EXECUTIVE SUMMARY

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PROPOSED SHIPYARD AT PTD 765, PTD 766 AND PTD 767 AND LAND RECLAMATION AT PART OF SUNGAI JOHOR RIVERBANK, MUKIM JOHOR LAMA, DAERAH KOTA TINGGI, JOHOR DARUL TAKZIM

Introduction

PROJECT PROPONENT
BMEV Dermaga Sdn Bhd
32-01, Jalan Harmonium 23/13
Taman Desa Tebrau
81100 Johor Bahru
Johor Darul Takzim

EIA CONSULTANT
Alam Dinamik Sdn Bhd
No. 19&19A, Jalan Bukit Impian 1
Taman Impian Emas
81300 Skudai
Johor Darul Takzim

LEGAL REQUIREMENT
First Schedule

6. Industry:
(e) Shipyards: Dead weight tonnage of 5,000 tonnes or more.

7. Land Reclamation:
Coastal reclamation or land reclamation along river banks involving an area of less than 50 hectares.

STATEMENT OF NEEDS

Project needs:-

- Johor state government and authorities have requested that the existing shipyard near to the Desaru Bridge to be moved due to risk of collision or mishap when ships dock there.
- Capacity of the existing shipyard is limited (only able to dock 3 vessels at once).
- A larger space is required to build a shipyard that can accommodate more and larger vessels.
- The new shipyard will become a one-stop centre for shipbuilding and ship maintenance for all kinds of boats.

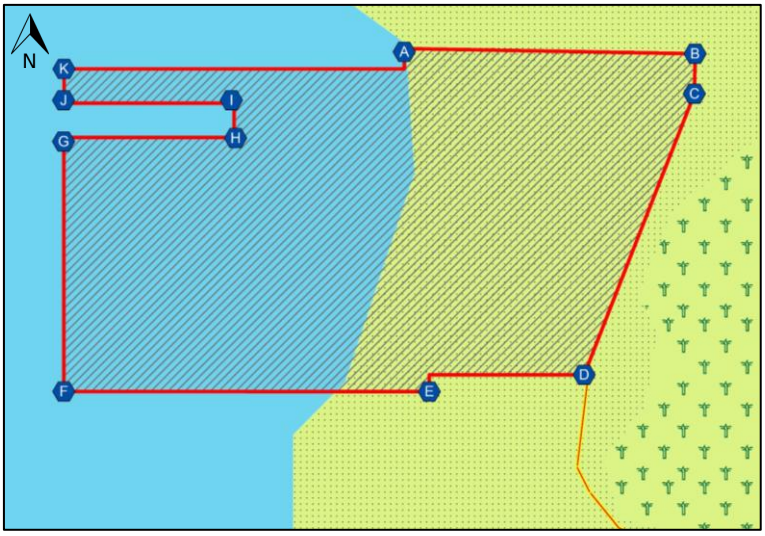
Project Location

The Project site is located at the riverbank of Sg Johor at Tanjung Buai, Mukim Johor Lama, Daerah Kota Tinggi, Johor Darul Takzim.

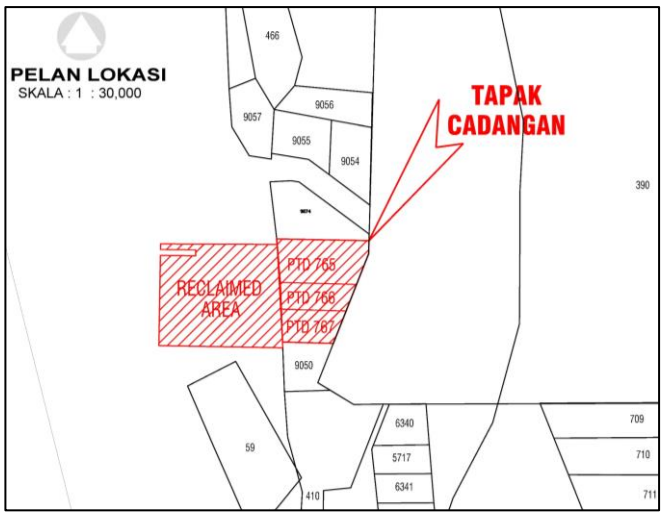
It covers an area of 6.366 hectares (15.730 acres), which includes reclamation area.

The proposed Project is located under Majlis Perbandaran Pengerang (MPP).

Boundary Coordinates



Cadastral Map



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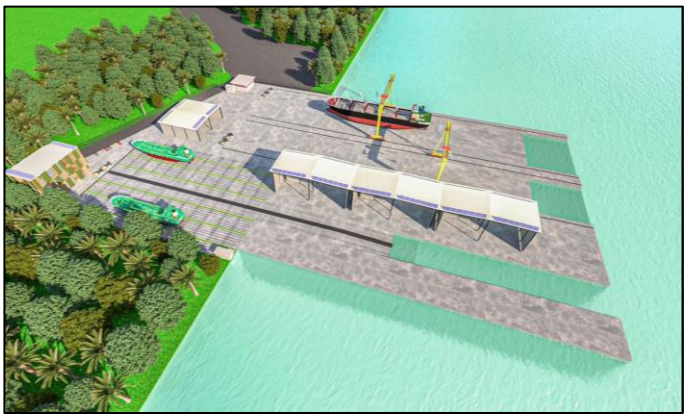
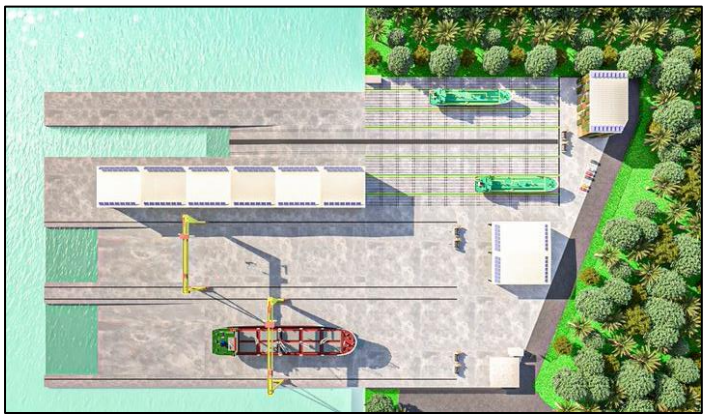
Project Concept

The shipbuilding and ship repair industry in Malaysia is growing with several shipyards established in the country. This proposed shipyard aims to serve as a multipurpose facility that can handle a wide range of shipbuilding, maintenance, and repair tasks.





Project Capacity

PTD	Dead weight tonnage (DWT) (tonnes)	Description
765	1,500 – 2,000	Tug bargers, navy ships and fishing trawlers
766	Maximum 8,000	Sand dredgers, tankers and lodging barges
767	Maximum 8,000	
Overall Capacity of the Proposed Project is 18,000 tonnes.		

Services Provided by the Shipyard

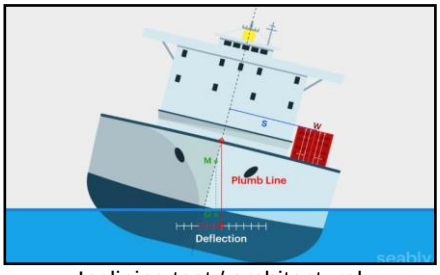
New shipbuilding

Ship repair and maintenance service by dockage

Ship repair and maintenance service by berthage / harbourage

Ship system conversion and engineering

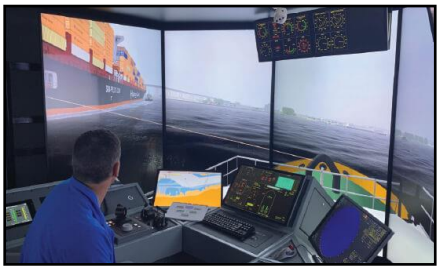
Bollard pull test



Inclining test / architectural assessment

Ship harbour test / sea trial

Launch boat, ship chandling and logistics



Pilotage service and berthing assist

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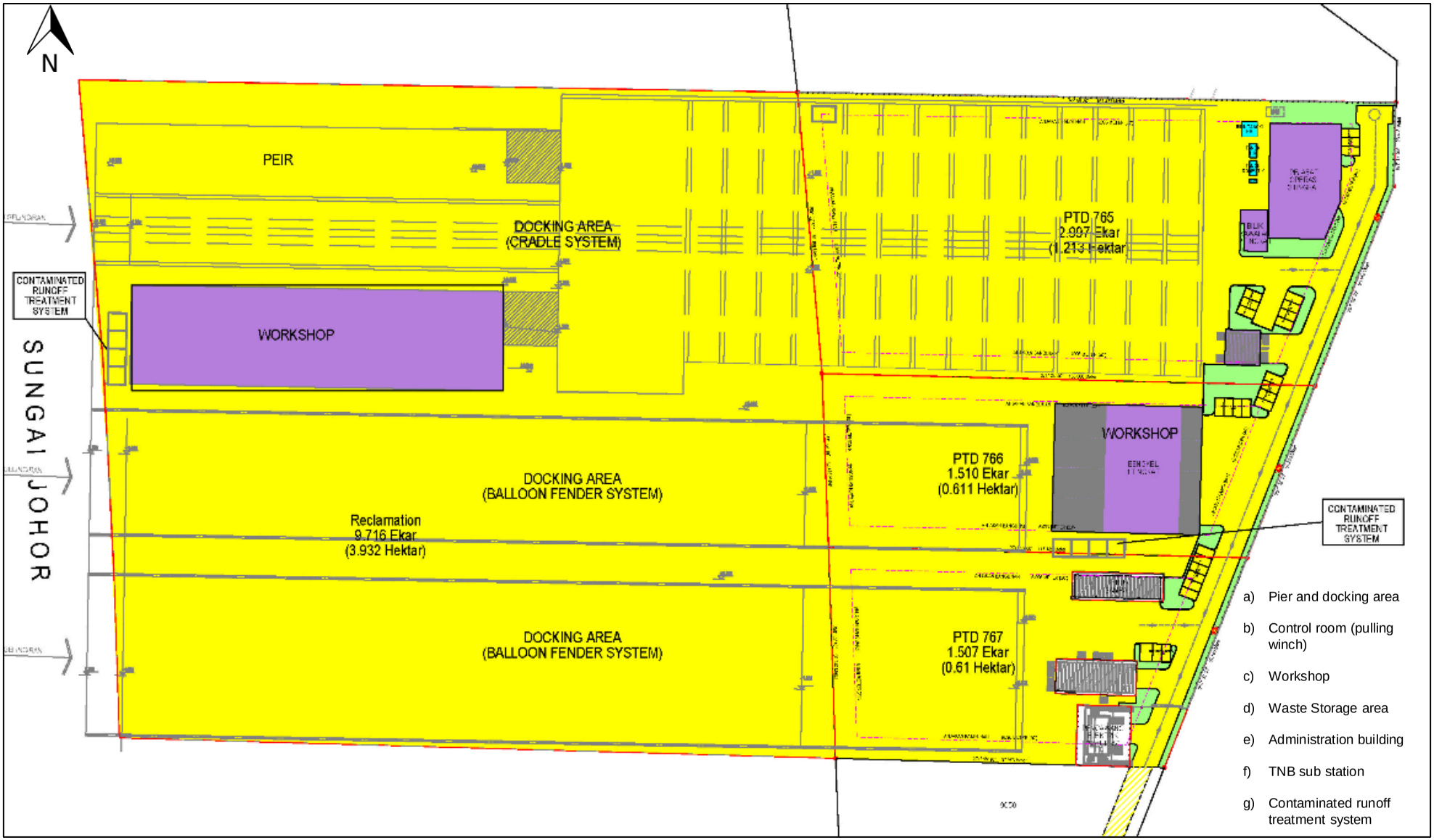
Overall Project Components



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Project Activities

Construction Stage

Survey Setting Out

Original Ground Level (OGL) survey will be checked on-site and verified against the construction drawing for any discrepancies.

Access Point

One (1) access point will be provided during construction phase. The access point will be equipped with wash trough.

Construction

Construction will be carried out in two (2) phases with a targeted completion in December 2025.

Earthwork and Reclamation

The inland area and reclamation area are 2.434 hectares (6.014 acres) and 3.932 hectares (9.716 acres) respectively. The earthworks include earth cutting and filling. Marine sand will be used to fill the mudflat area of the Project site.

Earthwork Volume

PTD No.	Area	Volume of Cut (m^3)	Volume of Fill (m^3)	Remarks
765, 766, 767	2.434 hectares (6.014 acres)	2,389.69	12,643.13	10,253.44 m^3 of marine sand is required for fill.
Reclamation area	6.367 hectares (9.716 acres)	22.52	125,682.91	125,660.39 m^3 of marine sand is required for fill.
Overall Project	6.366 hectares (15.730 acres)	2,412.21	138,326.04	135,913.83 m^3 of marine sand is required to fill at the Project site.

Operational Stage

Schedule of Operation

The proposed shipyard will be operated from 7.30 a.m. to 6.30 p.m. for 30 days a month. The working hour will depend on the river tidal when docking the vessel.

Manpower

The number of workers on-site is about 60 to 70 workers. The on-site manpower is subject to vessel size and the working schedule.

Safety & Health and

Standard Operating Procedure (SOP) for Vessel Arrival

The proposed Project site shall be equipped with fire fighting and other emergency response equipment as well as spill kits and comply fully with the requirements of the Fire and Rescue Department of Malaysia. The incoming vessels should strictly follow the proposed SOP during arrival.

Waste Management

Operation of the proposed shipyard will generate solid waste and scheduled waste. The solid waste shall be disposed of at the disposal site approved by the local authority. The scheduled waste will be disposed of at DOE approved premises.

Contaminated Runoff Treatment System

Runoff from workshops of the proposed shipyard will be inevitably contaminated by various pollutants such as waste oil and waste paint. The Project Proponent has proposed to install treatment system to treat the contaminated runoff.

Maintenance Dredging

Over time during shipyard operation, sediment, silt and debris will accumulate on the riverbed near the Project site. Maintenance dredging will be carried out at a frequency of once a month to maintain sufficient water depth at the Project site.

Abandonment / Decommissioning Stage

- In the event of project abandonment or decommissioning, the Project Proponent will notify DOE Johor. Necessary report will be submitted to relevant authorities to address the management of potential impacts during abandonment or decommissioning stage.

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Existing Environment

Topography and Land Use

- The elevation of the Project site is between 0.02 m to 6.07 m above mean sea level.
- Land use within 500 m and 5 km radius of the Project site consist of oil palm plantation, aquaculture pond, commercial and residential.

Climate and Meteorology

Based on Senai Meteorological data, the dominant wind direction is from north to south. The monthly mean rainfall amount for Senai for year 2014 – 2023 was in the range of 112.9 – 331.2 mm.

Geology and Soil

- Based on the geology map, the lithology of the Project site is clay and silt (marine).
- According to soil investigation, the soil is mostly consist of silt and clay (mudflat).

Tides, Current, Wind & Waves

- The mean sea level (MSL) is 2.07 m.
- The current flows toward north during flood tide and toward south during ebb tide.
- During southwest monsoon, wave average height is 0.23 m with wind from southwest and south. During northeast monsoon, wave average height is 0.32 m with wind from northeast.

River Water Quality

- River Water was sampled at five (5) stations.
- The Water Quality Index (WQI) fell between Class II to Class III.

Hydrology

- Surface runoff from the Project site discharges immediately into Sg Johor.
- After confluence, Sg Johor meanders about 8.0 km before discharge into Selat Johor.

Ambient Air

- Ambient air was sampled at two (2) stations.
- The ambient air quality at all sampling stations is well below the specified limits.

Noise Level

- Noise was measured at two (2) stations.
- The measured noise levels at all sampling stations are well below the specified limits.

River Ecology

- River ecology was carried at three (3) sampling stations.
- A total of thirteen (13) fish species, one (1) shrimp, one (1) crab and one (1) horseshoe crab were recorded during the study period.

Zoning in *Rancangan Tempatan Daerah (RTD)*

Based on *Draf RTD Kota Tinggi 2030, Kelas Penggunaan Tanah BPK 9.1: Teluk Sengat,* the Project site is zoned as commercial. However, industrial activities are allowed with conditions. The proposed Project is categorised under C1 (non-industrial park) activities (*Perkapalan/marin – Industri khas yang berasaskan marin/perkapalan*).

Marin Traffic

At Sg Johor near to the Project site, the marine traffic density is low, less than 50 routes/0.08km^2/year. The traffic includes tankers, fishing boats, tugs and dredgers.

Socio-economic

- A total of 50 respondents at the nearest residential (Tanjung Buai) was obtained for socio-economic survey.
- All of the respondents expressed confidence and optimism that the proposed Project would not bring negative impact towards the environment and they agreed with the proposed Project.

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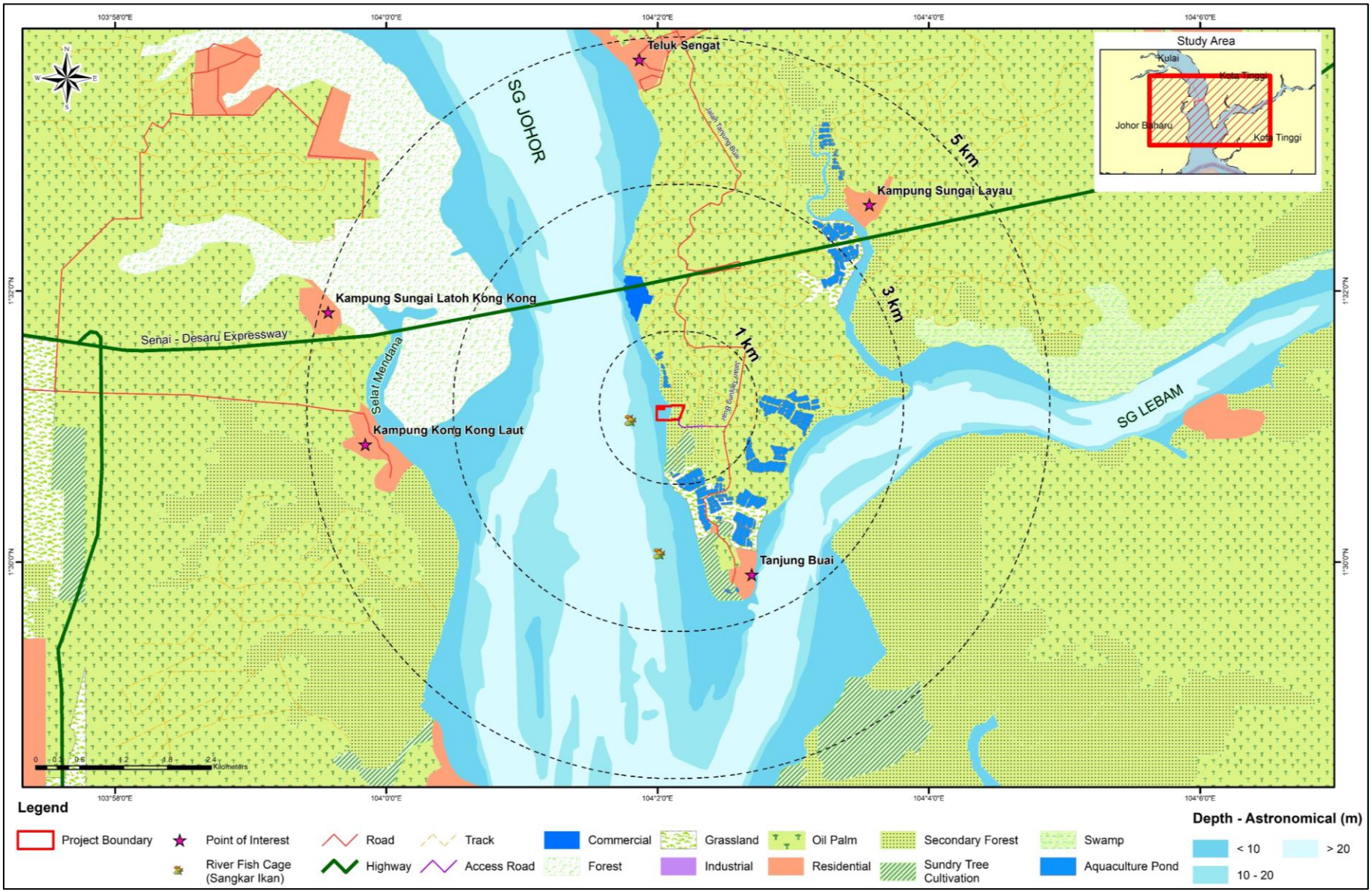
Land Use 5 km Radius



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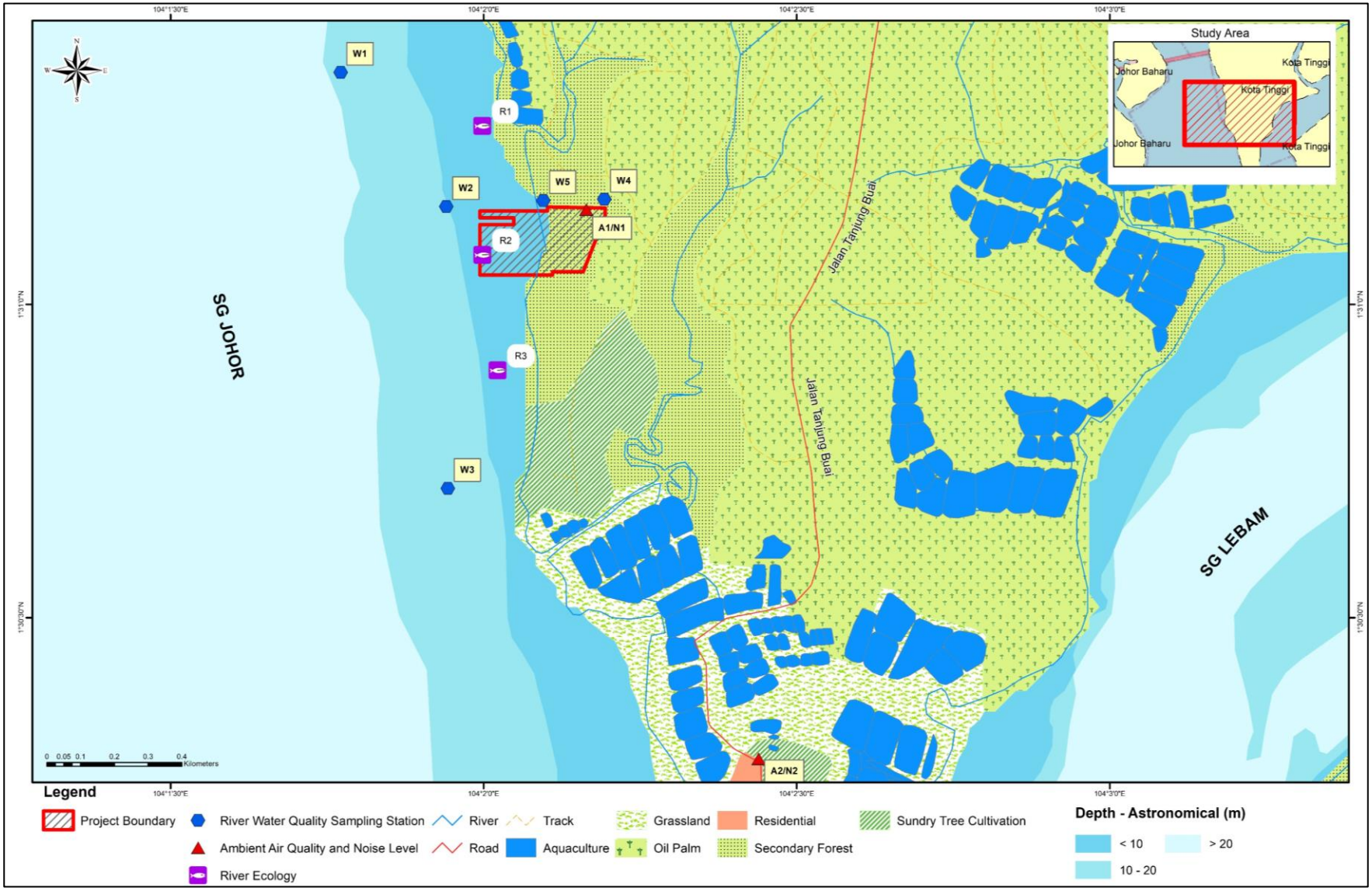
Sampling Stations of River Water Quality, Ambient Air Quality, Noise Level and River Ecology



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Baseline Sampling Results

River Water Quality

Classification of Water Quality Based on National Water Quality Standard for Malaysia

Parameter	W1 (LT)	Class	W1 (HT)	Class	W2 (LT)	Class	W2 (HT)	Class	W3 (LT)	Class	W3 (HT)	Class	W4 (LT)	Class	W4 (HT)	Class	W5 (LT)	Class	W5 (HT)	Class
DO (mg/L)	9.39	I (> 7)	9.6	I (> 7)	9.62	I (> 7)	9.55	I (> 7)	9.64	I (> 7)	8.05	I (> 7)	8.28	I (> 7)	6.79	II (5-7)	8.08	I (> 7)	9.35	I (> 7)
BOD_5 at 20°C (mg/L)	18	V (> 12)	23	V (> 12)	15	V (> 12)	33	V (> 12)	35	V (> 12)	18	V (> 12)	37	V (> 12)	23	V (> 12)	51	V (> 12)	36	V (> 12)
COD (mg/L)	64	IV (50-100)	70	IV (50-100)	47	III (25-50)	100	V (> 100)	105	V (> 100)	64	IV (50-100)	113	V (> 100)	68	IV (50-100)	152	V (> 100)	107	V (> 100)
Total Suspended Solids (mg/L)	1	I (< 25)	19	I (< 25)	1	I (< 25)	1	I (< 25)	1	I (< 25)	1	I (< 25)	12	I (< 25)	45	II (25-50)	22	I (< 25)	18	I (< 25)
Ammoniacal Nitrogen (mg/l)	0.06	I (< 0.1)	0.6	III (0.3-0.9)	0.13	II (0.1-0.3)	0.05	I (< 0.1)	0.07	I (< 0.1)	0.06	I (< 0.1)	0.1	II (0.1-0.3)	0.52	III (0.3-0.9)	0.07	I (< 0.1)	0.07	I (< 0.1)

Water Quality Index (WQI)

Parameter	W1 (LT)	W1 (HT)	W2 (LT)	W2 (HT)	W3 (LT)	W3 (HT)	W4 (LT)	W4 (HT)	W5 (LT)	W5 (HT)
Water Quality Index (WQI)	76	66	78	68	67	75	65	65	62	66
Class	III	III	II	III	III	III	III	III	III	III

Ambient Air Quality

Parameter	Unit	Concentration		*Limit
		A1	A2	
Particulate Matter (PM10)	µg/m³	83.3	69.4	100 (24 hours)
Particulate Matter (PM2.5)	µg/m³	27.8	27.8	35 (24 hours)
Carbon Monoxide (CO)	mg/m³	< 1.00	< 1.00	30 mg/m³ (1 hour) 10 mg/m³ (8 hours)
Sulphur Dioxide (SO_2)	µg/m³	< 1	< 1	80 (24 hours)
Nitrogen Dioxide (NO_2)	µg/m³	< 1	1	70 (24 hours)

**Malaysia Ambient Air Quality Standards (2020)*

Noise Level

Sampling Station	Noise Level L_{Aeq}	DOE Recommended Noise Level
Day Time		
N1	61.3	[1]75 dBA
N2	48.6	[2]65 dBA
Night Time		
N1	47.5	[1]75 dBa
N2	40.6	[2]60 dBA

[1]Guidelines for Environmental Noise Limits and Control (DOE Malaysia, 2019) – Second Schedule; Permissible Sound Level (L_{Aeq}) by Receiving Land Use for Existing Built Up Areas for Industrial Zones
*[2]Guidelines for Environmental Noise Limits and Control (DOE Malaysia, 2019) – Second Schedule; Permissible Sound Level (L_{Aeq}) by Receiving Land Use for Existing Built Up Areas; Suburban and Urban Residential, Mixed Development.**

River Ecology

- A total of thirteen (13) fish species, one (1) shrimp, one (1) crab and one (1) horseshoe crab were recorded during the study period.
- Sample of fishes, crab and horseshoe caught at the study area.

Selangat (Anodontostoma chacunda)

Semilang Karang (Plotosius lineatus)

Ketam Pasir (Portunus Pelagicus)

Tengkerong (Terapon jarbua)

Buntal (Tetraodon sp.)

Belangkas (Carcinoscorpicus Rotundicauda)

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Potential Impacts and Mitigations

Soil Erosion

IMPACT
- Soil erosion and sedimentation during construction phase,

MITIGATION
- Proper planning of earthwork and implementation of BMPs such as perimeter earth drain, sediment basin, silt fence and wash trough.

Hydraulic

IMPACT
- Minimal impacts on hydrodynamics in areas adjacent to the Project site.
- The extent of dispersed plume concentration from the Project area reaches a maximum distance of approximately 3.5 km from the north to the south of the Project site.

MITIGATION
- Reclamation activities are limited to a sand volume of 2,640 m^3 per day, with a maximum of two dredger trips daily, each carrying less than 1,320 m^3 per trip.
- Reclamation should be temporarily halted if TSS shows high reading (reading more than 25 mg/L) outside the monitoring points.
- To implement best management practices (BMPs) during sand reclamation works (contractor and dredging operator must adhere strictly to best management practices).

Hydrology

IMPACT
- The amount of surface runoff will increase and the collection time of concentration of rainwater in catchments will decrease during construction and operational phase.

MITIGATION
- Sediment basin and drain at the Project site shall be properly maintained during construction phase.
- Provision of on-site detention (OSD) pond to regulate the post development flow.

River Water

IMPACT
- Contaminated runoff from workshops of the proposed shipyard might be polluted by various pollutants such as waste oil and waste paint.
- Potential of oil spill from vessel during operation that will degrade river water quality.

MITIGATION
- Contaminated runoff treatment system is proposed at the Project site to treat the polluted runoff before discharge into Sg Johor.
- Sewage from the proposed Project site will be channeled to septic tank at the Project site.

Ambient Air

IMPACT
- The construction and earthworks activities will result in suspended particulates or airborne dust.
- The movement of vehicles on access roads and exhaust fumes could stir up dust during construction phase.

MITIGATION
- Spraying of water on the roads especially at exit and inlet points. Vehicles to pass through a wash trough prior to leaving the construction site
- Monitoring of traffic volume and observation of speed limits for heavy vehicles during construction phase.

Noise Level

IMPACT
- During construction phase, the operation of stationary and mobile equipment or machineries may contribute to the noise level.
- Machineries and equipment used for shipbuilding and repair & maintenance works such as welder, sand blaster and cutter will contribute to increased noise level.

MITIGATION
- Restricting noisy construction activities to between 0700 hours to 1900 hours only and avoid night-time activities.
- All construction vehicles must be checked for proper installation of engine silencer to reduce emitted noise level
- Provide noise emission control during operational phase.

River Ecology

IMPACT
- Land clearing will expose soil to eroding into nearby water body causing high TSS that directly influences fish biodiversity, especially during the rainy season.

MITIGATION
- Conduct Best Management Practices especially to control TSS, oil and grease pollution and sewage pollution.
- Contaminated runoff treatment system is proposed at the Project site to treat the contaminated runoff before discharge into Sg Johor.

Waste Management

IMPACT
- Activities during construction and operational phase will generate scheduled waste, solid waste and sewage.

MITIGATION
- Scheduled waste should be managed in accordance with the Environmental Quality (Scheduled Wastes) Regulations 2005.
- Solid waste shall be disposed of at the disposal site approved by the local authority.
- Septic tank will be provided at the Project site.

Socio-economic

IMPACT
- Based on social survey conducted, the proposed Project is deemed to bring positive impacts on the livelihood of people and the environment. Some of the positive impacts are providing job and business opportunities.

MITIGATION
- The operators should develop and implement an Environmental Management Plan, including strict policies compliance and enforcement. The Project Proponent / local authorities shall provide a proper channel for immediate complaints by the local residents.

Marine Traffic

IMPACT
- Movement of dredger during reclamation works might impose potential risks such as collision, oil spill, etc.
- Increase of traffic density at Sg Johor and potential risks during operational phase such as collision, oil spill, etc.

MITIGATION
- Only one (1) dredger was used for the reclamation works.
- The incoming vessels shall strictly follow the Standard Operating Procedures of Vessel Arrival during operational phase.

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Environmental Monitoring Programme

During Construction Phase

IMPACT MONITORING

River Water Quality

- Monitoring parameters of BOD, COD, TSS, oil and grease, AN and Turbidity at station W2, W3 and W5.

Ambient Air and Noise Level

- Monitoring of ambient air quality and noise level at station A1/N1 and A2/N2.

Sediment Plume

- Monitoring sediment plume at station ST1, ST2, ST3, ST4, ST5 and ST6.

PERFORMANCE MONITORING

<u>Sediment basin</u>
- Monitor silt storage zone and basin outlet.
- Daily checking and desilting for every 3 months or as needed.

<u>Temporary earth drain</u>
- Monitor drain.
- Daily checking and desilting for every 3 months or as needed.

<u>Wash trough</u>
- Monitor catch basin.
- Daily checking and desilting for every 3 months or as needed.

<u>Temporary Access road</u>
- Road should be well-paved to prevent dust generation and prevent damage to vehicles using the road.

<u>Stockpile area</u>
- Stockpile should be covered during storm.

<u>Silt fence</u>
- Monitor silt collection area.
- Daily checking

COMPLIANCE MONITORING

Scheduled Waste

- Collection and disposal
- Compliance with Environmental Quality (Scheduled Wastes) Regulations 2005 for disposal

Solid Waste

- Disposal of solid waste
- Compliance with Local authority guidelines for disposal

During Operational Phase

IMPACT MONITORING

River Water Quality

- Monitoring parameters of BOD, COD, TSS, oil and grease, AN and Turbidity at station W2, W3 and W5.

Ambient Air and Noise Level

- Monitoring of ambient air quality and noise level at station A1/N1 and A2/N2.

COMPLIANCE MONITORING

Scheduled Waste and Solid Waste

- Collection and disposal
- Compliance with Environmental Quality (Scheduled Wastes) Regulations 2005 for disposal and Compliance with Local authority guidelines for disposal

Sewage

- Compliance with Local authority guidelines for desludging and disposal

During Abandonment Phase

IMPACT MONITORING

River Water Quality

- Monitoring parameters of BOD, COD, TSS, oil and grease, AN and Turbidity at station W2, W3 and W5.

Ambient Air and Noise Level

- Monitoring of ambient air quality and noise level at station A1/N1 and A2/N2.

Sediment Plume

- Monitoring sediment plume at station ST1, ST2, ST3, ST4, ST5 and ST6.