

## CHAPTER 10

# STUDY FINDINGS

### 10.1. INTRODUCTION

The proposed Project is integral with the growth and expansion of the oil palm plantation development in Mukim Tembeling, District of Jerantut, Pahang Darul Makmur. This EIA study has attempted to clarify and address the environmental impacts associated with the implementation of the Project. The interpretations made here are based on the best available information and studies carried out as outlined in earlier sections of the EIA report.

The proposed Project can be viewed as an extension of the development of oil palm plantations by THP Agro Management Sdn Bhd which already has two oil palm plantations which are being co-currently developed adjacent to the proposed Project site.

### 10.2. PRINCIPAL FINDINGS

The principal findings of the study are as follows:

#### DURING DEVELOPMENT PHASE

##### SOIL EROSION

Since there will be exposed land areas due to site clearing and preparation works, significant soil erosion and sedimentation may arise. The peak flows may also increase slightly. However, with the implementation of the Land Disturbing Pollution Prevention Mitigation Measures (LD-P2M2) recommended in this EIA report, the impacts can be minimized. Given their vast exemplary experience in this sector, the Project proponent and Project Developer will also adopt other guidelines with respect to erosion control such as provided by the Department of Agriculture (DOA) and the Department of Irrigation and Drainage (DID) guidelines.

### **HYDROLOGY/HYDRAULICS/FLOODS**

The land clearing and planting activities may cause eroded materials to be transported and deposited in the streams and rivers in the project site. The deposited materials could adversely affect the conveyance capacities of these water bodies and increase the risk of flooding. However, this matter is unlikely to occur if all of the mitigation measures recommended are implemented systematically and actively maintained. Water management is a key component in oil palm plantation development and as described in **Chapter 5**, the Project Developer shall undertake pragmatic steps to preserve a satisfactory water balance for the plantation development during both, the dry and wet seasons.

### **WATER POLLUTION**

The activities associated with the project development will be confined to the area within the Project site. Proper implementation and active maintenance of the erosion and sedimentation control measures (LD-P2M2, ESCP, planting schedule, cover crops, etc.) is not anticipated to cause significant deterioration of the water quality in Sg. Tembeling, Sg. Jelai and Sg. Pahang over the long term. Any increase in the turbidity of the water in the rivers in the project site is expected to be slight and for a short duration only until the cover crops in the site are established. This has been shown to be true when the adjacent oil palm plantations (also developed by THP Agro Management Sdn Bhd) were being developed.

### **HYDROGEOLOGY & GROUNDWATER**

No major impacts on the quality of groundwater are expected due to this Project development.

### **AIR QUALITY**

There will be no major impacts on the air quality in the area due to this Project development. Temporary and short term impacts on air quality may be due to airborne dusts arising from the construction activities and by vehicles used for plantation preparation, but these can be mitigated effectively with the mitigation measures and BMPs put forward in this EIA report. Furthermore, open burning is strictly prohibited under the Environmental Quality Act, 1974, Section 29A (1).

### **NOISE**

Noise pollution is not expected to be significant as only a limited number of machinery, equipment and vehicles will be used. Furthermore, the Project site is surrounded by forest reserves and oil palm plantations that can act as a noise barrier to filter noise. The noise generated is expected to be of short term and intermittent in nature.

### **ECOLOGY**

There will not be any significant impacts to flora since the project site is a logged over forest and is covered with shrubs and bushes.

For the existing fauna, many species (mammals, reptiles, avifauna) has been recorded in the site. The plantation development will demolish habitats for the fauna species. Subsequently, many species will be exposed to danger of being captured or killed during the land clearing and site preparation stage as well as causing human-wildlife conflicts issues. In principal, the animals will move to the adjacent forests as the site is being cleared. Therefore, site development will be phased from the existing adjacent plantations towards the forest areas, taking into account weather conditions also. Other relevant mitigation measures have been proposed in this EIA report (**Chapter 8**) to prevent and/or minimize the impacts to fauna.

### **TRAFFIC**

Traffic is expected to increase slightly on the roads in the project area during the development phase. However, it is not anticipated to cause adverse impact to traffic flow in the area.

### **PUBLIC HEALTH**

Some potential health impacts during the development activities are associated with dust (respiratory problems in sensitive individuals), diseases (malaria, dengue, tuberculosis) and noise disturbance. These will be overcome by adoption and implementation of the recommended control practices as stipulated by the Ministry of Health and the Immigration Department.

### **WASTE MANAGEMENT**

Since the Project site is a logged over forest, the amount of biomass wastes (reusable/marketable trees and other vegetative wastes) that can be re-utilized is low. The total amount of biomass wastes may be significant given the large area of the Project site. However, since the development will be carried out in phases, the biomass waste volumes would be relatively small. The wastes may be shredded, mulched or stacked on site and used for land fertilization or for erosion control measures. Zero burning is prohibited.

### **SOCIO ECONOMY**

The proposed Project is expected to encourage participation of locals from the early stage. Approx. 61% of respondents in the social survey agree with the benefits (job opportunities) that may result from the Project development.

In terms of human-wildlife conflicts, it is expected to occur within the proposed Project site especially during the site clearing stage. Disturbance and loss of wildlife and the natural habitats due to site preparation to make way for the new oil palm plantation is unavoidable. In this regard, the contractors and workers shall follow the mitigation measures outlined (**Chapter 8**) to reduce the potential impacts of human-wildlife conflicts. Additionally, heavy vehicles from project site shall share the access road with the locals. Potential conflicts with foreign workers impacts on aquaculture activities in Sungai Jelai can be mitigated as per the mitigation measures presented in **Chapter 8**.

## **DURING OPERATION AND MAINTENANCE**

### **SOIL EROSION**

During this phase, the soil has been fully stabilized due to the existence of the cover crops. Establishment of oil palm trees will also reduce the soil surface from erosion agent i.e. precipitation. Hence, the impacts of soil erosion during this stage is minimal. However, LD-P2M2 tools shall be maintained regularly to ensure that they work efficiently.

### **HYDROLOGY/HYDRAULICS/FLOOD**

During the operations phase, hydrology and hydraulics would not be a significant factor as the cover crops, drainage and oil palm trees are already established. However, good water management must be practiced and drainage system shall be well maintained.

### **WATER POLLUTION**

Use of oil and grease and other agrochemicals can create water pollution if not stored and managed properly. Oil and grease is also classified as a fire hazard at the Project site because oil wastes may cause fire. However, with good management practices, fire hazard and water pollution issues can be minimized.

### **HYDROGEOLOGY & GROUNDWATER**

The use of pesticides, fertilizers and agrochemicals will not affect the groundwater quality as they will be controlled and used with care following the applicable guidelines.

### **AIR QUALITY**

Once the oil palm plantation is established, air pollution will not be a major concern during the operations phase. The movement of vehicles and machinery during estate maintenance will be reduced compared to the construction stage so dust dispersion will not be significant. Any source of atmospheric pollution will be temporary in nature and can be minimized with proper control measures.

### **NOISE**

Once the plantation area is in operation, the movement of vehicles and machinery is reduced. Thus, noise pollution and noise annoyance will be relatively insignificant.

### **ECOLOGY**

*Flora:* During the operations phase, there would be no significant impacts to flora as the cover crop and oil palm trees are established.

*Fauna:* The availability of food (palm oil seedlings) would eventually attract wild boars to enter the area. The project developer/plantation management is advised to refer to the DWNP and seek their guidance on how to handle wildlife encroachment and human wildlife conflicts.

### **TRAFFIC**

Tractors/lorries/trailers will be used to transport the FFB to the mill during the operations phase. Based on the assumptions and calculations made, all junctions in the area will be operating at LOS A where the average delay for all junctions are operating below 5 seconds. Overall, since the project site is located near rural area and only involves agricultural activities, it is predicted that there would be no major impact in traffic volume and no traffic disturbance and congestion in the area.

### **PUBLIC HEALTH**

It is possible that workers may be exposed to agrochemicals such as fertilizer and pesticide residues whilst managing the plantation. Handling these agrochemicals correctly will reduce the potential health impacts to the workers. In addition, related disease (malaria, dengue, tuberculosis) may be overcome by proper site management and checking of the workers health.

## **WASTE MANAGEMENT**

Waste generation will not be as much compared with during the development phase.

- Proper biomass mitigation measures shall be practiced to avoid blockages to natural streams and drainage systems. Burning of biomass is strictly prohibited at the Project site.
- Scheduled wastes (lubricant oils, chemicals) generated during maintenance can lead to water pollution and cause fire hazards. With proper management, the fire hazard and water pollution issues can be minimized.
- Sewage that will be produced during this phase can be managed properly by installation of a sewage management systems that comply with the regulations in the Environmental Quality (Sewage) Regulations 2009.

## **SOCIO ECONOMY**

During the operations stage, the impacts are mainly positive. The plantation is expected to induce local spending and create positive impacts to the local economy through generation of employment, creation of job opportunities and improvement of the relationship between the community in the study area and the project proponent.

### **10.3. PRINCIPAL RECOMMENDATIONS**

Several principal measures are recommended to be implemented throughout the development and operational phases of the project development. They are as follows:

- a) The LD-P2M2 control measures must be properly installed, maintained and monitored. The drainage system including the silt traps are recommended to be constructed at critical sections in the project site in addition to the existing earth drains to cater for surface runoff. An adequate permanent drainage system shall be constructed, maintained and de-silted regularly as a flood mitigation measures during the operation phase.
- b) Clearing of vegetation and drainage earthworks shall be avoided during the wet season to minimize soil erosion problems. Exposed tracks of land shall be re-vegetated or re-turfed immediately. Loose soil shall be compacted as soon as possible.

- c) The estate roads must be maintained regularly especially during the rainy season to minimize soil erosion. During the dry season, it shall be sprayed when necessary to control dust generation. Planting of cover crops shall be carried out on all exposed bare land.
- d) Biomass and solid waste generated during operation phase shall be managed using zero burning techniques. Solid waste and other wastes generated during development phase shall be segregated by waste type, composting for food waste while for non-degradable wastes can be sold to recycle premises.
- e) Noise control measures shall be implemented at the source and in the transmission path. This can be achieved by regular maintenance of equipment, limiting development activities within permitted times, enclosing the area of development and controlling access to the work areas.
- f) Adequate provisions shall be made for the storage and disposal of oil and grease and other agrochemical wastes to prevent contaminated runoff from entering nearby water bodies and seep into the groundwater. It will also reduce the risk hazard of fire.
- g) The project proponent and contractors must engage in dialogues with DOE officers and DWNP officers in the planning stage of the project development to formulate a management plan and strategies for handling human-wildlife conflict incidents.
- h) It is recommended that the project proponent prepares an Environmental Management Plan (EMP) and introduce an Environmental Monitoring and Auditing Program. Even after appropriate mitigation and abatement measures has been implemented, environmental monitoring is essential to evaluate the residual impacts and compliance with Environmental regulations.
- i) It is proposed that the development in the catchment areas be conducted following an environmental friendly method. Avoid major stripping of the existing vegetation and tress must ensure that there is no significant increase in the percentage of impervious area in the river catchment area.
- j) Other mitigation measures and recommendations have been incorporated in this EIA report. They are more clearly spelled out in the various sections of the report dealing with hydrology, erosion control, water quality, solid wastes, air quality, noise, water supply and socio-economics.



#### **10.4. CONCLUSION**

Throughout this EIA study report, there are many mitigation measures incorporated according to the analyzed potential impacts in each phase of development. There are more explainable and specific to every issue discussed.

It is concluded that the potential environmental impacts that would be created by the various project activities during drainage construction, land clearing and maintenance stages will be mostly manageable. Some of the most significant issues can be mitigated to acceptable levels if all control measures are implemented systematically and pro-actively to preserve the existing environmental quality. The project's potential beneficial impacts far outweigh the residual impacts.

Therefore, the success of the development in integrating with the surrounding natural areas will contribute towards the social acceptability of the project. Through strict commitment and supervision on-site, it is anticipated that the development can carry on with the context of a sustainable development for which, the Project Proponent and Project Developer i.e. THP Agro Management Sdn Bhd employed by Deru Semangat Sdn Bhd has vast expertise and experience.