

# FIRST SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT FOR CADANGAN PEMBANGUNAN BERCAMPUR (PERINDUSTRIAN DAN PERDAGANGAN) DI ATAS SEBAHAGIAN LOT PTD 59859 (LOT ASAL 2475), MUKIM SEDENAK, DAERAH KULAI, JOHOR DARUL TA'ZIM UNTUK SOUTHERN CATALYST SDN BHD

Project Proponent:



(Formerly known as Teon Choon Realty Company)

SOUTHERN CATALYST SDN BHD

Environmental Consultant:

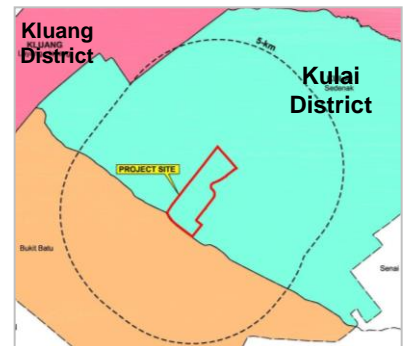
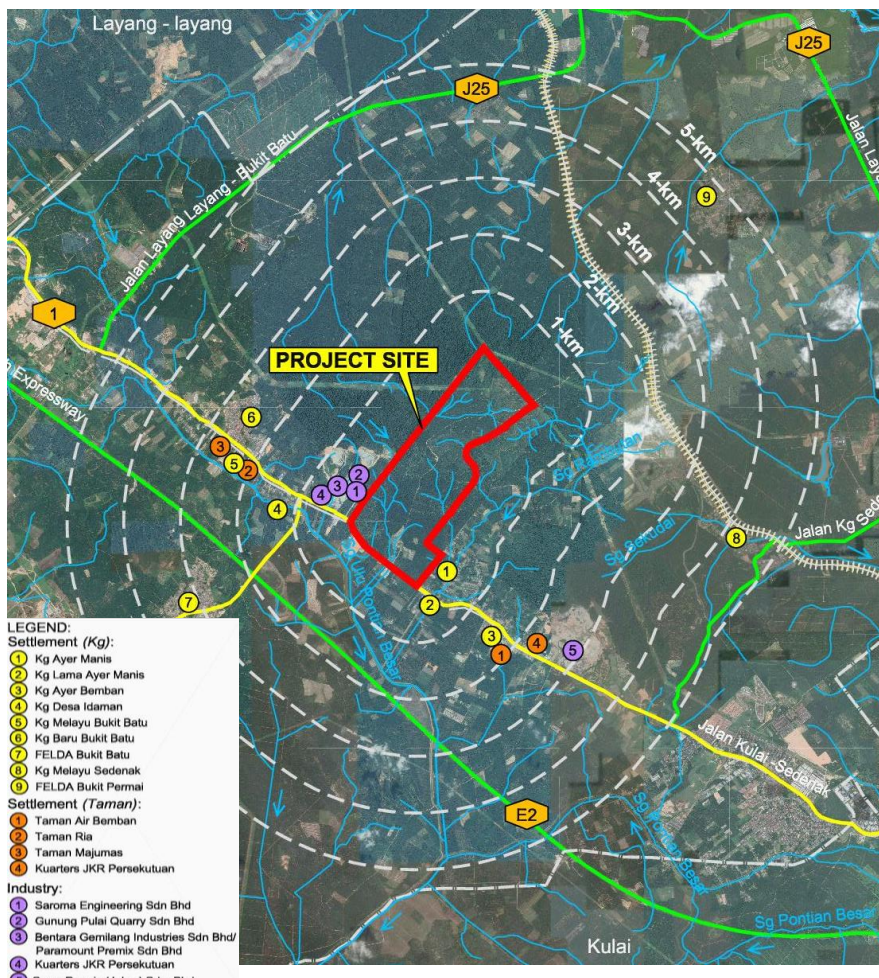
ASPEC

ASIA PACIFIC ENVIRONMENTAL CONSULTANTS SDN BHD

## EXECUTIVE SUMMARY

### Project Brief

- The Project involves the development of an industrial estate and commercial plots within Lot PTD 59859 with a total area of 1,240.27 ac (501.92 ha) located in Mukim Sedenak, Daerah Kulai, Johor.
- The industrial estate development is only for light and medium industries.
- Current landuse: The Project site is an oil palm plantation, namely, Ladang Air Manis owned by the Project Proponent and managed by the appointed operator, Johor Plantations Group Berhad.



## Project Concept




- **Planning:** Development of seven (7) industrial plots and four (4) commercial plots, along with infrastructure and utilities such as PMU, water tank and STP. These plots will be sold for future investors uptake upon completion.
- **Concept:** To prepare the platforms, infrastructure and utilities for the future investor uptake within the Project area.
- **EIA:** Any future industries to be developed on the prepared platforms will have their separate EIAs, if required.
- **Type of Industries:** Light and medium industries; proposed sectors are such as **food agro processing** (eg., modern farming, agri-tech, etc.), **logistic** (integrated supply chain and solution services), **Global Business Services** (eg., digital technologies), healthcare, tourism and others.



Source: IRDA, 2023

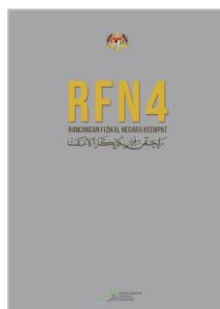
## Statutory Requirements

- The EIA is mandatory under the **First Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015**, under **Section 34A Environmental Quality Act 127 (1974)** for the following prescribed activities:

Prescribed Activity	Details
 <p><b>Activity 13:</b> <b>Development in Slope Area</b> Development or land clearing less than 50% of an area within slope greater than or equal to 25° but less than 35°.</p>	<ul style="list-style-type: none"> <li>• 2.2% of the Project site has Class III and Class IV slopes.</li> </ul>
 <p><b>Activity 14(c)i:</b> <b>Waste Treatment and Disposal</b> Sewage: Construction of sewage treatment plant with 20,000 population equivalent (PE) or more.</p>	<ul style="list-style-type: none"> <li>• The Project's Sewage Treatment Plant (STP) has a design capacity of 70,000 PE.</li> </ul>
 <p><b>Activity 17:</b> <b>Industrial Estate Development</b> Development of industrial estate covering an area of 20 hectares or more.</p>	<ul style="list-style-type: none"> <li>• Project area covers an overall area of <b>501.92 ha (1,240.27 ac)</b>, with industrial components covering <b>259.04 ha (640.09 ac)</b>.</li> </ul>

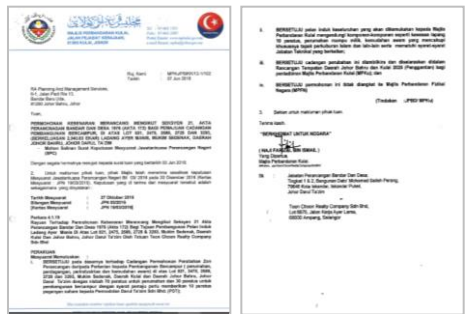
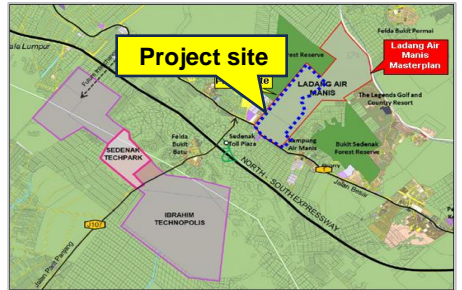
## Policy Conformance

- The Project is in accordance with the national, state and district policies and development plans:
  - Twelfth Malaysia Plan 2021 – 2025 (RMK 12)
  - National Physical Plan-4
  - Rancangan Struktur Negeri Johor 2030*
  - Rancangan Tempatan Daerah Johor Bahru dan Kulai 2025 (Pengubahan 1) [No. Warta.: JPU 40. Jil. 66 No.46 dated 17 November 2022]*

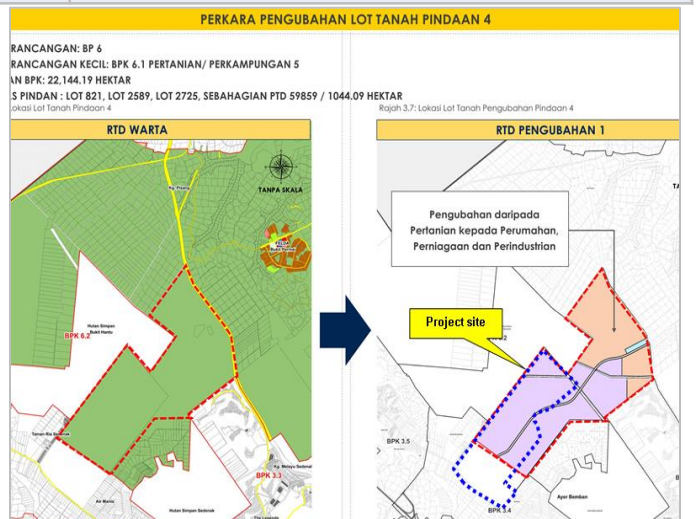
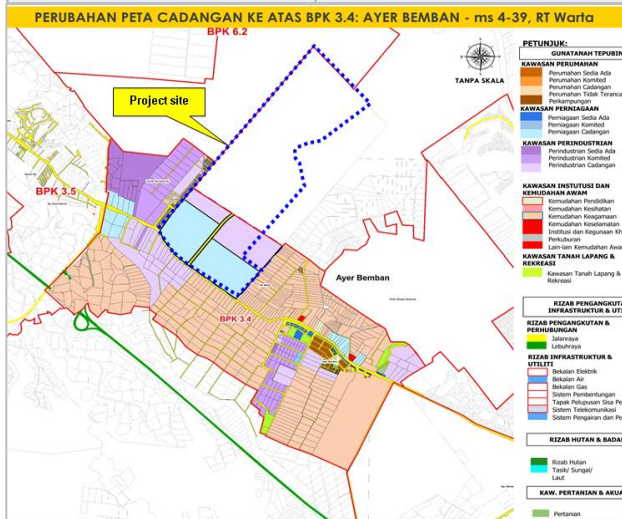


## Policy Conformance

- Under the Iskandar Malaysia Comprehensive Development Plan III (2022 – 2030), the Project site is fully designated within **Flagship F** and falls under the *Zon Antarabangsa Johor (ZAJ)*.
- The committed development of Flagship F includes the Sedenak Techpark, Ibrahim Technopolis and the Ladang Air Manis Masterplan. This Project is part of the Ladang Air Manis Masterplan where the PP intends to complement the government initiative by developing the industrial estate. As agreed in the State Planning Committee (SPC), the Masterplan development will have 60% industrial, 30% housing and 10% commercial areas.
- The Project site is located within two (2) *Blok Perancangan* (BP); **BP 3: Kelapa Sawit – Bukit Batu** and **BP6: Felda Inas – Layang-layang** and specifically located within two (2) *Blok Perancangan Kecil* (BPK); **BPK 3.4: Ayer Bemban** and **BPK 6.1: Pertanian/ Perkampungan**.
- The Project is consistent with the planned zoning as per the gazetted *Rancangan Tempatan Daerah Johor Bahru dan Kulai 2025 (Pengubahan 1)* and its allowable activities.



Blok Perancangan Kecil (BPK)	Planned Zoning	Allowable Activities
BPK 3.4: Ayer Bemban	Zoned for “Perniagaan Cadangan” and “Perindustrian Cadangan”	C1: Industri Berisiko Tinggi C3: Industri Sederhana C4: Industri Ringan C5: Industri Perusahaan Kecil & Sederhana
BPK 6.1: Pertanian/ Perkampungan	Zoned for “Perindustrian Cadangan”	C3: Industri Sederhana C4: Industri Ringan C5: Industri Perusahaan Kecil & Sederhana



## Sensitive Receptors



### Existing settlements:

- Existing worker quarters and oil palm plantation site offices within the Project site.
- Kg Ayer Manis located adjacent to the southeast boundary of the Project site; Kg Lama Ayer Manis located within the 1-km ZOS.
- Small commercial establishments located near the existing Ladang Air Manis entrance.



### Waterways:

- Unnamed tributaries of Sg Rambutan and Sg Ulu Pontian Besar flow within the Project site, eventually flowing into Sg Ulu Pontian Besar at the south; while the tributaries at the north of the Project site will flow in a northerly direction to Sg Sayong.



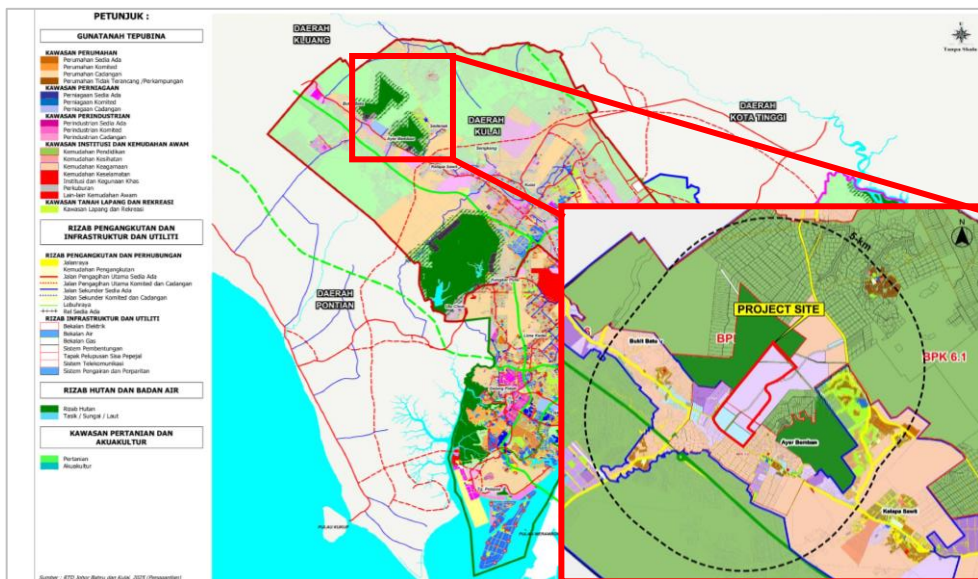
### Institutions:

- The nearest institutions are Pusat Pengajian At-Thoifury, SRTI Al-Hikmah, SK Ayer Manis and Sekolah Agama Ayer Manis.



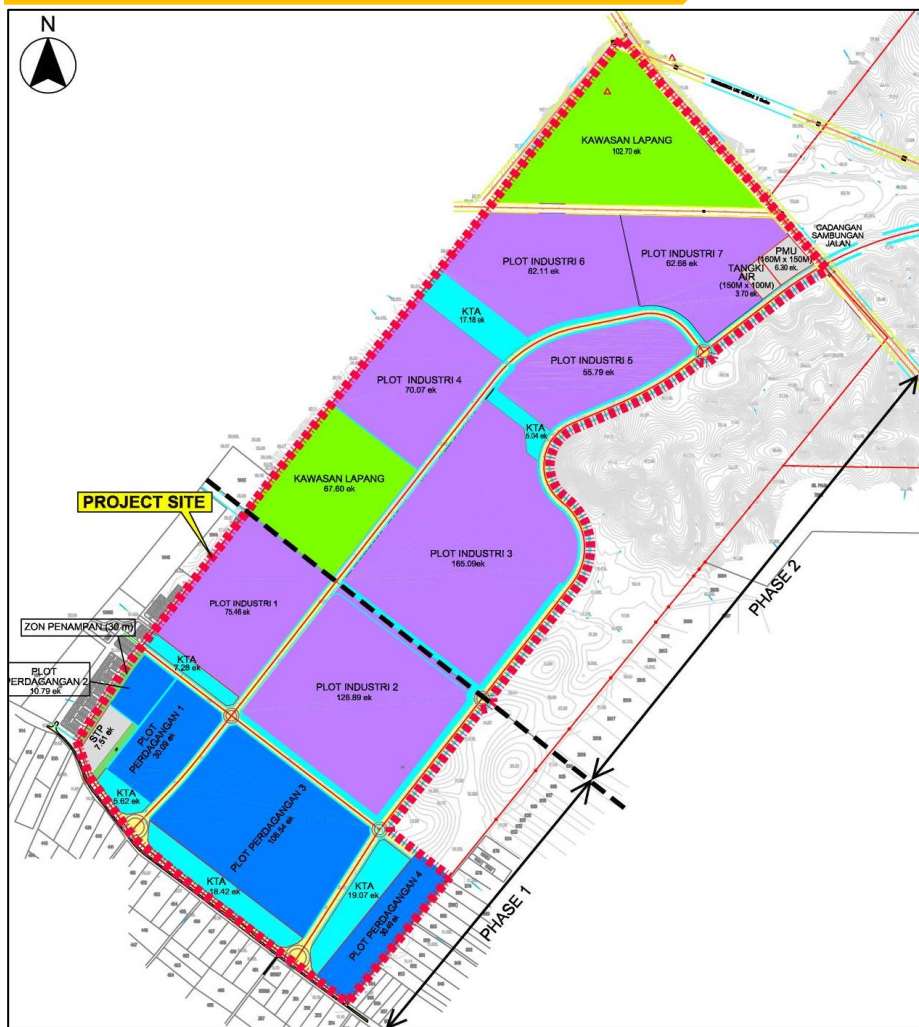
## Environmentally Sensitive Areas (ESA)

- The Project site is **not located** within any Environmentally Sensitive Areas (ESA) or *Kawasan Sensitive Alam Sekitar* (KSAS).
- Two (2) permanent forest reserves, *Hutan Simpan Kekal* (HSK) Bukit Hantu (northern and northwestern border of Project site) and HSK Sedenak (east of Project site) are located within the 5-km ZOS.
- Both forest reserves are categorised under ESA Rank 1 as per the *Rancangan Tempatan Daerah Johor Bahru dan Kulai 2025 (Penggantian)*, **where no development activities are allowed**.



## MAJOR PROJECT COMPONENT

### Project Layout Plan



#### A. PETUNJUK

GUNATANAH FASA 1				
A. PERDAGANGAN				
	Unit	Peratus	Keluasan (ek)	Peratus
PLOT PERDAGANGAN	4	-	179.91	35.08
JUMLAH KECIL	4	-	179.91	35.08

B. INDUSTRI				
	Unit	Peratus	Keluasan (ek)	Peratus
PLOT PEMBANGUNAN INDUSTRI	2	-	204.35	39.85
JUMLAH KECIL	2	-	204.35	39.85
JUMLAH KECIL (A+B)	6	-	384.26	74.93

D. INFRASTRUCTURE & UTILITIES				
	Unit	Peratus	Keluasan (ek)	Peratus
ZON PENAMPAN	-	-	5.76	1.12
KOLAM TAKUNGAN AIR	4	-	50.39	9.83
RIZAB PARIT	-	-	7.20	1.40
STP	1	-	7.51	1.46
JALAN	-	-	57.71	11.25
JUMLAH KECIL	5	-	128.57	25.07
JUMLAH FASA 1	-	-	512.83	100.00

GUNATANAH FASA 2				
A. INDUSTRI				
	Unit	Peratus	Keluasan (ek)	Peratus
PLOT INDUSTRI	5	-	435.74	59.90
JUMLAH KECIL	5	-	435.74	59.90

B. OPEN SPACE & RECREATIONAL				
	Unit	Peratus	Keluasan (ek)	Peratus
KAWASAN LAPANG	-	-	170.30	23.41
JUMLAH KECIL	-	-	170.30	23.41

C. INFRASTRUCTURE & UTILITIES				
	Unit	Peratus	Keluasan (ek)	Peratus
KOLAM TAKUNGAN AIR	2	-	23.23	3.19
RIZAB PARIT	-	-	7.58	1.04
PENCALWANG MASUK UTAMA	1	-	6.30	0.87
TANGKI AIR	1	-	3.70	0.51
RIZAB RENTIS (TNB)	-	-	20.47	2.81
JALAN	-	-	60.12	8.26
JUMLAH KECIL	4	-	121.40	16.69
JUMLAH FASA 2	-	-	727.44	100.00
JUMLAH KESELURUHAN	-	-	1,240.27	-

#### B. PENGIRAAN PENYEDIAAN KAWASAN LAPANG

	Penyediaan	
	Keluasan (ek)	Peratus
A. KAWASAN LAPANG MUTLAK		
KAWASAN LAPANG	170.30	13.73
PLOT PEMBANGUNAN - INDUSTRI (6%): 640.09 ek.	32.00	3.35
PLOT PEMBANGUNAN - PERDAGANGAN (5%): 179.91 ek.	9.00	0.73
JUMLAH KECIL	211.30	17.04
B. KAWASAN LAPANG TIMBAL BALAS (30%)		
RIZAB RENTIS (TNB) : 20.47 ek.	6.14	0.50
TANGKI AIR : 3.70 ek.	1.11	0.09
KOLAM TAKUNGAN AIR : 73.62 ek.	22.09	1.78
JUMLAH KECIL	29.34	2.37
JUMLAH	240.64	19.40

#### Total Area

- **501.92 ha (1,240.27 ac)**

#### Industrial Development

- **Seven (7) plots**, cover 51.61% or 259.04 ha (640.09 ac) of the Project site.
- **Potential industries:** Light and medium industries (e.g., agrotechnology, biotechnology, modern farming, etc.)

#### Commercial Development

- **Four (4) plots;** covers 14.51% or 72.81 ha (179.91 ac) of the Project site.
- Commercial plots aims to attract new business and investments.

#### Infrastructure and Utilities

- 20.15% of the Project site (101.15 ha) is allocated for the construction of infrastructure and utilities as well as the demarcation of reserve areas.
- **Electricity Demand:** Total of 80,629.77 kV; **one (1) PMU to be constructed.**
- **Water Demand:** ~ 5,373,741 GPD, water supply tapped from Semangar WTP.
- **Drainage:** Main drain designed for 100-year ARI for major drainage system.
- **Sewage:** ~ 52,000 PE; **one (1) STP with design capacity of 70,000 PE** shall be constructed at the southwest corner of the Project site.
- **Road:** Internal road network system and roundabout to facilitate traffic movement.

#### Open Spaces

- 13.73% of the Project site (68.92 ha) is designated for open spaces.

## Project Activities

### Pre-Construction Phase



- Project planning.
- Preliminary surveys.
- Conceptual design and engineering design.
- Data gathering and field works surveys.

### Construction Phase



- Workforce deployment and site preparation.
- Land clearing and earthwork.
- Platforming, construction of infrastructure and utilities.
- Landscaping works.

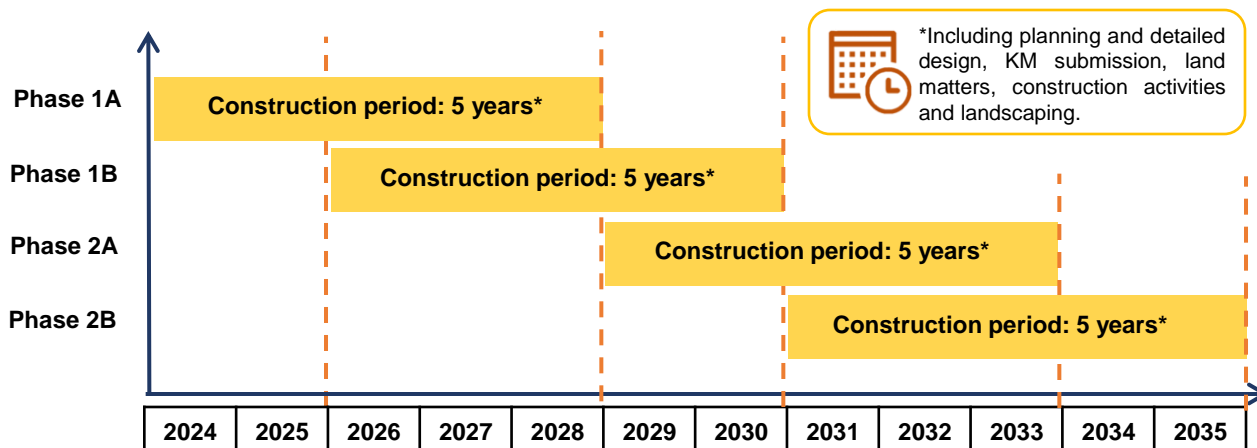
### Operational Phase



- Operation and maintenance of infrastructure, utilities and facilities.
- Assist future industries when they come on-stream.

## Proposed Project Implementation Schedule

- Timeline: The construction shall be developed in 2 phases (4 sub-phases), starting from 2025 to 2035.



## Statement of Need



### Supporting national, state policies and development plans.

- Project is aligned with the future action plans and goals of the Johor State and country.



### Increasing the availability of industrial land bank for development.

- Ensures that industries are readily provided with the necessary facilities, infrastructure and utilities in authority approved areas.



### Generate economic benefits to the country and state.

- The Project will spur the economic growth of the Johor Southern Conurbation.



### Job creation and employment opportunities.

- Industries and commercial development will provide additional jobs, increase demand of other properties, business and services.

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

## TOPOGRAPHY & SLOPE

### Existing Environment

#### Topography

- Characterised by undulating hilly terrain with moderate to steep side slopes and gentle low-lying areas.
- Elevation: 8 – 61 m above MSL.
- Highest elevation located at the northern corner of the Project site.
- Several areas considered as disturbed terrain with very steep cut gradient up to 45°.

#### Slope

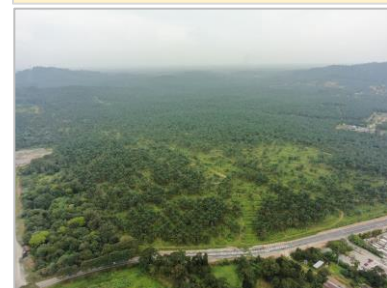
- Gentle slope to moderate steep terrain.

Classification/ Slope Gradient	Percentage %
Class I (0 – 5°)	46.83
Class I (>5 - 15°)	42.52
Class II (> 15 – 25°)	8.45
<b>Class III (&gt; 25 – &lt; 35°)</b>	<b>2.00</b>
<b>Class IV (≥ 35°)</b>	<b>0.20</b>

Source: Geolab (M) Sdn Bhd, 2024.

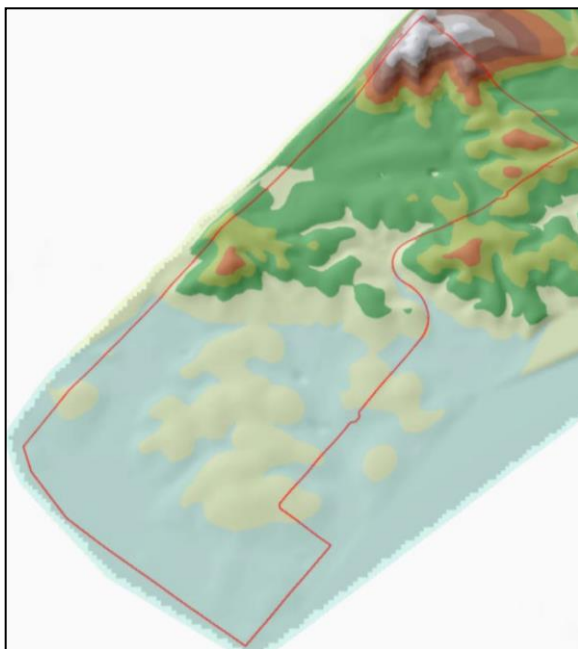


View of highest elevation  
(northern side)

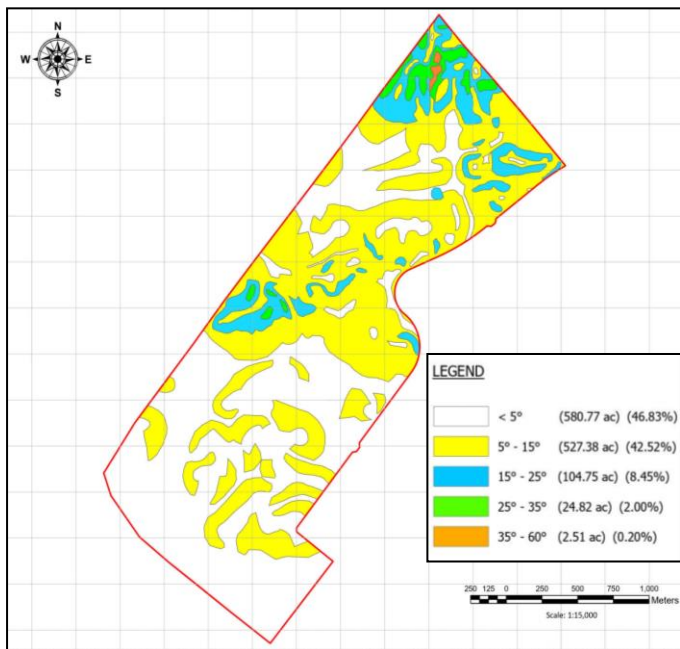


View of southwestern side  
(gentle to flat terrain)

Source: Geolab (M) Sdn Bhd, 2024.



Topography Map



Slope Gradient Map

Source: Geological Terrain Mapping Report, Geolab (M) Sdn Bhd, 2024.

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

## EROSION AND SEDIMENTATION

### Potential Impacts

#### Pre-construction Phase

- Existing soil erosion potential falls within low to very high erosion risk categories.

#### Construction Phase

- Soil erosion and sedimentation:
  - During land clearing and earthwork.
  - At fill slopes and high-risks during heavy rains.

#### Operational Phase

- Low soil erosion rates as the Project site will be turfed, paved or landscaped.

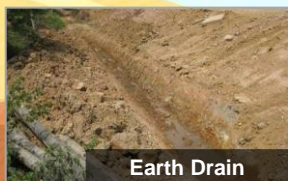
Scenario		Average Soil Loss (t/ha/yr)	Soil Erosion Risk Class	Sediment Yield (t/storm)
Pre-construction Phase		82.89	Moderately High	1,561.56
Construction Phase	Without Mitigation Measures	769.95	Very high	41,392.48
	With Mitigation Measures	158.57	Very high	6,746.95
Operational Phase		2.30	Low	149.95

### Mitigation Measures

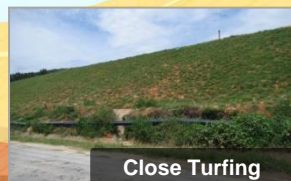
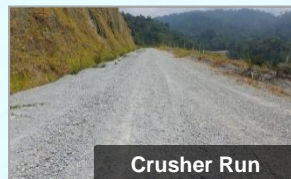
#### Construction Phase:

- Implementation of LD-P2M2 and BMPs for:

#### (i) Runoff Management



#### (ii) Erosion Control



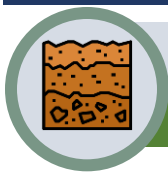
#### (iii) Sediment Control



#### Operational Phase

- No additional P2M2 needed as most areas would be turfed, paved or landscaped.
- Proper implementation and maintenance of turfing and slope stabilisation measures.
- Proper maintenance of premises by industrial operators.

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES



## GEOLOGY, GEOMORPHOLOGY AND SOILS

### Existing Environment

#### Project site:

#### Site Geology

- Located within area of undifferentiated acid intrusives.
- **To the west and south of Project site:** Triassic-age rocks are present including shales, mudstone, siltstones, phyllites, slates and sandstones.
- Clayey to sand alluvial deposits found in narrow to broad, flat-bottomed stream valleys.

#### Sub surface Geology

- **Topsoil:** Mainly consist of clay, sandy silt, sandy clay and clayey silt.

#### Geomorphology

- **Elevation:** 8 m – 61 m above MSL.

#### Soils

- Predominantly located within the Renggam-Jerangau Soil Association.
- **South end of Project site:** Located within the Local Alluvium Association.

#### Boreholes

- 13 Boreholes within Project site: Moderately to highly fractured, slightly to moderately weathered granite which can be found at some 2.6 m to 36.0 m below existing ground level.

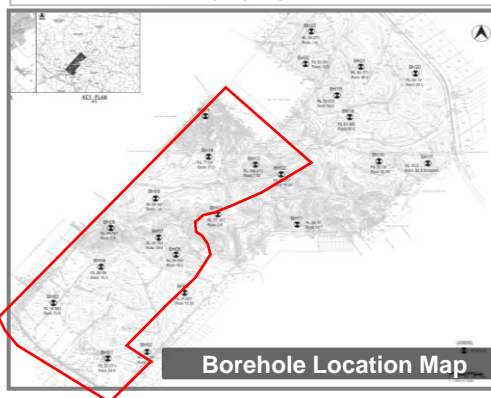
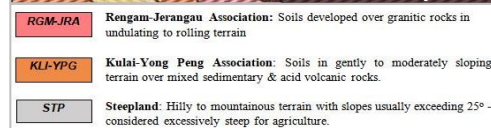
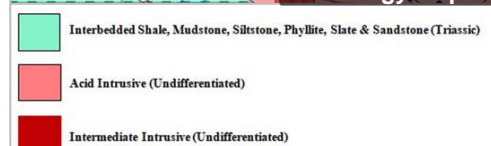
### Potential Impacts

#### Construction Phase

- Soil erosion from clearing of surface vegetation causing deterioration in water quality.
- Stability of embankments and fill slopes due to soil erosion and impeded surface drainage.
- Stability and erosion of cut slopes.
- Localised ponding.

#### Operational Phase

- Minimal soil erosion, probability failures at slope cuts and instability of slopes.
- Potential reduction in infiltration of surface water after establishment of a permanent vegetative cover.
- No significant adverse impact.



### Mitigation Measures

#### Construction Phase

- Minimise removal of vegetation cover.
- Implementation of P2M2s for silt, sedimentation and erosion control.
- Ensure stability at slope cuts with slope protection.

#### Operational Phase

- Regular maintenance of drainage systems.
- Landscaping over exposed surface areas and slopes to reduce erosion.

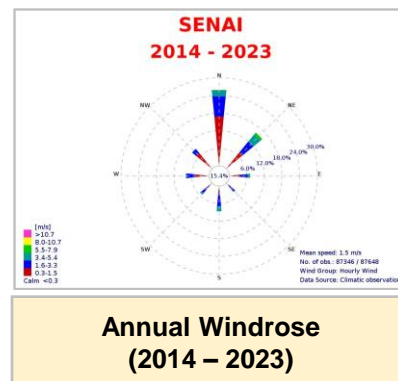
# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES



## CLIMATE

### Existing Environment

- **Rainfall:** Highest: 3,017.2 mm (2023); Lowest: 1,926.6 mm (2016).
- **Raindays:** Highest: 221 days (2017); Lowest: 161 days (2019).
- **Temperature:** Mean annual 24-hr: Fluctuated by 0.7 °C from 26.9°C in 2014 and 2018 to 27.6°C (2016); Mean monthly 24-hr: Fluctuated by 1.2°C from 26.5°C (January) to 27.7°C (May).
- **Relative Humidity:** Mean monthly max: 90.5% (February) to 94.4% (December); Mean monthly min: 74.6% (February) to 80.1% (November).
- **Surface Wind:** Mostly from the north (25.9%), northeast (16%) and northwest (8.9%).
- **Cloud Cover:** Fairly constant ranging between 6 – 7 oktas (2014 – 2023).



## WASTE MANAGEMENT

### Existing Environment

#### Existing Waste Management:

**Project site:** Collected and managed by SWM Environment Sdn Bhd.

#### Nearest Authority-approved Landfill:

- Seelong Sanitary Landfill located ~ 27.7 km while the road distance is ~ 40.5 km via Jalan Besar/ Jalan Kulai – Sedenak (Route 1).
- Current operator: SWM Environment Sdn Bhd.



## Potential Impacts

### Construction Phase

- Types of wastes: Biomass; spoils/ unsuitable earth materials; C&D wastes; scheduled wastes; municipal solid wastes.
- Water pollutants due to improper disposal of wastes and surface runoff.
- Earth stockpiles of silt and sediments.
- Scheduled wastes pollute land and water; toxic and hazardous to humans and wildlife.

### Operational Phase

- Types of wastes: industrial wastes, municipal solid wastes, sewage, effluent, scheduled wastes, green/ landscaping wastes.

## Mitigation Measures

### Construction Phase

- All scheduled wastes shall be collected, stored, labelled and managed properly.
- Temporary/ mobile toilets, complying with the MOH or SPAN specifications provided.
- Regular housekeeping.
- Designated stockpile areas for biomass, earth disposal.

### Operational Phase

- Proper management of solid waste for final disposal at the authorised sanitary landfill.
- All scheduled wastes shall be collected, stored, labelled and managed properly.

## EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES



### LAND USE

#### Existing Environment

##### Within 5-km ZOS:

###### Settlements:

- Kg Ayer Manis located adjacent to the southeast and northeast boundary.
- Kg Lama Ayer Manis within 1-km of the Project site.

###### Institutions:

- Pusat Pengajian At-Thoifury located adjacent to the northeast boundary.

###### Aquaculture

- Nanyang Fish Farm Sdn Bhd and Perkebunan Ikan Chang operating within the ZOS.

###### Industries

- Medium to heavy scale industries focusing on manufacturing and construction manufacturing activities within 1-km ZOS.
- Two active quarry sites located ~ 300 m southwest of the Project site.

###### Commercial

- Small establishment located at the existing entrance of Ladang Air Manis.
- Majority located at Kg Bukit Batu.

##### ESA:

Two (2) forest reserves; HSK Bukit Hantu and HSK Sedenak.

- HSK Bukit Hantu borders the north and northwestern border of the Project site.
- Both HSKs are ranked ESA Rank 1.



Nanyang Fish Farm Sdn Bhd



Kg Ayer Manis



Quarry and Premix Industries



Woodland Horticulture Trading Sdn Bhd



Kg Bukit Batu Commercial Area



SK Ayer Manis

### Potential Impacts

##### Construction Phase

- Nearby residents (i.e., Kg Ayer Manis) may experience environmental related impacts (air, noise, etc.)
- Traffic congestion along Jalan Kulai – Sedenak.
- Changes of topography and visual landscape due to land clearing and earthwork activities.

##### Operational Phase

- No landuse impacts anticipated.

### Mitigation Measures

##### Construction Phase

- To reduce any disruption to surrounding settlements, infrastructures and utilities to a minimum.

##### Operational Phase

- No mitigation measures required.

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

## HYDROLOGY REGIME & DRAINAGE

### Existing Environment

#### Rainfall, Surface Runoff and Water-balance:

- Average annual rainfall: 2,250 – 2,500 mm
- Annual potential evapotranspiration: 1,500 – 1,750 mm
- Potential runoff: ~ 750 mm

#### Hydrogeology

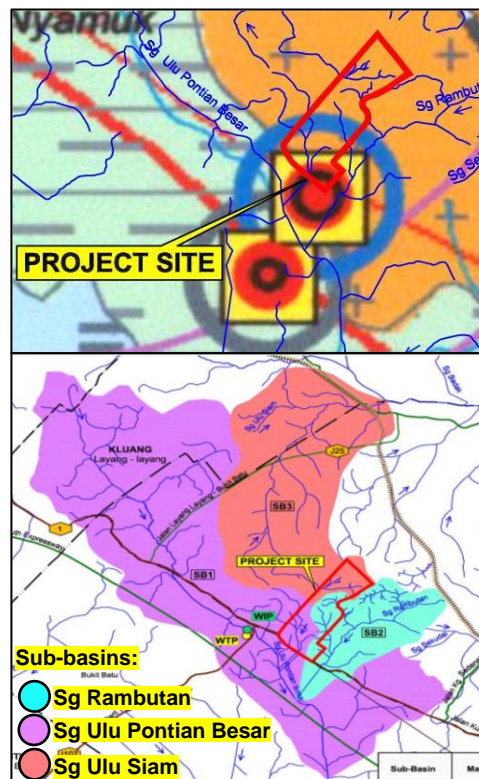
- Low aquifer potential region, with low availability of groundwater source.
- Two (2) inactive wells located within a high aquifer potential region (TDS: <1,500 mg/L).
- Subsoil: Topsoil consists of clay, clayey silt, sandy silt and sandy clay.

#### River Basin

- Located within three (3) river sub-basins; Sg Rambutan Basin, Sg Ulu Pontian Besar Basin and Sg Ulu Siam Basin.

#### Stream Flow Measurement

- Flow velocity ranged from low to average under sunny conditions.



## Potential Impacts

#### Construction Phase

- Increase silted surface runoff entering drainages and river streams/tributaries.
- River blockage and reduction of river carrying capacity.
- Localised flooding within the Project site and/ or downstream from obstruction of flows.
- Decrease evapotranspiration rate due to land clearing.

#### Operational Phase

- Increase in peak discharge is expected due to the increased impervious covers.
- Localised flooding at low-lying areas if drainage system is not properly maintained.

## Mitigation Measures

#### Construction Phase

- Installation of earth drains, sediment basin and fences in accordance with MSMA-2 requirements.
- Drainage network to properly contain and channel surface runoff into silt trap.
- Regular maintenance and inspection of drainage system and sediment basins.

#### Operational Phase

- Adequate structural provisions for proper drainage systems and detention ponds.
- Frequent desilting, regular inspection and maintenance of drainage system and detention ponds to maximise water detention capacity.
- Landscaping to reduce erosion and promote stormwater infiltration.



Temporary Earth Drain



Silt Trap

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES



## RIVER WATER QUALITY

### Existing Environment

#### Baseline sampling (26 – 28 November 2024):

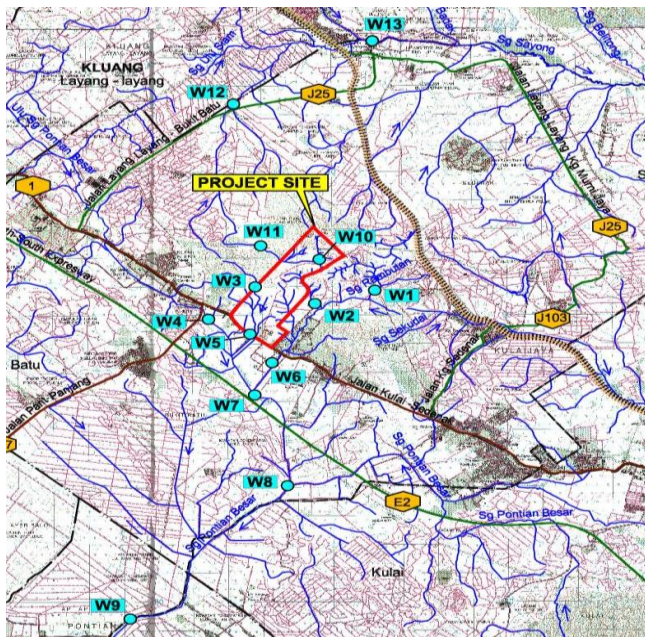
- 13 sampling points (W1 – W13) at tributaries Sg Rambutan, Sg Ulu Pontian Besar, Sg Pontian Besar and Sg Sayong

#### River Water Quality:

- Results compared against NWQS Class IIA/ IIB. All 11 river water samples were within Class II, 'Clean' and status of the NWQS except W4 and W9 (Slightly Polluted).

#### Pollution Sources:

- Agriculture, sewage and industrial discharges from the nearby agricultural lands, residential and industrial area, high Fe may be due to existing natural soil types, Lateritic soils.



### Potential Impacts

#### Construction Phase

- Increase silt and sediment input into rivers/ streams due to surface runoffs may deteriorate water quality.
- Increased turbidity due to suspended solids would affect aquatic life.
- QUAL2K simulation indicated TSS level could increase from Class II to Class V if without mitigation measures. With mitigation measures, minimal impacts downstream .
- Oil spills and leaks from vehicles and machineries.

#### Operational Phase

- Industrial and sewage discharge.
- Disposal of municipal solid wastes and scheduled wastes.

### Mitigation Measures

#### Construction Phase

- Adequate erosion and sediment control.
- Construction materials and stockpile management.
- Fuel and chemical management.
- Waste management (C&D waste, domestic and scheduled waste).
- Regular water quality monitoring.

#### Operational Phase

- Proper housekeeping, maintenance and monitoring of P2M2s.

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

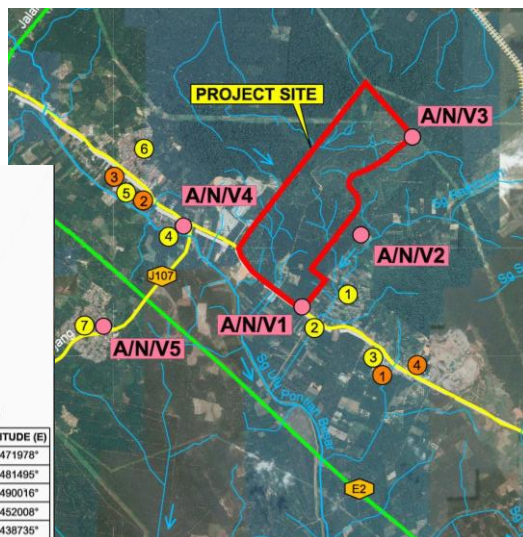


## AIR QUALITY

### Existing Environment

#### Baseline sampling (26 – 29 November 2024):

- Five (5) sampling location (A1 – 5) were measured during day time and night time.
- **Parameters:** PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, CO
- All parameters **complied with the limits of MAAQS Standard 2020.**



LEGEND:

Settlement (Kg):

- 1 Kg Ayer Manis
- 2 Kg Lama Ayer Manis
- 3 Kg Ayer Bemban
- 4 Kg Desa Idaman
- 5 Kg Melayu Bukit Batu
- 6 Kg Baru Bukit Batu
- 7 FELDA Bukit Batu
- 8 Kg Melayu Sedenak
- 9 FELDA Bukit Permai

Settlement (Taman):

- 1 Taman Air Bemban
- 2 Taman Ria
- 3 Taman Majumas
- 4 Kwarters JKR Persekutuan

POINT	LATITUDE (N)	LONGITUDE (E)
A/N/V1	1.707864°	103.471978°
A/N/V2	1.719984°	103.481495°
A/N/V3	1.736353°	103.490016°
A/N/V4	1.721448°	103.452008°
A/N/V5	1.704677°	103.438735°

### Potential Impacts

#### Construction Phase

##### General impacts:

- Dust dispersion, vehicular and machinery emission, malodour but limited within the Project site.
- Potential health issues towards workers exposed to small dust particles.

##### Air Dispersion Modelling:

- Predict 24-hr and annual Maximum Average Incremental Concentrations (MAICs) for PM<sub>10</sub> and PM<sub>2.5</sub> using AERMOD (3 Scenarios: No mitigation, 35% and 90% mitigation)

##### Results:

- 24-hr GLC: PM<sub>10</sub> Under 90% mitigation through revegetation, all ASRs were below the MAAQS 2020 prescribed limit of 100 µg/m<sup>3</sup> except for ASR2: Near Pusat Pengajian At-Thoifury (Phase 2) and ASR3: Northeastern of Project Boundary (Phase 2). PM<sub>2.5</sub> at all ASRs were all below 35 µg/m<sup>3</sup>.

#### Operational Phase

- Industrial emission, vehicular and machinery emission
- **Modelling simulation:** Predicts Maximum MAICs of air for PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub> and CO.
- Highest MAIC: Located at ASR2 (Near Pusat Pengajian At-Thoifury) due to proximity of plots and wind patterns.

### Mitigation Measures

#### Construction Phase

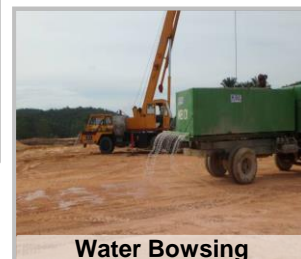
- Adequate dust control through water bowing, wash trough for wheels, temporary hoarding, impose speed limit within the construction site, adherence to applicable guidelines.

#### Operational Phase

- To abide with Environmental Quality (Clean Air) Regulations 2014 (CAR 2014); the plant operation shall be guided by BAT Guidance Document issued by DOE Malaysia.
- Ensure sufficient buffer is provided between industrial plots and air sensitive receptors.
- Landscaping and control of odour.



Vegetative Buffer



Water Bowing

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES



## NOISE AND VIBRATION

### Existing Environment



#### Baseline sampling (26 – 29 November 2024):

- Five (5) sampling location (N/V 1 – 5) were measured during day and night time

**Parameters:**  $L_{Aeq}$ ,  $L_{10}$ ,  $L_{90}$ ,  $L_{max}$

**Noise & Vibration sources:** Traffic and vehicle movement and residential activities (noise).

#### Results:

**Noise levels** (day and night) were within the permissible limits of the *Second Schedule - Recommended Permissible Sound Level ( $L_{Aeq}$ ) by Receiving Landuse for Existing Built-up Areas*.

**Vibration levels** (day and night) were within the permissible limits of the *Third Schedule: Recommended Vibration Limits for Human Response and Annoyance from Intermittent Vibrations*.

## Potential Impacts

### Construction Phase

#### General impacts:

- Increase ambient noise from vehicle movement and construction machinery.
- Noise impacts towards construction workers due to exposure to loud noise.

#### Environmental Noise Model:

- To predict sound pressure levels using ISO 9613-2: Acoustic – Attenuation of sound during propagation outdoors – Part 2: General Method of Calculation (3 Scenarios: Construction of Phase 1; Phase 2; Phase 1 and Phase 2)

#### Results:

- $L_{max}$  levels at all identified off-site NSRs are generally within recommended limits of the Sixth Schedule under the *Guidelines for Environmental Noise Limits and Control, 3<sup>rd</sup> Edition 2019*.

### Operational Phase

#### General impacts:

- Increase ambient noise from vehicle movement, operational industrial activities and manufacturing processes.

#### Environmental Noise Model:

- To predict sound pressure levels using CadnaA (Computer Aided Noise Abatement) (Scenario: Worst-case scenario with buildings considered during daytime and night-time).

#### Results:

- Predicted cumulative  $L_{Aeq}$  levels at the identified NSRs are generally below the recommended limits for the daytime and night-time period). anticipated community response to the cumulative noise level is “None” to “Little”

## Mitigation Measures

### Construction Phase

- Regular maintenance of on-site machineries and vehicles.
- All workers to wear appropriate PPE.
- Limit working hours for workers/operators as per DOSH guidelines during daytime only; very minimal work during night time and public holidays.
- Address public complaints registered by the public.
- Erect sufficient hoarding surrounding the Project site.
- Use acoustic cover for noisy machineries, if deemed necessary.

### Operational Phase

- Regular monitoring of noise levels.
- Industries to adhere to DOSH guidelines and DOE guidelines on noise limits.



Temporary Noise Barriers



Movable Barriers

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

## BIOLOGICAL RESOURCES

### Existing Environment

#### Survey Methodology

- Visual Encounter Survey (VES); direct wildlife observation.
- Wildlife camera trapping.
- Footprint measurement.
- Literature review.

#### Flora Assessment:

- **Species diversity:** 44 species from 27 families.
- **Project site and 5-km ZOS:** Mainly palm oil trees, undergrowth and secondary vegetation, bushes and shrubs.
- **Invasive species:** Black Wattle Tree (*Acacia Mangium*) found within the surrounding environment.
- No Rare, Threaten, Endangered species recorded.

#### Fauna Assessment:

##### Mammals:

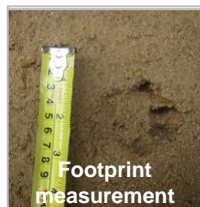
- **Species diversity:** 8 species from 6 families.
- **IUCN Redlist:** 2 species listed under “Endangered” conservation status.
- **WCA 2010:** 4 species listed under “Protected” conservation status.

##### Herpetofauna

- **Species diversity:** 12 species from 10 families.
- **WCA 2010:** One (1) species (*Veranus salvator*) listed under “Protected” conservation status.

##### Avian

- **Species diversity:** 20 species from 16 families.
- **IUCN Redlist:** One (1) “Vulnerable” species (*Acridotheres javanicus*).
- **WCA 2010:** 10 “Totally Protected” species.



### Potential Impacts

#### Construction Phase

- Loss of existing vegetation and natural regeneration due to Project activities.
- Reduction in soil quality.
- Habitat disruption for fauna due to land clearing.
- Increase of Human-Wildlife Conflict (HWC) and roadkill incidents.
- Reduction in species diversity.

#### Operational Phase

- Water pollution due to sewage and effluent discharge affecting the survival of aquatic life
- Human-wildlife conflict (HWC)

### Mitigation Measures

#### Construction Phase

- Proper removal of vegetation, biomass to minimise damage during land clearing.
- Replant or reuse topsoil and vegetation to preserve soil quality.
- Relocation or rescuing effort of endangered or protected species.
- Control of disease vector through proper waste management.

#### Operational Phase

- Water pollution control
- Erect proper fencing surrounding the Project site.
- Conduct landscaping to increase vegetation.

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

## SOCIO-ECONOMIC ENVIRONMENT

### Existing Environment



#### Social Survey with Local Community

- **Sampling frame:** 335 respondents.



Community survey:  
291 samples



Business operators  
survey: 44 samples

- **Awareness of respondents:** 91.9% not aware of the Project.
- **Perception:** 89.6% in favour of the Project.

#### Focus Group Discussion

- FGD was conducted on 27 November 2024 with local community leaders (MPKu/ JPKK/ Ketua Kampung/ Penghulu).
- To gauge their issues of concern, views, aspirations and suggestions.

#### Issues raised:

- Impacts towards surrounding social environment and community well-being due to increase of foreign workers.
- Traffic accidents due to speeding vehicles and lorries parked on the roadside.
- Road damages due to frequent heavy vehicles.
- Flood risk to surrounding villages due to land clearing.
- Illegal waste dumping during construction and operational phases.



## Potential Impacts

### **Construction Phase**

#### Adverse impacts:

- Environmental (water, noise, air) pollution.
- Traffic movement and nuisances caused by heavy vehicles (dust, noise, dirt).
- Road damages and safety issues towards locals.
- Security issues due to influx of workers.

#### Positive impacts:

- Employment and business opportunities.

### **Operational Phase**

#### Adverse impacts:

- Potential illegal dumping of industrial waste.
- Increase in road traffic volume.

#### Positive impacts:

- Increase in business employment.
- Economic growth and increase in land property value.

## Mitigation Measures

### **Construction Phase**

- Construction vehicles to operate during approved working hours and adhere to speed limits.
- Ensure all sediment basins and temporary drains are constructed prior to land clearing to prevent flooding events.
- Provide adequate bins for proper waste disposal prior to collection.
- PP to ensure an Emergency Response Plan is available.
- Scheduled monitoring to prevent environmental impacts

### **Operational Phase**

- Address public complaints promptly.
- Provide job opportunities to locals.
- Proper waste management within industrial and commercial premises

# EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES



## TRAFFIC

### Existing Environment

#### Connectivity

- The Project site is connected and accessible through Jalan Kulai – Sedenak.
- The main road network is connected to the North-South Expressway (E2) via Jalan Parit Panjang (J107).

#### Level of Service (LOS)

- **Main road users during peak hours:** Cars, taxis and MPVs
- **Existing roads:** LOS A to LOS D during morning and evening peak hours.
- **Existing junction:** LOS D and LOS C at Junction J1 during morning and evening peak hours, respectively.



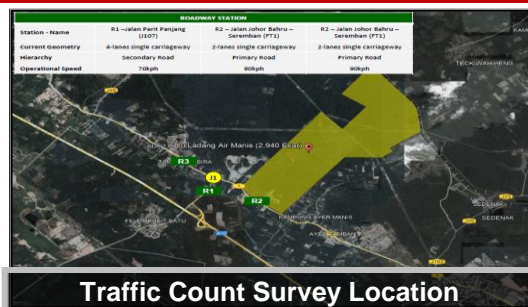
### Potential Impacts

#### Construction Phase:

- Increase in heavy vehicle traffic.
- Material spillage.
- Potential road damage, e.g. potholes
- Travel delays.
- Increase in vehicular emission

#### Operational Phase:

- Morning Peak Hour: Inbound of **1,135 PCU** and outbound of **408 PCU**.
- Evening Peak Hour: Inbound of **428 PCU** and outbound of **948 PCU**.
- Expected Road Conditions: **LOS B to LOS D** in Year 2045.
- Expected Junction Condition: J1 to operate at **LOS C during morning peak hour** and **LOS B during evening peak hour**.



### Mitigation Measures

#### Construction Phase:

- Proper logistic management plan.
- Wheel cleaning / tyre washing.
- Impose speed limits.
- Provision of adequate warning signage and lightings.



#### Operational Phase:

- New internal road arrangement (RA - RD and JA - JG)
- Roadway upgrade of R1 , R2 and R3 upon Year 2030.
- Continuous movement and provision of U-turn at J1 upon Year 2030.
- Single point interchange with continuous grade separated through movement and both side U-turn at J1 upon Year 2035.



## ENVIRONMENTAL MONITORING AND SURVEILLANCE PLAN

### Compliance Monitoring (CM) and Performance Monitoring

COMPONENT	COMPLIANCE REQUIREMENT	NO. OF POINTS/ LOCATION	FREQUENCY
			CONSTRUCTION PHASE
<b>COMPLIANCE MONITORING</b>			
<b>Discharge Quality from Sediment Basin</b>	<ul style="list-style-type: none"> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Outlet of proposed sediment basins.</li> </ul>	<ul style="list-style-type: none"> <li>➤ After every rain event <math>\geq 12.5</math> mm by EO</li> <li>➤ Monthly by EnvMC</li> </ul>
<b>Solid Waste Management (i.e., biomass, construction, domestic wastes)</b>	<ul style="list-style-type: none"> <li>➤ <i>Environmental Quality Act 1974.</i></li> <li>➤ <i>Local Government Act 1976, Sections 69 – 71.</i></li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Within the Project site.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Daily by EO.</li> <li>➤ Monthly by EnvMC</li> </ul>
<b>Scheduled Waste Management</b>	<ul style="list-style-type: none"> <li>➤ <i>Environmental Quality Act 1974.</i></li> <li>➤ <i>Environmental Quality (Scheduled Wastes) Regulations 2005.</i></li> <li>➤ <i>Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia (DOE, 2014).</i></li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Storage areas for scheduled wastes.</li> <li>➤ Workshop.</li> <li>➤ Active work areas.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Daily by EO.</li> <li>➤ Monthly by EnvMC.</li> </ul>
<b>Sewage Effluent</b> (Note: If the cumulative P.E. $\geq 150$ )	<ul style="list-style-type: none"> <li>➤ <i>Standard A, Second Schedule, Environmental Quality (Sewage) Regulations 2009.</i></li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Cumulative septic tank's effluent discharge point</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monthly by EnvMC.</li> </ul>
<b>PERFORMANCE MONITORING</b>			
<b>Functionality of the BMPs for Erosion and Sediment Control</b>	<ul style="list-style-type: none"> <li>➤ ESCP layout and report approved by DID Johor.</li> <li>➤ LD-P2M2.</li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ All BMPs proposed in the LD-P2M2 and ESCP approved by DID.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Weekly and after every heavy rain event by EO</li> </ul>



## ENVIRONMENTAL MONITORING AND SURVEILLANCE PLAN

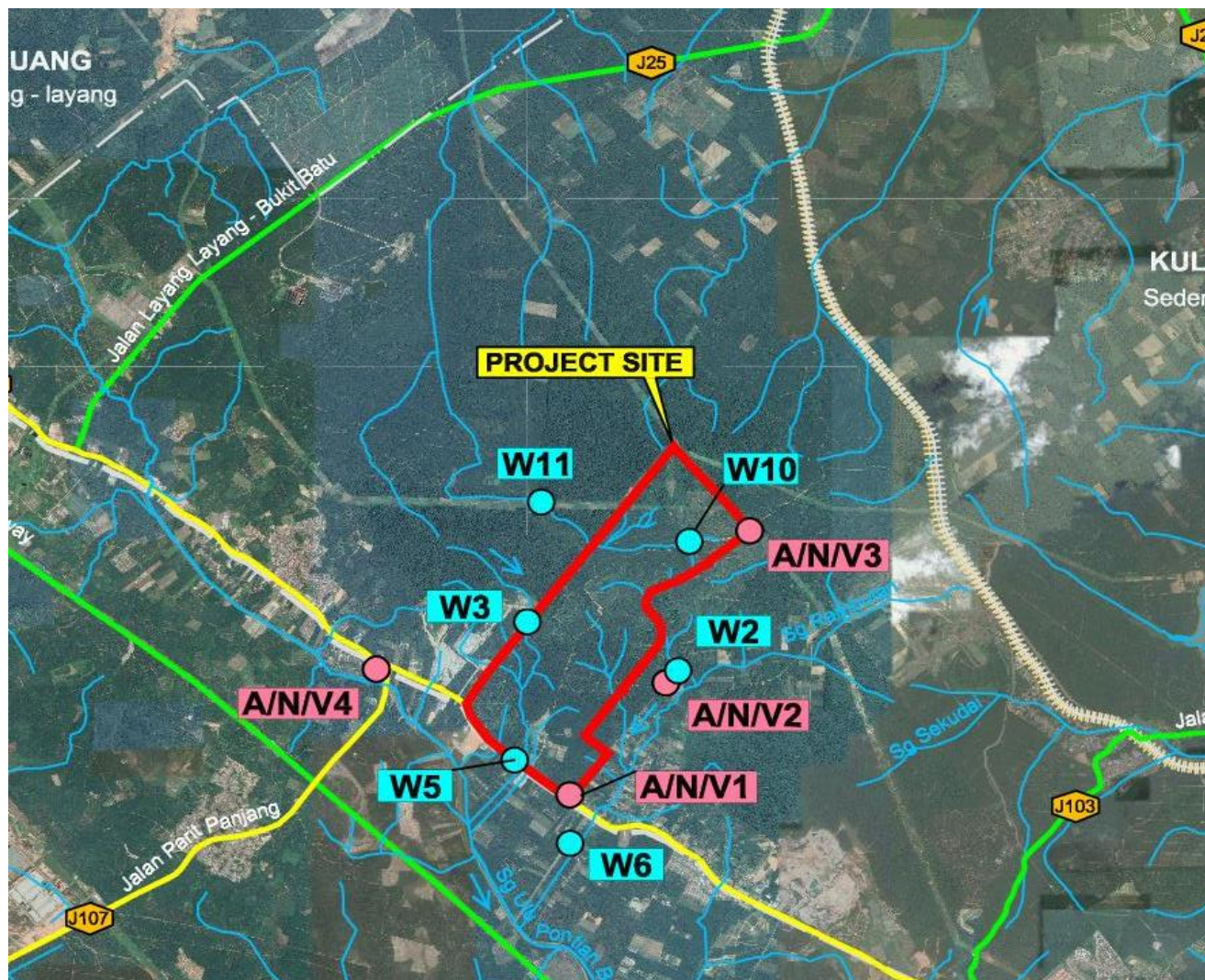
### Impact Monitoring (IM)

COMPONENT	PARAMETERS	COMPLIANCE REQUIREMENT	NO. OF POINTS/ LOCATION	FREQUENCY
				CONSTRUCTION PHASE
<b>Ambient Air Quality</b>	<ul style="list-style-type: none"> <li>➤ PM<sub>10</sub><sup>*</sup></li> <li>➤ PM<sub>2.5</sub><sup>*</sup></li> <li>➤ NO<sub>2</sub><sup>*</sup></li> <li>➤ SO<sub>2</sub><sup>*</sup></li> <li>➤ Weather conditions</li> </ul> <p>Note: *24-hr duration. # 8-hr duration.</p>	<ul style="list-style-type: none"> <li>➤ Standard 2020, MAAQS (DOE, 2015).</li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Four (4) points (A1, A2, A3, A4).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monthly by EnvMC.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>➤ L<sub>Aeq</sub></li> <li>➤ L<sub>10</sub>, L<sub>50</sub>, L<sub>90</sub></li> <li>➤ L<sub>min</sub>, L<sub>max</sub></li> </ul> <p>Note: 24-hr duration, including day- and night-time sessions.</p>	<ul style="list-style-type: none"> <li>➤ Third and Sixth Schedule of <i>Guidelines for Environmental Noise Limits and Control, Third Edition, reprint (DOE 2021)</i>.</li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Four (4) points (N1, N2, N3, N4).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monthly by EnvMC.</li> </ul>
<b>Water Quality</b>	<ul style="list-style-type: none"> <li>➤ Temperature</li> <li>➤ pH</li> <li>➤ Turbidity</li> <li>➤ DO</li> <li>➤ BOD<sub>5</sub></li> <li>➤ COD</li> <li>➤ TSS</li> <li>➤ AN</li> <li>➤ O&amp;G</li> <li>➤ Faecal Coliform</li> <li>➤ Total Coliform</li> <li>➤ Conductivity</li> </ul>	<ul style="list-style-type: none"> <li>➤ Maintain baseline water quality.</li> <li>➤ NWQS (Class IIA/IIB).</li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Six (6) points (W2, W3, W5, W6, W10, W11).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monthly by EnvMC.</li> </ul>
<b>Ground Vibration</b>	<ul style="list-style-type: none"> <li>➤ Peak Particle Velocity (mm/s)</li> <li>➤ Frequency (Hz)</li> </ul>	<ul style="list-style-type: none"> <li>➤ First, Third, Sixth and Ninth Schedules of <i>Guidelines for Environmental Vibration Limits and Control, Third Edition (DOE, 2021)</i>.</li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Four (4) points (V1, V2, V3, V4).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Monthly by EnvMC.</li> </ul>
<b>Slope Monitoring</b>	<ul style="list-style-type: none"> <li>➤ As per the requirement by JKR.</li> </ul>	<ul style="list-style-type: none"> <li>➤ JKR requirements.</li> <li>➤ COAs (if any).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Whole Project site where cut slopes has been formed.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Annually by specialist.</li> </ul>










# PROPOSED MONITORING POINTS

## River Water Quality, Air, Noise and Vibration Level

### PROPOSED MONITORING POINTS



**LEGEND:**

-  Project Site  
(Area = 501.92 ha/ 1,240.27 ac)
-  River
-  River Flow Direction
-  Highway
-  Main Road
-  Railway
-  Gemas-JB Double Track Railway
-  District Boundary
-  Mukim Boundary
-  River Water Quality Monitoring Points (W2, W3, W5, W6, W10, W11)
-  Air Quality, Noise Level and Vibration Monitoring Points (A/N/V1 - A/N/V4)

**RIVER WATER QUALITY POINTS**

POINT	LATITUDE (N)	LONGITUDE (E)
W2	1.721275°	103.482725°
W3	1.726450°	103.467265°
W5	1.711647°	103.466097°
W6	1.702633°	103.471546°
W10	1.735216°	103.483902°
W11	1.739404°	103.468774°

**AIR, NOISE, VIBRATION POINTS**

A/N/V1	1.707864°	103.471978°
A/N/V2	1.719984°	103.481495°
A/N/V3	1.736353°	103.490016°
A/N/V4	1.721448°	103.452008°



## STUDY FINDINGS

### Environmental Impacts

<b>Construction Phase</b>	<ul style="list-style-type: none"> <li>• <b>Changes in existing topography.</b></li> <li>• <b>River water pollution due to soil erosion, silt and sedimentation</b></li> <li>• <b>Environmental impacts (air, noise, water) and social impacts on sensitive receptors.</b></li> <li>• <b>Increase traffic related impacts.</b></li> <li>• <b>Beneficial impacts on socio-economic.</b></li> </ul>
<b>Operational Phase</b>	<ul style="list-style-type: none"> <li>• <b>River water pollution due to discharge of industrial effluent and commercial wastewater.</b></li> <li>• <b>Air pollutant emission, noise and vibration from industrial activities.</b></li> <li>• <b>Increase traffic related impacts.</b></li> <li>• <b>Beneficial impacts on socio-economic.</b></li> </ul>

### Pollution Prevention Mitigation Measures (P2M2s)

- Mitigation measures, best technological and management practices were provided to mitigate the adverse impacts. Minimal residual impacts is expected.



Proper vehicle/  
machinery  
management



Conduct water  
quality monitoring



Proper waste  
management



Provide adequate  
PPE to workers



Follow pre-  
approved routes



Install drainage  
network as per  
Stormwater  
Management Report  
MASMA-2



Install erosion control  
(silt fence, sediment  
basin, etc.)



Open communication  
platform for engagements