e) During project implementation, wherever necessary, consideration shall be made by the Project Proponent to appoint a consultant to supervise the implementation of pollution prevention and mitigation measures (P2M2).

Specific consideration which shall also be taken into account during each stage of project implementation are enumerated below.

9.3. ALLOCATION OF RESPONSIBILITY

To manage the environment in proper manner, a good and systematic management program must be adopted, with strong emphasis on employee education, regular monitoring, environmental auditing and employing best management practices to prevent environmental issues from arising wherever possible.

An Environmental Management Team (EMT) set up by the Project Proponent and Project Developer is to implement, monitor, audit and report based on the Environmental Management Plan (EMP) on all matters pertaining to the environment.

9.3.1. Responsibilities of Project Proponent

The Project Proponent (PP) is not only legally responsible for ensuring regulatory compliance, but is the driver for mainstreaming the environmental agenda in all stages of project implementation. The major roles and responsibilities of the PP include the following:

- Formulating an Environmental Policy (EP) of the company with respect to the EIA project, which shall be communicated to the stakeholders, consultants, contractors and other parties involved in the project planning and implementation.
- Establishing an organizational structure which clearly shows the emplacement of a Registered EIA Consultant and an Environmental Officer (EO), where they are charged with specific responsibilities to ensure environmental aspects are taken into consideration, and Pollution Prevention and Mitigation Measures (P2M2) are integrated into every stage of project planning and implementation.
- Allocating sufficient funds for all steps in the EIA process and every stage of project planning and implementation with itemized budget required for water quality monitoring, air quality and noise monitoring, for comprehensive site survey and investigation of the specific existing site conditions, for implementation of Environmental Management Plan (EMP) including temporary Pollution Prevention and Mitigation Measures (P2M2). P2M2 shall be those which can be described as state of the art technologies, Best Available Technologies (BATs), or industry best practices.
- Appointing an Environmental Officer (EO), at the stage of post submission of EIA Report need to be commit with responsibilities to execute environmental quality control and performance monitoring functions during the construction and operation phases of the project implementation. Service of an EO can also be obtained from an Environmental Officer Service Provider. Service of EO from EO service provider is allowed during the construction stage only. However, at the operational stage, the Project Proponent shall employ his own EO.

- Establishing a project Environmental Performance Monitoring Committee (EPMC) to monitor the environmental performance, effectiveness of pollution prevention and mitigation measures (P2M2), and status of regulatory compliance of the project. The EPMC shall be represented by all relevant parties involved in project implementation and chaired by a senior member representing the Project Proponent. The chairman who shall be formally appointed by the Project Proponent shall be responsible for ensuring the decisions of the meeting are responsibly executed. The EPMC shall meet at a minimum, once in a quarter and the minutes of the meeting shall be maintained.
- Setting up a "mini laboratory", wherever appropriate, to facilitate the implementation of environmental performance monitoring program. This mini laboratory shall be adequately equipped with relevant resources including staff and portable analytical testing equipment.
- Ensuring the Environmental Management Plan (EMP) including temporary and permanent pollution prevention and mitigation measures (P2M2) are implemented and maintained according to industry's best practices.

The Other Roles of the Project Proponent:

THP Agro Management Sdn Bhd is employed by Deru Semangat Sdn Bhd to designate a Coordinator who is responsible for environmental matters and will work closely with the environmental consultant and contractor. The Coordinator will report to the THP Agro Management Sdn Bhd on a weekly basis.

In the event of a breach of the environmental criteria limit or non-conformances observed on site, the Coordinator will be notified immediately. The Coordinator will proceed to implement the necessary remedial action and formally inform the THP Agro Management Sdn Bhd on the cause, nature, and extent of breach and the actions taken to rectify the situation.

The responsibilities of THP Agro Management Sdn Bhd are as follow:

- To ensure that the Contract Documents include provisions for compliance with environmental requirements. The Environmental Quality Act, 1974 and other subsidiary legislation and guidelines shall be used as reference.
- To allocate an adequate budget for implementing the EMP.
- To organize a structure for Environmental Management for the Project, with clear defined roles and responsibilities, and reporting mechanism.

- To advise the Contractor on matters related to working/management practices critical to the environmental integrity and acceptability of the site with respect to the identified environmental issues.
- To establish a system to respond promptly to public complaints.
- To review periodically, the overall monitoring program with respect to monitoring locations, frequency, parameters, environmental controls and mitigation measures, and revise if necessary.
- To conduct meetings with the Environmental Consultant and Contractor to review environmental performance of the proposed works and to identify any improvements in working practices to avoid breaches of limit levels.

The Project Manager will be responsible for overseeing the site clearing for ensuring that they are undertaken by the Contractors in accordance with the specification and Contractual requirements. The project manager will serve pivotal roles throughout all phases of the project by providing input on matters pertaining to:

- Ensure the correct agricultural techniques and methods are applied in all works on site.
- Monitor the Contractor's compliance with contract specification, including effective implementation and operation of environment mitigation measures and other aspects of the monitoring program.
- Instruct Contractor to follow the agreed protocols or those in the Contract Specification in the event of ascendances or complaints.
- Ensuring the work is within the scope of the contract and other tender condition.

9.3.2. Responsibility of Estate Manager

The Estate Manager will designate an Assistant Estate Manager who shall lead the environmental management team in managing the project and the surrounding environment. He will also have ultimate on-site responsibility for the execution and compliance with the specifications set in the EIA/EMP. The Assistant Estate Manager shall report to the Estate Manager.

Additionally, the relevant contractors shall be responsible in maintaining all plantation area and equipment in good and efficient working order, in compliance with the manufacturer's recommendation. Regular maintenance will help minimize excessive noise and exhaust emissions generated by this machinery. The contractors should use quieter construction methods, if practical and cost-effective.

9.3.3. Responsibilities of Environmental Consultant

The Environmental Consultant (the registered EIA Consultant) plays a major role in the preparation of this EIA report and environmental monitoring programmes in accordance with the objectives and requirements of the EIA, whilst ensuring compliance with the relevant regulations and standards. The registered EIA Consultant is the key person who is entrusted with the responsibilities for ensuring environmental impacts from a project are correctly identified, assessed, and mitigated. The roles and core duties of the EIA Consultant include the following:

- Preparing the Terms of reference (TOR) for EIA study of a project proposal;
- Performing quality control (QC) to ensure the quality of EIA report meets the requirements of DOE and hence, is fit for submission;
- Preparing and defending the EIA report of a project; and
- Preparing the Environmental Management Plan (EMP).
- To ensure proper execution of the environmental impact and compliance monitoring programme
- To advice Project Proponent / Contractor on the performance of implementation of the EIA / EMP and recommend appropriate changes as indicated by monitoring results
- To assist Project Proponent / Contractor in reporting to DOE.
- To liaise with the DOE and relevant regulatory authorities on environmental matters.

9.3.4. Responsibilities of Environmental Officer (EO)

The Environmental Officer (EO) is the main project personnel responsible for ensuring regulatory compliance at the project implementation stage (post submission of EIA Report). The roles and core duties of the EO include the following:

- Implementing the Environmental Management Plan (EMP), and installing the temporary and permanent pollution prevention and mitigation measures (P2M2).
- Preparing Environmental Performance Monitoring Document (EPMD). EPMD describes in detail how EIA approval conditions are going to be complied and how performance monitoring of the various pollution prevention and mitigation measures (P2M2) will be conducted to ensure the optimal functionality of the P2M2 is maintained. The details shall include, among others: performance monitoring equipment/instruments, sampling protocols and analysis, monitoring parameters, sampling frequency, preventive and

corrective maintenance procedure for the P2M2, discharge compliance, record keeping, etc. EPMD also includes Compliance Monitoring (CM) and Impact Monitoring (IM) wherever relevant. *(*note: Performance monitoring in this context refers to the monitoring of certain characteristics that would indicate that a P2M2 is functioning in an optimal manner. It also includes the preventive and corrective maintenance of the P2M2 to maintain their optimal performance. P2M2 refers to all measures to prevent and mitigate pollution and includes temporary pollution prevention and mitigation measures)*

- Performing or supervising the conduct of Performance Monitoring (PM) program as specified in the EPMD.
- Preparing Performance Monitoring Report (PMR). PMR discusses the results of the performance monitoring conducted as described in the EPMD. Wherever relevant, PMR shall include data interpretation and assessment of the effectiveness of the Pollution Prevention and Mitigation Measures (P2M2) by making comparison of the Performance Monitoring Parameters (PMR) with their recommended ranges (or standards). Statistical techniques and graphical presentation of the performance monitoring parameters should be used wherever appropriate. PMR shall also make some definitive conclusions on the overall performance of the P2M2 and suggest improvement measures to be taken if necessary. PMR shall be submitted to the Environmental Performance Monitoring Committee (EPMC) as established by the Project Proponent for the EIA project and maintained for the inspection of the DOE officers.
- Communicating the status of environmental regulatory compliance of the project during construction and operation phases to the Project proponent.
- Maintaining a detailed record of major upset conditions encountered, if any, for the duration of the project construction and operation phases. The date of occurrence, nature and causes of upset conditions, and the corrective actions taken shall be recorded. Upset conditions refer to failures of Pollution Prevention and Mitigation Measures (P2M2) which result in noncompliance with the EIA approval conditions or discharge/emission standards, or pollution that affects the immediate neighbourhood or seriously threatens the environment or public health and safety.
- Acting as an environmental advisor to the Project Proponent in advising him to undertake additional efforts, if any, to further ensure effective implementation Environmental Management Plan (EMP) including temporary Pollution Prevention and Mitigation Measures (P2M2) on a sustained basis.

An organization structure is attached below for further reference on the roles of each parties involved and responsible to oversee, execute and consult during the entire duration of the Project from pre to post execution (**Figure 9.3.1**).

9.3.5. Organization Structure

The organization structure of THP Agro Management Sdn Bhd and parties involved in regards to the Project development (**Figure 9.3.1**).

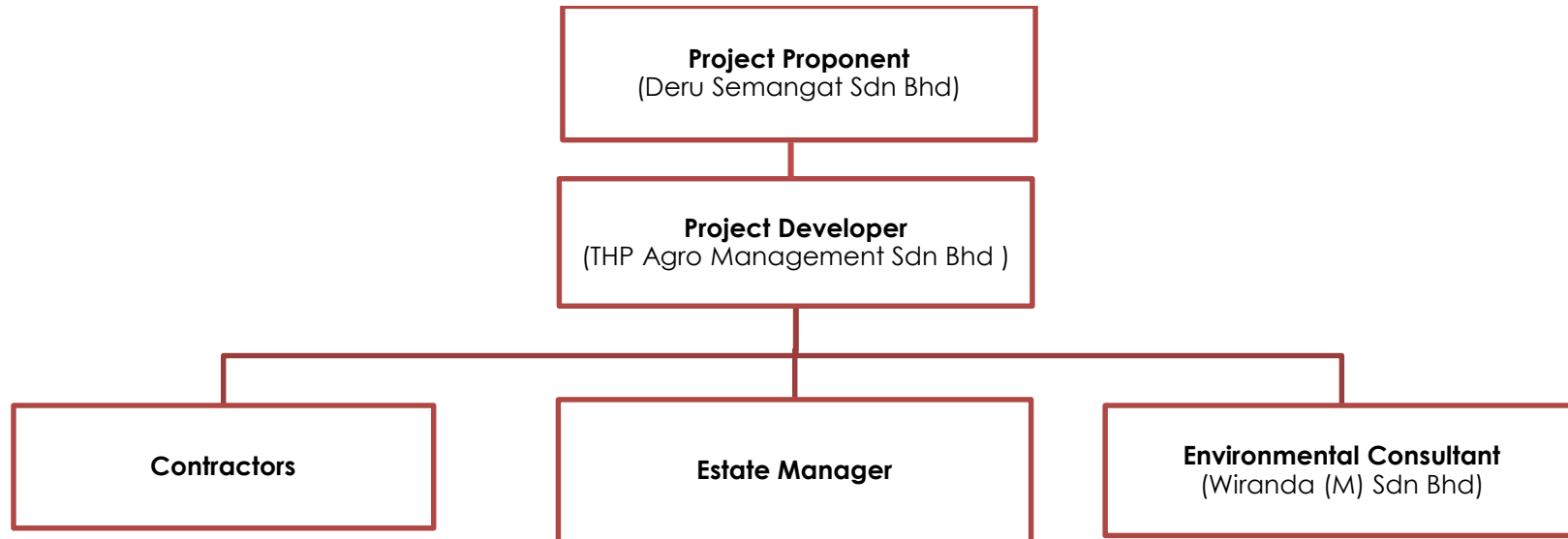


Figure 9.3.1: The Organization Structure

9.4. RELATED ENVIRONMENTAL COMPLIANCE

9.4.1. Water Quality

Effluent discharges into the inland waters of the country are governed by provisions and standards stipulated in the Environmental Quality Act 1974 and the Environmental Quality (Sewage) Regulations 2009.

It is noted that total suspended solids is a critical parameter with regard to land development activities and construction works for this Project.

Classes of water quality for inland surface waters as recommended in the National Water Quality Standards for Malaysia (NWQS) are presented in **Table 9.4.1**, while **Table 9.4.2** shows the water classes and its uses.

Under the Environmental Quality (Scheduled Waste) Regulations 2005, spent lubricants such as oil and grease, hydraulic oil from machineries and solvents are categorized as scheduled waste. These are prohibited from being discharged into streams and rivers. Such wastes must have proper storage and handling on site.

Table 9.4.1: NWQS for Some Parameters Concern

Classes						
Parameter	I	IIA	IIB	III	IV	V
DO (mg/l)	7	5 – 7	5 – 7	3 – 5	3	< 1
pH	6.5 – 9	6.5 – 9	6.5 – 9	5 – 9	5 – 9	-
BOD ₅ (mg/l)	8.5	3	3	6	12	> 12
COD (mg/l)	10	25	25	50	100	> 100
TSS (mg/l)	25	50	50	150	300	300
NH ₃ -N (mg/l)	0.1	0.3	0.3	0.9	2.7	2.7
Turbidity (NTU)	5	50	50	-	-	-
Oil & Grease (mg/l)	Natural levels	40; N	40; N	N	-	-
Total Coliform (count/100 ml)	100	5000	5000	50000	50000	>50000

Source: Department of Environment, Malaysia

Note: TSS : Total Suspended Solids
 NH₃-N : Ammoniacal Nitrogen
 a : Maximum not to be exceeded
 N : Free from visible, sheen, discolouration and deposits

Table 9.4.2: Water Classes and its Uses

CLASS	USES
Class I	Conservation of natural environment Water Supply I - Practically no treatment necessary Fishery I - Very sensitive aquatic species
Class IIA	Water Supply II - Conventional treatment Fishery II - Sensitive aquatic species
Class IIB	Recreational use with body contact
Class III	Water Supply III - Extensive treatment required. Fishery III - Common, of economic value and tolerant species; livestock drinking
Class IV	Irrigation
Class V	None of the above

Source: Department of Environment, Malaysia

9.4.2. Air Quality

The Department of Environment (DOE) has adopted some recommended standard (*New Malaysia Ambient Air Quality Standard*) for a number of pollutants including Particulate Matter with the size of less than 10 micron (PM₁₀), Particulate Matter with the size of less than 2.5 micron (PM_{2.5}), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂), Ground Level Ozone (O₃) (**Table 9.4.3**).

Under *Environmental Quality (Declared Activities) (Open Burning) Order 2003*, had mentioned that any burning activity that has been listed in the order are prohibited.

The installation of fuel burning equipment e.g. temporary generator sets is prohibited without prior written approval from the DOE (Regulations 5). The contractor shall submit the written notification to DOE as per Regulations 5 of the *Environmental Quality (Clean Air) Regulations 2014*. (**Appendix 18**).

Emissions of black smoke from diesel powered vehicles and construction equipment must comply with the emission limits specified under the *Environmental Quality (Control of Emissions from Diesel Engines) Regulations 1996*.

Table 9.4.3: New Malaysia Ambient Air Quality Standard

Pollutant	Averaging Time	Malaysian Ambient Air Quality Standard		
		IT-1 (2015)	IT-2 (2018)	Standard (2020)
		$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
Particulate Matter with the size of less than 10 micron (PM_{10})	1 year	50	45	40
	24 hours	150	120	100
Particulate Matter with the size of less than 2.5 micron ($\text{PM}_{2.5}$)	1 year	35	25	15
	24 hours	75	50	35
Sulfur Dioxide (SO_2)	1 year	350	300	250
	24 hours	105	90	80
Nitrogen Dioxide (NO_2)	1 hour	320	300	280
	24 hours	75	75	70
Ground Level Ozone (O_3)	1 hour	200	200	180
	8 hours	120	120	100
Carbon Monoxide (CO) (in mg/m^3)	1 hour	35	35	30
	8 hours	10	10	10

Source: Department of Environment, Malaysia

9.4.3. Ambient Noise

Noise generated by the construction and operations phases of the project site is governed by The Planning Noise Limits and Control. Protection of site personnel from the effect of excessive exposure to noise falls under the Department of Occupational Health and Safety (DOSH) via the *Factories and Machinery (Noise Exposure) Regulations 1989*. The noise emitted from motor vehicles is controlled under the *Environmental Quality (Motor Vehicle Noise) Regulations 1987*.

Table 9.4.4 presents Guidelines for Environmental Noise Limits and Control.

Table 9.4.4: Guidelines for Environmental Noise Limits and Control

(First Schedule: Recommended Permissible Sound Level (L_{aeq}) By Receiving Land Use For New Development)

Receiving Land Use Category	Day Time 7.00 a.m – 10.00 p.m	Night Time 10.00 p.m – 7.00 a.m
Low Density Residential, Noise Sensitive Receptors, Institutional (School, Hospital, Worship).	55 dBA	50 dBA
Suburban Residential (Medium Density), Recreational	60 dBA	55 dBA
Urban Residential (High Density), Mixed Development	65 dBA	60 dBA
Commercial Business Zones	65 dBA	60 dBA
Industrial Zones	70 dBA	65 dBA

Source: Department of Environment, Malaysia

9.4.4. Solid Waste

Solid wastes are controlled by the *Local Government Act 1976* and *Refuse Collection, Removal and Disposal By-Laws* under the Act. The Act enables Local Authorities to prohibit deposition of waste in streams, watercourses and public drains (Section 69). The by-laws specify that commercial and industrial waste maybe collected and disposed off on a fee basis prescribed by local authorities. Contravention of the by-laws is an offence.

The *Solid Waste and Public Cleansing Management Act 2007* provide and regulate the management of controlled solid waste and public cleansing for the purposes of maintaining proper sanitation and for the matter of incidental. Under Section 71 (2) of the Act clearly stated that all controlled solid waste shall be deposited, treated, kept, stored or disposed of only at solid waste management facilities licensed under this Act.

Project proponent will be responsible for ensuring that solid wastes generated on site shall be the domestic waste (worker's quarters and site offices) are properly stored and then transported and disposed off at approved disposal sites.

9.4.5. Scheduled Waste Management

The management of scheduled waste generated on the project site will guide following the rules and regulations set in *Environmental Quality (Scheduled Wastes) Regulations 2005*. According to this regulation, scheduled waste can be defined as “any waste falling within the categories of waste listed in the First Schedule”. Implementation of the project might potentially generate scheduled waste as mentioned in **Chapter 7**. During the development phase, such waste include:

- SW305 ; Spent oil or grease used for lubricating industrial machines
- SW231 ; Contaminated soil, water, debris or matter resulting from clean-up of spill of chemical or scheduled wastes
- SW103 ; Used batteries

The Regulation 8 (1) describes the responsibilities of the Project Proponent which shall ensure that the scheduled wastes generated are properly stored, treated on-site, recovered on-site for material or product from such scheduled wastes or delivered to and received at prescribed premises for treatment, disposal or recovery of material or product from scheduled wastes.

In addition, the Regulation 9 (1) of this Act describes that any scheduled wastes shall be stored in containers which are compatible with the scheduled wastes to be stored, durable and which are able to prevent spillage or leakage of the scheduled wastes into the environment.

These Regulations introduce the "cradle to the grave" waste management concept whereby a historical record is maintained providing documented details of the life-cycle of the waste from its generation through to its ultimate disposal. Specific requirements can be referred at Environmental Quality Act 1974 under *Environmental Quality (Scheduled Wastes) Regulations 2005*.

9.5. ENVIRONMENTAL MONITORING PROGRAM

The scope under the proposed monitoring program comprises the following key tasks:

1. Site Inspection to assess the current progress of Project implementation on site
2. Monitoring of water quality, LD-P2M2 tools, air quality and noise levels to assess environmental conditions against work progress and intensity
3. Analysis of the monitoring results and formulation and recommendations on suitable measures for areas of non-compliance and/or enhancement of environmental quality

Based on the information described, it is recommended that environmental impact monitoring of the project shall be implemented according to the following sampling locations, frequency of sampling and analytical methods.

9.5.1. Types of Environmental Monitoring

9.5.1.1. Performance Monitoring (PM)

This project site will apply Land Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2) in order to avoid disturbance on the environment in the project area as well as to conserve the environment. A performance monitoring (PM) is applied to monitor the effectiveness of the LD-P2M2. **Table 9.5.1** summarized the description on PM parameters.

Table 9.5.1: The Performance Monitoring Descriptions

LD-P2M2 Tools	Performance Monitoring (PM) Parameters	Recommended Limits	Monitoring Locations	Frequencies
Sediment Basin/Trap	Silt Marker	2/3 depth from sediment trap	Refer LD-P2M2 Conceptual Plan (Attachment 1)	Weekly or after rain event (<i>in- situ</i>)
Perimeter Drain	Performance	-		Quarterly
Earth Drain with Check Dam	Sediment Level			
Temporary or permanent waterway crossing(culvert/bridge)	Structure and Performance			

9.5.1.2. Compliance Monitoring

Compliance monitoring (CM) program is being employed in the Project site, in order to assess the overall project compliance and opportunity for optimization and further improvement in environmental management of the Project. The CM program is used to monitor the effluent discharge and air emissions. **Table 9.5.2** shows the proposed parameters for monitoring.

Table 9.5.2: The Compliance Monitoring Descriptions

Component	Regulated Parameters	Applicable Standards	Monitoring Locations	Frequencies
**Noise	LAeq	Day: 55 dBA Night: 50 dBA	Refer Figure 6.8.12 in Chapter 6	Quarterly
***Water Quality (Discharged from Sediment Basin)	Total Suspended Solids (TSS)	50 mg/L	Refer Figure 6.8.12 in Chapter 6 and LD-P2M2 Conceptual Plan (Attachment 1)	After 12.5 mm rainfall (using rain gauge)
	Turbidity	250 NTU		

Note:

* First Schedule, Guidelines for Environmental Noise Limits and Control, 2019.

** Refer to EIA approval condition

9.5.1.3. Impact Monitoring

The establishment of forest plantation may result some impacts on the condition of the area. Therefore, the Impact Monitoring will be carried out to observe the condition of the Project site. The monitoring will be conducted to verify that the findings of the EIA study on the potential impacts identified during the EIA scoping process are correct, appropriate mitigation and prevention measures are properly implemented, and the measures are effective in mitigating the adverse impacts to the environment. The components on the monitoring parameters are shown in **Table 9.5.3**.

Table 9.5.3: The Impact Monitoring Descriptions

Component	Regulated Parameters	Monitoring Locations	Frequencies
*Air Quality	PM ₁₀	Refer Figure 6.8.12 in Chapter 6	Quarterly
**Noise	L _{Aeq}	Refer Figure 6.8.12 in Chapter 6	Quarterly
	L _{max}		
	L _{min}		
***Water Quality	Total Suspended Solids (TSS)	Refer Figure 6.8.12 in Chapter 6	Monthly
	Biochemical Oxygen Demand (BOD)		
	pH		
	Turbidity		
	Ammoniacal Nitrogen (NH ₃ -N)		
	Dissolved Oxygen (DO)		
	Chemical Oxygen Demand (COD)		

Note:

* New Malaysia Ambient Air Quality Standard, Department of Environment Malaysia (DOE)

** First Schedule, Planning Guidelines for Environmental Noise Limits and Control, 2019.

*** National Water Quality Standard for Malaysia (NWQS), Department of Environment, Malaysia (DOE).

9.5.2. Descriptions of Environmental Monitoring

9.5.2.1. Water Quality Monitoring

Monitoring is intended to determine compliance with specified procedures and instructions with regards to environmental quality control. It is imperative that the Project Proponent monitor the results of the water quality monitoring closely, especially during the project development phase, and to take corrective actions whenever and wherever deterioration of the water quality occurs which can be ascribed to the project development.

For the preservation of water quality in the proposed project area, the following is recommended:

- Monitoring of the water quality is carried out at least once a month during land clearing and construction phase and also normal operations and maintenance phase. The water quality sampling stations.
- The water quality monitoring points should include all of the sampling stations.
- All the stations will be selected based on the following criteria:
 - Potential impacts due to project development to aquatic environment, water resources and water for human uses
 - Upstream and downstream of potential impact area
 - Upstream of water intake point / water treatment point

Water Quality Monitoring Frequency

Water quality monitoring at sixteen (16) locations at the Project site will be monitored. Water quality monitoring frequency can be divided into two (2) phases, namely development phase and operation phase. Monitoring shall be conducted by individual party concerned at the effluent discharge points of the baseline water quality points. Analysis of the water quality should be conducted by an accredited laboratory and all monitoring records must be kept and presented to the relevant authority upon request. Samples will be taken on a monthly basis throughout the plantation development.

9.5.2.2. Air Quality Monitoring

Air quality monitoring is important during the development stage of the Project. Basic climatic data should be collected in conjunction with the air quality measurements. This should include ambient conditions during monitoring such as wind speed and direction, temperature and description of the general climatic conditions. This information can assist in the interpretation of the air quality data (e.g. wind speed and direction will assist in determining the degree of air mixing occurring and may help to qualify the importance of any contaminant concentrations that may be detected).

As a minimum requirement, some of the parameters (as per requested by DOE) specified in the DOE's ambient air quality guidelines shall be monitored. All records of monitoring shall be kept and presented to the authorities upon request.

There are three (3) air quality stations at the proposed project site that will be monitored during the development of the project. The locations for air quality monitoring station are as shown in **Chapter 6 (Figure 6.8.12)**. The air samples will be collected from a fixed point by drawing the air from the surrounding area through absorbing media via a pre-calibrated portable pump stationed at the fixed points.

Air Quality Monitoring Frequency

Air quality monitoring during the construction phase will be carried out at three (3) locations. A **quarterly** monitoring frequency is proposed during the construction phase. This is to ensure that dust suppression measures for potentially dusty construction activities; and vehicle movement are implemented. The monitoring exercise will also ensure regular maintenance of construction vehicles and equipment and prevent excessive noxious exhaust emissions.

9.5.2.3. Noise Level Monitoring

Three (3) noise monitoring stations (N1, N2 and N3) are proposed in the project site. **Chapter 6 (Figure 6.8.12)** shows the locations of the noise monitoring stations.

Noise Level Monitoring Frequency

Noise monitoring will be carried out three (3) locations at daytime and night time during the establishment phase. It is proposed that monitoring will be carried out on a **quarterly** basis during establishment phase.

9.6. ENVIRONMENTAL AUDIT PROGRAM

The environmental audit program is proposed to track and ensure the enforcement of specified environmental protection and pollution control measures. The audit should be undertaken regularly by the audit team to ensure that the appropriate environmental protection and pollution control mitigation measures are properly implemented. The main points of audit program are:

- Include the general environmental conditions in the vicinity of the site.
- The pollution control and mitigation measures within the sites.
- Environmental condition outside the site area which is likely to effected, directly or indirectly by site activities.

It should also review the environmental condition outside the site area which is likely to effected, directly or indirectly by site activities. The audit team shall make reference to the following information in conducting the audit:

- The EIA approval condition from DOE.
- The EIA recommendations on environmental protection and mitigation measures.

The audit findings and their associated recommendations on improvements to the environmental protection and mitigation measure shall be submitted to the project proponent for taking immediate action. The contractor shall follow the procedures and time frames stipulated in the environmental audit for the implementation of the mitigation proposal. An action reporting systems shall be implemented to report on any remedial measures implemented subsequence to the environmental audit.

All auditors must be registered with DOE. Auditor for the development stage should also pose the CESSWI Certificate (competency to inspect and sedimentation control plan).

9.7. REMEDIAL ACTION

As mentioned earlier, the EMP consists of measures that are proposed to mitigate potential adverse impacts through guidelines / procedures to be followed in compliance with the regulations imposed by the authorities.

9.7.1. EMP during Development Phase

The recommended procedures to be followed by the Project Proponent are as listed below:

- Land Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2)
- Control of Contaminants
- Control of Noise Emissions
- Control of Airborne Particulate Emissions
- Project Development Waste Management
- Scheduled Waste Management
- Protection of Biological Resources
- Protection of Public Health and Safety

Land Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2)

As part of the design, drawing of LD-P2M2 that will be undertaken during development phase shall be prepared. These shall be followed the requirement by DOE. The sedimentation measures carried out during the development phase shall at a minimum consist of following:

- The construction of a temporary earth drain, check dam and sedimentation / retention pond within all drainage basins on site;
- The use of silt traps where appropriate;
- The use of interim vegetative ground covers in areas where earthworks have been suspended for a period of more than two months;
- Carry out de-silting work in check dam, silt trap and retention pond regularly.

Clearing and earthwork activities shall be minimized during days when significant rainfall occurs and a temporary drainage network should be provided. This is to route surface runoff to sediment ponds. Maintenance in term of de-silting sediment from drains and retention ponds is necessary. Re-vegetation of an exposed land should also be carried out as soon as possible.

Control of Contaminants

Fuels, lubricants and solvents that are required for establishment machinery must be stored in an orderly procedure within specially designated and clearly marked areas on-site. Liquid containers shall be kept in good condition at all times and leaking containers shall be replaced or repaired immediately. Such storage areas shall not be located within 100 meters from any stream, pond or other water body on-site.

- The containers used for storing the contaminant
- Storage of construction/establishment equipment not in use
- Any equipment maintenance activities

Any spills of fuels, etc. or leakages from equipment will be contained immediately upon detection of the incident.

Control of Noise Emissions

The contractor shall comply with The Planning Guidelines for Environmental Noise Limits and Control at residential areas for both day time and night time. To the degree possible, development works which produce high noise levels should be limited to day time hours, with quieter operations to be carried out at night.

The generation of unnecessary noise during construction shall not be permitted (e.g. the unnecessary idling and reviving of engines).

Control of Airborne Particulate Emissions

On-site roads should be sprayed with water mist during times when significant visible dusting occurs due to vehicle movements.

Any soil loads being transported to or from the site shall be securely covered to prevent spillage or dusting. During establishment activities is being carried out, any paved public road used as access to the site shall be visually inspected, for at least 1 km in each direction from the site entrances and exits, at least 3 times per week for significant accumulations of dirt. Significant accumulations of soil on roadways arising from site related traffic shall be removed as necessary.

All vehicles shall be kept free of significant accumulations or dirt (including bodies, undercarriages, and wheels) while on public roadways. Vehicle washing bay should be provided at the exit / entrance points of the site.

Project Development Waste Management

Throughout the Project development phase, the waste generated shall be treated in an orderly manner. The waste shall be placed in a designated location on the site. The waste will be collected and transported out of the Project site and disposed at a licensed facility on a routine basis.

Waste containers and appropriate facilities shall be provided within any construction camps. These facilities shall be serviced and maintained on a frequent and routine basis. The discharge of untreated sewage to existing surface water bodies shall not be permitted.

Scheduled Waste Management

The contractors shall ensure that the scheduled wastes generated by them are properly stored. Guideline for packaging, labelling and storage of any scheduled waste in Malaysia published by the Department of Environment (DOE) need to be referred for good practices (**Appendix 17**).

- ***Storage of Schedule Waste***

Scheduled waste shall be stored in containers which are compatible with the scheduled waste to be stored, durable and which are able to prevent spillage or leakage of the scheduled waste to the environment (**Plate 9.7.1**).

Areas for the storage of the containers shall be designed, constructed and maintained adequately in accordance with the guidelines to prevent spillage or leakage into the environment. The contractor may store scheduled wastes generated by him for 180 days or less after its generation provided that the quantity of scheduled wastes accumulated on site shall not exceed 20 metric tons.



Plate 9.7.1: Example of Improper and Proper Storage of Scheduled Waste

The date when the scheduled wastes are first generated, name, address and telephone number of the waste generator shall clearly labelled on the containers that are used to store the scheduled wastes. The containers of the waste shall be clearly labelled in accordance with the types applicable to them as specified in Third Scheduled and mark them with proper code as specified in First Scheduled for identification and warning purposes. It is prohibited to alter all the markings and labels as described in this Act. **Figure 9.7.1** shows the example of proper labelling of scheduled waste.



Figure 9.7.1: Example of Proper Labelling of Scheduled Wastes

- **Disposal of Scheduled Wastes**

Any scheduled wastes identified will need to be disposed by a licensed transporter at a recycling facility operated by a licensed scheduled waste contractor. The disposal of scheduled wastes is not considered to be a key issue for this Project.

Used oils are classified as scheduled waste under *Environmental Quality (Scheduled Wastes) Regulations 2005*. Improper management and disposal of used oils can lead to serious contamination of the watercourses. **Plate 9.7.2** shows the storage tanks for waste oil. The capacity of the containment should be 110% of the largest containers stored. The types of oil wastes generated from the maintenance yard are classified as follows:

- SW305: Spent lubricating oil
- SW408: Contaminated soil resulting from scheduled wastes
- SW103: Waste of batteries containing cadmium and nickel

Plate 9.7.2 shows the storage tanks for waste oil. The capacity of the containment should be 110% of the largest containers stored.



Plate 9.7.2: Example of Storage Tanks for Waste Oil

Protection of Biological Resources

The site workers shall not be permitted to harm any animal, bird, reptile or amphibian encountered during the project construction phase. However, there are no extinct species recorded within the proposed project site.

Protection of Public Health and Safety

A written public health and safety plan shall be prepared and established during the construction phase. The plan constructed in order to mitigate any risk involving the health and safety of the workers and the public within the proposed project site. The plan will be made available for review by the DOE upon request. The plan shall address the followings:

- Site security during day and night;
- The proposed storage practices for fuels, solvents and other hazardous materials;
- The safety practices that will be followed by the drivers of vehicles using adjacent public roads.

9.7.2. EMP during Operational and Maintenance Phase

Waste Management

Prior to handling over to local authority, non-hazardous and domestic solid wastes should be managed properly by ensuring regular collection of wastes. Adequate and strategically located collection areas should be provided. All solid wastes should be disposed off at an approved landfill sites.

Wildlife Management

The Project management will discuss with the authority in any suitable preventing actions and get endorsement from the authority to practice any problem solving solution methods which might infringe the law. Prior to conduct any actions, consultation from the Department of Wildlife and National Parks (DWNP) would be sought.

9.8. WILDLIFE MANAGEMENT PLAN (WMP)

9.8.1. Tapir and Sun Bear Strategy Program

The adjacent forest area is habited by the tapir. These animals may encroach to the Project site. The Department of Wildlife and National Parks (DWNP) must be included in the management of the wildlife of the area. The tapir control strategy for the proposed Project site shall refer to The Malay Tapir Conservation Project established by the Department of Wildlife and National Parks (DWNP).

Site preparation activities affect many lowland forest areas. Malaysia is the world's leading exporters of tropical hardwoods, and most of these tropical hardwoods originate in sun bear habitat. As lowland forest habitats become fragmented due to resources extraction and human settlement, it is reasonable to assume that sun bear population in much of their remaining ranges are now fragmented and in many cases isolated due to human activity.

The proposed component of the tapir and sun bear mitigation strategy program describes as follows:

a) Cooperation with Department of Wildlife and National Parks (DWNP)

The Project proponent shall be responsible to cooperate and seek advices with the DWNP on any plans involving the mitigation of encroachment by the sun bear.

b) Consultation for the Construction of Ditch

For the construction of ditch, the Project Proponent shall consult the DWNP on the best location, material used, effective protection and the cost of implementation.

c) Planning the Contingency Plan

The Project Proponent shall draft a contingency plan in the case of sun bear creating chaos the Project site.

d) Project Proponent Prevention Action

Any appropriate prevention action can be proposed by the Project management and endorsed by the authority prior to the implementation for any methods which might infringe the law.

9.8.2. Wild Boar Strategy Program

The management of wild boar will be executed to prevent the encroachment into the plantation. The plan is necessary, to avoid case of wild boar species creating chaos in the plantation, which involved destroy of trees or loss of lives.

This species is known to damage crops. They uproot large areas of land, eliminating native vegetation and spreading weeds. Once there is a report on wild-boar encroachment, the competent authority has to be notified (e.g. PERHILITAN), and then a response team should be mobilized to the project area. Actions needed for effective programme are;

- Confirm identification of species/track and sign.
- Carry out survey and produce distribution map indicating the location of the species across the site. Include all designated sites on maps produced.
- Notification to relevant agencies is required.
- Talk to the adjacent land owners and make them aware of the program.
- Be conscious on health and safety.
- Identify disposal options for animals culled during the program.
- If applicable ensure all plantation staffs and nearest public are aware of the action plan and report sighting.

A program of wild boar eradication (e.g. hunt and shoot) should only be undertaken by suitably qualified personnel with appropriate firearms. Points to note when undertaken a program of control are;

- Continual shooting may disperse the animal to new areas.
- Dictating a programme for public and personnel safety on site.
- Ensure that the hunting team adopt and follow an appropriate code of good practice.
- Shooting from stationary vehicles and night hunting with use of lamps is necessary.

Any wildlife conflict encountered in plantation must be immediately reported to PERHILITAN Pahang, or the complaint can be made online or phone call.

9.8.3. Elephant Strategy Program

The elephant prefers lowland habitat as their food is abundance in the area namely banana tree, bamboo and other floor vegetation. Oil palm tree originally is not their favourable food. However, the shrinking of forest size has inhibited the food sources.

Therefore, the wildlife-human conflict management authority i.e. Department of Wildlife and National Parks (DWNP) should be included in the wildlife management of the area. The plantation management will formulate an action plan to confront the conflicts, if any.

9.8.3.1. Management Strategy

Classification of Disturbance

The Project Proponent, together with advice from DWNP, should establish a guideline to classify the level of disturbance. This is to keep a proper inventory of all disturbance cases that occur in the Project site. Recorded details should include of physical details (disturb area, age of crops and types of crops), elephant details (population of elephant, duration of elephant creating chaos and frequency of disturbance).

Prevention mitigation and its costs would also be included in the records. These would serve as supporting documents for submission to the relevant authority for their records and quick response to all potential conflicts, situations.

Classification of Elephants

All of the elephants that exists in the Project area have potential to create disturbance in the Project site. Therefore, the Project Proponent should keep a proper inventory of records of all elephants in the vicinity. The elephants in the Project area should be categorized in groups to differentiate them for management purposes. For the classification of the elephant groups, advice can be sought from the DWNP. The classification of the elephants will help the authorities to make decision upon any disturbance cases. The elephants can be categorized into three types which are viable elephants, potential problematic elephants and problematic elephants

Mitigating Strategies

- **Cooperation with Department of Wildlife and National Parks (National Elephant Conservation Action Plan – NECAP 2013)**

The Project Proponent will collaborate with the authority to properly manage the conflict between human and elephant. The Project Proponent will secure a portion of the funds (if needed) to be used by the authority for management purposes but however, Project Proponent been aware to fully funds (which is necessary) based on situations and discussion to be held from time to time with DWNP. In the case of disturbance, the Project Proponent will seek advice from DWNP for suitable course of action including translocation or other methods suggested by the DWNP based on the Action Plan for elephant. Project Proponent shall be collaborate with the authority to conduct any form of dialog or outreach program in providing sufficient information to workers or to the nearby villagers.

- **Consultation – Construction of Ditch and Fence**

The Project Proponent should seek the advice from the DWNP prior to any construction of ditch or fence and to determine the best location of such items with the most efficient protection and costs. All the prevention equipment or structure such as ditches and fences shall be well maintained.

- **Contingency Plan**

The Project Proponent shall prepare a contingency plan for the elephant encroachment in the Project site.

- **Buffer Zone**

The Project management should ensure that the boundary between the Project and the forest edge is well maintained with no dense bushes on the forest floor. Clearing must be scheduled and boundary of Project site is recommended to be planted with the plant species that are not favoured by elephant.

- **Prevention Action**

Any appropriate prevention action can be proposed by the plantation management and should be endorsed by the relevant authority prior to its implementation to guard against infringement of the law. Any wildlife conflict encountered by residents must be immediately reported to DWNP Pahang, or the complaint can be made online via http://perhilitan.wildlife.gov.my/e_aduan/index.php.



Plate 9.8.1: Example of Signage for Elephants

9.8.4. Macaque Strategy Program

According to the Management Manual of Human-Long Tailed Macaque Conflict 2006, long-tailed macaque is a wild life that is being protected under the Act of Wildlife Protection No. 76 (1972). The species found in the Project site during fauna survey was *Macaca fascicularis* which is the long-tailed macaque. There are several ethics that needed to be done in order to overcome the conflict between human and long-tailed macaque.

- Any disturbance from long-tailed macaque should be reported to the Department of Wildlife and National Parks (PERHILITAN) immediately.
- Carry out survey and produce distribution map including indicating the location of the species across the site.
- 'Catch and Transfer' approach can be implemented in case long-tailed macaque creating chaos at the project site with the consultation from Department of Wildlife and National Parks (PERHILITAN).
- 'Catch and Transfer' (if needed) should be done immediately, protect long-tailed macaque from the exposure of rain and also prepare adequate food while transferring with the consultation from the Department of Wildlife and National Parks (PERHILITAN).

9.9. FIRE FORTIFICATION PLAN

Open burning is prohibited under the law (*Environmental Quality Act, 1974*), Section 29A

"Prohibition on Open Burning":

- (1) Notwithstanding anything to the contrary contained in this Act, no person shall allow or cause open burning on any premises.
- (2) Any person who contravenes subsection (1) shall be guilty of an offence and shall, on conviction, be liable to a fine not exceeding five hundred thousand ringgit or to imprisonment for a term not exceeding five years or to both.

This open burning fortification plan outlines the procedure to follow in the event of emergencies during clear-felling activities. It also assigns the responsibilities for its implementation. The proposed plan contains all the followings:

- Construct watch tower (**Plate 9.9.1**) on the highest point in the project site.
- Install open burning warning posts 'No Burning' (**Plate 9.9.2**) at the approach and strategic locations along the access road to alert workers at the vicinity of the project site.
- Plantation Management shall establish the Emergency Response Team (ERT). All staff is responsible to understand ERP and response procedures and evacuation routes and to follow the instructions of the designated Site Manager. The locations of the Fire Assembly Points (**Plate 9.9.3**) should be marked with appropriate signs to clearly indicate its location.
- The ERT should conduct periodical training for the ERP and ensure emergency response equipment are tested were applicable at least once a year. The ERT also should review and revise the ERP at least once a year particularly after the occurrence of accidents or emergency situations.



Plate 9.9.1: Example of Watch Tower



Plate 9.9.2: Example of Open Burning Warning Post



Plate 9.9.3: Example of Signage of Fire Assembly Point

Figure 9.9.1 shows the flow chart for the overall response to a fire emergency and together with the above information should be displayed in appropriate areas.

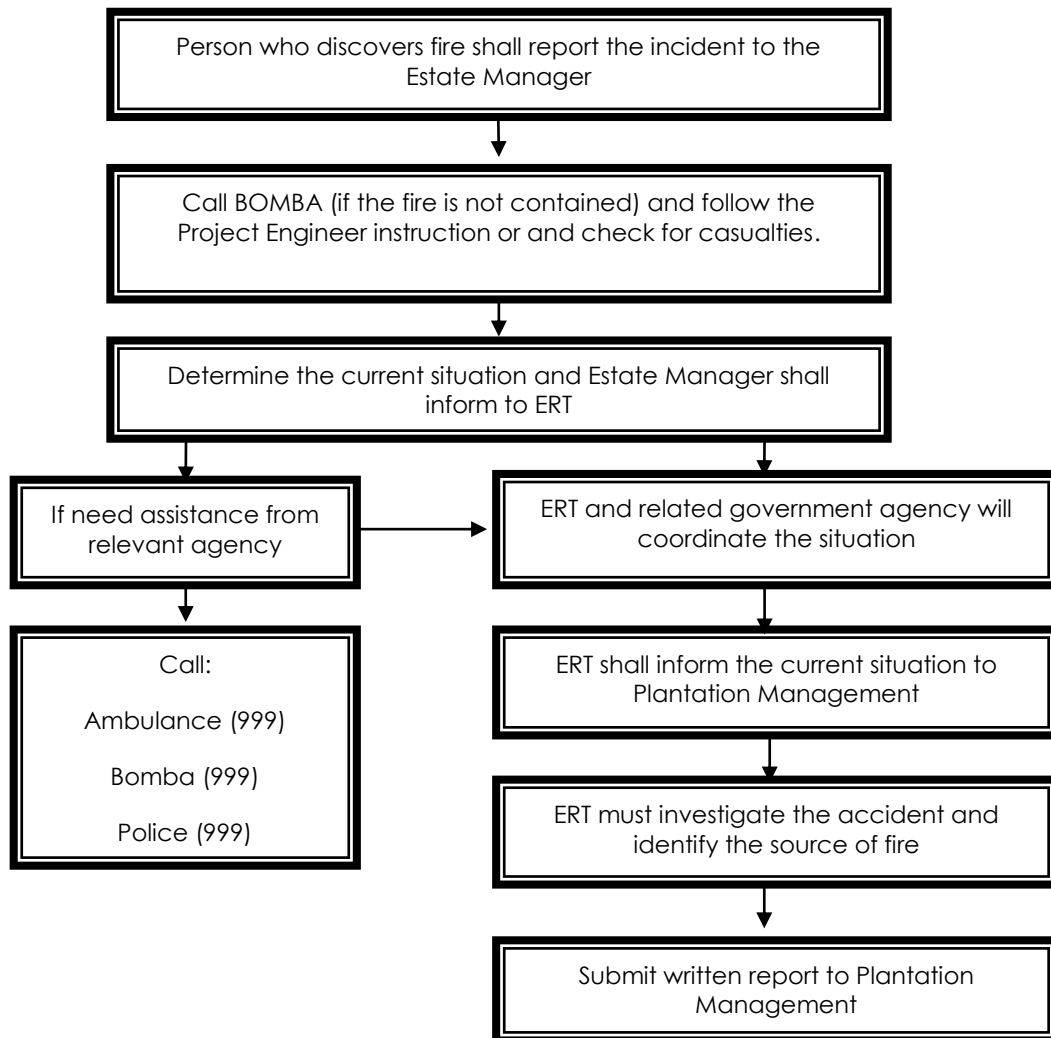


Figure 9.9.1: Fire / Explosion Emergency Response Flow Chart

9.10. EMERGENCY RESPONSE PLAN (ERP)

An Emergency Response Plan (ERP) is an essential component of a facility's safety and loss strategy. It provides an organized structure for a chain of action to be put into motion in the event of an emergency at the proposed project site. In the context of emergency of the ERP, it is defined as an incident which has the potential to cause injury or loss of life, and/or damage to property and the surrounding environment.

9.10.1. Objectives of ERP

The main objectives of developing the ERP are:

- To establish a formalized emergency team and to control and contain any emergency on site through prompt and effective response measures to that its effect is localized;
- To ensure that trapped or injured persons are rescued and given prompt and appropriate medical assistance;
- To control the spread of the damage arising from the emergency situation to the environment including the nearest sensitive receptors;
- To communicate information on the emergency to the relevant facility personnel and the relevant on-site parties, including the Police, Fire and Rescue Department, Department of Occupational Safety and Health (DOSH), Department of Environment (DOE) and the local authority;
- To keep information and records for investigation into the incidents/accidents;
- To restore normality at the proposed project site prior to personnel re-entering the project site after an emergency and resuming work; and
- To provide training for all the workers in emergency response management to maintain a high level of preparedness at all times.

9.10.2. Basis for Emergency Response Plan

The ERP is a formal document that identifies the potential emergency conditions at the proposed project site and specifies pre-planned actions to be followed and to minimize property and environmental damages and loss of life. The document specifies the actions the facility's management shall undertake to moderate or alleviate the impact from accidents and contains step-by-step procedures and information to assist in issuing early warning and notification messages to responsible emergency management authorities. An emergency response plan generally contains six main elements (**Figure 9.10.1**).

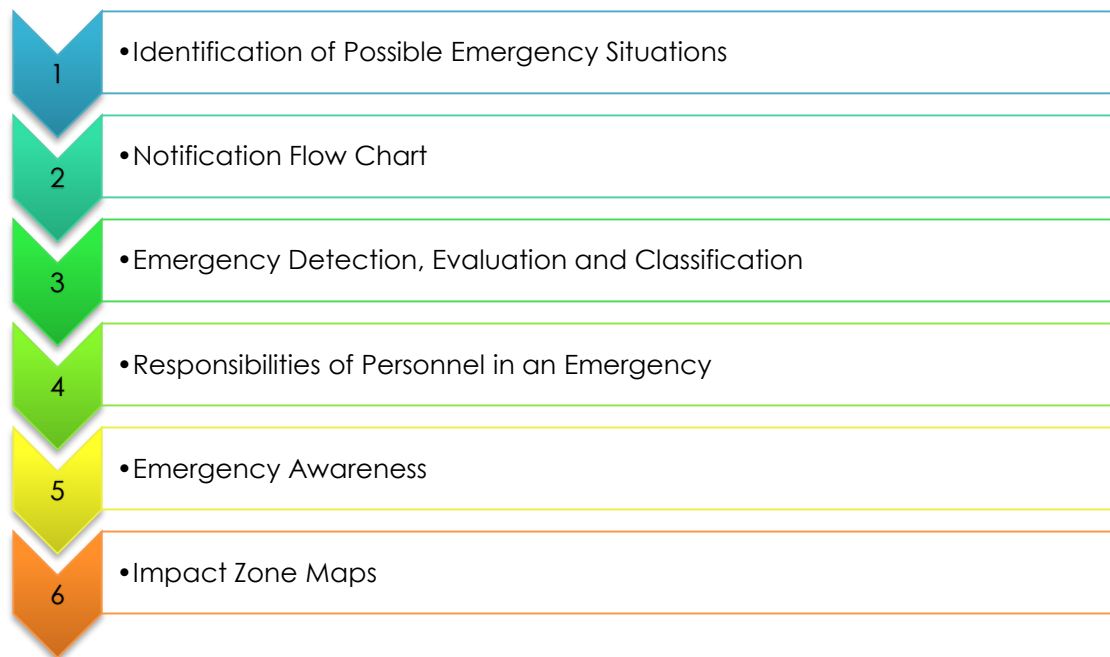


Figure 9.10.1: Six Elements of Emergency Response Plan

A. Identification of Possible Emergency Situations

An emergency identification exercise is to list emergency or hazard or abnormal situations resulting in the operation of the proposed project. From the exercise, the high and medium risks can be identified and the possible incidents documented. The emergency response actions relevant to each of these hazards will be focus of the emergency planning exercise.

B. Notification Flow Chart

A notification flowchart indicates the nominated persons who are to be notified during the emergency and in the order of priority. The information presented on the flow chart is needed to ensure the timely notification of persons responsible for handling the emergency situations.

C. Emergency Detection, Evaluation and Classification

Early detection and evaluation of the situation(s) or triggering event(s) that initiates or requires an emergency action is crucial. The establishment of procedures for reliable and timely classification of an emergency situation is necessary to ensure the appropriate course of action is taken based on the urgency of the situation.

D. Responsibilities of Personnel in an Emergency

A clear definition of the responsibilities of personnel for ERP related tasks must be determined during the formulation of the plan. Project manager or facility operators are responsible for developing, maintaining, managing and implementing the ERP.

The Federal and local emergency management officials have the statutory obligations for warning and evacuating affected areas. The ERP must clearly specify the responsibilities of operator and when/how those responsibilities are transferred to government officials, to ensure timely and effective action.

E. Emergency Awareness

Actions of the ERP are taken to moderate or alleviate the effect of a potential situation and facilities responses to the situations.

F. Impact Zone Maps

Impact zone map delineates the areas that could be affected as a result of accidental events at the proposed project site. Impacted zone maps are used both by the project manager and emergency management officials to facilitate timely notification and evacuation of areas affected by accidental events.

9.10.3. Emergency Response Plan (ERP) for the Proposed Project

9.10.3.1. Organization

Within the facility management, a health, Safety and Environmental (HSE) committee has to establish to ensure all issues related to safety, health and environment pertaining to the facility, employees and surrounding environment, are adequately incorporated into the actual implementation of the ERP. However, the setting up of the committee is dependent on the number of persons employed at the facility. If the number is below 40, then the formation of the committee is not required by law.

Upon agreement or acceptance of the proposed ERP by DOE and DOSH, the HSE committee shall ensure that all personnel are familiar with the plan. To ensure workability of the plan, training sessions and regular rehearsals by means of drills have to be conducted.

a. Establishment of 'Local Response Team'

A 'Local Response Team' may be established through the initiation of the nominated HSE Committee. The team would comprise of the relevant from the project proponent, government agencies and local authorities such as the local BOMBA (Fire and Rescue Department), DOSH (Department of Occupational, Safety and Health), and DOE (Department of Environment) (**Table 9.10.1** and **Plate 9.10.1**).

Table 9.10.1: Internal and External Emergency Phone List

NO	AGENCY	LOCATION	CONTACT NUMBER
INTERNAL (PROJECT PROPONENT)			
1	THP Agro Management Sdn Bhd	Level 31 – 35, Menara TH Platinum, No. 9, Persiaran KLCC, 50088 Kuala Lumpur	Tel: 03-2603 4800
EXTERNAL (GOVERNMENT AGENCIES)			
1	Department of Environment (DOE)	Kuantan, Pahang	Tel: 09-573 0636
2	Fire & Rescue Services Department (BOMBA)	Jerantut, Pahang	Tel : 09- 266 3444
3	Jerantut District Police Headquarters (IPD Jerantut)	Jerantut, Pahang	Tel : 09-266 2222
4	Hospital Daerah Jerantut	Jerantut, Pahang	Tel : 09- 266 3333
5	Hospital Kuala Lipis	Lipis, Pahang	Tel : 09-312 3333
6	Klinik Kesihatan Mela	Lipis, Pahang	Tel: 09-3129424
7	Klinik Kesihatan Kuala Tembeling	Jerantut, Pahang	Tel: 09-308 6033
8	Pejabat Kesihatan Daerah Kuala Lipis	Lipis, Pahang	Tel: 09-310 1043
9	Pejabat Kesihatan Daerah Jerantut	Jerantut, Pahang	Tel: 09-266 1905
10	Department of Occupational, Safety & Health (DOSH)	Pahang	Tel: 09-555 4014
11	Department of Wildlife and National Parks (DWNP) Peninsular Malaysia	Kuantan, Pahang	Tel : 09- 517 8111



Plate 9.10.1: Example of Signage of Government Emergency Phone List

b. Types of Emergency

An emergency is an unforeseen combination of circumstances that disrupts normal operating conditions and poses a potential threat to human life, health and property or the environment if not controlled, it has to be contained or eliminated immediately. Generally, emergencies in the project facility areas can be categorized into the following (**Figure 9.10.2**).

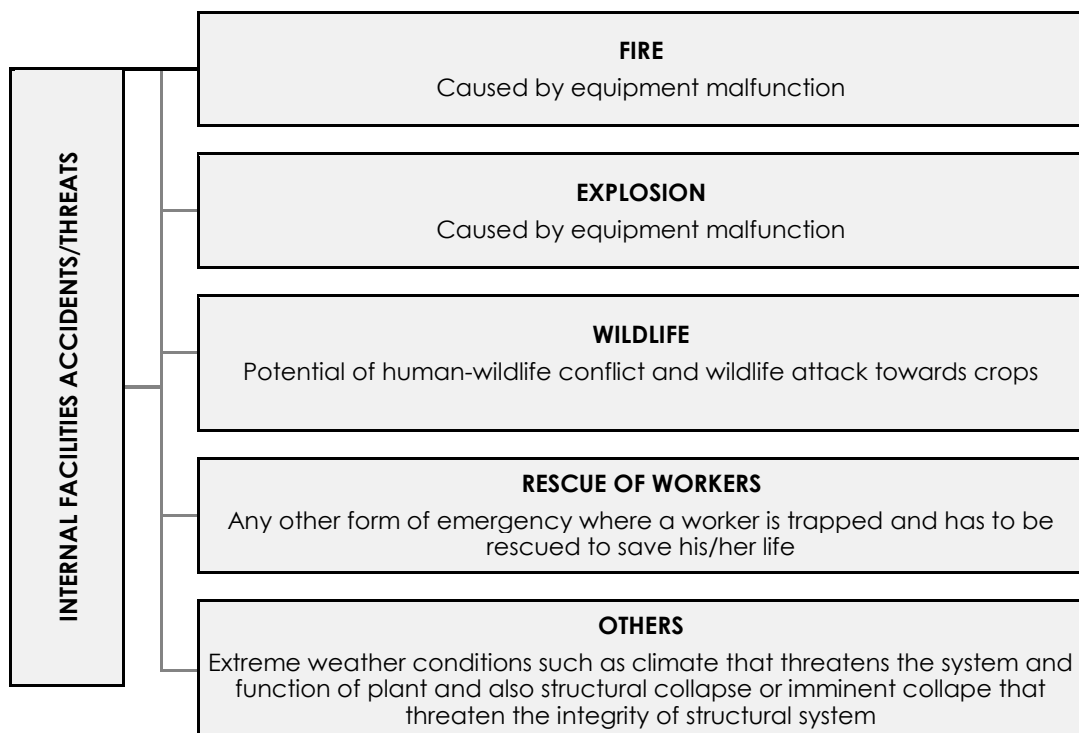


Figure 9.10.2: Categories of Emergencies in Project Facility Area

9.10.3.2. Emergency Classification Levels

Emergencies are classified according to their severity and urgency. An emergency classification system is one means of classifying emergency events according to the different times at which they occur and to the varying levels of severity.

The emergency classification level for the types of emergencies described in the previous section can be further divided into three (3) levels of response. This three level system is proposed as a general principle to activate the type of emergency response and is listed below:

LEVEL 1 (LOCAL LEVEL)

This is an emergency situation where only the transfer stations operations personnel would be required to manage and control the emergency. Level 1 emergency would normally call for the station's own resources and equipment for the response.

LEVEL 2 (AREA LEVEL)

This is an emergency situation which requires action and management by the combined efforts of the in-house transfer station's response teams or any of the relevant government agencies (e.g. BOMBA).

LEVEL 3 (DIVISIONAL LEVEL)

This is an emergency situation where a Level 2 emergency has escalated into an uncontrolled situation and has resulted, or would result in, loss of many human lives, extensive property or environmental damage, and has reached a scale that is beyond the control and capabilities of all response teams combined. Consequently an Evacuation action plan is then needed to be activated.

9.10.4. General Responsibility of On Scene Commander (OSC) and Emergency Response Team

The purpose of having a nominated emergency response team is to take immediate action to combat the emergency at local level (Level 1). In the event the emergency escalates to Level 2 or 3, the emergency response has to ensure proper actions are taken to control the emergency while waiting for the arrival of external assistance, such as from BOMBA and other external aids. The emergency response team is led by an On Scene Commander (OSC). The OSC is usually a general officer who has operational control of emergency response forces and supervises all on-site operations at the scene of the accident. He is the responsible person for all decisions relating to the management of the incident. As an OSC, he should be well versed with the transfer station's operation and must have in-depth knowledge on occupational safety and health.

The general responsibilities of an OSC during an emergency are as follows:

- To ensure all emergency response team members are assembled at predetermined location according to their respective responsibilities.
- To assess information and the situation, and decide on the actions to be taken as outlines in the response flowchart.
- To approved changes to the response plan during the event, if necessary. To direct the orderly evacuation of personnel not involved in the emergency response to a safe place.
- To ensure that all personnel are accounted for and coordinate search and rescue.
- To decide raising alarm for external assistance in the event the emergency escalates from Level 1 to Level 2 or 3.
- To coordinate between the team members and the sub-team members.
- To coordinate efficient hand over of firefighting, area containment or other responsibilities upon the arrival of external assistance such as BOMBA.
- To assist the external assistance team(s) to combat the emergency event as whenever required.
- To ensure that the incident is recorded and reported to the HSE committee and the necessary government agencies, such as BOMBA, DOSH and DOE.

Typical emergency team members shall acknowledge his/her responsibilities as an emergency response member having pertinent duties and responsibilities in the event of an emergency situation. For each designated position in the team, there should be at least one (1) name assigned and two (2) others as standby.

For the project in particular, the following sub-teams are to be established as part of the emergency response team.

Fire Fighting Team

The Fire Fighting Team members should comprise of employees that are familiar and trained for firefighting. Preferably, the team members should be experienced in handling the firefighting equipment.

Security Control Team

During an emergency event the Security Control Team will be responsible to maintain order at the premises and ensuring security at all time. This is crucial as there may be presence of outsiders on the site during the emergency event. Some of the responsibility of the Security Control Team is to prevent unauthorized entry during the emergency, control of vehicle movement and providing access to external assistance team(s), take head counts and conducts search and rescue, if needed.

First Aid Team

The First Aid team members shall be ideally personnel with basic knowledge of First Aid and CPR. In an emergency event, the First Aid Team will be required to provide immediate first aid to injured persons while waiting for the arrival of ambulance, depending on its necessity.

Communication Team

The communication Team assumes the role of team coordination and providing instructions through the command of OSC. The main responsibility of the team is to ensure the instructions are correctly and timely conveyed to the right party during an emergency. The team will record instructions conveyed out by OSC and received from all parties.

Restoration/Remediation Team

The Restoration/Remediation Team is responsible for the recovery of any losses and damages caused by the incident. After overcoming the emergency and the situations has been secured, the team will investigate the cause of the incident and estimate the damages and losses. It is also the team's duty to propose remedial steps to restore the affected area (with the collaboration of government agencies if required) and proposed the mitigation measures to prevent future occurrence.

The personnel selected for the various teams named above may comprise of the same persons but it is important that they understand their function in each specific contingency team.

9.10.5. Emergency Equipment

An emergency response plan must be based on realistic assessment of the availability of the emergency response facilities and equipment. To ensure that the Emergency Response Team is able to control an emergency situation, the team has to be fully equipped by proper facilities and dedicated equipment. It is the responsibility of the Facility Manager with the assistance of HSE committee to ensure its efficiency.

9.11. COMMITMENT FROM PROJECT PROPONENT

The Project will need to address conditions of approval, permit requirements, conditions of the EIA which will include an EMP and legislative and company requirements. The Environmental Management Framework discussed in this section includes reference to the proposed structured plan for mitigation of predicted environmental impacts, for Environmental Monitoring and Environmental Auditing for construction and operation of the Project within **Chapter 9**. This summary of commitments is proposed by Wiranda (M) Sdn Bhd.

Commitments

This following subscribes outline the key commitments made through the Environmental Impact Assessment (EIA) process. These commitments have also been included in the management sub plans for all environmental aspects and will be further addressed in the EMP framework. These commitments will form the basis of a commitments register that will be maintained and expanded where necessary, in order to monitor compliance with the Department of Environment and environmental authority conditions.

Table 9.11.1: Proposed Commitment from Project Proponent

Impact Area	Proponent Commitment	Compliances
Community		
Health and Safety	<ul style="list-style-type: none"> - Occupation health and safety policies will be developed for the construction and operational phases of the Project. - A site safety plan will be developed that includes preventative measures for a range of on and off-site incidents that might impact on community health and safety. - An emergency response plan will be developed that includes any emergency incidents that might involve members of the public. <ul style="list-style-type: none"> • The proponent will work closely with the HSE committee and the necessary government agencies, such as BOMBA, DOSH and DOE. 	Will be adhered
Employment and training	<ul style="list-style-type: none"> - The Proponent will work with local training providers to develop local training programs that will provide opportunities for employment to unskilled people. 	Will be adhered
Land		
Soil Erosion & Runoff	<ul style="list-style-type: none"> - Develop and implement Land Development Pollution Prevention and Mitigation Measures (LD- P2M2 including installation of temporary erosion control measures such as sediment basin, culvert, sediment traps and covers crops. - Regular inspection and maintenance of sediment control structures. - Minimise the disturbance footprint and undertake progressive rehabilitation where practicable. 	Will be adhered

Impact Area	Proponent Commitment	Compliances
	<ul style="list-style-type: none"> - Construction and management of soil stockpiles to ensure they do not contribute to sediment load on drainage lines and watercourses. - Stormwater drainage controls and erosion and sediment controls for bare roads will be designed and constructed to minimise erosion. 	
Scheduled Waste		
Hazardous materials management	<ul style="list-style-type: none"> - All chemicals, fuels and oils will be stored and contained according to <i>Environmental Quality (Scheduled Wastes) Regulations 2005</i>. Standards and Regulations. - Lubricating oil will be stored in bulk containers inside a bunded area with spill protection and recovery. - Waste oil / lube oil will be stored in tanks within a bunded area and held for collection by a contractor for reprocessing and recycling. - The Proponent will use low toxicity, non-ionic or anionic flocculants to prevent adverse environmental impacts. - The Proponent will provide an alternative and temporary supply for potable water in the event of failure of the water treatment plant. Spill response and clean up procedures will be implemented. Sewage treatment will be licenced by the Department of Health and DOE. 	Will be adhered

Impact Area	Proponent Commitment	Compliances
Flora & Fauna		
Flora & fauna	<ul style="list-style-type: none"> - Adhere to buffer widths recommended by the Land Clearing Guidelines. - Stage clearing of vegetation to minimise areas of bare ground and clear land only as required and in accordance with the Land Development Pollution Prevention and Mitigation Measures. - Avoid land clearing for development during the Wet Season (October-March). - Make all workers aware of buffer zones around the site. Clearly mark limits of clearing. - Project personnel and contractors will be educated to understand the vegetation clearing plans as part of general environmental inductions for the workforce. - Clearing will be monitored to comply with areas marked for clearing. - No intrusion of any kind will be made on areas outside the clearing zone. - Areas of potential habitat for the threatened species will be fenced off and clearly marked as 'no-go' areas. - The Project Proponent and Project Developer will give commitment and be responsible for mitigation measures (e.g. bare the cost of mitigation measures in WMP) if there is any impact related to human-wildlife conflict. The human-wildlife conflict can be referred in Chapter 7 of 7.6.7 (b) Socio Economy. - A WMP will be established by the Project Developer based on advice, guidance and cooperation by the DWNP to counter potential negative impacts from the Project development and operation. E.g. human-wildlife conflict related. 	Will be adhered

Impact Area	Proponent Commitment	Compliances
Noise & Vibration		
Noise level	<ul style="list-style-type: none"> - Although not expected to cause adverse noise impacts, a complaint management system will be implemented. - Including the implementation of management measures adopted should noise complaints be received. - Operation of more recent and silenced equipment where possible and maintenance for good working condition. - Comply with the <i>Environmental Quality (Motor Vehicle Noise) Regulations 1987</i> - Comply with the <i>Factories and Machinery (Noise Exposure) Regulations 1989</i>. 	Will be adhered
Air		
Dust	<ul style="list-style-type: none"> - Use water sprays on bare roads during very dry season - Covering areas of disturbed soil, stockpiles and temporary spoil containment with mulch or other material as best practicable. 	Will be adhered
Fire	<ul style="list-style-type: none"> - Under <i>Environmental Quality (Declared Activities) (Open Burning) Order 2003</i>, had mentioned that any burning activity that has been listed in the order are prohibited. 	Will be adhered
Generators	<ul style="list-style-type: none"> - The installation of fuel burning equipment e.g. temporary generator sets is prohibited without prior written approval from the DOE (Regulations 5). 	Will be adhered