EXECUTIVE SUMMARY
Infographic

Second Schedule EIA
AMR.2024.KSSB.EIA

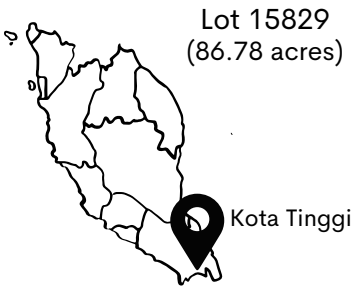
Project Title

PROPOSED DEVELOPMENT OF RECOVERY, TREATMENT AND DISPOSAL OF SCHEDULED WASTE (SCHEDULED WASTE HUB) AT PTD 15829, MUKIM ULU SUNGAI JOHOR, KOTA TINGGI, JOHOR FOR KITAR SELATAN SDN. BHD.

PROJECT PROPONENT	ENVIRONMENTAL CONSULTANT
KITAR SELATAN	AMR ENVIRONMENTAL
KITAR Selatan Sdn. Bhd.	**AMR Environmental Sdn. Bhd.**

PROPOSED PROJECT SITE DESCRIPTION AND LOCATION

Project Location

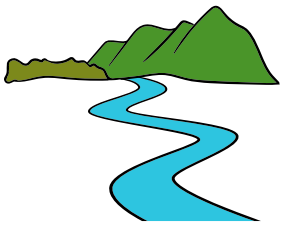


Majlis Daerah Kota Tinggi
Landuse: Heavy Industry

Current site condition
Palm oil plantation

Land Owner: Kitar Selatan Sdn. Bhd.

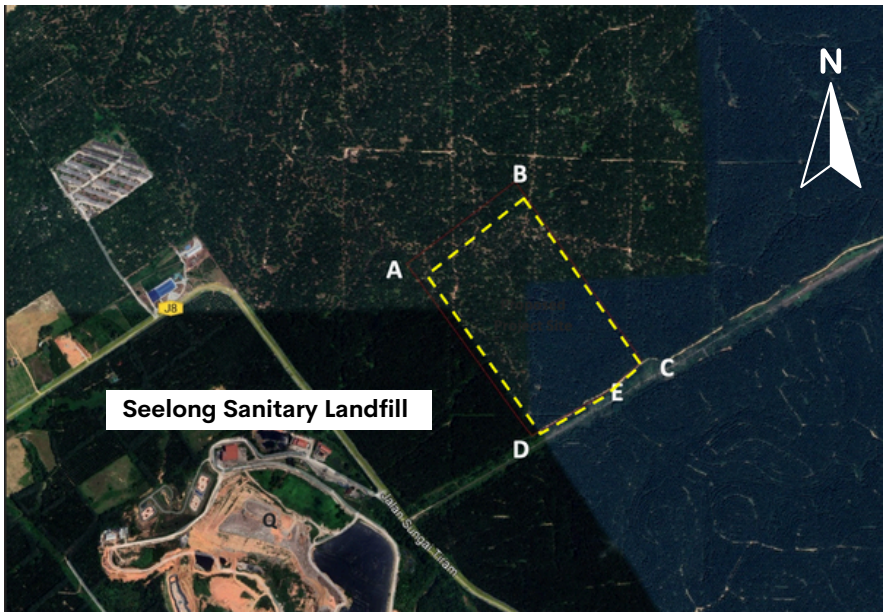
Nearby Waterway



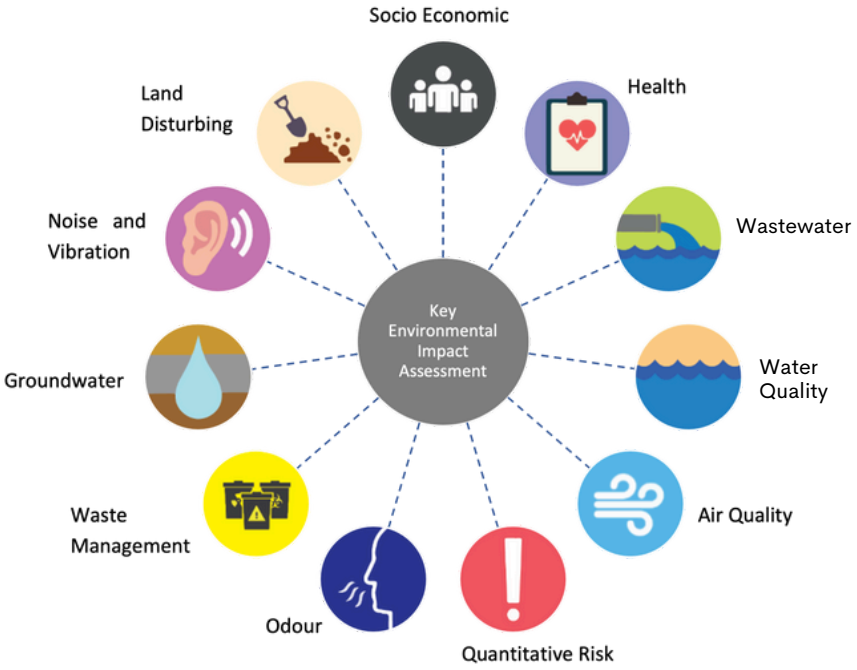
Tebrau River
25km to straits of Tebrau
No Water Intake Downstream

Project Site Coordinates

No.	Latitude (N)	Longitude (E)
A	1°40'6.64"N	103°43'21.55"E
B	1°40'15.71"N	103°43'33.71"E
C	1°39'55.70"N	103°43'47.82"E
D	1°39'47.32"N	103°43'35.45"E
E	1°39'51.81"N	103°43'43.27"E



EIA STUDY SCOPE



11
Quality Impact Assessment Scopes

11
Qualified EIA Consultants

3
Qualified Assistant Consultants

EIA TEAM MEMBERS

EIA TEAM LEADER
Ir. AMMAR MOHD RASHID
Air & Odour Quality

Dr. MOHD RASHID MOHD YUSOF
Scheduled Waste Management

Dato' Seri Ts. Hj. MOHD NAWAHIDUDIN MAHAMAD ISA
Socio-Economic Impact Assessment

Dr. AZNI IDRIS
Wastewater Quality Impact Assessment

Ts. ADNAN YUSOP ALI
Quantitative Risk Assessment

Ir. Dr. ZAKI ZAINUDDIN
Water Quality Impact Assessment

Mr. ZAHIR YAHYA
Groundwater Quality Impact Assessment

Mr. MOHAMMAD AMAN SAMSUREY
Soil Erosion and Sediment Control

Dr. AZLI ARIFIN
Noise and Vibration Quality Impact Assessment

Dr. MAZRURA SAHANI
Health Impact Assessment

Mrs. W NUR BAZLIN W MAHADI
Water, Noise and Vibration Quality and Baseline Assessment

Ms. ALLESYA ALIS RAMLI
Assistant Consultant

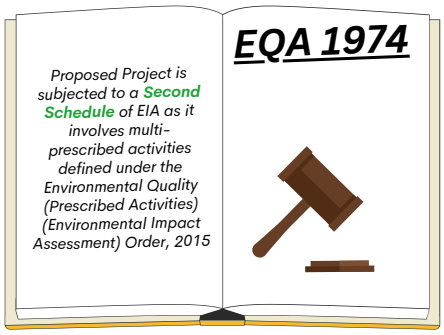
Ms. NOOR AIZA IZZATI MAHMOD
Assistant Consultant

Mr. ANAS MOHD RASHID
Assistant Consultant

STATUTORY REQUIREMENTS

No.	Proposed Facilities	Type of Prescribed Activities	EIA Schedule
1.	Thermal Treatment Plant (WTE)	14) Waste Treatment Disposal (a) Scheduled waste (i) Construction of thermal treatment plant	**Second**
2.	Secure Landfill	(a) Scheduled waste (iv) Construction of secure landfill facility.	**Second**
3.	Recovery Facility	(a) Scheduled waste (i) Construction of recovery plant (off-site).	**First**
4.	Slope and Land Clearing	13) Development in Slope Area Development or land clearing less than 50 per cent of an area with slope greater than or equal to 25° but less than 35°.	**First**

Source: Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 2015



STATEMENT OF NEED

1. Rising Generation of Scheduled Wastes in Malaysia
2. Maximizing Resource Recovery and Minimizing Landfill Disposal
3. Minimizing Carbon Footprint through Energy Recovery
4. Reducing Conveyance Risks through Centralized Waste Management
5. Providing an Effective Solution for the Southern Region of Peninsular Malaysia
6. Setting New Standards in Hazardous Waste Management
7. Providing an Alternative Avenue for Scheduled Waste Management

TERMS OF REFERENCE

TOR OF EIA STUDY

APPROVED ON **27 January 2023**
[REF. NO.: JAS 600-2/13/28 18]

BASELINE MONITORING	CURRENT LAND USE	FIT TO LOCAL PLAN
EMERGENCY RESPONSE PLAN	UNTREATED EFFLUENT AND LEACHATE CHARACTERISTIC	PROPOSED MITIGATION MEASURES
EIA GUIDELINES IN MALAYSIA, 2016	PROJECT IMPLEMENTATION SCHEDULE	BUFFER ZONE
CONCEPT AND TECHNOLOGY	SITE ASSESSMENT	

PROJECT OPTION

Site Option → Siting Criteria

- Size, Physical and Land Use
  1. Away from Densely Populated Areas
  2. Compatibility of Land Use
  3. Adequate to Cater for Future Expansion
- Environmental Constraints
  - Avoidance of Unique Habitat, Ecological Value or Scenic Beauty Areas
- Economic Constraints
  1. Distance to be less than Half Day Travel by Trailers to Site
  2. Minimal Transportation Costs
- Social Constraints
  1. Away from Major Settlements
  2. Away from Public Facilities

Technology Option
1. Thermal
2. Autoclave
3. Microwave Disinfection
4. Chemical Disinfection

No Project Option
- Not Acceptable

Project Concept

- **Treatment**
- **Recovery**
- **Disposal**

Project Chronology

First Submission TOR	*26 May 2022*
Terms of Reference Adequacy Check	*23 June 2022*
Submission TOR Rev: 01	*12 Dec 2022*
TOR Approval	*27 Jan 2023*

Control Measures

- Best Available Technology
- Operated by Competent Person
- Installation of BMPs at Site
- Periodic Environmental Monitoring
- Continuous Emission Monitoring System
- Away from Dense Settlement Area

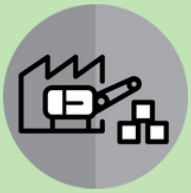
PROPOSED 10 MAIN FACILITIES

To Treat, Recover and Disposed 76 Scheduled Waste Codes

Treatment Facility

Thermal Treatment Plant (WTE) (100 MT/day)

Physical and Chemical Treatment Plant (PCT) (15 MT/day)



Solidification Plant (33 MT/day)

Leachate Treatment Plant (LTP) (150 m^3/day)

Effluent Treatment Plant (ETP) (300 m^3/day)

Surface Water Treatment Plan (250 m^3/day)

Recovery Facility

Oil Distillation Recovery Plant (100 MT/day)

Solvent Recovery Plant (145 MT/day)

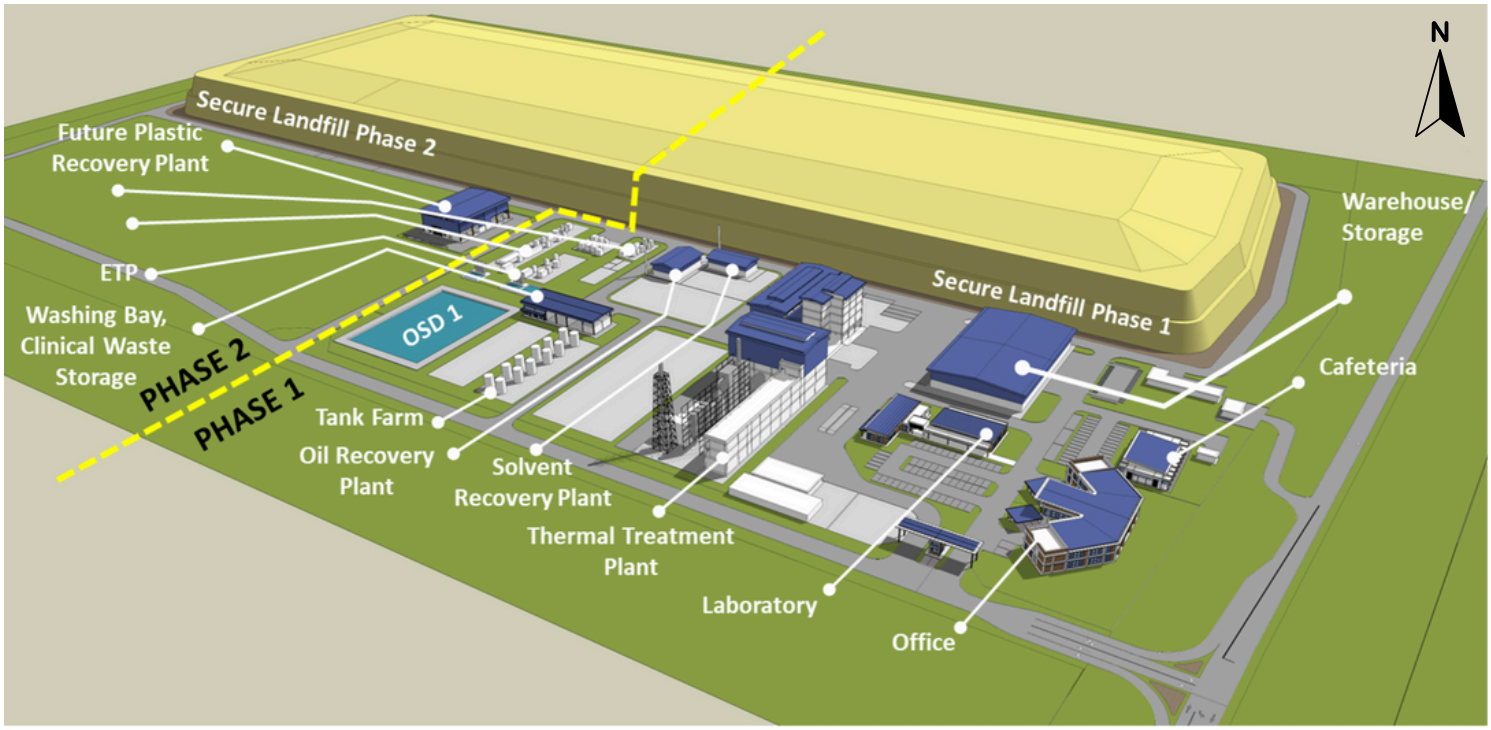
Disposal Facility

Secure Landfill (3,760,425.50 air space (m^3))

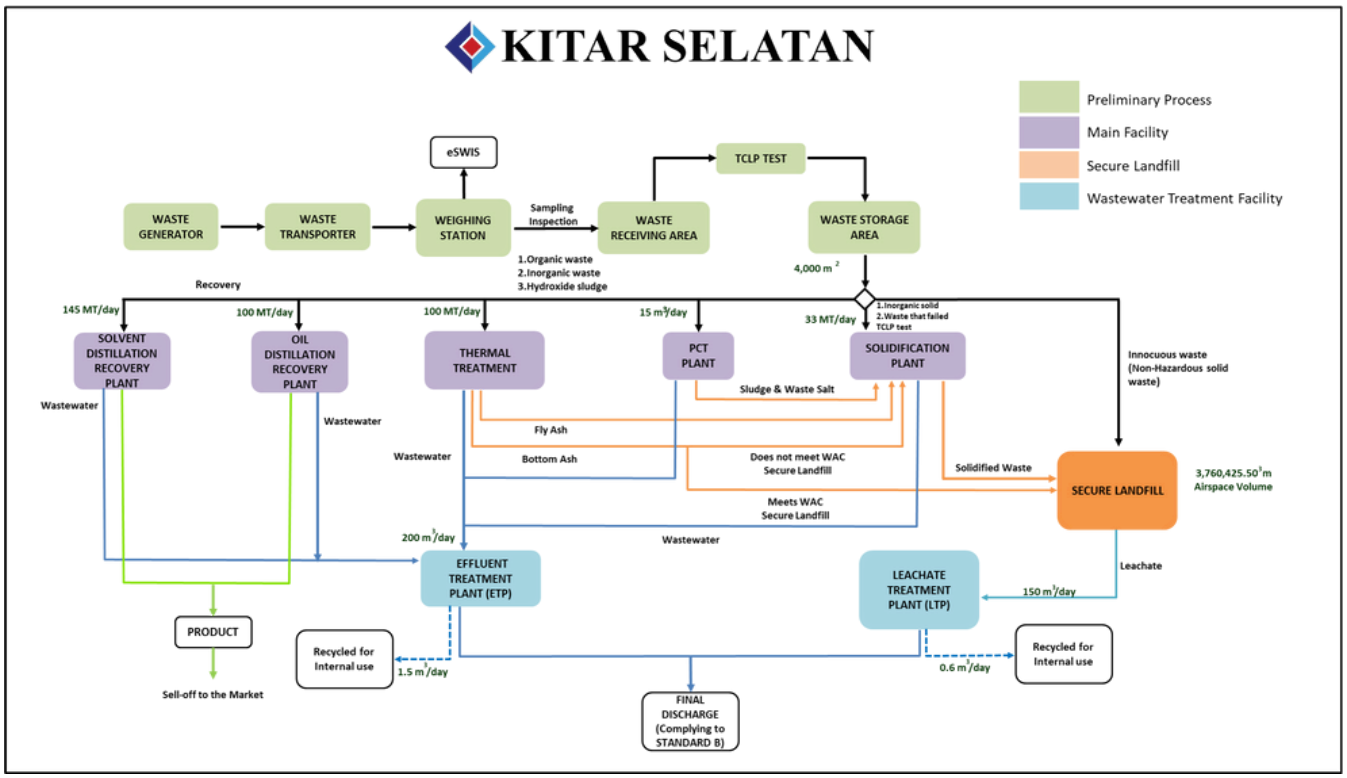
Other Facility

Storage Facility (4,000 MT)

PROJECT CONCEPTUAL DESIGN



PROCESS FLOW OF THE SCHEDULED WASTE HUB



EXISTING ENVIRONMENT

ZONE OF STUDY | PUBLIC HEALTH | PUBLIC HEARING

BASELINE CONDITION | SOCIO-ECONOMIC

ZONE OF STUDY

SENSITIVE RECEPTORS

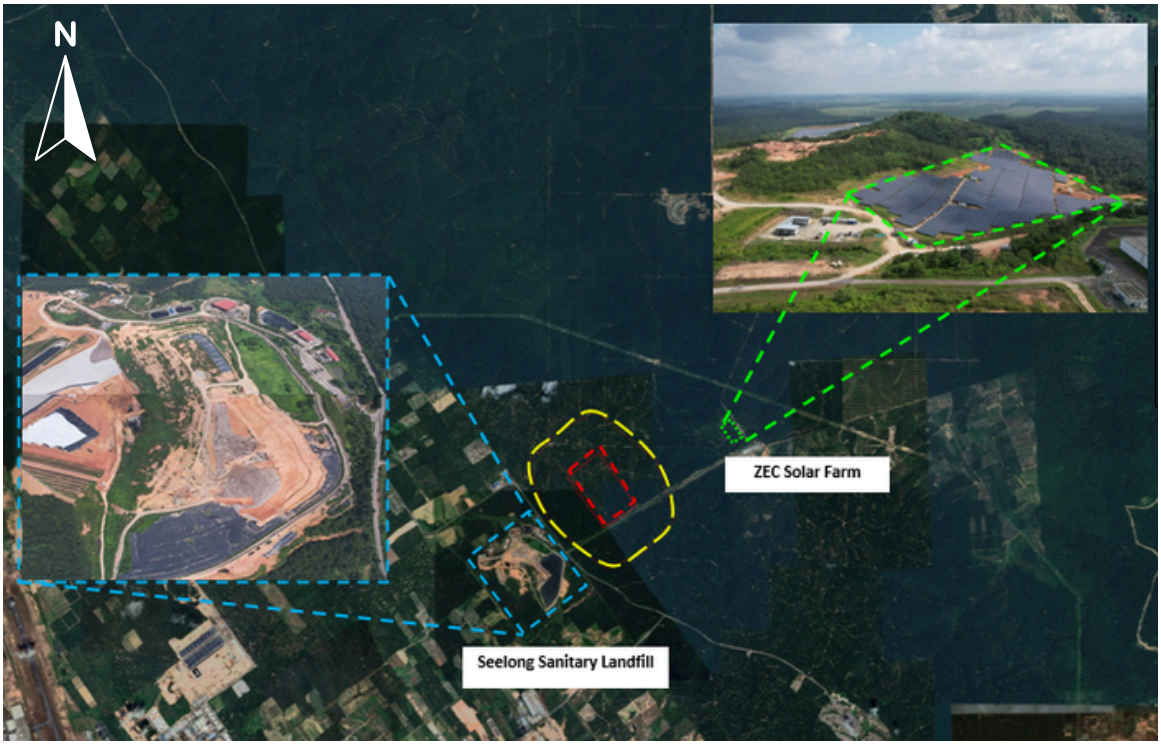
DISCHARGE FLOW

Discharges → OSD → Monsoon Drain → Final Discharge → Tebrau River → Straits of Tebrau

Total Number of Residential Areas from Site

0-1KM	1-2KM	2-3KM	3-4KM	4-5KM
0	1	2	2	2

PHYSICAL ENVIRONMENT



SOCIO ECONOMIC

309
SURVEY RESPONDENTS

7 SELECTED RESIDENTIAL AREAS WITHIN 5KM RADIUS

AGREED RATE

53.4%
PRIMARY ZOI
0-3km

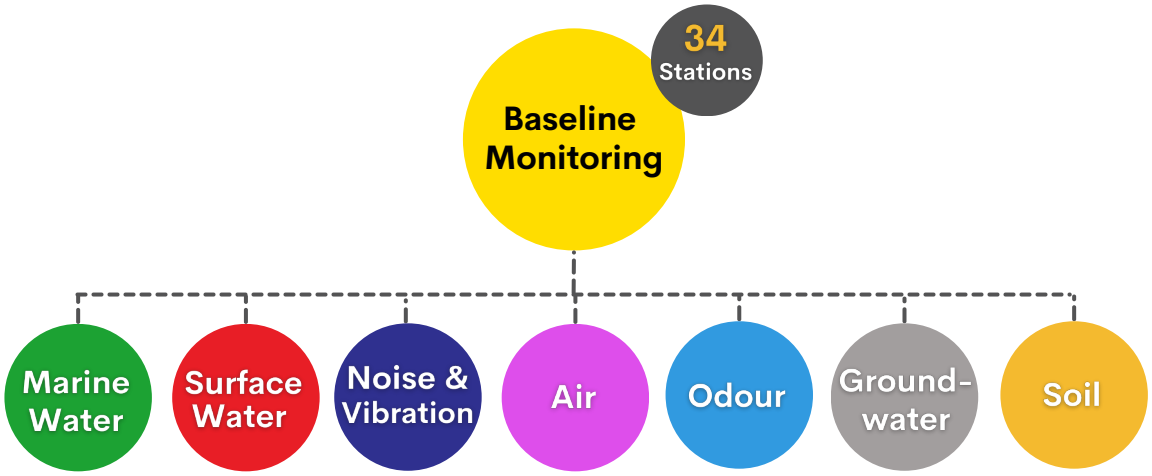
85.3%
SECONDARY ZOI
3km-5km

PUBLIC DIALOGUE

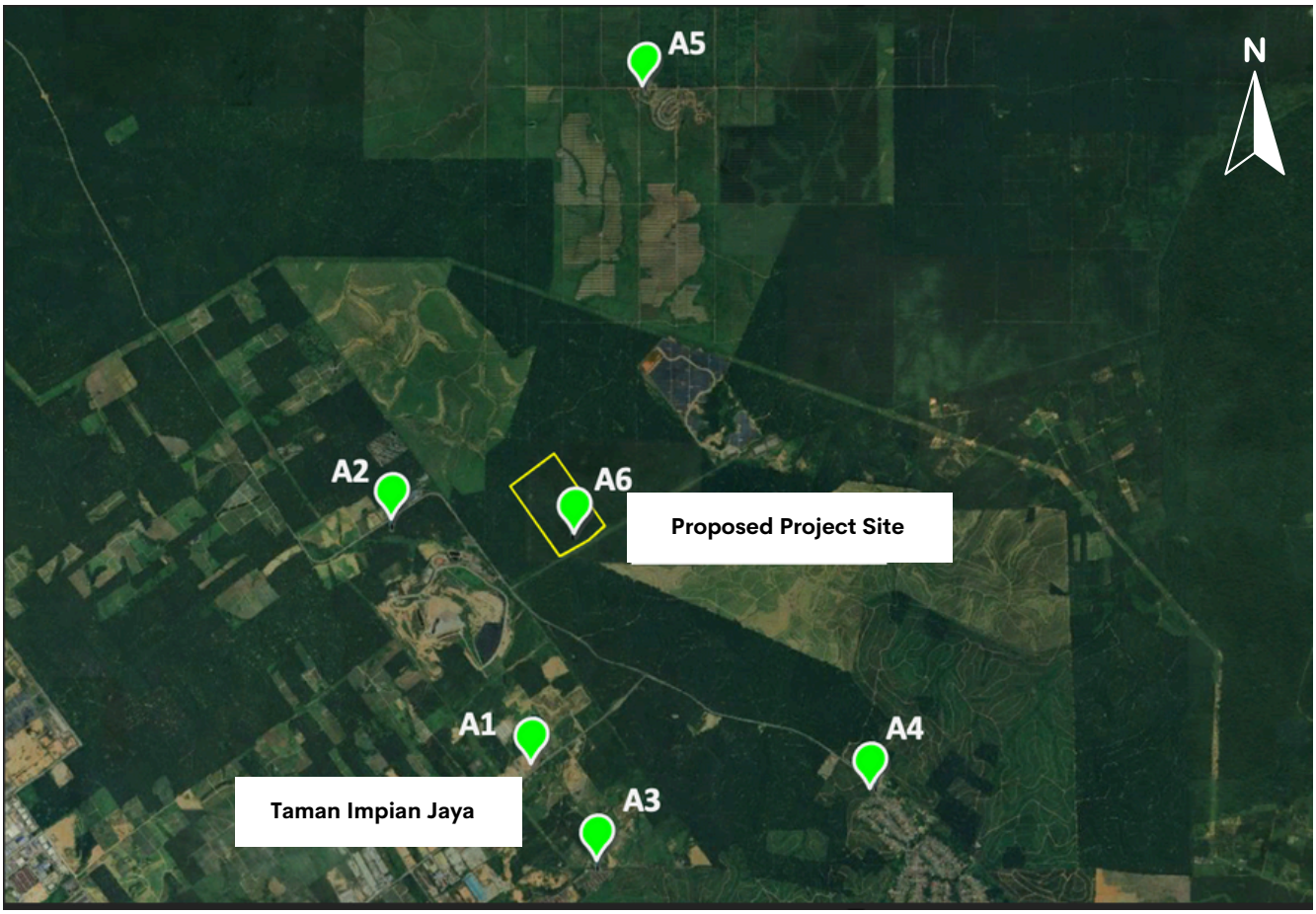
CONCERN ON:
- SCHEDULED WASTE MANAGEMENT
- TRAFFIC IMPACT
- WATER IMPACT
- AIR IMPACT

AGE	%
21 - 30	17.8
31 - 40	19.4
41 - 50	28.2
51 - 60	14.2
> 60	20.4

BASELINE ENVIRONMENTAL MONITORING



AMBIENT AIR QUALITY



STANDARD
Malaysia Ambient Air Quality Standards (MAAQS, 2020)
and other adopted standard


A1


A2

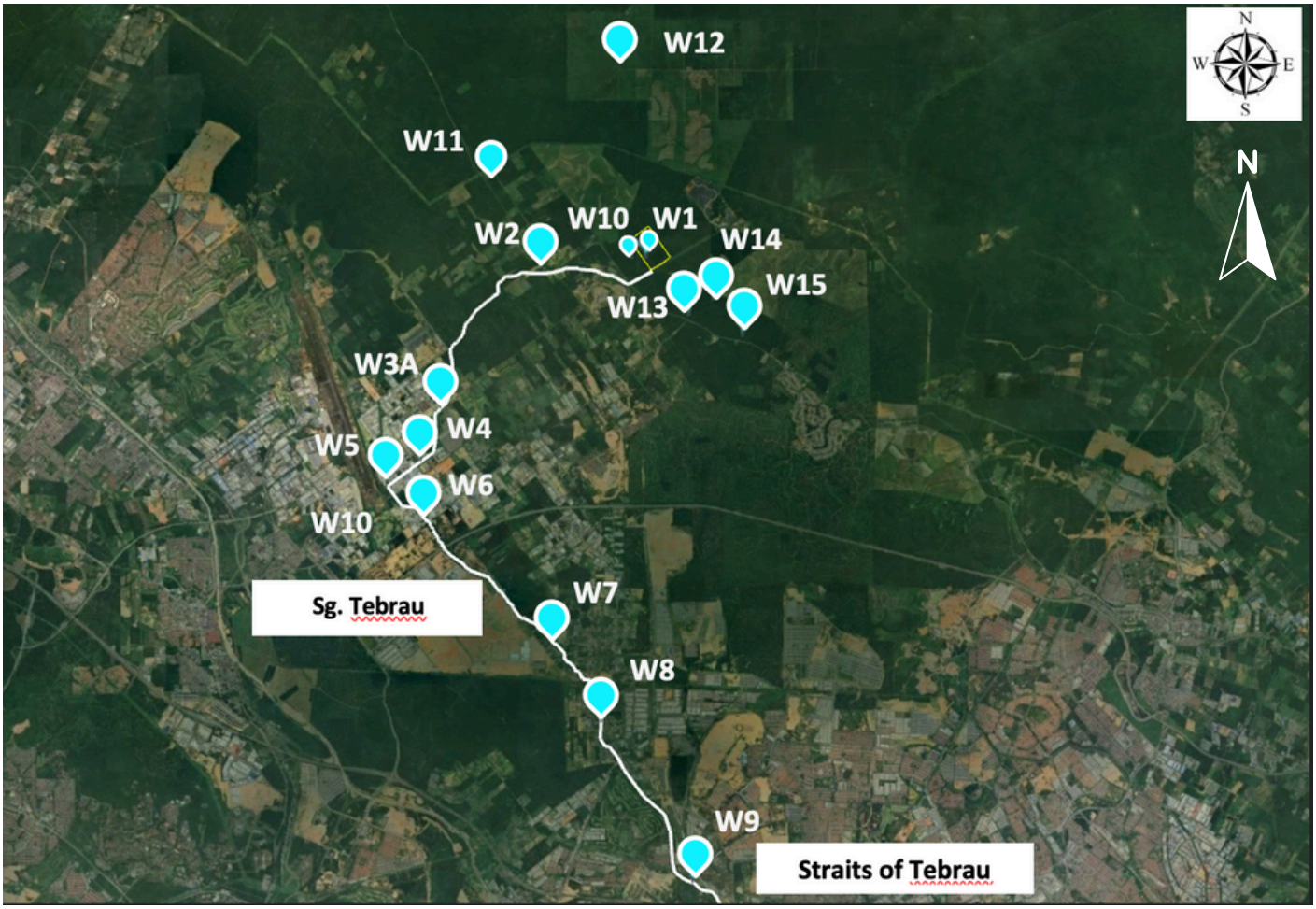

A3


A4


A5


A6

SURFACE WATER QUALITY



STANDARD
Kelas IIB, Piawaian Kualiti Air Kebangsaan (NWQS)

W1

W2

W3

W4

W5

W6

W7

W8

W9

W10

W11

W12

W13

W14

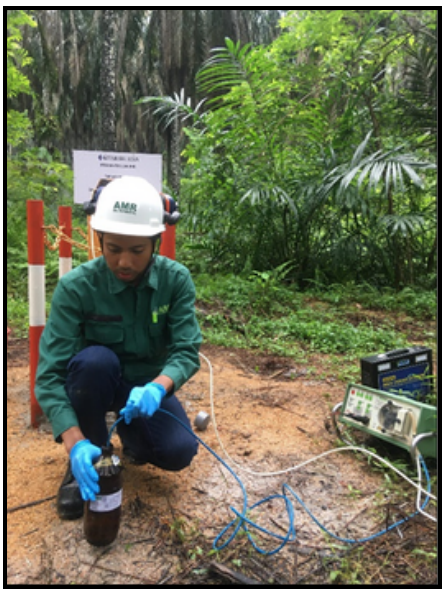
W15

GROUNDWATER QUALITY

STANDARD
Groundwater Quality Standard (For Conventional Raw Water Treatment Use for Drinking Water)

GW1

GW2



GW3

NOISE QUALITY

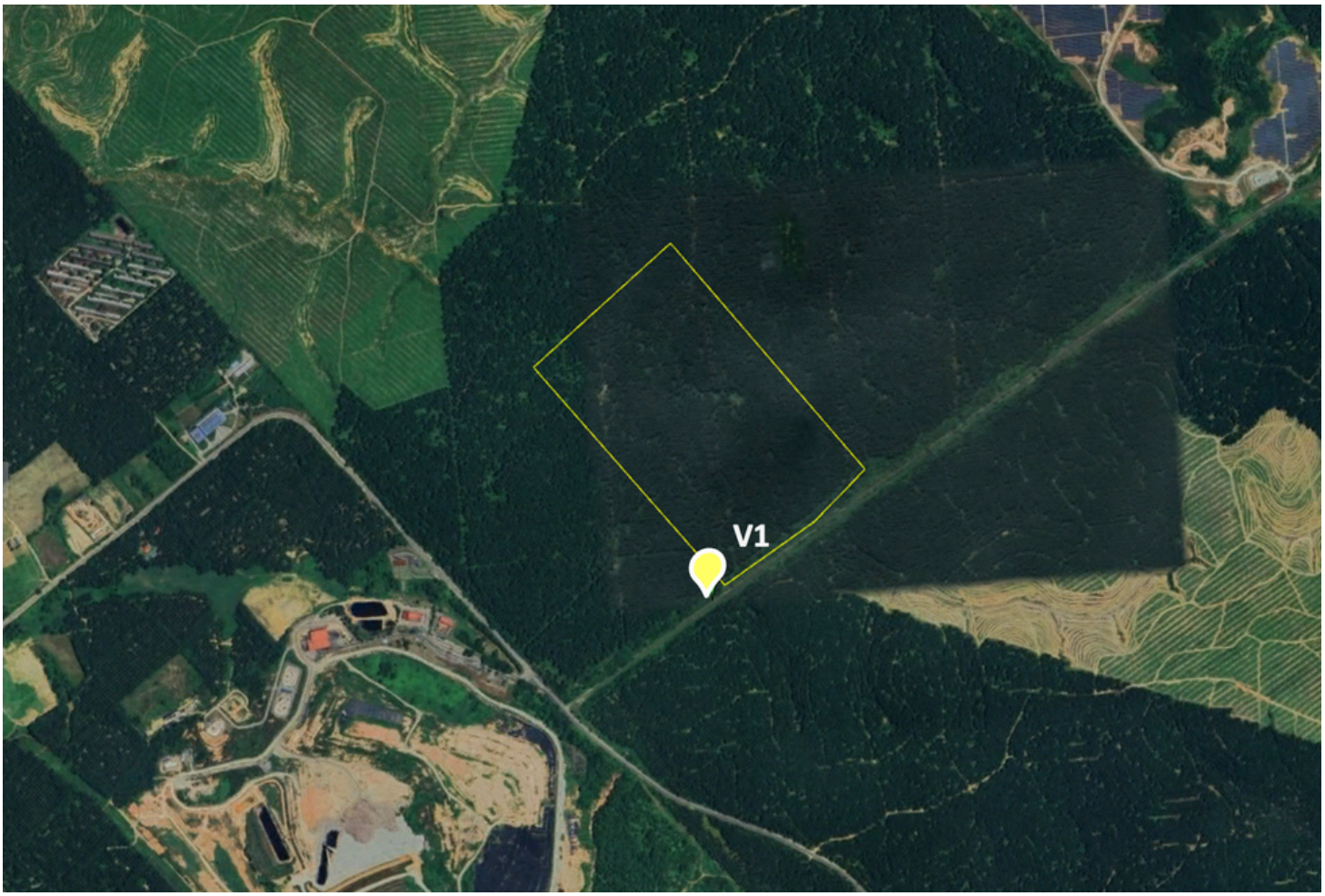
STANDARD
Environmental Noise Limits and Control, 2019

N1

N2

N3

VIBRATION QUALITY



STANDARD
Environmental Vibration Limits and Control in the Environment

V1

ODOUR QUALITY

O1

O2

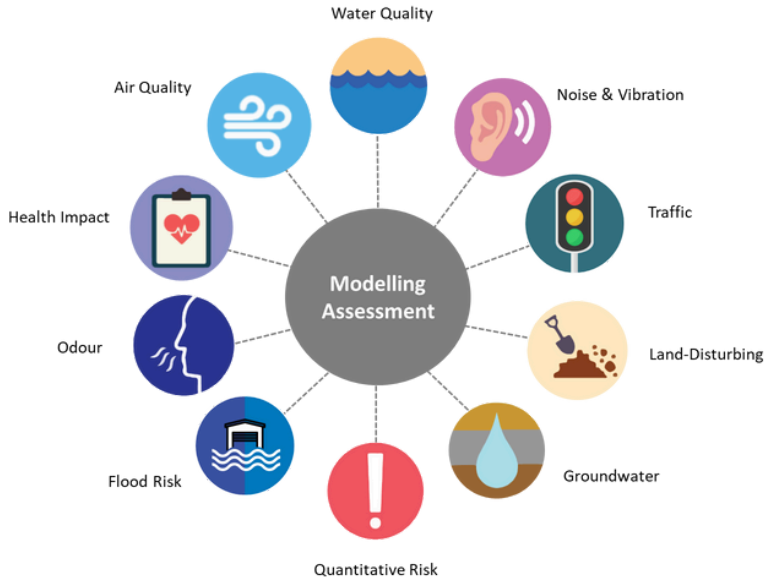
O3

O4

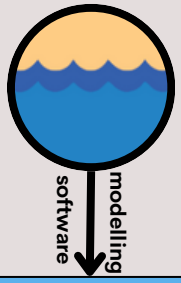
O5

O6

KEY ENVIRONMENTAL CONCERNS



WATER QUALITY

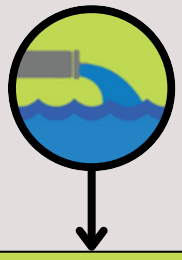


QUAL2K

Normal Flow | **Low Flow**

Compliance of the LTP to the Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulation 2009; ETP and SWTP to the maximum of Standard B limits of the Environmental Quality (Industrial Effluent) Regulations 2009, showed some noticeable impacts towards the upper reaches of Sg. Tebrau for many modelled parameters.

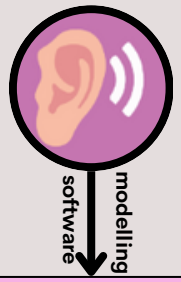
WASTEWATER QUALITY



Industrial Effluent Characteristic Study

Stormwater management and overflow controls prevent leachate issues during monsoons, while advanced treatment and monitoring ensure effluent quality meets standards. Regular maintenance reduces equipment failure risks, and proper sludge handling mitigates environmental impacts. Operator training ensures the facility is managed competently and sustainably.

NOISE QUALITY



Phases

Construction | **Operation**

No mitigating measures are necessary, confirming the proposed project's compliance with noise regulations and environmental guidelines

KEY ENVIRONMENTAL CONCERNS

QUANTITATIVE RISK ASSESSMENT

software

modelling

EFFECTS Version 12 by GEXCON

- **Explosion**
- **Fire**

The credible scenario consequences assessed does not reach involuntary recipients of industrial risk surrounding the project, which is in compliance with DOE's risk acceptance criteria.

SOCIAL-ECONOMIC IMPACT

CAUSE-EFFECT ANALYSIS

- **Planning**
- **Construction**
- **Operation**

1. Negative perception from surrounding community toward the proposed development
2. Disruption on surrounding environment
3. Traffic disruption
4. Job and business opportunities

LAND DISTURBING

- **Hydrological Assessment**
- **Soil Lost Estimation**
- **Sediment Yield Estimation**
- **Evaluation of Impact**
- **Sediment Trap Estimation**

Adequate to cater up the Project Site construction development

KEY ENVIRONMENTAL CONCERNS

GROUNDWATER QUALITY

software

modelling

MODFLOW

Construction

Final Stage

The groundwater modelling study for the proposed project shows minimal impact on the surrounding groundwater system.
Even though the groundwater pressure increased by 5 meters, the flow pattern remains unchanged, and the impact is limited to the project site.
No contamination spread was observed as the soil in the area has very low permeability, preventing contaminants from moving into deeper layers.
Additionally, the project site is located on a small ridge between two tributaries of Sungai Semangar, which slows or even stops the groundwater flow due to its position in a water divide area.

WASTE MANAGEMENT

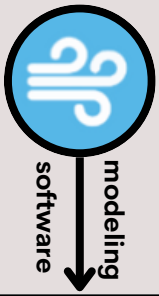
Solid Waste

Scheduled Waste

There will be no significant issue involving solid waste management while the expected environmental impact for scheduled waste is minimal.

KEY ENVIRONMENTAL CONCERNS

AIR QUALITY



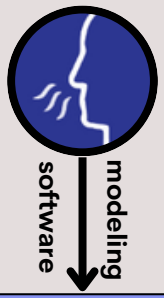
BREEZE AERMOD AIR DISPERSION MODEL (BREEZE AERMOD VERSION 11 PRO)

Normal Case

Worst Case

Predicted pollutant's maximum Ground Level Concentration were within their respective guideline limits for both cases except for parameters of SO2 and Dioxin-Furan for worst case scenario which can potentially happen during emergency incidents. An installed air pollution control system can meet the Clean Air Regulation 2014 imposed on such facility as guaranteed by the technology provider.

ODOUR QUALITY

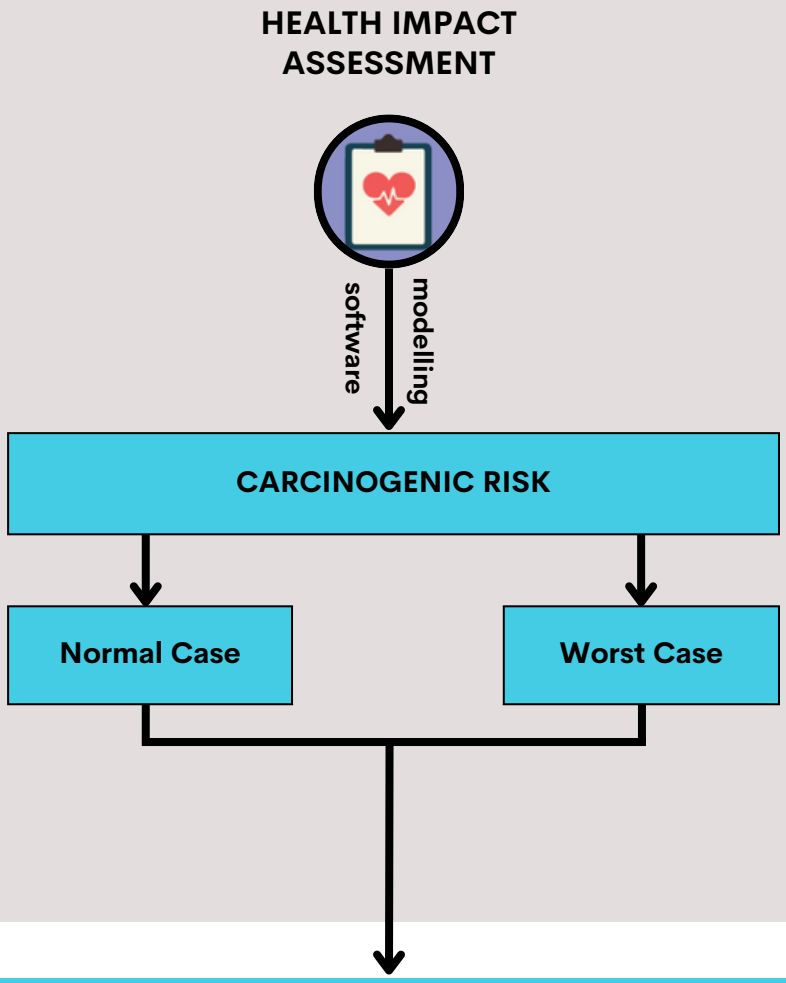


BREEZE AERMOD AIR DISPERSION MODEL (BREEZE AERMOD VERSION 11 PRO)

Maximum Ground Level Odour Concentration (1hr & 24hr)

The proposed development is unlikely to cause any significant odour impact to the nearest residential receptor from the site as the predicted Odour Concentration is well below the recommended standard limit to cause objectional odour perception. Furthermore, the maximum odour ground level concentration falls within the project site.

KEY ENVIRONMENTAL CONCERNS



AIR

Health risk assessment showed that from exposure to air pollutants from the project activities are predicted not to pose any non-cancer and carcinogenic risks to the sensitive receptors during normal and worst-case scenarios.

WATER

Exposure to water pollutants and fish consumption could pose some non-cancer health risks (HQ>1) for the following pollutants during the stated scenarios:

1. Water pollutants
   - Arsenic during Scenario 2 and Scenario 3
   - Lead during Scenario 1, Scenario 2, Scenario 3 and WLA
   - Hexavalent Chromium during Scenario 3

2. Fish consumption
   - Lead during all scenarios

For the cancer risk of water pollutants, exposure to Arsenic, however, could pose some carcinogenic health risk during scenario 1, scenario 2, scenario 3 and scenario WLA. Meanwhile, exposure to Chromium (VI) in water and exposure to Arsenic for fish consumption could pose some carcinogenic health risk during scenario 3.

MITIGATION MEASURES

AIR QUALITY

Construction	Operation
Open burning is prohibited on-site at all times;	Air pollution control systems for flue gas treatment shall be in continuous operation to remove harmful pollutants and toxins from the emissions
Maintain and check the construction equipment and machineries regularly.	The bag filters require periodic cleaning and regular maintenance.

WATER QUALITY

Construction	Operation
·Provide adequate temporary and permanent drainage infrastructure including retention ponds to avoid flooding.	Sampling should be a combination of regular, fixed periodical sampling.
A monitoring and audit programme shall be carried out	Appointing full time competent person to manage, monitor, analyse and report the operation of the LTP.

HEALTH IMPACT

Construction	Operation
·Provide adequate temporary and permanent drainage infrastructure including retention ponds to avoid flooding.	Proper plant operating conditions and operation shall be implemented.
Clean water supply and proper solid waste disposal.	Any cases involving infectious disease at site must be immediately reported to local District Health Office.

NOISE QUALITY

Construction	Operation
Noise control engineering techniques will be in use where practical	Carry out regular noise monitoring;
Scheduling of construction materials transportation process	Regular maintenance and inspection of all plant facilities

MITIGATION MEASURES

WASTE MANAGEMENT

Construction	Operation
Open burning is prohibited on-site at all times	Segregated according to their source and classify them into recyclable and non-recyclable categories
Contractor shall provide a designated temporary covered stockpile area within the site	Open burning is strictly prohibited

WASTEWATER QUALITY

Construction	Operation
Not Applicable	Diversion of all stormwaters
Not Applicable	Provide Skilled and Trained Personnel

LAND DISTURBING

Construction	Operation
All vehicles going out of the Project site must pass through a washing bay or wash trough	Not Applicable
Proper minute meeting needs to be recorded in order to trace progressive works	Not Applicable

MITIGATION MEASURES

QUANTITATIVE RISK ASSESSMENT

Construction	Operation
Not Applicable	Safe or standard operating procedures should be established
Not Applicable	Establish an Emergency Response Plan (ERP)

SOCIO-ECONOMIC IMPACT

Construction	Operation
Vehicles conveying product materials and equipment must not exceed permissible tonnage	Priority for locals to fill any job vacancies
Labour Management Plan	Not Applicable

GROUNDWATER QUALITY

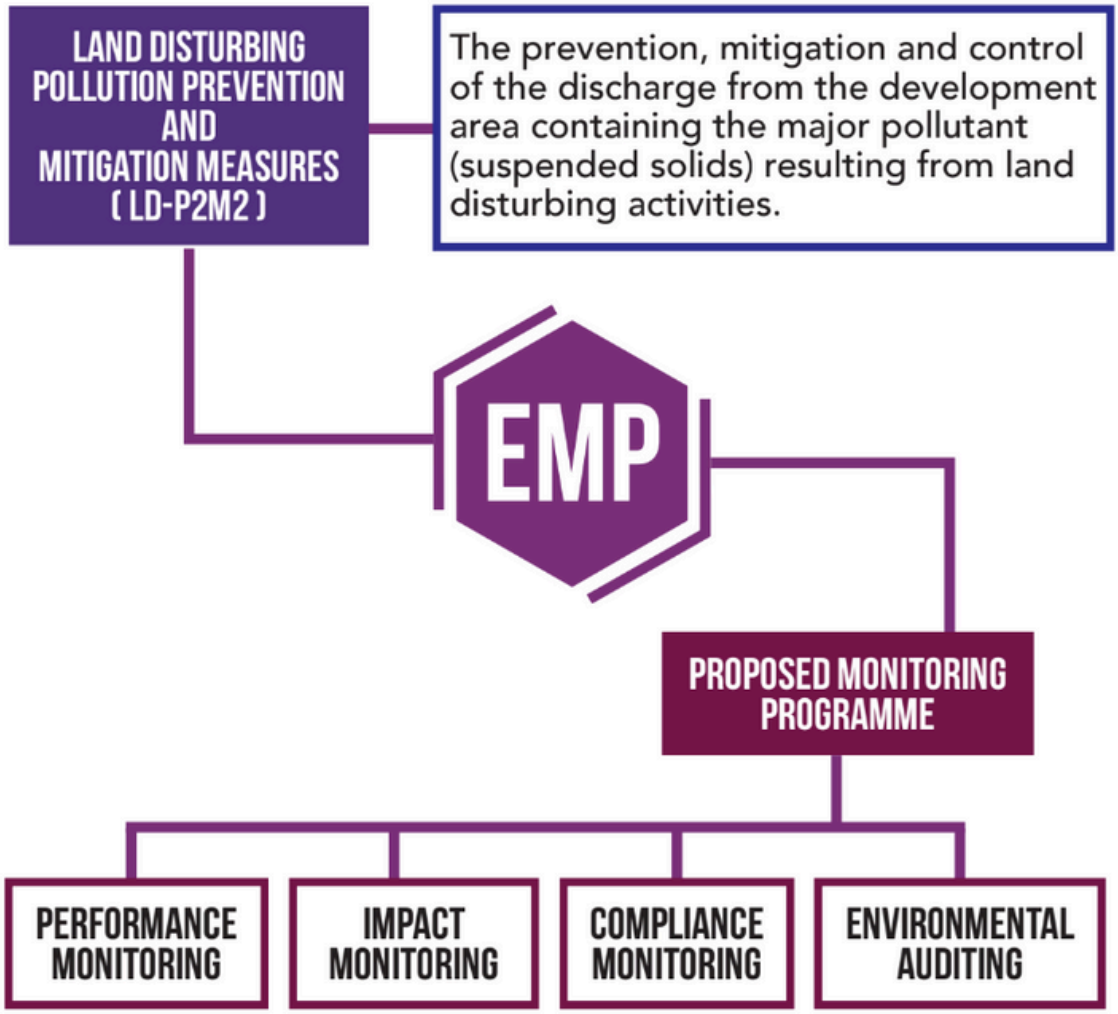
Construction	Operation
Monitoring wells shall be designed to detect leakage from the facility	Monitoring of groundwater quality and groundwater level in all groundwater monitoring wells
Monitoring wells must be in accordance to currently accepted international engineering practice	Groundwater monitoring data shall be compiled and stored

MITIGATION MEASURES

ODOUR QUALITY

Construction	Operation
Ensure proper dedicated waste containers and waste storage area is placed	To conduct periodic odour monitoring
Not Applicable	Establish an action plan or SOP in the case of public complaint

ENVIRONMENTAL MANAGEMENT PLAN



IMPACT AND COMPLIANCE MONITORING

SUMMARY OF PROPOSED IMPACT MONITORING

No.	Monitoring Components	Number of Stations	Monitoring Stations	Sampling Frequency
During Construction Phase				
1.	Ambient Air Quality	4	A1, A2, A4 and A6	Quarterly
2.	Water Quality	6	W1, W2, W6, W9, W10, W13	Quarterly
3.	Noise Quality	3	N1, N2 and N3	Quarterly
4.	Vibration Level	1	V1	Quarterly
During Operation Phase				
1.	Ambient Air Quality	4	A1, A2, A4 and A6	Quarterly
2.	Water Quality	6	W1, W2, W6, W9, W10, W13	Quarterly
3.	Noise Quality	3	N1, N2 and N3	Quarterly
4.	Vibration Level	1	V1	Quarterly
5.	Odour Quality	4	O1, O2, O4 and O6	Quarterly
6.	Groundwater Quality	3	GW1, GW2 and GW3	Quarterly

SUMMARY OF PROPOSED COMPLIANCE MONITORING

No.	Monitoring Components	Number of Stations	Monitoring Stations	Sampling Frequency
During Construction Phase				
1.	Silt Trap Discharge Quality	2	Final effluent discharge point of silt trap	Monthly or after ≥ 12.5mm rainfall event
During Operation Phase				
1.	Stack Emission Quality	3	**Stack** i. Thermal Treatment Plant (1 station) ii. Oil Recovery Plant (1 station) iii. Solvent Recovery Plant (1 station)	Quarterly and Bi-annually for PCDD/PCDF
2.	Effluent Quality	4	Final effluent discharge point for LTP, ETP, SWTP and STP	Monthly

No.	Environmental Impact	Impact Rank
1.	Air Quality	High
2.	Health Impact	High
3.	Land Disturbing	High
4.	Waste Management	Medium
5.	Water Quality	Medium
6.	Wastewater Quality	Medium
7.	Groundwater Quality	Medium
8.	Quantitative Risk Assessment	Medium
9.	Socio-Economic Impact	Medium
10.	Noise Quality	Low
11.	Odour Quality	Low

THE PROPOSED ACTIVITY WILL NOT IMPOSE SIGNIFICANT ADVERSE IMPACT TO THE ENVIRONMENT IN THE VICINITY OF THE PROPOSED SITE.

IT IS RECOMMENDED THAT THE PROPOSED DEVELOPMENT OF PROPOSED DEVELOPMENT OF RECOVERY, TREATMENT AND DISPOSAL OF SCHEDULED WASTE (SCHEDULED WASTE HUB) AT PTD 15829, MUKIM ULU SUNGAI JOHOR, KOTA TINGGI, JOHOR FOR KITAR SELATAN SDN. BHD. TO BE APPROVED ON THE BASIS THAT THE PROJECT PROPONENT WILL CONTINOUSLY ADHERE TO THE REQUIREMENT OF THE ENVIRONMENTAL GUIDELINES AND EMPLOYING MITIGATION MEASURES TO ENSURE COMPLIANCE WITH STATUTORY REQUIREMENTS AND RECOMMENDED CRITERIA.

MITIGATION MEASURES HAVE BEEN PROPOSED FOR EACH SCOPE FOR THE BEST MANAGEMENT PRACTICE TO CATER ON THE ENVIRONMENTAL IMPACT