

5.0 PROJECT DESCRIPTION

This chapter provides a description of the proposed project including the overall project concept, implementation schedule and the main project activities based on the information provided by the Project Proponent.

5.1 Project Concept

The proposed Project involves reclamation of 120 acres coastal area along the Klebang Beach. It is located at Lot 152, PT 149 and PT 50 of Mukim Klebang Besar, District of Melaka Tengah, State of Melaka and is accessible from Melaka town via Jalan Klebang Besar.

The proposed location of this project has been granted to Awan Plasma Sdn Bhd by the State Government of Melaka under a concession agreement. The location of the proposed Project is illustrated in **Figure 5-1** while the acreage of the proposed reclamation site is presented **Figure 5-2**.

The area granted to APSB covers a total area of 170 acres but only 120 acres will be reclaimed while the other 50 acres will be remained untouched. There will be no top side development on the proposed 120 acres reclaimed land in the near future and thereby this EIA does not cover construction activities, which are not related to the reclamation works, for example earthwork, building construction, road and drainage work, etc.

5.2 Project Development Phases

The proposed project development phases include the followings:

- Site Preparation Phase
- Reclamation Phase
- Abandonment Phase

5.2.1 Site Preparation Phase

This phase mainly involves project kick-off, mobilization of project team and machineries, establishment of temporary facilities on-site as well as the clearance and removal of debris and rubbish, if necessary.

5.2.1.1 Clearance and Authorities Approval

All available information will be reviewed, approval for all necessary licenses, permits and other requirements will be sought and local authorities will be visited and informed on planned reclamation operation. Various supporting documentation and plans required for execution of works will be prepared.

5.2.1.2 Setting Up Storage and Base Camp

Temporary facilities for the office consist of basic services (water, electricity, toilets) and operational services (telephone, fax, radio). If necessary, a temporary site-office will be erected as well as a temporary jetty. The project involve of soil improvement operations, a power supply will be arranged either from TNB's main power supply or generator.

5.2.1.3 Mobilization

The survey equipment will be the first equipment to arrive on site to perform the baseline survey of the reclamation area. The echo sounding system will be installed on board the survey vessel together with the other survey system.

The operational project team will prepare the mobilization of the sand carrier vessels and auxiliary equipment and make a detailed execution plan based on various factors.

5.2.2 Reclamation Phases

Fill material for the reclamation will be sourced from the nearest licensed sea sand source concession site in Melaka namely Extrorish Sdn Bhd. The selected sand source concession site is located at 10.4 km southwest of the proposed project site. It covers an area of approximately 1,114 hectares with water depths ranging from 20-30 meters CD. The sand source concession site is located within the jurisdiction of the State of Melaka with approximately 946.9 hectares (85% of the total area) dredging area. The coordinates of this sand source concession site is tabulated in **Table 5-1** below while the location of the concession site is depicted in **Figure 5-3**. The EIA for Sand Mining activities of Extrorish Sdn Bhd has been approved by DOE Melaka on 4 August 2009 and has been renewed until 31st December 2017. Application of license renewal after December 2017 has been submitted by Extrorish Sdn Bhd and now pending the approval from the Minister of Natural Resources and Environment.

Table 5-1 Sand Source Coordinates

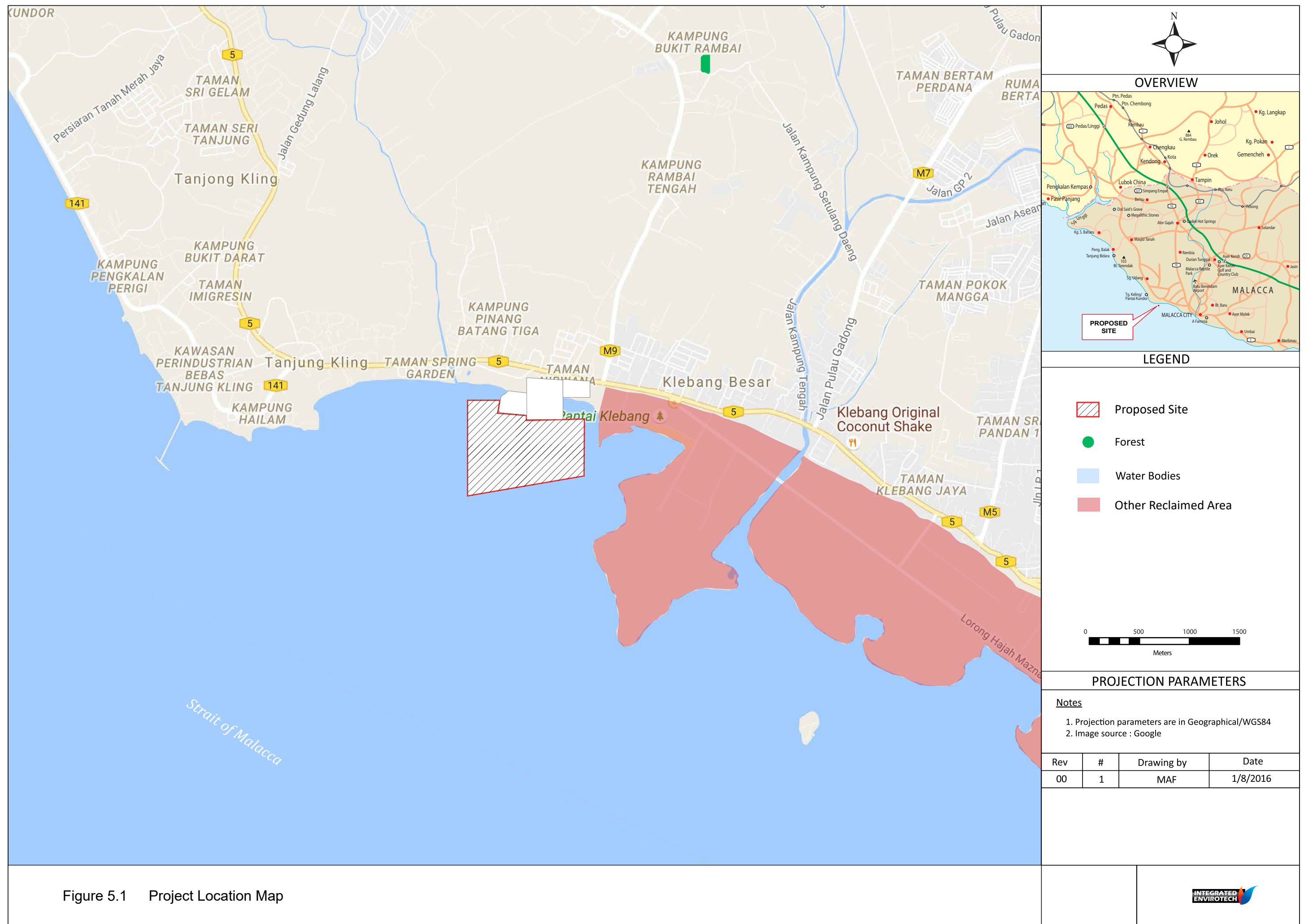
Point	Latitude	Longitude
A	2°08'18.0"N	102°06'00.0"E
B	2°07'25.0"N	102°06'00.0"E
C	2°05'00.0"N	102°09'30.0"E
D	2°05'30.0"N	102°10'00.0"E

The estimated volume of fill material needed for the proposed project is about 2 million cubic metres. According to the EIA for Sand Mining activities of Extrorish Sdn Bhd, the sand source concession site selected for the proposed project contains about 100 million cubic metres of dredged material. From the total of this volume, 78% is sand and the deposits of sand are found at most of the concession area from the surface of seabed until about 4m below the seabed. At

the mid region of the concession site, the sand deposit even settled until 6m to 9m below the surface of the seabed.

The fill material from the sand concession will be deposited to the project site using the right vessels which vessels' water draft are suite to the water level at the reclaim areas. For the proposed project site, vessels full laden's maximum water draft 3.5 m upon high tide is most ideal and appropriate. A sand carrier with capacity 1000 m³ to 2000 m³ has been selected for the reclamation.

The sand carrier is designed to operate in 3 in 1 method, i.e. self- sand suction, self-propel & self- sand discharging. It is normally accommodated with a standby sand dredger without self -suction function. The main function of the sand carrier is to obtain dredged materials from the selected sand concession site and deposited them to the reclamation area. Only suitable fill material will be transported to the proposed project site. Thereby, there will be no disposal of unsuitable material (USM) involved for the proposed project. It is estimated that 3 trips per day will be carried out to attain sand from the selected sand concession site.



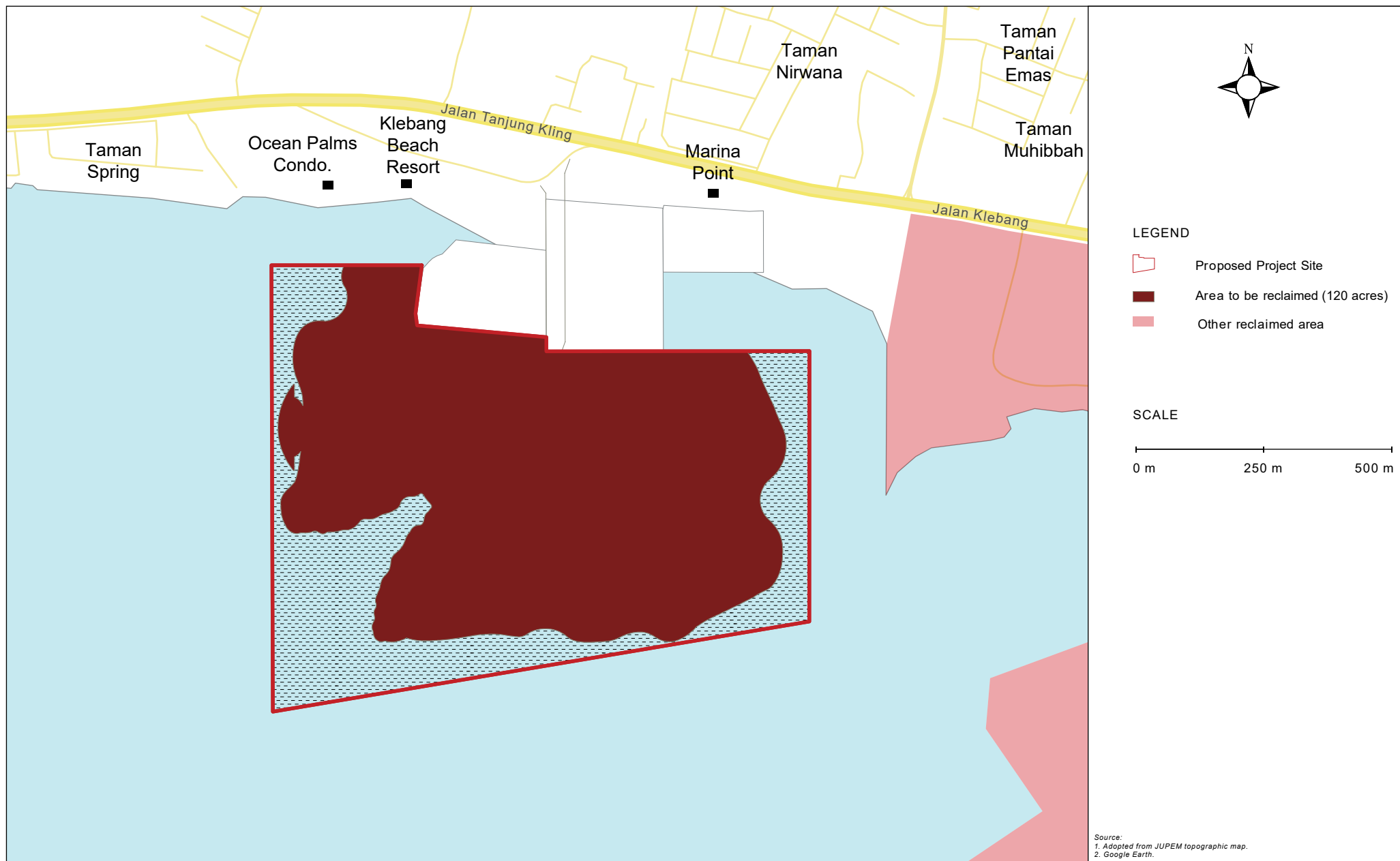
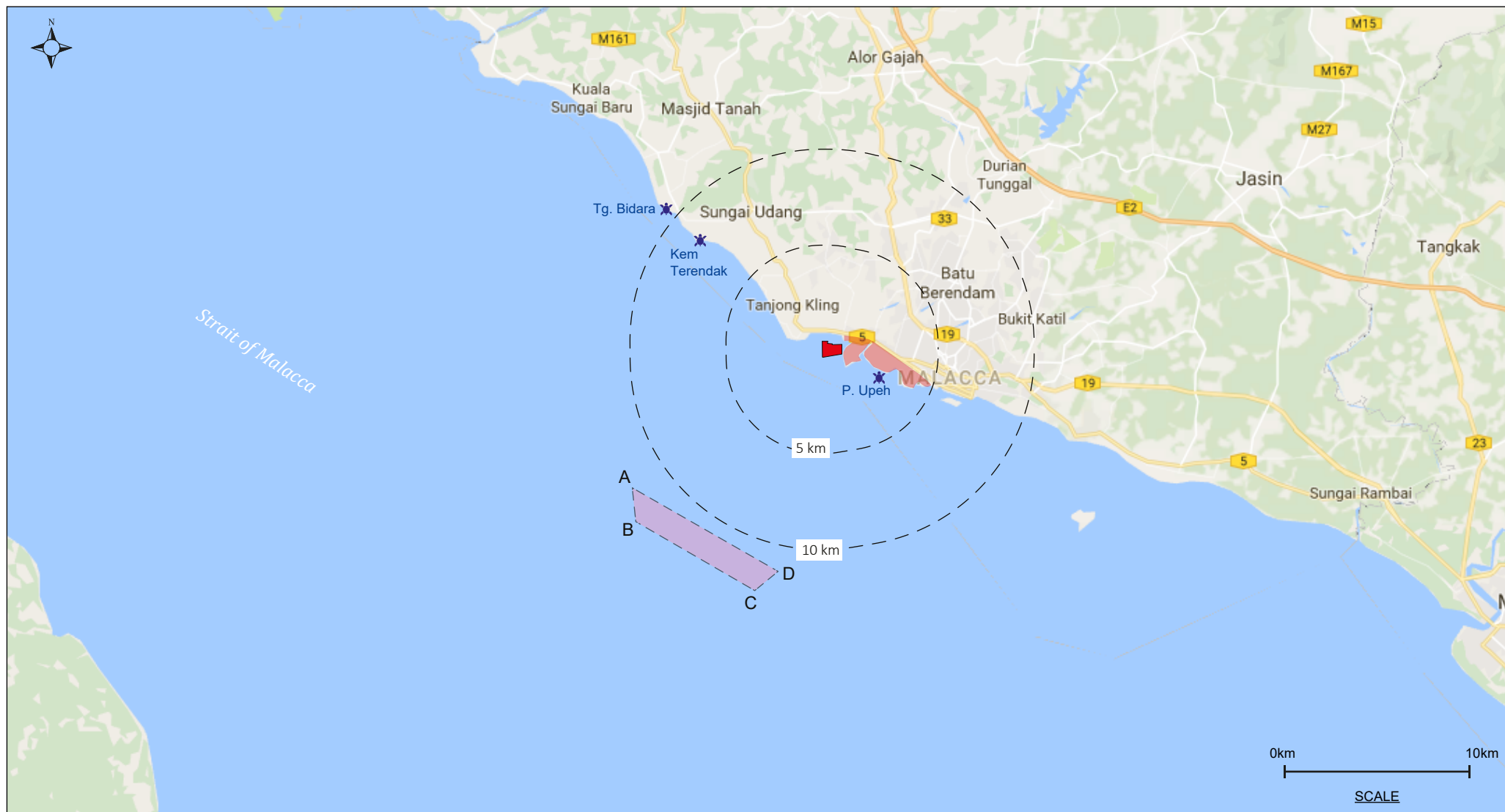


Figure 5.2 Area To Be Reclaimed

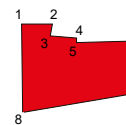


LEGEND

 Sand source	 Roads
 Water bodies	 Turtle landing site
 Forest	 Proposed project site
 Other reclaimed area	

SAND SOURCE COORDINATES

A - 2°08'18.0"N 102°06'00.0"E	C - 2°05'00.0"N 102°09'30.0"E
B - 2°07'25.0"N 102°06'00.0"E	D - 2°05'30.0"N 102°10'00.0"E



PROJECT BOUNDARY COORDINATES

1) 2° 13' 9.47"N, 102° 10' 34.11"E	5) 2° 13' 4.07"N, 102° 10' 51.33"E
2) 2° 13' 9.47"N, 102° 10' 43.53"E	6) 2° 13' 4.09"N, 102° 11' 7.82"E
3) 2° 13' 5.70"N, 102° 10' 43.23"E	7) 2° 12' 47.14"N, 102° 11' 7.81"E
4) 2° 13' 4.96"N, 102° 10' 61.33"E	8) 2° 12' 41.49"N, 102° 10' 34.20"E

Figure 5.3: Location of Sand Source at Klebang, Malacca

The reclamation works involve activities as below:

5.2.2.1 Pre-Survey

Joint for pre-survey to determine the exact area and volume.

5.2.2.2 Sandkey trenching and Construction of perimeter bund

This process involves the removal of existing revetment and excavation of the underlying soft clay and mud for seabed stabilization purpose. The excavated materials will form part of the fill material, where no dumping is required.

In term of the perimeter bund, it will be constructed using sand, which is barged to the site and with truck and excavator onsite to distribute the material into the swallower areas of the reclamation's footprint. This stage will include the installation of the storm water outfalls, which run through the perimeter of the reclamation bund as well as a layer of geotextile to the inside of the core material.

5.2.2.3 Sand Transportation and Filling Works

The fill material from the sand concession will be deposited to the project site using a sand carrier with capacity 1000 m³ to 2000 m³. As the estimated volume of fill material needed for the reclamation is about 2 million cubic metres, 3 trips per day is estimated to be carried out to attain sand from the nearest sand source.

Filling works involve unloading and delivering of the fill material. A few suitable 'temporary landing' points will be identified within the proposed project site according to the progress of work. The sand on board of the vessel will be unloaded and delivered to the reclamation area by vacuum pump, which has the capacity of 1000m³ per hour. Basically, it would require about 1 to 2 hours to unload a fully loaded vessel.

Due to reclamation project for sand transportation is through sea base, as such there have no any issue for the access road to site for reclamation material transportation.

5.2.2.4 Soil Treatment

Prefabricated Vertical Drains (PVD), also called Wick Drains, are prefabricated drain strips consisting of a polypropylene core extruded into a configuration to transmit a maximum water flow on both sides of the core. The core is wrapped in a non-woven filter, ultrasonically welded at the edges. The filter fabric made usually with needle punched or thermally bonded geotextile.

Ground improvement using PVD is applied in areas with compressible water-saturated soils such as peat, clay and silty clays, where significant settlement may occur. Installation of PVD is used as a method to accelerate the consolidation of

soft soil. It is part of the treatment of fill materials and the treatment process is to be carried out after the completion of the filling activities

Typically, the PVD will be installed into the soil to create shorter drainage path with a regular spacing in order to enabling the excess water to flow horizontally through the longitudinal grooves on both sides of the core. It shall be located, numbered and pegged out using baseline and benchmark indicated and designed by the Project Engineer.

The installation of PVD is usually done by penetrating the soft soil with a hollow steel mandrel. It is usually done with the aid of special PVD stitcher. A drainage filter or drainage blanket (sand or small aggregate or any other permeable material) should be provided directly above the installed PVD for easy flow of pore water expelled from the PVD during the clay consolidation. While a non-woven geotextile is usually used as a separator between the drainage filter and soil fill above.

Advantage of using of PVD is the reduced construction time and the elimination of the risk of slip plane failure due to maximum efficiency in discharging pore water, whereby the jacket provides the optimum filtration and permeability.

5.2.2.5 Sand Spreading and Surface Compaction Works

After sand discharged to shoreline by sand carriers, sand is required to be transported, dumped and bulldozed to designate reclaim areas to required platform level (3 m). Sand surface must then be compacted in order for sand ground fully settled to the required level. Treatment of top layer subgrade for final platform to optimum density will be achieved by using vibratory drum rollers, with a capacity of approximately 10 tonnes. Next, levelling the reclamation area to the desired finished grades and slopes using earthmoving equipment.

5.2.2.6 Excess sand fill surcharge removal

Sand surcharge will be used to render the sand ground to achieve maximum settlement of sand ground. The recommended surcharge duration usually up to 4 -6 months. After surcharge duration mentioned, sand can be removed for other designated reclaim areas.

5.2.2.7 Water quality & geotechnical monitoring

This plan concerns the proposed execution of geotechnical investigation and monitoring for the project development. Proper installation, monitoring and processing of the result of instrumentation is essential to the success of the sand fill reclamation works.

5.2.2.8 Silt curtain installation

Single layer silt curtain will be installed at the early stage of the Reclamation Phase to minimize sediment transport from the reclamation area to adjacent water body. This barrier aims to prevent fine grained suspended materials from migrating by advection and diffusion from the point generation at work site to the wider water environment. The typical specification of the proposed silt curtain is provided in **Table 5-2**.

Table 5-2 Typical Specification of the Proposed Silt Curtain

Properties	Test Method	Unit	SC100
Wide Width Tensile Strength			
Wrap	ASTM*	kN/m	100
Left	D 4595-86		100
Elongation at Max Tensile Strength			
Wrap	ASTM	%	15
Left	D 4595-86		15

Note: * American Society for Testing and Materials

The fine grained materials generated during the reclamation activities may reduce water quality and impact upon sensitive receivers in the vicinity of the works site area. By installing single layer silt curtain, the sediment dispersion plume is restricted within reclamation area. The proposed position of the silt curtain is shown in **Figure 5-4** while the installation procedures are as below:

- The silt curtain should be oriented parallel to the directions of flow. It should extend the entire depth of the watercourse during calm-water situation.
- During wave conditions, the curtains should extend to within 0.3 m (1 ft) of the bottom of the watercourse. In that case, the curtains will not stir up sediment by hitting the bottom repeatedly. If it is desirable for the curtain to reach the bottom in an active-water situation, a pervious filter fabric may be used for the bottom 0.3 m (1 ft).
- The top of the curtain should consist of flexible floatation buoys, and the bottom shall be held down by a load line incorporated into the curtain fabric. The fabric shall be a brightly colored impervious mesh.
- The curtain shall be held in place by anchors placed at not more than 30m (100 ft) apart on both sides.
- First place the anchors, then tow the fabrics out in a furled condition, and connect to the anchors. The anchors should be connected to the floatation devices, and not to the bottom of the curtain. Once in place, cut the furling lines, and allow the bottom of the curtain to sink.
- Sediment that has been deflected and settled out by the curtain should be removed. Particles should always be allowed to settle for a minimum of 6 to 12 hours prior to their removal or prior to removal of the turbidity curtain.



Figure 5.4: Proposed Position of Silt Curtain

5.2.2.9 Construction of Coastal Protection Structure

After completion of the reclamation works, the edge works can commence. Rock revetment is a form of coastal defense made by placing the rock inland so that the land may be protected against powerful waves. The scope of these activities is the supply and installation of rock revetment protection works along or around of the reclamation areas, including installation of geotextile underneath the rock works. The proposed location of rock bund and typical cross-section of the revetment are shown in **Figure 5-5** and **Figure 5-6**. In general, the selection of proposed rock revetment structure is based on several considerations as follows:

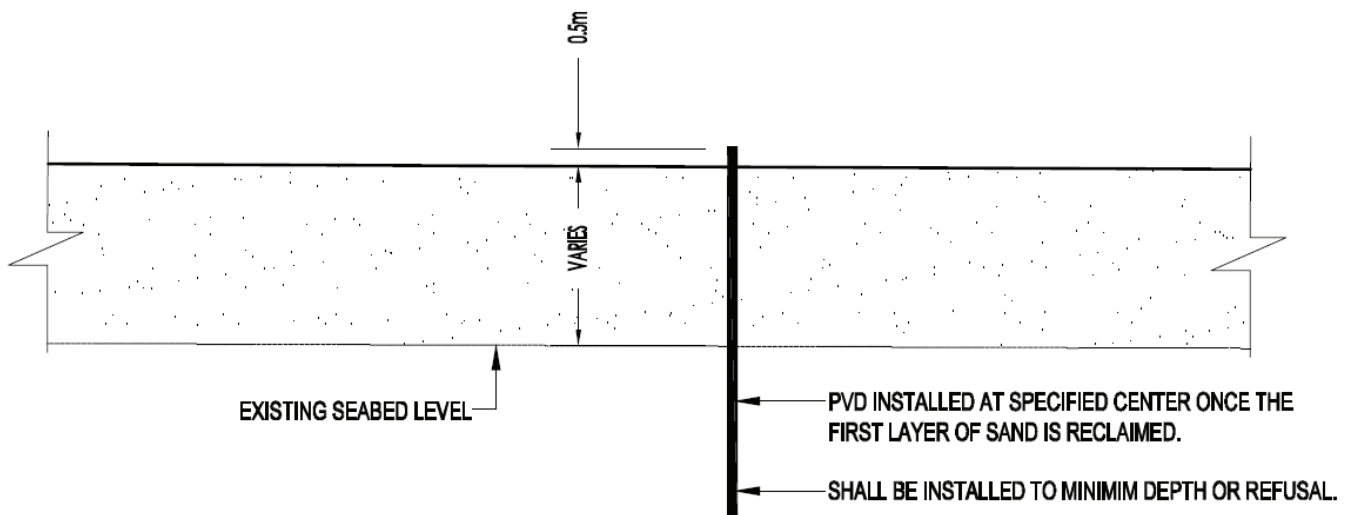
- Structural stability
- Life-cycle cost
- Foundation or soil conditions
- Exposure to wave action
- Availability of construction material
- Functional performance

Table 5-3 Proposed Coastal Protection Structure

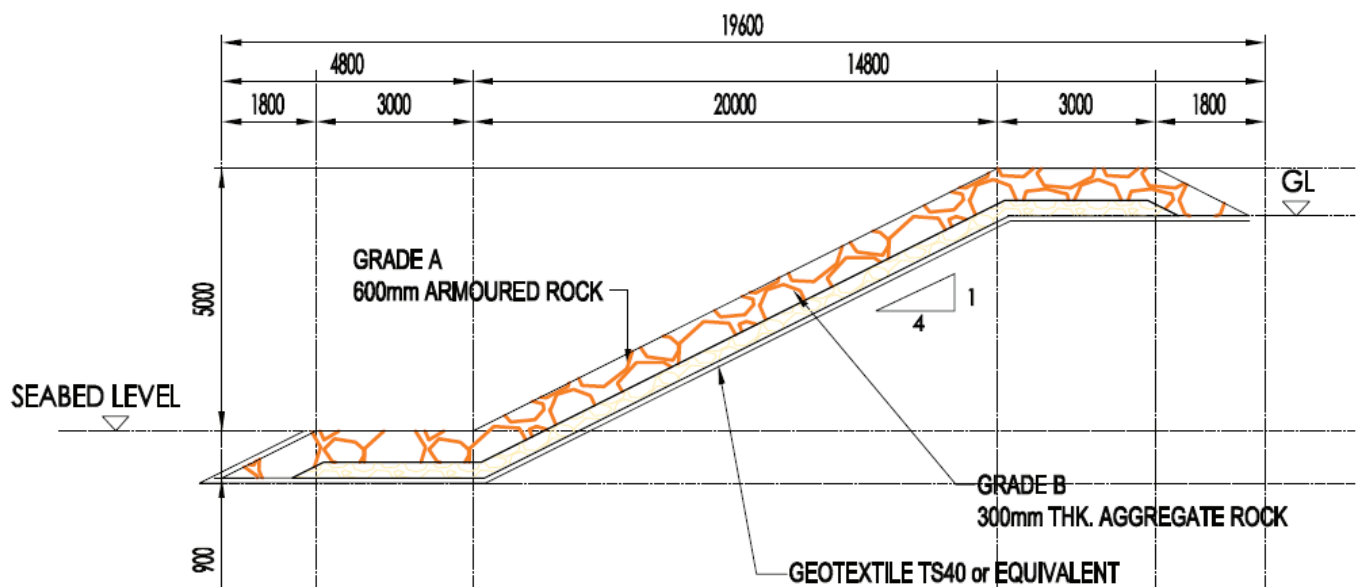
Type	Length (m)	Primary Rock		Secondary Rock	
		Weight (tonne)	Volume (m ³)	Weight (tonne)	Volume (m ³)
Rock Revetment	3520	146,362	54,208	61,523	26,752

General construction of revetment work is detailed are as below:

- Carry out localized excavation where to permit construction of rock revetment work.
- Trim the areas on which rock revetment is to be positioned to the shapes specified. Trim surfaces shall be free of roots, stumps, brush, rocks and like protrusions.
- Place geotextile on prepared surface as specified.
- Place revetment rock in such a manner to avoid displacement or tearing of geotextile and to produce a dense evenly distributed revetment.
- Hand place revetment rock adjacent to walls and structures unless otherwise specified.



TYPICAL DETAIL OF PVD (SUBJECT TO SI RESULTS)



TYPE - B TYPICAL SECTION REVETMENT NOT TO SCALE

Figure 5.6: Typical Cross Section of Revetment

5.2.3 Abandonment Plan

In the unlikely event that the proposed project, at any stage of construction, cannot proceed and has to be abandoned due to unforeseen circumstances, the project proponent must endeavor to vacate the project site in an environmentally responsible manner and prepare a Project Abandonment Plan.

Abandonment during earthworks will result in serious air and water quality impacts due to failure to implement soil erosion measures or complete turfing. The project site will be an eyesore due to the presence of partially completed structures, construction debris left all around the site and neglected offices, stores and sheds. After a short time of inactivity,alang and weeds will start to grow and will gradually cover up the work site, aggravating the poor visual appearance of the site. This situation will continue until another Developer/Contractor is called in to take over the site, or the half-completed structures torn down for redevelopment.

The project site should be left in the best shape possible in terms of the environment. It should also be free of any unexpected hazards to the public. The abandonment plan indicates all the necessary actions and steps to be taken to achieve the objective above and ensure that the site is left in a condition that has no environmental implications.

In general, the abandonment plan will include an inventory of materials and equipment and their removal. It will provide details on the demobilization and removal of temporary and semi-built structures, and the closure of work sites. The abandonment plan will also address the need for rehabilitation of cleared areas through turfing, the restoration of all temporary drainage and completion of permanent drainage channels.

Party that is responsible for the abandonment plan will be the Project Proponent i.e. Awan Plasma Sdn Bhd (APSB). Its registered and correspondence address is as follow:

Awan Plasma Sdn Bhd

Unit 2F-6, 2nd Floor, Tower 1 @ PFCC,
Jalan Puteri 1/2,
Bandar Puteri, 47100 Puchong,
Selangor Darul Ehsan

Contact Person	: Deric Cheong
Position	: Project Director
Contact Number	: +60-3-8051 7335
Facsimile	: +60-3-8051 6779
Email	: dericcyh.biz@gmail.com

5.3 Project Requirements

5.3.1 List of Equipment

Lists of equipment required for the proposed project is presented below:

Table 5-4 Equipment Requirements

Phase/Activities	Equipment Requirements
Site Preparation	<ul style="list-style-type: none"> • Survey Equipment • Backhoe • Excavator • Generators
Reclamation	<ul style="list-style-type: none"> • Sand carrier vessels and auxiliary equipment • Excavators • Dump trucks • Shovels

5.4 Personnel Requirements

Personnel/man power required for the proposed project is provided as follows:

Table 5-5 Personnel Requirements

Manpower Requirements	Phase	
	Site Preparation	Reclamation
Project Director	1	1
Project Manager	1	1
Project Engineer	1	1
Project Supervisor	2	2
Land Surveyor	1	1
General Workers	5	10
Sand Carrier Crew	-	30
Machineries Operator	5	10

5.5 Waste Generation and Management

Wastes generated during reclamation are proposed to be temporary stored at two allocated zone as depicted in **Figure 5-7**. These zones are located on left and right of reclamation site with estimated areas of 7acres and 9 acres, respectively.

The wastes stored within these designated zones will be segregated according to type. For construction wastes, they should be reused and recycled as much as practically possible. The wastes cannot be reused or recycled will be disposed of to the nearby approved landfill, for example Sungai Udang Sanitary Landfill and Dengkil Inert Waste Landfill by licensed contractors. As for the scheduled wastes,

they will be managed according to the Environmental Quality (Scheduled Wastes) Regulation, 2005 and to be disposed of by DOE licensed contractor only.

Amount of wastes generated by the proposed development is provided in tables below based on the Project Proponent estimation:

Table 5-6 Expected Waste Volumes Generated during Reclamation Phase per Month

Waste Type		Source	Total (Tonnes)
Solid Waste (Non- Schedule Waste)	Domestic Waste	Base Camp	1
	Gravel/Laterite	Revetment	1
Schedule Waste	Diesel	Machinery Equipment	1
	Oil	Oil Tanker/Vessel	1

5.6 Project Implementation Schedule

The proposed project is expected to take about 6 years to complete. It is scheduled to commence in March 2018 and end in September 2024. The Overall Project Implementation Schedule is shown in **Figure 5-8** whereas EIA Study timeline are shown in **Figure 5-9**.



Figure 5.7: Temporary Storage Sites

Activity	Duration (Month)	2018												2019												2020			
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
Reclamation Phase																													
Mobilization Phase																													
Vessels and Machineries	1 month																												
Site office establishment	1 month																												
Survey Phase																													
Pre-dredge survey reclamation area	1 month																												
Out-survey reclamation area	1 month																												
Reclamation Phase																													
Imported Sandfill	5 months																												
Soil Improvement Works	3 months																												
Sand Settlement Period	3 months																												
Sand Surcharge Removal	3 months																												
Rock Revertment Work	3 months																												
Demobilisation Phase																													
Survey equipment/Machineries	2 months																												

Figure 5.8 Project Schedule

No	Item	Year 2016							Year 2017												Year 2018				
		June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
1	Contract Award, Project Preparation and Kick-off																								
2	Preparation & Submission of PAT																								
3	Data gathering and information on proposed project																								
4	1st TOR submission to DOE																								
5	2nd TOR submission to DOE (Additional information)																								
6	TOR Processing Period by DOE																								
7	Endorsement of TOR from DOE																								
8	Approval of Hydraulic Study from JPS																								
9	Environmental Baseline Studies and Modelling																								
	- Air and Noise Level quality																								
	- Water and Sediment Quality																								
	- Ecology (Flora and Fauna)																								
	- Marine Biology and Fisheries																								
	- Socio Economic Study and Public Engagement																								
10	- Study Findings and Analysis of Results																								
	- Prediction of Impact and Analysis																								
11	Final report submission to DOE																								
12	DOE EIA-TRC Meeting																								
13	Submission of Corrected EIA Report to DOE																								

Figure 5.9 Revised EIA Schedule