

CHAPTER 8 : MITIGATION MEASURES

This chapter outlines recommendation of appropriate mitigation measures to minimize the negative impact that could occur from the execution of this Project. The mitigation measures are based on activities during the various stages of the Project as follows:

- i. Logging;
- ii. Oil palm and coconut palm plantation;
 - Pre-Planting Stage;
 - Planting Stage;
 - Operation Stage;
 - Replanting Stage; and
 - Abandonment Stage.

8.1 ADHERENCE TO DOE GUIDELINES

During the assessment of the impacts for this Project, several guidelines have been referred to as follows:

- Guidance Document for addressing soil erosion and sediment control aspect in EIA;
- Guidance Document for the preparation of Land Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2);
- Environmental Impact Assessment Guidelines for Agriculture, 2003;
- Environmental Impact Assessment Guidelines in Malaysia, 2016;
- Urban Stormwater Management Manual (MSMA) published by Department of Irrigation and Drainage Malaysia in 2000 (Revised version 2012);
- RSPO New Planting Procedure (NPP) 2021 by RSPO Board of Governors (BoG) (2021); and
- Other relevant guidelines and guidance documents issued by the DOE pertaining to environmental-related system and management.
 - A Guidebook on Identification and Classification of Scheduled Wastes
 - *Panduan Pengurusan Buangan Terjadual Daripada Bengkel / Workshop*

- *Manual Panduan Pemeriksaan BMPs Untuk Kawalan Hakisan dan Sedimen*

8.2 PROPOSED MITIGATION MEASURES FOR OIL PALM PLANTATION

8.2.1 Pre-Development Stage

Pre-development activities involve surveys and studies of the Project area which will involve minor land clearing.

As the survey will only involve about 3 to 5 vehicles and the site being located away from populated areas, therefore it is not expected to cause impendence to public roads or other users. Therefore, mitigation measures will mainly be in terms of road safety measures to be taken by the personnel driving the vehicles to adhere to public road safety. Besides public road safety, safety in terms of protection against wild animals and rugged terrain need to be considered prior to conducting the survey within the site. Vehicles and personnel must be equipped with safety equipment such as safety helmets, boots and vests, ropes, spare tyres, tyre changing gears etc.

8.2.2 Development Stage

As mentioned in the chapter 7 (evaluation of impact), the main activities during this stage are logging, site preparation and field establishment. Site preparation includes activities such as access road, base camp, utility provision, site clearing, earthworks and drainage construction. Field establishment includes activities such as field lining and holing, culling and planting.

8.2.2.1 Logging

Logging activities are to be conducted in phases to reduce soil erosion. Logging license will be issued plot by plot (for the two (2) plots) by the Forestry Department/Office Mersing to avoid major damage on the vegetation that can expose to surface runoff. The logging for Plot PTD 4085, there will be conducted in 2 sub-phases whilst PTD 4118 is divide into 4 sub-phases.

The number of logging trucks moving into and out of the site is estimated to be about 10 trucks/day. Safety measures must to be taken to ensure there are proper signage's at the entry and exit of the site to notify the general public of the

vehicle movements. Safety measure in terms of securing the logs on the trucks must be adhered to, in order to avoid falling of logs from the trucks which can be a major road hazard as well as causing accidents and deaths.

8.2.2.2 Transportation of Machinery and Materials

During logging, land clearing and site preparation works, several types of vehicles machineries will be used. Mitigation measures are as follows:

- The transportation of logs/tree trunks or machinery should be undertaken preferably during off-peak traffic hours;
- Lorries carrying soil and other light materials must be covered with trampoline;
- The vehicles and machinery movement should also, as far as possible, avoid using the public roads during the weekends when more road users are expected to ply the road;
- Adequate warning signs should be put up at suitable locations to forewarn road users of the existence of the project activities; and
- During busy times, flagmen should be employed to assist in the direction of traffic when site vehicles are converging to the main traffic flow.

8.2.2.3 Land-Disturbing Pollution Prevention Mitigating Measures (LD-P2M2)

Platform Level

The existing elevation of Project site ranges from 3 to 30 m. Upon completion of terracing activities, the final platform level of the project site would remain the same as there is no earthwork involve except for land clearing works. The is no class III and IV slope within the project area. There will be no earthwork involve within the project area.

Pollution Prevention and Mitigating Measures (P2M2s)

The pollution prevention and mitigating measures (P2M2s) shall be adopted, applied and implemented in the process of carrying out land disturbing activities at the development site. The P2M2s outlined in this section are the minimum standard requirements whether physical or non-physical measures to be taken to prevent, reduce and control the discharge of suspended solids and other pollutants from the development site. The P2M2s shall be detailed out in EMP stage.

a. Schedule of Phasing, Staging and Sequencing

Earthwork and clearing activities shall be scheduled to reduce erosion potential. For example, works shall be avoided during heavy rain. The activities shall follow project implementation schedule as shown in **Table 5-6**.

b. Scheduled Site Meeting

Site meeting shall be conducted prior to commencement of any clearing activity or land-disturbing activity. The meeting shall be attended by Project Proponent, project Environmental Officer, project contractors and/or sub-contractors to discuss in detail all the relevant scopes of work related to pollution prevention and mitigating measures.

c. Clearing Markers

Land disturbance is limited within project boundary. During clearing, the limits of disturbance shall be marked at all times.

d. Stabilized Clearing Entrance

All entrance / exit roads to the site shall be stabilized and paved for a suitable distance from where these access roads join the existing paved roads or public road where Stabilized Clearing Entrance P2M2 and/or Tires Washing Facility (wash trough) shall be constructed from this point inward to the subjected clearing site.

Any swept soil or sediment accumulated on pavement or other impervious surfaces from within Stabilized Clearing Entrance P2M2 and sediment-laden washed water from Tires Washing Facility (wash trough) are not allowed to be hosed down and discharged respectively into any off-site drainage way, storm drain inlet or watercourse unless connected to a sediment basin or sediment trap.

e. Drainage

The main drainage within project site consists of a small stream that discharges into Sg. Labong and Sg. Endau. Phase 1 of the Project will include clearing of detention pond to mitigate potential flooding due to the Project development. Upon Project development, the stream will be diverted to flow into detention pond to regulate the flow before being discharge into Sg. Labong and Sg. Endau as shown in **Figure 8-1**.

f. Perimeter Control

Before land-disturbing activities are executed, perimeter control shall be first constructed and made operational. The perimeter control shall include silt fences and temporary drains that control discharges from the site.

g. Sediment Basin/Trap

Before land-disturbing activities are executed, principal sediment basin/trap shall be first constructed and made operational. A vertical silt marker shall be installed for the purpose of measuring the depth of accumulated sediment to facilitate maintenance program. In total 7 sediment basin has been proposed within the project site.

h. Runoff Management

Before land-disturbing activities are executed, key runoff control measures shall be first constructed and made operational. The runoff control measures shall include temporary earth drain that control flows and discharges from and within the site and combined with installation of interval check dams along the channel to reduce the runoff velocity.

i. Temporary Stabilization

Temporary stabilization is a condition where exposed soils or disturbed areas are provided with temporary vegetative and/or non-vegetative protective cover to prevent erosion and sediment loss. Temporary soil stabilization shall be applied to exposed areas as follows:-

- Within fourteen (14) days after final formation level is reached on any portion of the site;
- Within seven (7) days to exposed areas that may not be at final grade but will remain unattended for longer than fourteen (14) days; and
- Temporary stabilization may include temporary seeding, geotextiles, mulches, and other techniques to reduce or eliminate erosion until further clearing activities take place to re-disturb this area.

j. Discharge

All discharge runoff water from land-disturbing activities shall be channelled to sediment basin which is regarded as the designated final discharge. The discharge point of the treated runoff shall be released by using a dissipator or other means of outlet protection.

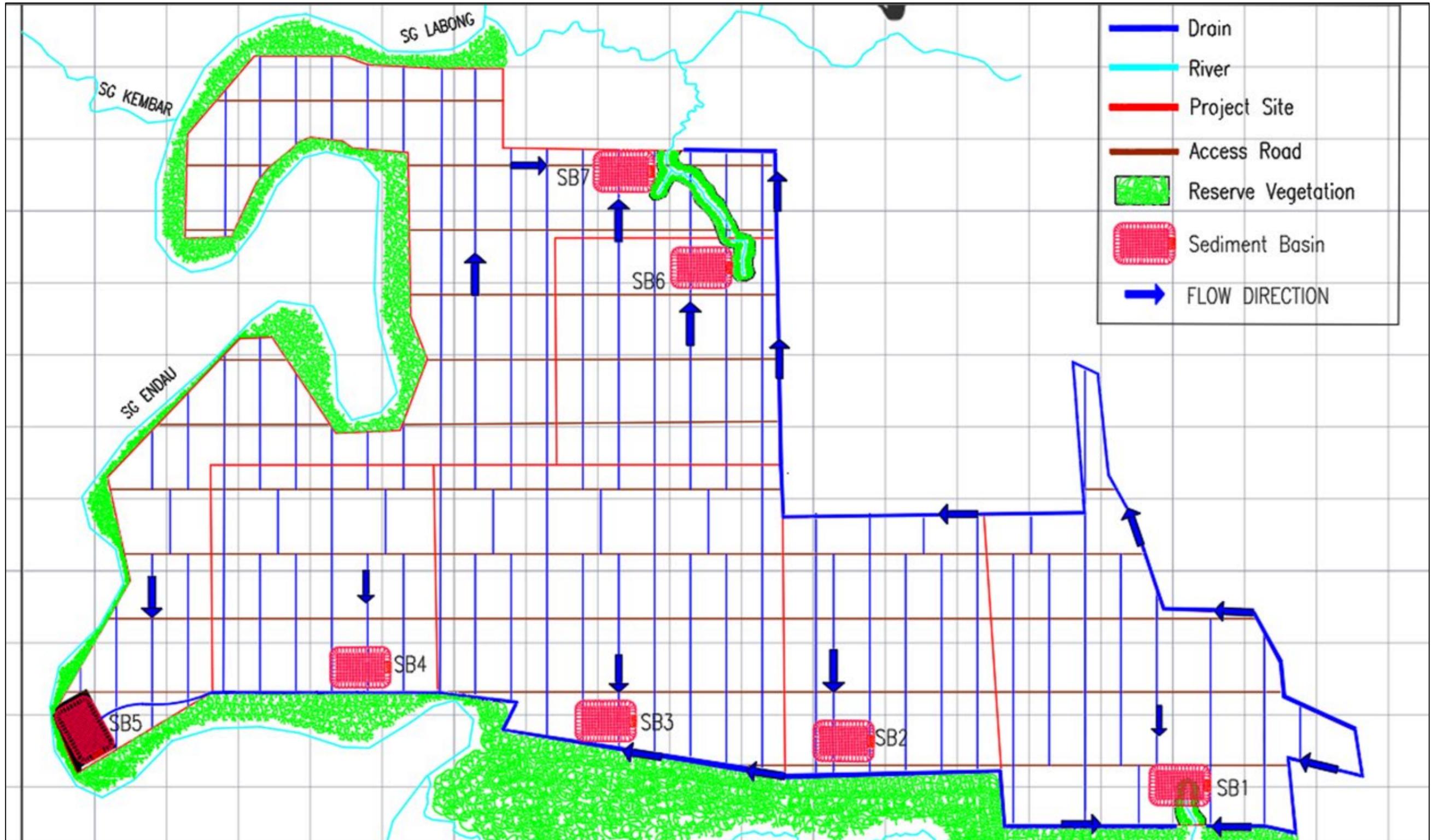


Figure 8-1: Proposed Erosion and Sediment Control Plan

k. Corrective Actions

In the event where the P2M2 was installed incorrectly, or is not effective enough to produce a discharge that complies with the discharge standards, the Project Proponent shall install a new or modified P2M2 or additional P2M2 and make it operational by no later than 7 calendar days from the time of discovery.

l. Site Inspections

Site inspections shall be conducted to check and to ascertain that all P2M2s specified in the EIA Report and this document have been properly installed and maintained as well as to determine whether any controls that is clearly not operating as intended or any P2M2s requires replacement, or additional P2M2s are required. The site inspections shall also assess if pollution is effectively being controlled and off-site discharge is being prevented in compliance with the EIA conditions of approval (COAs).

m. Maintenance

Maintenance shall begin as soon as the first P2M2 is installed or applied and shall continue through all the succeeding activities until the permanent erosion control measures are established and functioning. Maintenance method shall be in accordance to design specification.

Proposed BMPs

As a matter of compliance to the environmental regulations, BMPs are the most suitable measures which could be implemented into the Project site in order to control or prevent any unwanted event such as landslide, flooding and excessive erosion and sedimentation.

The recommended BMPs to be installed during clearing period are as follows:-

- a. Temporary drain;
- b. Check dam;
- c. Silt fence;
- d. Sediment basin; and
- e. Wash trough.

The proposed BMPs will be shown in the erosion and sedimentation plan in **Figure 8-1**. The descriptions of the BMPs are provided in the following sub-sections.

a. Temporary Perimeter Earth Drain

Temporary drain shall be provided to channel surface runoff from Project site to sediment basins and to channel the discharge of the treated surface runoff to the receiving stream.

Every area of earthworks whether it is phase 1 or subsequent phases together must always have temporary perimeter earth drains. The function of the perimeter earth drain is to ensure that the surface water and sediment runoff do not over spill to the areas outside the progressing earthworks area. The size of the perimeter drain is to be adjusted constantly depending on weather patterns and the surface runoff of from the area of the earthworks. Internally within each area of earthworks, temporary perimeter drains should be provided as per required based on earthworks work sequence, surface runoff flow directions and the minimization of soil erosion. The position and number of these temporary drains must be constantly adjusted and realigned as per necessarily based on site condition. As such, different approach must be used in different time of the year, where towards the monsoon season, where higher rainfall are to be expected, more temporary earth drains are to be constructed, while in the dry season, more sediment basins or water ponds are to be constructed to enable conservation of water to be used to wet the bare soil surface to prevent excessive dust stirred up by the wind. For certain areas where the surface runoff flow velocity is high enough to cause a possible spill over the earth drains, earth banks will be constructed to provide additional barrier resistance to ensure pollutants carried by the runoff such as silts and sedimentation do not pollute areas outside the earthwork zone.

b. Check Dam

Check dam will be constructed within temporary drain at interval of 100 m or based on the slope drain.



Plate 8-1: Check Dam

c. Sediment Basin

A sediment basin (**Plate 8-2**) is a temporary containment area that will collect all runoff from project site and attenuate surface runoff as well as to settle the sediments out and released into the receiving stream. Based on topography of project area and the phasing of earthwork, the locations of sediment basin are as shown in **Figure 8-1**.

All the temporary drainage must be channeled into the sediment basin where the sediment basin will retain all the silt and water to prevent excessive water flow discharge into the outlet drainage system. The size of the sediment basin must be constantly adjusted as per required based on site conditions and requirements. Typically, heavy rainfall seasons will see extra numbers and larger sediment basin because of the excessive silt and water during the season, while during dry season, less number and smaller size sediment basins are required. The primary reason where most clearing sites causing problems to the adjacent earthwork zone is the maintenance of the sediment basin. The sediment basin must constantly be de-silted and repaired as often as required to ensure its functionality. Silt marker must be installed in sediment basin to indicate silt level. The outlet of sediment basin shall be protected with rock to reduce flow velocity and to prevent scouring as shown in **Plate 8-3**. The design of sediment basin is Attached in **Appendix 8-1**.



Plate 8-2: Sediment Basin



Plate 8-3: Rock Outlet Protection

The size of sediment basin for each earthwork phase will be determined based on *Manual Saliran Mesra Alam (MASMA2)*. Sample calculation will also be provided. Nevertheless, as mentioned above, the size might be adjusted based on site conditions and requirements.

d. Silt Fence

A silt fence (**Figure 8-4**) is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fence will be installed at sensitive receptors such as at the boundary of working area and around stockpile area to capture the overflow sediment runoff during heavy rain. Silt fence allow sediment to settle from runoff before water leaves the clearing site. In addition, silt fence could also reduce the water flow rate down slope. Silt fences are normally placed at the following location:-

- i. Below the toe of exposed and erodible slopes;
- ii. Down-slope of exposed soil areas;
- iii. Around temporary stockpiles; and
- iv. Along streams and channels.

Silt fence can also be replaced with hoarding provided that the toe is buried.



Plate 8-4: Silt Fence

e. Site Inspection and Maintenance

The Environmental Officer (EO) shall be placed at site to inspect, monitor and control the ESCP. All the workers also need to be well informed about the LD-P2M2 and all the BMPs need to be installed, maintained and applied properly. The EO shall be suitably qualified e.g. Certified Erosion, Sediment and Stormwater Inspector (CESSWI) or Certified Inspector Sediment and Erosion Control (CISEC) or equivalence. Maintenance need to be carried out until the site is stabilised. The non-structural measures for LD-P2M2 are as follows:-

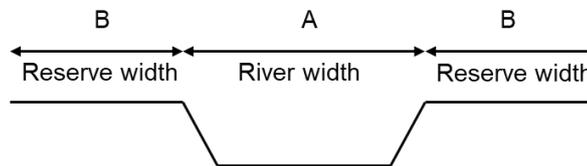
- **Train Personnel** –EO is the person that is responsible to conduct site inspections, monitoring the LD-P2M2 problem and how to define the solutions, to conduct the LD-P2M2 toolbox, and keep all LD-P2M2 record.
- **LD-P2M2 toolbox briefing** –All workers is compulsory to attend the toolbox briefing before entering the site area or start work. The LD-P2M2 toolbox is a briefing about the major provision of the erosion and sediment control plan.
- **Regular Maintenance** – All the exposed lands/slopes need to be protected with close turf to stabilise the disturbed area and to control the internal erosion potential. The LD-P2M2 need to be maintained frequently to make sure it is functioning effectively.
- **Housekeeping** – Practice good housekeeping to minimise the pollution, sediment and debris from clearing activities that have the potential to enter adjacent watercourses.

8.2.2.4 Water Quality

Site clearing and site preparation will affect the water quality level. Following mitigation measures are recommended for the protection of the water quality:

- During clearing, minimise the period of bare exposed land and to maintain the ground cover where possible. Ground cover slows the depletion of soil organic matter from the effects of sunlight and erosion. It also adds to the organic matter content through leaf and plant litters;
- Before the commencement of site clearing, temporary perimeter earth drains shall be constructed to channel surface runoff for control of sediment discharge.
- The width of the river reserve must be in accordance to Government Gazette No. 11206 dated 27.10.2011 and Guidelines for Development Involving Rivers and River Reserves. The river bank reserve requirement (measured from the plant boundary towards the land) is 20 meters per bank. This reserve should be maintained between the logging/ oil palm cultivation area and the watercourse. No activity is allowed within the distance of the buffer zone. (Source:DID, Johor 2021)
- Any watercourse in the valley area shall be defined as a tributary and shall not be diverted, obstructed or disturbed in its flow and reserved as per the following diagram (Source:DID, Johor 2021)

No	River Width (A)*	Reserve width of each cliff (B)*
i.	> 40 meter	50 meter
ii.	30 – 40 meter	40 meter
iii.	20 – 30 meter	30 meter
iv.	10 – 20 meter	20 meter
v.	5 – 10 meter	10 meter
vi.	< 5 meter	5 meter



- Approval from DID Mersing is needed for any diversion or changes of the existing river/tributary flow, carrying out work in the river or river water including the construction of any crossing/culvert/bridges across any river or tributary of the site area.
- Any discharge of wastewater from any source into the storm water or river drainage system without treatment is not allowed.
- Sediment basins have been proposed for this project to intercept sediment carrying runoff before discharging into the natural watercourse. As the work progresses and site condition changes, additional sediment basins shall be installed as when and where necessary;
- The sediment basin shall be designed with the procedures given in the Urban Stormwater Management Manual for Malaysia, 2012. The design shall take into consideration discharge from the gold mining activities with the worst-case scenario.
- Land clearing and site preparation is recommended to be carried out during the dry season (if necessary).
- Sewage and solid wastes from the site camp and site office and work areas need to be properly disposed to ensure no water contamination of the nearby waterway. Temporary toilets with septic tanks and/or portable toilets should be provided for workers in accordance with the guidelines recommended by the Sewerage Services Department (JPP) and Ministry of Health (MOH).
- The maintenance and operation of diesel machinery and the storage of diesel and petroleum products may lead to oil and grease pollution should spillage / leakage occurs. Hence, adequate attention should be given to storage and refueling activity.

- Oil spills should be cleaned up as soon as possible to prevent possible oil contamination to the waterway.
- Used oil and grease should be stored in proper drums/containers, labeled and placed at a designated location with containment facilities as far away as possible from waterways, prior to disposal by licensed contractors.

8.2.2.5 Groundwater Quality

The development and operation of a plantation will use machineries such as generators for the water pumps and the life on the base camps, bulldozers for the site clearing, trucks, cars, chainsaws, etc. The equipment will use fuel, grease, and lubricants to function. All these petrochemicals should be well stored, handled, and disposed of to avoid spillage, and thus avoid soil and waterways pollution. The oil/water separator next to the workshop drainage system. Workers should be warned of the danger of these products and trained on the way to handle them, use them and dispose of their used containers. “Spill Response Plan” should be established in the operation manual.

8.2.2.6 Air Quality

During logging, land clearing and site preparation works, several types of vehicles machineries will be used. Following are some of the recommended measures involving the transport of machinery and materials.

- The transportation of machinery should be undertaken preferably during off-peak traffic hours;
- Lorries carrying soil and other light materials must be covered with tarpaulin;
- The vehicles and machinery movement should also, as far as possible, avoid using the public roads during the weekends when more road users are expected to ply the road;
- Adequate warning signs should be put up at suitable locations to forewarn road users of the existence of the project activities;
- During busy times, flagmen should be employed to assist in the direction of traffic when site vehicles are converging to the main traffic flow; and
- Regular maintenance of vehicles and construction equipment helps to reduce emissions of smoke and other air pollutants such as NO_x, SO_x and CO.

The distribution of air pollutants in the surrounding areas during land clearing will depend on meteorological factors, especially wind directions. Dry weather conditions are expected to increase the number of pollutants, especially particulate matter. Fugitive dust from vehicular movement on exposed surfaces can cause dust and reduce visibility. Following measures are commended to suppress the dust and avoid soiling of roadways.

- Wash trough or water jet shall be provided at the ingress and egress of the site to avoid soiling of the roadways with soil particles which can cause fugitive dust to other road users in the vicinity;
- Entrance and exit area shall be paved or layer with gravel to reduce the amount of surface silt.
- The speed at which lorries ply unpaved roads or dry mud tracks should be restricted as dust generation would be excessive at high speeds on these roads, especially during dry periods;
- Open burning at project site is strictly prohibited; and
- The construction workers shall be educated on air pollution prevention at site through induction and training.
- Wash trough to be constructed at the ingress and egress of the site to avoid soiling of the roadways with soil particles which can cause fugitive dust to other road users in the vicinity.

8.2.2.7 Noise Level

Noise level is generally from the use of tractors, bulldozers, excavators and trucks. Based on the noise modelling, noise is not expected to be an issue as the values Incremental Noise Level were 0.4 dBA to the nearest receptor. Thus no specific noise mitigation measures are recommended except to limit the working hours to daytime 7am to 7pm and vehicles and machinery to be well maintained and if the need arises, use mufflers and silencers.

8.2.2.8 Biomass Management

Biomass will be left on site for natural decomposition, thus need a proper planning to manage. Following mitigation measures are recommended for the biomass management on site:

- During site clearing all vegetation to be cleared should be windrowed into a broad swathe, leaving only a cleared planting avenue;
- Felled trees and other biomass (tree stump, bushes, shrubs and organic) generated from the site clearing and cannot be used as mulching for green should be cut into manageable sizes, collected and transported out / sold-off.
- Dumping of biomass along streams is not allowed.
- Avoid stockpile of biomass near to the river/stream; and
- Burning of cut vegetation and cleared biomass is strictly prohibited. Signage “No Burning” shall be erected at places that can be seen by workers.

8.2.2.9 Solid Waste Management

Proper waste storage bins for the workers must be provided. As for collection and disposal, since the amount is rather small, a weekly collection and disposal should suffice. The collection and disposal can be done either by a licensed contractor or by the contractors of the project themselves.

As for the organic waste, there is technology available for camp sites to use mechanised machine to convert the food waste into compost at site. This is a good alternative as it will not pose problem of degradation of organic materials causing pollution of the ground, water and odour. It will also avoid pest breeding at the storage locations. Example of this technology is the composting technology system which is an in-vessel drum composting system that consists of two components i.e., the machine and effective microbes.

The size varies from 10 kg to 200 kg. The machine can convert the food waste into compost within 24 hours. It is fast, easy and clean technology. This method has been used in hospitals, food courts, construction areas and mining sites in Malaysia and other parts of the world.

Used polybag generated during transplanting shall be collected at appropriate designated area. If possible, reuse the polybag. Open burning of polybag is strictly prohibited.

8.2.2.10 Scheduled Waste Management

Scheduled wastes storage and handling is important to protect the surface water, groundwater and soil. Therefore, measures should be taken to ensure scheduled

wastes are well managed on site. Following are recommended mitigation measures for scheduled waste management.

- All scheduled wastes including used oil and spent/wastes oil generated during the development works from machines, generators, chemical containers, etc. shall be collected and disposed off-site by licensed contractors for disposal.
- Storage and handling of scheduled wastes is to be carried out according to the Environmental Quality (Scheduled Wastes) Regulations, 2005.
- The wastes should be stored in sealed drums, labeled and placed in a designated scheduled waste storage area.
- Separate compartments should be provided for different groups of incompatible wastes.
- The quantity of scheduled wastes accumulated on site shall not exceed 20 metric tons and the wastes stored for a period not exceeding 180 days, which ever earlier.
- Scheduled wastes will be collected by licensed collector and send to approved licensed recovery facility for further treatment /disposal.

8.2.2.11 Flora

- For clearing and cutting purposes, the proposed project area should be divided into 15 sub phases (average 200 ha) for the purpose of regulated cutting. The cutting should be conducted phases by phases and immediately followed by planting of the oil palms seedlings. This is to avoid large areas of barren surface and hence massive erosion if the cutting is done one go for the entire project area. In addition, carbon sequestration could be restored immediately because the newly planted seedlings are photosynthesizing actively.
- Cutting and clearance should be done in dry season to reduce massive surface top soil erosion and shall be limited to the areas designated for each phase.
- Minimized open burning of the cut vegetation in order to reduce CO₂, other greenhouse emissions and production of haze particulate.

- The timing to clear the forest made a substantial difference with respect to the degree of soil erosion. Once the vegetation cover is cleared what is left is barren ground. If during this period there is heavy downfall, the top soil will be eroded and washed. It will finally end up in the river systems and degrade the aquatic ecosystems. In addition, the organic humus component of the top soil will also be wash away and renders the land less fertile. The impact will be more severe in hilly gradients. Since the clearance is for the cultivation of crop plants, it is unwise to let this happen. Thus, it is highly recommended that the clearing and earthworks to be conducted during the dry seasons. It is a good practice in sustainable developments. Advance planning is needed to coordinate the work so that the above 'disaster' can be avoided or at least minimized.

8.2.2.12 Fauna

- Disturbance and loss of wildlife natural habitats due to site preparation to make way for the internal access road, vegetation clearing for plantation and subsequently earthwork is unavoidable. However, the Project Proponent shall follow the mitigation measures outlined to reduce the potential impacts of local species extinction and human-wildlife conflicts.
- The project area should be will divided into 15 sub phases (average 200 ha each). The sub-phases process should be done after taking into consideration the delineation for riverine buffers. Clearance of the vegetation of the first parcel/block should be followed by immediate planting of oil palm seedlings. After this has been completed, the second parcel/block can be cleared and as before followed by immediate planting of seedlings. This cycle is repeated until the entire project area is cleared and planted. In this way, the animals have more time to adapt to the changing environment and disturbance. They also have more time to 'plan' their escape to safer areas.

8.2.2.13 Social and Health

The employment and use of workers for the Project will introduce new people to the area. This could pose issues of safety, health and social problems. Recommended mitigation measures include:

- The Project Proponent should advertise to the community and sincerely approach local community heads for encouraging locals to participate in jobs that are suitable to the skills of locals such as security officers, workers during felling, site preparation activities and maintenance activities.
- The employment of foreign workers should only be considered when local workers could not be engaged. It is recommended that foreign workers, if employed, should be closely supervised to avoid any untoward incidents with the local community. Also, workers should undergo annual medical check-ups to ensure they are fit to carry out their duties at the construction site. Workers with hypertension and cardiovascular illnesses shall not be allowed to work in the construction site, particularly for works at high and confined areas. All young persons under the age of 18 are not allowed to work in the construction site.
- Base camp constructed in the project site shall have housekeeping and hygiene at all times. Sewage and solid wastes from the site office and work areas have to be properly disposed of in order to ensure no water contamination occurs. Therefore, temporary sanitary facilities (septic tank or portable toilets) should be provided for workers in accordance with the requirement of *Jabatan Perkhidmatan Pembetungan* (JPP). This will reduce the concern on public health hazards related to generation of sewage and solid waste residues. Other measures to ensure the site camp is well maintained and safe are:
 - Surrounding shrubs and abandoned materials that may attract insects rodents and reptiles to the construction site must always be cleared. Fogging should be carried out occasionally if the insect problem persists.
 - Remaining food and wrappers must be disposed in covered containers to keep stray animals such as dogs, cats and birds away from the construction site as these animals may be disease vectors.
 - Clean water should be provided for the workers. If the water is not meant for drinking purposes, a separate water supply should be provided. Proper bathing and washing facilities should be provided at the site camp.
 - All foreign workers are to be screened for health and security purposes.
 - Scheduled inspection from Ministry of Health especially dealing with aedes mosquitoes.

- Awareness campaign on contagious disease such as malaria, tuberculosis etc.
- Any massive influx of workers, particularly foreign workers, may create some social problems in terms of public safety and social harmony. To avoid such problems the workers for the project should be segregated from the local residents. The workers should be advised to behave in a socially responsible manner and not to disturb the local people.
- General hygiene is an important factor, as unkept and dirty working areas will provide breeding grounds for flies and rats. Work areas should be kept clean at all times. Garbage and solid wastes should be disposed into the designated waste bins and stored at a central location prior to disposal off-site by licensed contractors.

8.2.3.1 Hydrology

The result clearly shows that the post-development peak flow exceeds the pre-development peak flow by about 30 m³/sec. thus the following mitigation should be adopted:

- Retain most of the top soils vegetation.
- Provide Detention Pond to reduce the post-development flow to the pre-development level. The proposed location is as shown in **Figure 8-2**.
- Drainage and sediment basin should be provided as proposed in LD-P2M2 and regular maintenance should be carried out.
- Tidal gate should also be built at the outlet to prevent tidal water from flooding the project area.

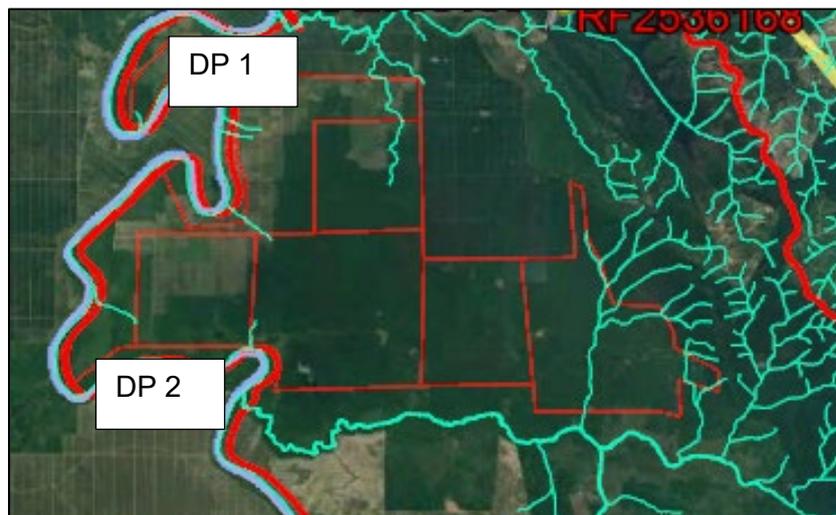


Figure 8-2: Proposed Locations of the Flood Pond

8.2.3.2 Fisheries

Fish surveillance mainly depends to water quality of the river and habitat quality. Sediment yield transported into the river could increase TSS concentration in the river. The contractor must follow recommended siltation ponds, check dam, earth drains and buffer strip as been recommended by LD-P2M2 design to minimise TSS inflow into nearby river. In addition, river quality modelling should be undertaken to foresee maximum TSS inflow into the river. Most of fish species are adaptable for class II water quality based on NWQS.

A good size and suitable location for no fishing signage should be setup. The signage should contain information on the species threaten level since one species from the river is in endangered category.

Contractor must ensure all machineries are well serviced and BMP for machinery workshop must be practiced. Used oil must be transported following standard procedure and discharged at permitted location. Fuel tank area must has perimeter drain to cater any leak from disperse without control.

8.2.3 Operation Stage

During operation the project will involve maintaining the plantation which mainly involves fertilising, weeding and pesticide control using agrochemicals. This could have an impact on the water quality and aquatic habitat. Project proponent shall use Good Agricultural Practice (GAP) for oil palm in Malaysia during operation stage.

8.2.3.3 Water Quality

Some of measures recommended for protection of surface water quality are as follows:

- Install erosion control measures such as bunds, platforms and terraces to reduce losses of native and applied phosphate in surface run-off water and eroded soil;

- During harvesting or pruning, cut fronds should be cut into two and the petiole or frond base half stacked between palms in the palm row. The upper or leafy half should be spread in the non-harvesting inter-row;
- Loss of nitrate and phosphate by surface run-off and to ground water must be avoided. This is a particular concern on shallow soils or where heavy rainfall causes surface run-off/soil erosion. Elsewhere, losses will be small provided inputs can be maintained at a level close to exports in the crop;
- Steps must be taken to minimise run-off losses by avoiding fertilizer application during rainy season or days. Use frond placement and silt traps to contain run-off;
- Avoid applying fertilizers within 3-4 m of watercourses;
- Algal blooms in ponds should be investigated. Blooms indicate nutrient run-off with surface water;
- Water harvesting practices should be encouraged (e.g. water from road-side drains should be directed to conservation terraces, use of empty fruit bunches (EFB) to hold irrigation water, use of spread pruned fronds, silt pits, etc.);
- Proper storage areas to be allocated for the fertilizer and pesticides to avoid spillage into the water bodies.
 - Pesticides shall be stored in a sound, secured, water resistant, well ventilated and well-lit location away from other materials.
 - The pesticide store shall be able to retain spillage (e.g. to prevent contamination of water courses).
 - There shall be emergency facilities (e.g. plenty of clean water, sand, sawdust) to deal with contamination and accidental spillage;
 - Keys and access to the store shall be limited to personnel with adequate training in the handling of pesticides.
 - A procedure to handle accidents, a list of contact telephone numbers and the location of the nearest telephone shall be available within the immediate vicinity of the store. Similar information shall also be available next to the designated telephone.
 - All pesticides shall be stored in their original packaging.

- Fertilizers shall be stored in a covered, clean, dry location where there is no risk of contamination of water sources.
- The use of fertilizers and agrochemicals for plant growth and pest control must be in accordance with the manufacturer's recommendations and must be applied as and when required to avoid any over usage and eventual runoff containing excess chemicals into the water bodies.

8.2.3.4 Ambient Air Quality

The proposed project has no air emissions during the operational stage. Any potential source of air pollutants will be the emissions from vehicles going to and leaving the project site. Such air pollution from vehicle traffic is not expected to be significant. Although the impact is not significant, good practices are recommended to further minimise this nuisance, including the following:

- The access road to the Project site shall be paved with crusher run or gravel or laterite to protect the earth surface from erosion during the dry season.
- Vehicles shall be regularly serviced and maintained to reduce undesirable emissions.
- Open burning is strictly prohibited under the Environmental Quality Act, 1974, Section 29A (1).
- The usage of a generator set has to comply with the Written Notification on Air Emission Sources (Generator) under Regulations 5 of the Environmental Quality (Clean Air) Regulations 2014.
- Only approved chemicals registered under the Pesticides Act 1974 with the Pesticides Board of Malaysia should be used.
- The frequency, dosage and timing of chemicals application must be closely monitored. Spraying is forbidden on raining and windy days.

8.2.3.5 Noise Level

Noise is not expected to be an issue as the site is protected by vegetation. However, some of the measures that can be incorporated are limiting the working hours to daytime which is from 7am to 7pm and to use silencers or mufflers where required.

8.2.3.6 Scheduled Waste

Use of fertilizer and agrochemicals will generate scheduled waste in the form of used containers and packaging materials containing residues for the products. Therefore, measures should be taken to ensure scheduled wastes are well managed on site.

Following are recommended mitigation measures for scheduled waste management.

- All used pesticides and fertilizer containers and any other scheduled wastes shall be collected and disposed off-site by licensed contractors for disposal.
- Storage and handling of scheduled waste is to be carried out according to the Environmental Quality (Scheduled Wastes) Regulations, 2005.
- The wastes should be stored in sealed drums, labeled and placed in a designated scheduled waste storage area.
- Separate compartments should be provided for different groups of incompatible wastes.
- The quantity of scheduled wastes accumulated on site shall not exceed 20 metric tons and the wastes stored for a period not exceeding 180 days.
- Scheduled wastes that are collected by licensed collector are disposed at approved licensed facility;
- Empty pesticide containers shall not be reused and their disposal shall be in a manner that avoids exposure to humans and contamination of the environment.
- Empty containers shall be rinsed at least three times with water, and the washings returned to the spray tank before disposal; and
- Obsolete pesticides shall only be disposed through an approved chemical waste contractor.

8.2.3.7 Flora

There are no mitigation measures proposed for the flora in operation stage as the impacts is in significant.

8.2.3.8 Fauna

- Construction and maintenance of electrified fence along the boundary of the proposed project site. The Project Proponent/plantation management shall seek advice from the Department of Wildlife and National Parks for the construction of electrified fences at the boundary of the Project site taking into account the most efficient protection measure and costs. Once constructed, the fence or any other structural control system shall be well maintained to ensure its' effectiveness.
- To avoid any incidents, the Project Proponent/plantation management is advised to refer to the Department of Wildlife and National Parks and seek their guidance on how to handle wildlife and human conflicts.

8.2.3.9 Fisheries

Most of fishes are intolerant to chemical contaminations. Fertilization and herbicides activities recommended to be undertaken during dry period and based on phasing plan to minimize cumulative effects. This would minimize contamination risk as no surface runoff occur. The amount of fertilizer used should not exceed maximum concentration that been proposed by to water quality simulation results. The surface runoff water from the plantations must be simulated using water quality simulator and maximum allowable concentrations can be determined. Similarly, all TSS contamination potential must be control by conducting LDP2M2 proposed design.

8.2.3.10 Social and Health

The employment and use of workers for the project will introduce new people to the area. This could pose issues of safety, health and social problems. Recommended mitigation measures include:

- Job preference should be given to the local population and not to foreigners.
- Implementation of Corporate Social Responsibility (CSR) by the project proponent to the nearest community of FELDA to protect welfare to them.
- Any massive influx of workers, particularly foreign workers, may create some social problems in terms of public safety and social harmony. To avoid such problems the workers for the Project should be segregated from the

local residents. The workers should be advised to behave in a socially responsible manner and not to disturb the local people.

Safety shall be strictly adhered to and workers should be well trained as to minimize and avoid accidents at the work site. Adequate first aid facilities should also be made available on site. The main purpose is to avoid or minimize occupational as well as accidental hazards to the public as well as the workers. To achieve this purpose, various measures can be taken such as;

- There should be an action plan to promote safe and good working conditions.
- Operators shall be trained on safe and proper use of pesticides, operating dangerous or sophisticated equipment;
- Operators shall be equipped with suitable personal protective clothing and equipment appropriate to the danger posed to health and safety in accordance to the Occupational Safety and Health Act 1994 and Regulations;
- Personal protective clothing and equipment shall be cleaned after use and stored separately from pesticides.
- Accident and emergency procedures with clear instructions in the appropriate language of the workforce shall be displayed to all workers.
- Workers undertaking pesticide applications on the farm should receive health checks in line with the Occupational Safety and Health Act 1994 and Regulations and Pesticides Act 1974.

8.2.3 Application of Fertilisers and Pest Control

The use of fertilisers and agrochemicals for plant growth and pest control must be used in accordance with the manufacturer's recommendations and must be applied as and when required to avoid overuse and eventual runoff containing excess chemicals into the water bodies.

8.2.3.11 Harvesting

Workers shall undergo training in basic hygiene and safety. They shall be made aware of the requirement to notify management should they contract any transferable diseases.

Vehicles transporting FFB shall be registered and licensed and secured and should not carry other hazardous cargo e.g. chemicals.

8.2.4 Replanting

Replanting is only done when there is a requirement after the expected life span of the plantation.

In the event replanting is carried out, mitigation measures as recommended during the development stages for site clearing and field establishments in the previous sections must be practiced. map management, soil erosion and water quality protection measures are the most important.

The silt trap that has been developed during site clearing is recommended to be maintained so that during the replanting it can act again as a soil erosion mitigation measure.

The palm trees can be sold to furniture manufacturers or other potential wood-based industries. As for the unwanted vegetation, it can be shredded and used as ground protection.

8.2 PROJECT ABANDONMENT

In the event the project does not materialize as planned and has to be abandoned, then all materials and equipment on site will be sent back to supplier or sold. Proper Abandonment Plan should be in place, so that the abandonment process can be in line with the plan. All structures will be dismantled and sold to recyclers or sent back to suppliers. The plantation will usually remain as it is until the future plan for the site has been determined.

8.3 SUMMARY OF IMPACT AND MITIGATION MEASURES

The summary of potential impact and propose mitigation measures as discussed above is presented in Table 8-1 below:

Table 8-1: Summary of Potential Impact and Mitigation Measures

Environment Component	Potential Impact	Propose Mitigation Measures
Oil Palm and Coconut Palm Plantation Development		
Development Stage		
Logging activities	<ul style="list-style-type: none"> Removal of logs will cause soil erosion and destruction of flora and fauna. Loss of existing ecosystem due to deforestation activity. Ambient noise level may contribute from heavy machineries 	<ul style="list-style-type: none"> Logging activities to be conducted in phases to reduce soil erosion. Safety measures must to be taken to ensure there are proper signage's at the entry and exit of the site to notify the general public of the vehicle movements.
Transportation of log to buyers	<ul style="list-style-type: none"> Soiling of roadways Risk of lorry collision and accident. 	<ul style="list-style-type: none"> The transportation of logs/tree trunks or machinery should be undertaken preferably during off-peak traffic hours. These machineries should also, as far as possible, avoid using the public roads during the weekends when more road users are expected to ply the road. Adequate warning signs should be put up at suitable locations to forewarn road users of the existence of the project activities. During busy times, flagmen should be employed to assist in the direction of traffic when site vehicles are converging to the main traffic flow. Wash trough to be provided at the exit points.
Land Disturbing Pollution Prevention Mitigating Measures (LD-P2M2)	<ul style="list-style-type: none"> Soil erosion due to exposed surface. Increase surface runoff. Improper Biomass Management can cause pollution of land and water bodies. 	<ul style="list-style-type: none"> Land clearing to be carried out in phases to reduce exposed surface. Replanting of the oil palm trees and cover crop to be carried out soon after the vegetation clearance to reduce the time of exposed land surfaces. Uneconomical biomass will be left on site and used as fertilizer or ground cover. Clearing shall be confined within the block area. Site clearing shall be conducted during dry season.
Ambient Air Quality	<ul style="list-style-type: none"> Ambient air quality may generate from heavy machineries and logging truck. The use of heavy machinery/equipment such as excavators and mobile generator set using diesel may emit dark smoke from the exhaust due to the inefficiency of the diesel engines. Other airborne pollutants and gases e.g., carbon 	<ul style="list-style-type: none"> The transportation of machinery should be undertaken preferably during off-peak traffic hours; Lorries carrying soil and other light materials must be covered with tarpaulin; The vehicles and machinery movement should also, as far as possible, avoid using the public roads during the weekends when more road users are expected to ply the road;

Environment Component	Potential Impact	Propose Mitigation Measures
	<p>monoxide (CO) will be generated from the exhaust emissions of vehicles especially from the trucks and heavy machineries.</p>	<ul style="list-style-type: none"> • Adequate warning signs should be put up at suitable locations to forewarn road users of the existence of the project activities; • Regular maintenance of vehicles and construction equipment helps to reduce emissions of smoke and other air pollutants such as NOx, SOx and CO. • Provide wash through or water jet at site to avoid soiling of the roadways with soil particles • Paved or layer the entrance and exit area with gravel in order to reduce the amount of surface silt. • Provide and educate the construction workers with induction and training at site. • Restrict the speed of lorries at ply unpaved roads or dry mud tracks especially during dry periods.
Noise Level	<ul style="list-style-type: none"> • Noise pollution are expected from heavy vehicles such as logging truck and machinery operating within the site. • Based on noise assessment study The finding shows that the Lmax levels at the nearest sensitive receptor is far from the stipulated limit. Therefore, the noise pollution does not warrant much concern to the receptor as the distance is quite far from the Project site. In addition, the noise pollutant will be intermittent, localized and short-term. The disturbance will cease upon completion of the clearing activity. 	<ul style="list-style-type: none"> • Regular maintenance and frequent servicing of machineries. • Use of silencers and mufflers where required.
Water Quality	<ul style="list-style-type: none"> • Deterioration of water quality due to: <ul style="list-style-type: none"> - Leakage of oil from transport trucks. - Maintenance of machinery • Increased turbidity and TSS levels compared to present levels. 	<ul style="list-style-type: none"> • Ground cover slows the depletion of soil organic matter from the effects of sunlight and erosion. It also adds to the organic matter content through leaf and plant litters. • Temporary perimeter earth drains shall be constructed to channel surface runoff for control of sediment discharge. • The river bank reserve should complied with the DID's requirement. • No activity is allowed within the distance of the buffer zone. • Any discharge of wastewater from any source into the storm water or river drainage system without treatment is not allowed. • Sediment basin are used to intercept sediment carrying runoff before discharging into the natural watercourse. • Land clearing and site preparation is recommended to be carried out during the dry season (if necessary).
Fauna	<ul style="list-style-type: none"> • The intrusion into the wildlife natural areas and thus the sudden movement of wildlife out from the habitat to the adjacent or nearby areas. 	<ul style="list-style-type: none"> • Project Proponent shall follow the mitigation measures outlined to reduce the potential impacts of local species extinction and human-wildlife conflicts.

Environment Component	Potential Impact	Propose Mitigation Measures
	<ul style="list-style-type: none"> Human wildlife conflicts, possibility of animal entering the Project site, entering to the nearest settlements could happen due to forest clearing and biomass removal during the start of earthwork stage. Loss of orientation and direction may cause wildlife to roam away from their routine path and end up somewhere away from their home range. 	<ul style="list-style-type: none"> The project area should be will divided into 15 sub phases (average 200 ha each). The sub-phases process should be done after taking into consideration the delineation for riverine buffers. Clearance of the vegetation of the first parcel/block should be followed by immediate planting of oil palm seedlings. After this has been completed, the second parcel/block can be cleared and as before followed by immediate planting of seedlings. This cycle is repeated until the entire project area is cleared and planted. In this way, the animals have more time to adapt to the changing environment and disturbance. They also have more time to 'plan' their escape to safer areas.
Flora	<ul style="list-style-type: none"> permanent in-situ loss of the plant species found in the proposed Project area that is cut where vegetation such as trees, shrubs will be pulled, stacked and compact and leave to rot naturally. 	<ul style="list-style-type: none"> In the event there are plants that are found to be within the endemic or protected category, it is recommended that they be transplanted or preserved where possible.
Groundwater Quality	<ul style="list-style-type: none"> Hydrocarbons spill can have adverse effects on surface water courses and shallow underground water system. 	<ul style="list-style-type: none"> Petrochemicals should be well stored, handled, and disposed of to avoid spillage, and thus avoid soil and waterways pollution. The oil/water separator next to the workshop drainage system. Warned the workers of the danger of these products and trained them on how to handle them, use them, and dispose of their used containers. "Spill Response Plan" should be established in the operation manual.
Fisheries	<ul style="list-style-type: none"> Increase of TSS in water body would threat intolerant species such as <i>Poropuntius</i> and <i>Rasbora</i>. 	<ul style="list-style-type: none"> Implement the proposed P2M2 and carry out regular maintenance.
Hydrology	<ul style="list-style-type: none"> The result clearly shows that the post-development peak flow exceeds the pre-development peak flow by about 30 m³/sec. 	<ul style="list-style-type: none"> Retain most of the top soil's vegetation. Provide Detention Pond to reduce the post-development flow to the pre-development level. Drainage and sediment basin should be provided as proposed in LD-P2M2 and regular maintenance should be carried out. Tidal gate should also be built at the outlet to prevent tidal water from flooding the project area.
Operation Stage		
Ambient Air Quality	<ul style="list-style-type: none"> Dust generation from vehicular movement at unpaved access road, during plantation activity. Spraying of agrochemicals in controlling weeds, pests and diseases could introduce chemical pollutants into the air in the form of spray droplets suspended in the air and swept away by winds. 	<ul style="list-style-type: none"> The access road to the Project site shall be paved with crusher run or gravel or laterite to protect the earth surface from erosion during the dry season. Vehicles shall be regularly serviced and maintained to reduce undesirable emissions. Open burning is strictly prohibited under the Environmental Quality Act, 1974, Section 29A (1). The usage of a generator set has to comply with the Written Notification on Air Emission Sources (Generator) under Regulations 5 of the

Environment Component	Potential Impact	Propose Mitigation Measures
		<p>Environmental Quality (Clean Air) Regulations 2014.</p> <ul style="list-style-type: none"> Only approved chemicals registered under the Pesticides Act 1974 with the Pesticides Board of Malaysia should be used. The frequency, dosage and timing of chemicals application must be closely monitored. Spraying is forbidden on raining and windy days.
Noise Level	<ul style="list-style-type: none"> The noise pollution does not warrant much concern to the receptor as the distance is quite far from the Project site. In addition, the noise pollutant will be intermittent, localized and short-term. 	<ul style="list-style-type: none"> Planting activities can be limits into working hours to daytime which is from 7am to 7pm and to use silencers or mufflers where required.
Water Quality	<ul style="list-style-type: none"> The use of pesticide and fertilizer could cause an increase in total phosphate, nitrate and BOD. 	<ul style="list-style-type: none"> Install erosion control measures such as bunds, platforms and terraces to reduce losses of native and applied phosphate in surface run-off water and eroded soil; Proper storage areas to be allocated for the fertilizer and pesticides to avoid spillage into the water bodies. Ensure the measurement for spraying of pesticide and fertilizer is referred to the packaging recommendation. Over usage of the chemicals can contaminate the water bodies.
Social and Health	<p>Based on the overall assessment, the Project Proponent shall ensure a smooth plantation operation, so that;</p> <ul style="list-style-type: none"> The Project may not disrupt the surrounding community; Health and safety of surrounding communities are guaranteed; Traffic flow is smooth along roads of 1398 Jalan Kilang Sawit Nitar and 1399 Jalan Felde Nitar 1; Low impact on the surrounding environmental quality; 	<ul style="list-style-type: none"> Conduct a Grievance Management Plan and Procedure by established a committee consists of Project Proponent, locals' representative and representative of fishermen community. Comply any mitigation measures and Best Management Practice (BMP) highlighted in EIA and EMP; and Abide the SOPs that been outlined by KKM to avoid any spread of COVID-19 virus
Scheduled Waste Management	<ul style="list-style-type: none"> Scheduled waste from equipment and maintenance of machinery Wastes generated are mainly packing materials, oil filters, rags and used oil. These wastes will be segregated into scheduled and non-scheduled wastes and transported for final disposal. Waste generated will be minimal in quantity therefore its impact will be insignificant. Improper disposal and management of scheduled wastes can result in contamination of water bodies. Empty containers with pesticides and fertilizer residues can cause pollution to soil and water with improper storage and disposal. 	<ul style="list-style-type: none"> All scheduled wastes including used oil and spent/waste oil generated during the construction works from machines, generators, chemical containers, etc. shall be collected and disposed off-site by licensed contractors for disposal. Storage and handling of scheduled waste is to be carried out according to the Environmental Quality (Scheduled Wastes) Regulations, 2005. The wastes should be stored in sealed drums, labeled and placed in a designated scheduled waste storage area. Separate compartments should be provided for different groups of incompatible wastes. The quantity of scheduled wastes accumulated on site shall not exceed 20 metric tons and the wastes stored for a period not exceeding 180 days. Scheduled wastes will be collected by licensed collector and disposed at

Environment Component	Potential Impact	Propose Mitigation Measures
		<p>approved licensed facility.</p> <ul style="list-style-type: none"> • Empty pesticide containers shall not be reused and their disposal shall be in a manner that avoids exposure to humans and contamination of the environment. • Empty containers shall be rinsed at least three times with water, and the washings returned to the spray tank before disposal; and • Obsolete pesticides shall only be disposed through an approved chemical waste contractor.
Flora	<ul style="list-style-type: none"> • There will be no significant impact on flora as the oil palm tree have been planting and cover crop will be fully grown and established. 	<ul style="list-style-type: none"> • There are no mitigation measures proposed for the flora in operation stage as the impacts is in significant.
Fauna	<ul style="list-style-type: none"> • Impact to wildlife at the operational is expected to be less significant. • Impact probably expected to occurred from conflicts with elephant, wild boars and macaques that wanders through the plantation. 	<ul style="list-style-type: none"> • Construction and maintenance of electrified fence along the boundary of the proposed project site. • To avoid any incidents, the Project Proponent/plantation management is advised to refer to the Department of Wildlife and National Parks and seek their guidance on how to handle wildlife and human conflicts.
Fisheries	<ul style="list-style-type: none"> • Most of fishes are intolerant to chemical contaminations 	<ul style="list-style-type: none"> • Fertilization and herbicides activities recommended to be undertaken during dry period and based on phasing plan to minimize cumulative effects.
Application of Fertilisers and Pest Control	<ul style="list-style-type: none"> • Over usage or wrong application quantities of methods could cause them to be washed off into the water bodies 	<ul style="list-style-type: none"> • The use of fertilisers and agrochemicals for plant growth and pest control must be used in accordance with the manufacturer's recommendations and must be applied as an when required to avoid overuse and eventual runoff containing excess chemicals into the water bodies.
Harvesting	<ul style="list-style-type: none"> • Impacts are generally minimal as the fruits will be manually plucked, collected and transferred onto tractors prior to transporting to the potential buyers. • Impacts are minimal as it is mainly a manual practice and tractors are used for transport. • Safety of workers is a concern during harvesting as the fruit bunches can be stolen or attack from reptiles and mammals could occur. • The increase in vehicular movement could be a safety concern to the local road users. 	<ul style="list-style-type: none"> • Workers shall undergo training in basic hygiene and safety. They shall be made aware of the requirement to notify management should they contract any transferable diseases. • Vehicles transporting FFB shall be registered and licensed and secured and should not carry other hazardous cargo e.g. chemicals.

Environment Component	Potential Impact	Propose Mitigation Measures
Replanting Stage		
Clearing of Old Oil Palm Tree	<ul style="list-style-type: none"> • Soil erosion causing siltation of stream and rivers. • Water quality of rivers due to siltation and runoff containing pesticides and fertilizer. 	<ul style="list-style-type: none"> • Clearing to be conducted in phases to avoid long term surface exposure. This can reduce surface runoff thus reducing erosion and surface water containing pesticides and fertilizer. • It is recommended that clearing be minimized during the wet season.
Replanting of Oil Palm Tree	<ul style="list-style-type: none"> • Dust emission and dispersion during replanting due to digging process which can deteriorate the surrounding air quality. • Soil runoff from the top soil filling may increase the Total Suspended Solid (TSS) and turbidity levels of the river water. 	<ul style="list-style-type: none"> • The silt trap that has been developed during site clearing is recommended to be maintained so that during the replanting it can act again as a soil erosion mitigation measure.
Abandonment Stage		
Abandonment	Minimal impacts are foreseen as mitigations measures will be taken to ensure site safety and prevention of pollution.	<ul style="list-style-type: none"> • In the event the project does not materialise as planned and has to be abandoned, then all materials and equipment on site will be sent back to supplier or sold. • All structures will be dismantled and sold to recyclers or sent back to suppliers. • The plantation will usually remain as it is until the future plan for the site has been determined.