CHAPTER 5: PROJECT DESCRIPTION

5.1 PROJECT CONCEPT

The concept of the proposed Project is to develop the proposed site into a productive oil palm and coconut palm plantation that can generate income to the state.

Currently the land consists of shrubs, forest and oil palm plantations. The forest on PTD 4085 and PTD 4118 is to be deforested. The concept of logging is clear-cutting, where all valuable trees within the project area are cut down. Natural vegetation such as bushes and shrubs will be left on the project site. The biomass will be properly stacked on the ground and left to rot. The twigs and branches will be used as mulch to protect the soil surface. On PTD 4882 and PTD 4963, which consist of oil palm plantation will be remain as it is.

The vegetation clearance and planting will be carried out in phases. These activities will be carried in minimal time duration to avoid exposed land surfaces as a mitigation measure against soil erosion. The Project will also adopt the “zero burning’’ concept in line with the DOE regulations for no open burning.

There will not be any palm oil mill constructed on site, as the fresh fruit bunches will be sold to mills outside the plantation area. The coconut is also will be sold outside of this plantation site.

5.2 PROJECT LOCATION

The proposed Project covering an area of 3775.34 ha (9,329.05 ac) is located at PTD 4882, PTD 4085, PTD 4963, PTD 4118, PTD 4177 and PTD 4121 Mukim Padang Endau, Daerah Mersing, Johor Darul Takzim. These lands have Temporary Title (*Hak Milik Sementara Borang 11AK*) for all PTDs (**Appendix 5-1**).

The existing landuse within the Project site comprises of forest area, oil palm plantation, shrub, bush and watermelon farm. The detail of each lot land is summarised in **Table 5-1** and **Plate 5-1** to **Plate 5-4**.

Table 5-1: Existing Land Used within the Project Site

Lot No.	Existing Landuse	Area	
		Hectare (ha)	Acre (Ac)
PTD 4882	Oil palm plantation	789.022	1949.72
	Shrub	324.000	800.61
PTD 4085	Forest area	340.89	842.01
	Shrub	63.80	158.00
PTD 4963	Oil Palm plantation	176.90	437.13
	Shrub	227.790	562.88
PTD 4118	Forest area	809.38	2000.02
PTD 4177	Shrub and bush	412.379	1019.01
PTD 4121	Shrub and bush (abandoned land) previously the land was awarded to Yayasan Pelajaran Johor (YPJ)	631.178	1559.67
Total Area		**3775.34**	**9329.05**

Plate 5-1: View at PTD 4118 (Forest area)

Plate 5-2: View at PTD 4117 (Abandonment Land)

Plate 5-3: View at PTD 4882 (The Land was Intruded)

Plate 5-4: View at PTD 4963 (the land was Intruded)

5.3 PROJECT BRIEF

The Project Proponent AA Sawit Sdn. Bhd. will undertake loging, clearing and plantation. The operation stage will be operated by IBZI Holding Sdn Bhd.

Logging license was issued by Forestry Department Negeri Johor to AA Sawit Sdn Bhd for PTD 4118 and PTD 4084. The license is attached in **Appendix 5-2** and summarized in **Table 5-2**. During the EIA preparation, both areas (PTD 4118 and PTD 4085) has been logged after the logging license was granted.

Table 5-2: Logging License Obtained from Forestry Department

Location	Size	Date
PTD 4118	809.38 ha	1/3/2020 – 31/8/2020
PTD 4085	404.69 ha	1/9/2020 – 28/2/2021

As mentioned in the Project concept, the proposed site will be planted with coconut palm and oil palm, which have an acreage of 1,982.88 ha and 1,792.45 ha, respectively, as shown in Figure 5-1 and listed in Table 5-3. 965.92 ha of the area proposed for oil palm plantation has already been planted with oil palm by the encroacher and will be taken over by the project proponent.

Table 5-3 : Coconut Palm and Oil Palm Area To Be Planted

Type of Plant	Species	Location	Area (ha)
Oil Palm	*Elaeis Guineensis*	PTD 4882	1,113.02
		Part of 4118	274.74
		PTD 4963	404.69
Total area			**1,792.45**
Coconut Palm	*Cocos Nucifera* (Aromatic Green Dwarf or Pandan coconut)	PTD 4177	412.38
		PTD 4118	809.38
		PTD 4085	404.69
		Part of PTD 4121	356.43
Total area			**1,982.88**

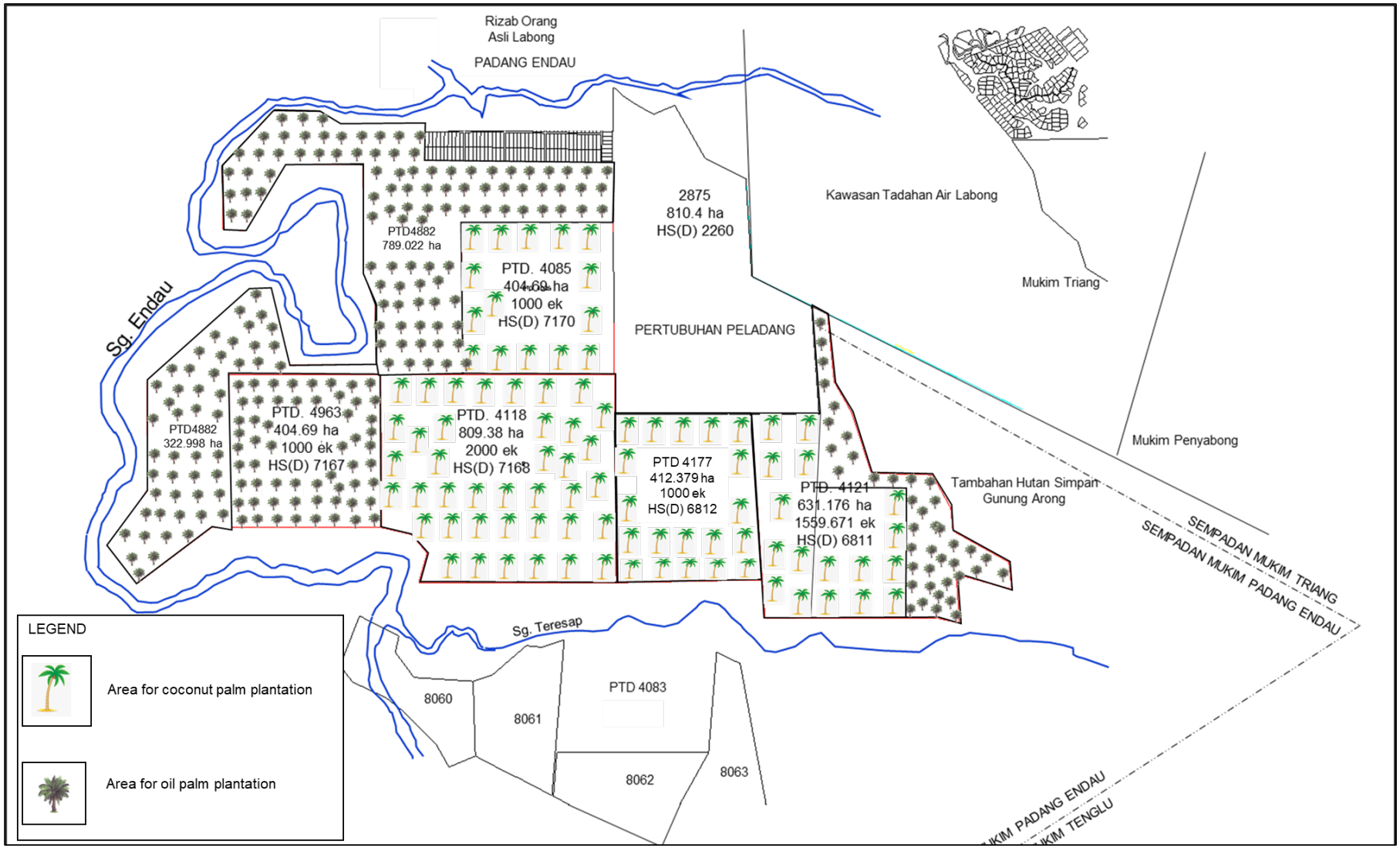


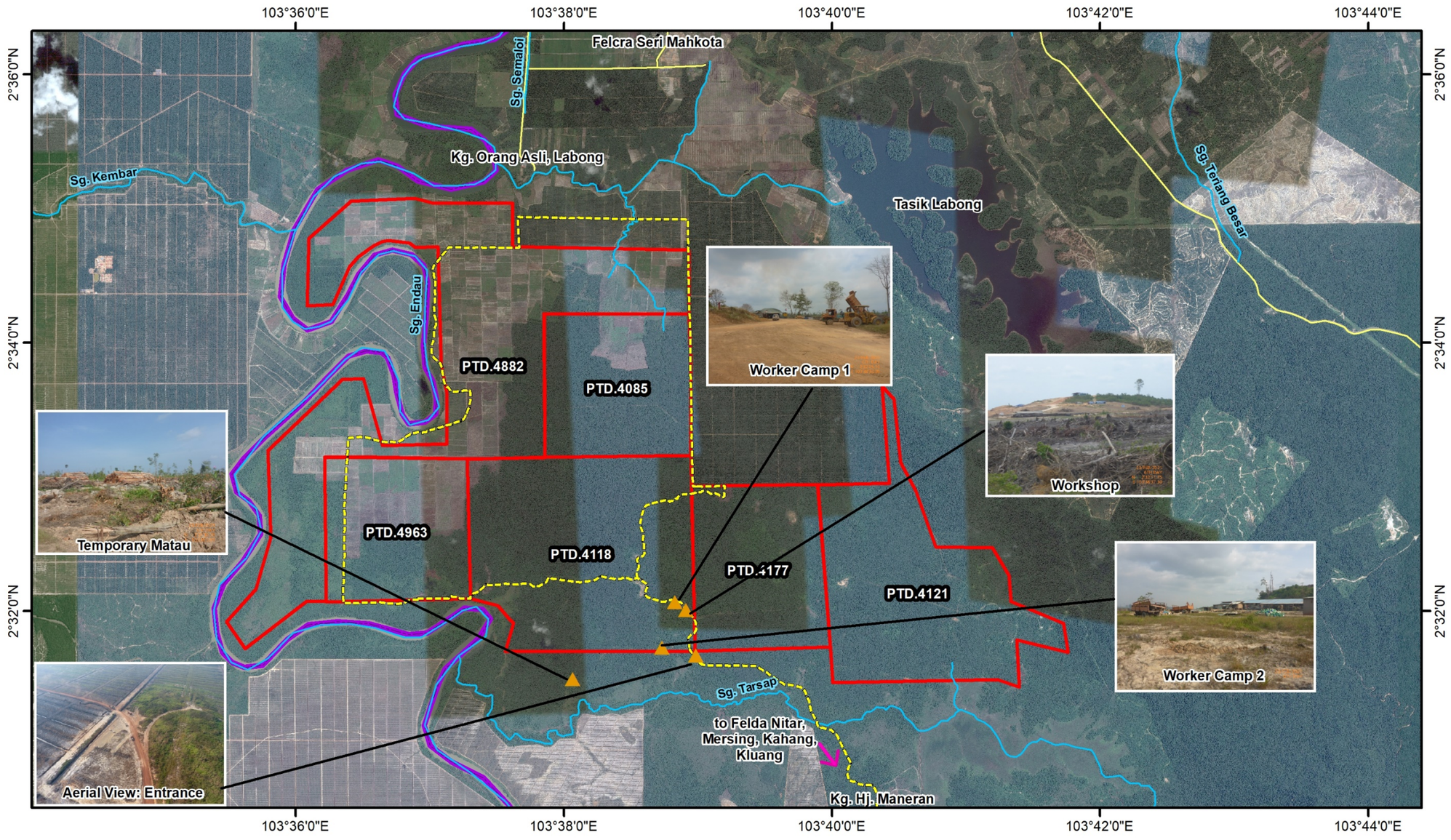
Figure 5-1: Proposed Distribution Area of Coconut Palm and Oil Palm Plantation

5.4 PROJECT ACTIVITIES AND COMPONENTS

In establishing an oil palm and coconut plantation, the main activities are as follows:

a) Pre-Planting Stage;
b) Logging;
c) Site Preparation;
    - Access Road development;
    - Base Camp;
    - Barriers and Fencing;
    - Utility Provision;
    - Logging and Site Clearing;
    - Biomass Management and Disposal;
    - Earthwork and Drainage;
d) Cover Crop Establishment;
e) Field Establishment for oil plam and coconut;
    i. Field Lining and Holing;
    ii. Culling;
    iii. Transplanting;
f) Maintenance and Harvesting;
g) Fertilizer Application and Agrochemical;
h) General Field Upkeep;
i) Harvesting;
j) Transportation of Fresh Fruit Bunches to Oil Mills; and
k) Replanting.

The overall flow chart and planting layout is shown in **Figure 5-2** and **Figure 5-3**. The Details of project activities and components is describe in the following section.



Legend

- Project Site
- Road Network
- River Network
- Temporary Receptors within Project Site
- State Boundary
- Proposed Access Road

N, W, E, S

0 1 2 4 km

PROJECT SITE LAYOUT PLAN

Coordinate system: WGS 1984
Unit: Degree
Basemap source: Google Earth, 2018

Figure 5-2: Layout Plan

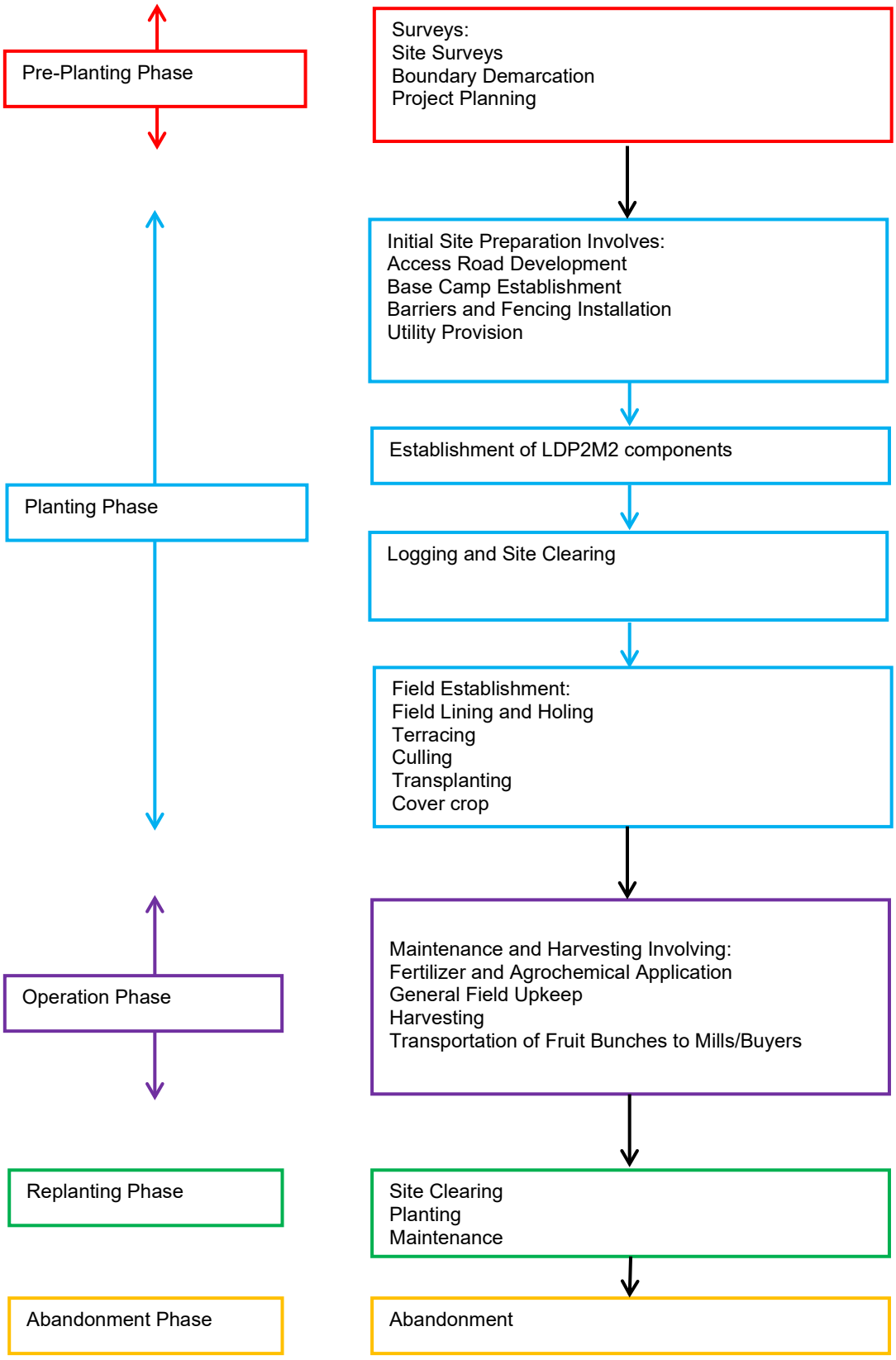


Figure 5-3: Overall Flow of the Plantation Process

5.4.1.1 Pre-Planting Stage

During the pre-planting stage, the necessary site investigations and surveys are carried out such as boundary demarcation, determination of access routes, determination of site conditions and surrounding areas.

5.4.1.2 Site Preparation

Site preparation activities include the following:

a) Access Road development

Access road to the proposed Project site is via earth track which is 10 km from Jalan Felda Nitar as shown in **Figure 5-4**. Access road within the Project site was developed from the previous land clearing.

b) Base Camp

There are two (2) wooden base camp has been constructed onsite for the workers during logging and site clearance up to plantation. The base camp was furnished with proper toilet facility. The toilet using septic tank. The total man power during logging up to plantation stage are as follows:

Activity	Total Manpower
Logging	8
Site clearance up to plantation	13

c) Barriers and Fencing

The Project boundary will be fenced to avoid intrusion of unwanted people and animals. The purpose of fencing is as a security measure to protect the crops as well as safety for workers and equipment.

d) Utility Provision

Water supply for the workers is through portable water pump from groundwater wells. Electricity is supplied by generator sets.

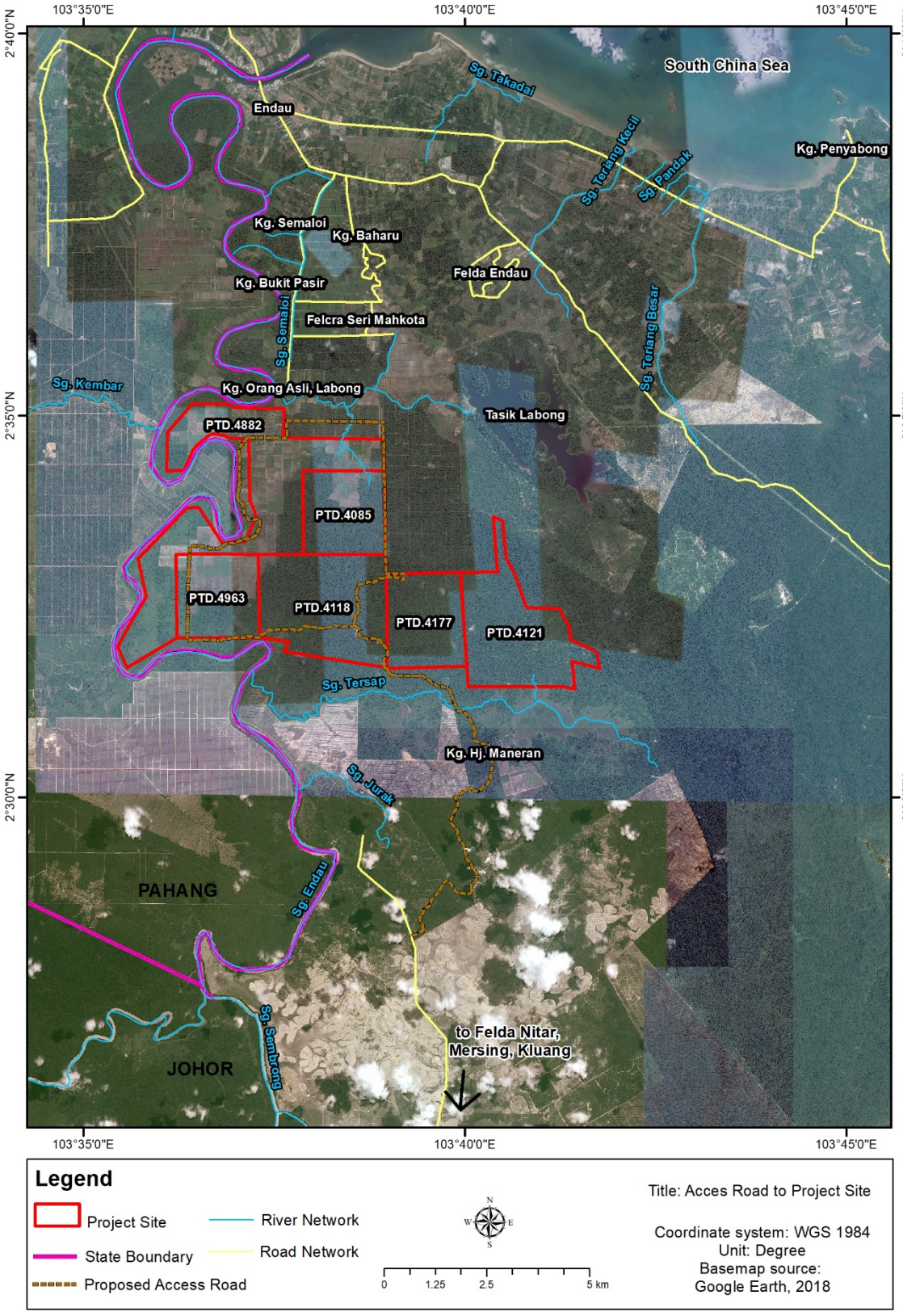


Figure 5-4: Access Road to Proposed Project

e) Logging and Site Clearing

Site clearing involves clearing of the existing vegetation which is logging of forest trees and undergrowth clearance at PTD 4085 and PTD 4118 and clearance of shrub and bush at PTD 4177 and PTD 4121. The proposed Project will be carried out in a total of 3 phases as shown in **Figure 5-5**. Each phase will be sub-divided in to a 14 of sub-phases. The existing oil palm area at part of PTD 4882 and part of PTD 4963 will be maintained as it is (Phase 2E and 3C). The details activity for each phase is summarize in **Table 5-4**. The BMP's should be installed prior to land clearing and planting. This is to prevent soil erosion and eroded material from leaving the Project area and to prevent flood occurrences at the downstream area during clearing work. The following table describe the activity for each phase:

Table 5-4: Project Phasing and Activities

Lot No.	Existing Land Used	Acreage (ha)	Phase	Acreage (ha)	Activities
PTD 4882	Oil palm plantation	789.022	3C	789.022	No site clearing
	Shrub	324.000	3D	155.000	Site clearing
			2G	169.000	Site clearing
PTD 4085	Forest area	340.890	3A	204.690	Logging & Site Clearing
	Shrub	63.800	3B	200.000	Logging & Site Clearing
PTD 4963	Oil palm plantation	176.900	2F	176.900	No site clearing
	Shrub	227.790	2E	227.790	Site clearing
PTD 4118	Forest area	809.380	2A	220.00	Logging & Site Clearing
			2B	184.000	Logging & Site Clearing
			2C	220.00	Logging & Site Clearing
			2D	185.38	Logging & Site Clearing
PTD 4177	Shrub and bush	412.379	1C	200.000	Site clearing
			1D	212.379	Site clearing
PTD 4121	Shrub and bush	631.178	1A	380.000	Site clearing
			1B	251.178	Site clearing
Total Area		**3775.339**		**3775.339**	

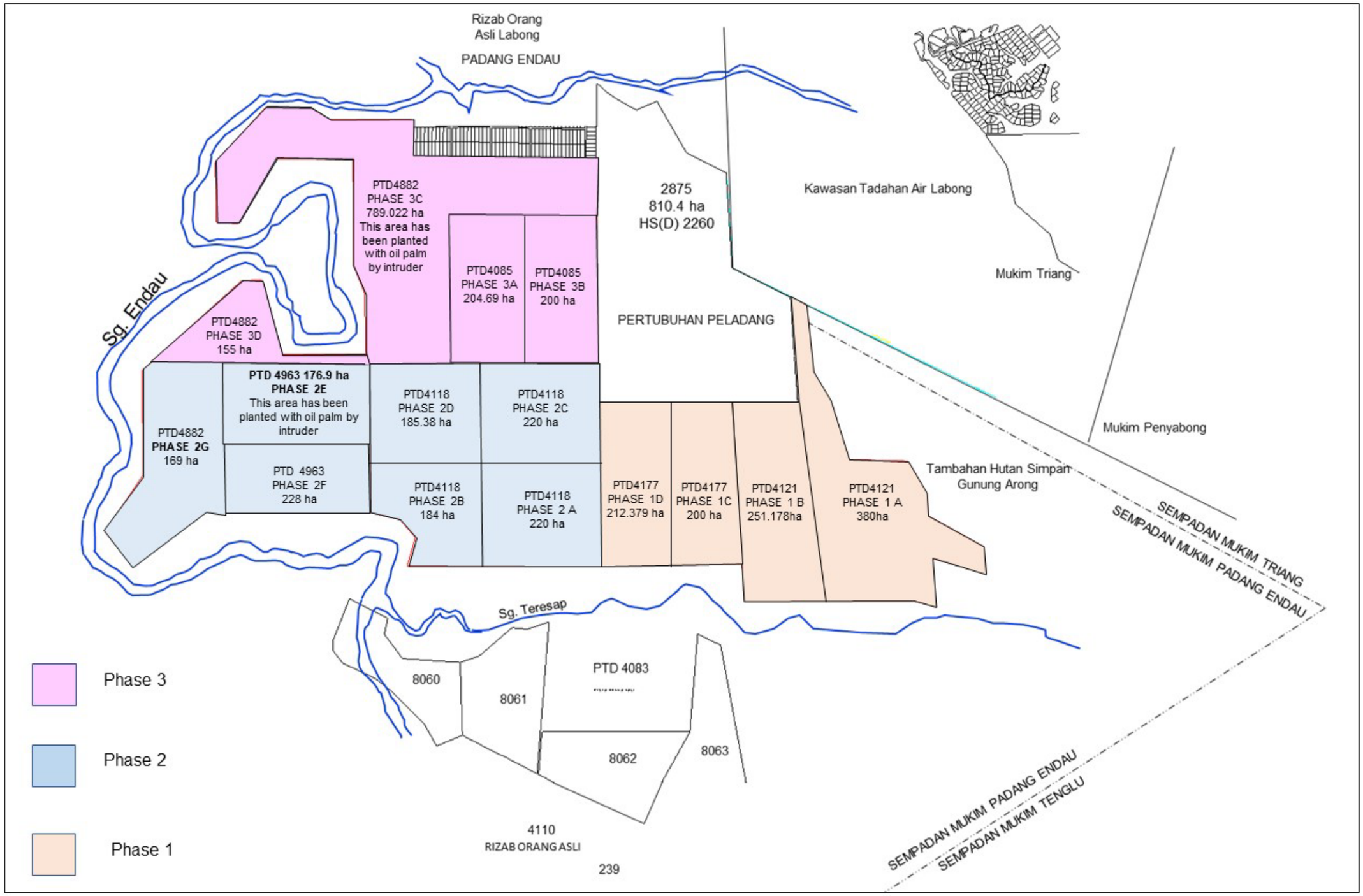


Figure 5-5: Phasing Plan for Site Clearing and Planting

The logging will be carried out using chainsaw, and the logs are then cut according to demand sizes. The cut trees will then be transferred to the temporary stockpile area (so called as *matau*) which will be determine later using excavator or bulldozers. From the temporary stockpile area, the logs will be transported to the stockpile centre for screening. Screening involves measurement of diameter, length and species. Logs are then loaded into trucks using log fork loader or log excavator.

The site clearing will involve land stripping and biomass stacking. Biomass will be stacked within the Project site. Equipment and vehicles to be used onsite during site clearing activities for each plot are as in **Table 5-5**.

Table 5-5: List of Equipment

Equipment / Machineries	Quantity
Logging Activity	
Tractors	2
Bulldozers	2
excavators	4
lorries	5
Site Clearing	
Excavator	11
Bulldozer	1
Lorry	2
Mini tractor	2

f) Biomass Management and Disposal

The tree trunks/logs which have an economic value will be taken out by trucks to potential buyers whilst the uneconomical plants and trees such as leaves, wood remnants, undergrowth and shrubs will be shredded on site using machinery that are commonly used for this purpose. The shredded vegetation will be stored on site for natural decomposition and decay. Open burning is strictly prohibited at this site under the Environmental Quality Act, 1974, Section 29A (1).

g) Earthwork and Drainage

Certain areas may require for terracing. As for drainage within the site, it will be developed as the stages progressed to allow for proper drainage for the plantation.

5.4.1.3 Cover Crop Establishment

It is envisaged that *Mucuna Bracteata* plant will be planted as cover crop for young oil palm trees. This is chosen because of the characteristic which provide good soil cover and protection. The cover crop will be planted with the space of 10 ft x10 ft. Planting method using seedling bought from nurseries outside of the site most probably from Mersing.

5.4.1.4 Field Establishment

1. Oil Palm

a) Field Lining and Holing

Lining peg will be used to allow for the marking of a planting distance which, approximately 18 ft. x 26 ft. Holing is normally done prior to, or at the actual time of planting. The dimensions of the hole must be sufficient to allow consolidation and firming of the soil around the ball of earth at the time of planting which approximately about 0.6 x 0.6 x 0.6 m. The holes for oil palm will be manure (fertilized) with Egypt Rock Phosphate (ERP) mix with Furadan with ratio 500 g of ERP and 30 g of Furadan per hole.

b) Culling

Final culling will be carried out to remove unwanted plants having diseases, or infected or undesirable for growth. This is done because if such plants are retained, it will infect the other plants and the whole plantation will be affected and eventually destroyed. Prior to the oil palm seeding being sent to the planting site, the supplier will carry out an initial culling at the nursery to ensure that only good quality plant is sent. Normally, after 2 - 3 years of planting, the culling will take place for about 3 - 5% of the area.

c) Transplanting

This includes transport of young trees from oil palm nursery to the site. The young palm will be transported in the polybag container. Approximately 60 trees will be planted for one (1) acre. Planting also will incorporate zinc plate or wire mesh to

protect from wild boars. Planting will be carried out manually and excavators will also be used when necessary. The unused polybags will be buried onsite.

d) Maintenance and Harvesting

Fertilizer Application and Agrochemical

Fertilizer and pesticide (agrochemical) application will be carried out as a normal maintenance practise for a healthy grows of the plant. The usual practice of fertilizer usage is one (1) in three (3) months and fertilizing the trees are carried out by phases.

General Field Upkeep

It is the usual practice that after one (1) month of planting, the area needs to be inspected for mortality. Any unhealthy or dead oil palm trees need to be replaced immediately with new seedlings. In the early stages of palm development, it is important to ensure that the young root system has a minimum of competition from the surrounding vegetation with respect to water and nutrients. Clean circle weeding normally commences immediately following field planting.

Weed control in young palms is normally done manually as the use of herbicides can be dangerous. During weeding, care must be taken to avoid damaging the young root system or producing a saucer like depression around the palm. Regular monthly weeding rounds are necessary in the early stages of growth, but, the intervals between rounds can be increased as the shade in the circle increases with palm development. Palm fronds must not be damaged by weeding. During weeding rounds all creepers should be removed from the palm fronds and kept clear of the weeding circle.

Harvesting

Harvesting can usually commence three (3) years after planting. Harvesting is carried out manually using chisel. The harvesting activity include cutting bunches from the tree and collecting the loose fruit which falls from harvested· bunch, transporting bunches to the nearest roadside where they can be loaded into vehicles for transport to the factory. The harvesting operations should be based on

the block or plot into which the plantation has been divided. Carrying the cut fruits from the oil palm tree to the collecting point is the costliest task in the operation of harvesting.

Transportation of Fresh Fruit Bunches to Oil Mills

The common vehicles used for in-field collection of oil palm fruits is the industrial dump truck. The majority of these vehicles are powered by adequately sized diesel engines making for reliability and economy and maintenance is within the scope of the average plantation owner.

All the harvested oil palm fruit is expected to be sub-contract by the project proponent to the selected contractor to collect and transport the harvested oil palm fruit from the proposed project site to the buyers.

e) Replanting

Replanting is only done when there is a requirement after the expected life span of the plantation. The life span of the plantation can be prolonging to 26 years. After this stage, palms are felled, chipped and/ or shredded and trees and sapling are staked in windrow and left to decomposed in-situ. Open burning is strictly prohibited during this phase.

Zero-burning replanting techniques may contribute to improved soil physical and chemical properties because the large quantity of biomass and nutrients contained in palm trunks and fronds is conserved and returned to the soil (Goh et al., 2003). The technique has been proven to be the most environment-friendly. Apart from the environment factor, this technique has also been proven superior to the slash and burn technique because of the following reasons:

- It allows complete return of organic matter to the soil. This helps to preserve, restore and improve soil chemical and fertility as well as physical properties of the soil;
- It allows immediate replanting of trees as the new stands can be planted simultaneously while felling and shredding are being done;
- This technique recycles organic matter to the soil;

- This technique also allows replanting to be done without violating the Environmental Quality (Clean Air) and contributes positively towards efforts in minimizing global warming.

The activity during replanting are as follows:

- Site clearing (Cut down the old palm, chipped or shredded, and sapling are staked in windrow and left to decomposed in-situ;
- Planting; and
- Maintenance of access road, drainage and perimeter fencing.

Coconut Palm

a) Field Lining and Holing

For this project the lining peg planting distance is similar as oil palm which is 18 ft. x 26 ft. The planting hole 0.45 m x 0.45 m x 0.45 m prepared with 200 gm phosphate.

b) Culling

Final culling will be carried out to remove unwanted plants having diseases, or infected or undesirable for growth. This is done because if such plants are retained, it will infect the other plants and the whole plantation will be affected and eventually destroyed. Prior to the coconut palm seeding being sent to the planting site, the supplier will carry out an initial culling at the nursery to ensure that only good quality plant is sent. Normally, after 2 - 3 years of planting, the culling will take place for about 3 - 5% of the area.

c) Transplanting

The "seednuts" will be sourced from a certified seed producer. Normally seednuts are sold as emergent, which can be seen in the photo as shown in **Plate 5-5**. Seednuts will be soak into water for about 24 hours' prior place in the hole.

Plate 5-5: Seednuts

d) Maintenance and Harvesting

Fertilizer Application and Agrochemical

Manuring program for coconut varies from different soil type and the age. Early stage requirement was NPK 15:15:15 about 1 kg/tree/yr. Chemical fertilizer should be applied to supplement inherent soil nutrients to provide a steady supply of balanced nutrient range required for the healthy growth of palms. The quantity and quality of the fertilizer applied, and their timing and placement, are important aspects to be considered to ensure proper realization of this input.

The manuring regimes recommended are as follows:

500g urea + 500g MOP + 250g RP

Which this assumption is based on manuring programme for 4 times a year and apply for around canopy of the tree. When manuring, avoid spreading the fertilizer to broadly. It is important that the fertilizers are applied within the root zone area. One trick that many growers do is to spread some of the fertilizer over the frond

heap stacked at the inter-palm area. As the frond heap traps a lot of moisture and organic nutrients, coconut roots tend to congregate beneath the heap. Thus, applying some fertilizer onto the heap would target the coconut roots there, thereby feeding the palms more efficiently.

Coconut pests was *Rhinoceros Beetle* (Oryctes rhinoceros) that attack whole tree and controlled by cultural method and chemical (moth ball or carbofuran). Kumbang Jalur Merah (*Rhynchophorus schach*) was a secondary pest and controlled with monocrotophos or methamidiphos (5-10 ml/tree). Artona Moths (*Artona catoxantha*) attack coconut leafs that cause a 'burnt symtom' especially during dry season. Heavy rain able to remove the moths. Cartepiler (Setora nitens) eats coconuts leafs and use monocrotophos to control. Haidari Moths (Hidari irava) larvae also attack coconut. Plesipa Beetle (*Plesisipa reichei*) with yellowish in colour also attack the leaves and spray with chemical. Coconut diseases was leaf Spot (*Curvularia maculans*) attack young leafs and use Capstan to control. Other pests were Squirrel that attack the nuts and during early stage there will see Wild Boar.

General Field Upkeep

Coconuts are normally self-pruning, meaning that dead fronds and bunch stalks will dry and fall on their accord. However, it is still a good practice to remove them off the palm where they don't fall naturally, and stack them neatly on the inter-palm heap. There is great value in keeping this practice; as the dead fronds and bunch stalks break down, they actually release micronutrients back into the soil. This helps increase the soil nutrient content and biomass over time, which will further improve your coconut palm's health. In addition, such frond heaps act as moisture traps, and help provide an alternate source of moisture to palm roots. As mentioned earlier, fertilizers may also be applied to this zone, as the coconut root mass tends to congregate here, thereby ensuring that the fertilizer is targeted to the roots of the palms.

Harvesting

Harvesting can usually commence three (3) years after planting. Tender nuts are harvested when the nuts are about 7 months old. Harvesting intervals are 17-21 days per round, depending on the preferences of the buyers and the consumers. This is usually pertaining to the thickness and harness of the soft coconut flesh; at 17 days, the flesh is very jelly-like, whereas at 21 days, there is some firmness to the flesh.

During harvesting, the harvester must remove all dried fronds and place them along the field drain edges, or cut them into smaller section and place them in the inter-palm spaces

Harvesting operation is a two-man job. One person climbs up the palms using a sturdy ladder, and attaches a harvesting harness (hook and rope) onto the bunch of coconut. The person below pulls the harness tout, to give some tension onto the bunch, and the stalk of the bunch is then cut and freed from the palm by the person on top. The person below will then carefully lower the bunch of coconut onto the ground.

This method of harvesting ensures that the tender young coconuts are not bruised or damaged, since this will not only affect the appearance of the nuts, but any internal damages will cause the nuts to spoil fast. Bunches harvested this way will have a shelf life of 4-5 days if kept in chilled room.

For mature nuts, coconuts are plucked when their exocarp (skin) turns fully brown. The harvesting for Dwarfs (Kelapa Pandan) is done every 36 days (10 rounds per year).

The harvesting operation consists of plucking the ripe nuts from the palms, or shaking them loose from the bunch using a long pole.

Replanting

Replanting is only done when there is a requirement after the expected life span of the plantation. The life span of the plantation can be prolonging to 26 years. After this stage, palms are felled, chipped and/ or shredded and trees and sapling are staked in windrow and left to decomposed in-situ. Open burning is strictly prohibited during this phase. The activity during replanting are as follows:

- Site clearing (Cut down the old palm, chipped or shredded, and sapling are staked in windrow and left to decomposed in-situ;
- Planting; and
- Maintenance of access road, drainage and perimeter fencing.

i. Abandonment

In the event that the plantation is to be abandon, the evacuation of all the plantation staff and workers will be carried out. Equipment and machineries onsite will also be removed and sent back to the subcontractors. The site will then be restored and rehabilitated to ensure that there is no erosion or pollution generated from the site.

5.5 PROJECT IMPLEMENTATION SCHEDULE

The Project proponent will implement the Project upon receiving all relevant approvals from DOE and other approving authority. Initial site preparation such as access road, base camp establishment, barrier and fencing installation and utility provision will be carried out prior land preparation. LD-P2M2 component will be developed before the site clearing and planting activity commenced.

The Project site will be carried out in phases and divided into three (3) main phases which is Phase 1, Phase 2 and Phase 3 which further divided into 14 sub-phases for site clearing, and plantation as shown in **Figure 5-5**. Site clearing and planting will be carried out concurrenly for oil plam and coconut based on the phasing. The plantation will be carried out from Phase 1 to Phase 2 and lastly Phase 3 as shown in **Table 5-6**. Planting for each phase which has an acreage of 200- 380 ha will be approximately one month to complete. Overall, the project will take approximately 18 months to complete up to the planting stage.

Table 5-6: Proposed Project Implementation Schedule for Oil Palm and Coconut Palm Plantation

No	Activities	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Pre-Planting Stage • Site Surveys • Boundary Demarcation • Project Planning																		
2	Initial Site Preparation Involves • Access Road Development • Base Camp Establishment • Barriers and Fencing Installation • Utility Provision																		
3	Land Preparation Installation of LD-P2M2 tools Construction Drains and Road Lining for planting and terracing			Phase 1A	Phase 1B	Phase 1C	Phase1D	Phase 2A	Phase 2B	Phase 2C	Phase 2D	Phase 2E	Phase 2F	Phase 2G	Phase 3A	Phase 3B	Phase 3D		
4	Site Clearance				Phase 1A	Phase 1B	Phase 1C	Phase 1D	Phase 2A	Phase 2B	Phase 2C	Phase 2D	Phase 2E	Phase 2F	Phase 2G	Phase 3A	Phase 3B	Phase 3D	
5	**Planting** Transporting of planting material using lorries and tractor Holling and planting using cangkul Supplying (during first year planting)					Phase 1A	Phase 1B	Phase 1C	Phase 1D	Phase 2A	Phase 2B	Phase 2C	Phase 2D	Phase 2E	Phase 2F	Phase 2G	Phase 3A	Phase 3B	Phase 3D
6	**Manuring application (immature palms)**	**Age of planting**																	
	Compound fertilizer	12	14	18	24	28	32	36											
	Oil palm	✓	✓	✓	✓	✓	✓	✓											
	Coconut palm	✓	✓	✓	✓	✓	✓	✓											
7	**Manuring application (palms)**	**Age of planting**																	
	Compound fertilizer	40	44	48	52	56	60	64	68	72	76	80							
	Oil palm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓							
	Coconut palm	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓							