

# **EXECUTIVE SUMMARY**

# EXECUTIVE SUMMARY

# PROPOSED SEWAGE TREATMENT PLANT (STP) WITH ULTIMATE CAPACITY OF 40,000 POPULATION EQUIVALENT (PE) AT PTD 112722, MUKIM SENAI, DAERAH KULAI, JOHOR DARUL TAKZIM

## INTRODUCTION



### PROJECT PROPONENT

**Scientex Lestari Sdn Bhd**  
Pejabat Jualan Scientex Utama  
Jalan Persiaran Scientex Utama 2  
81400 Kulai  
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

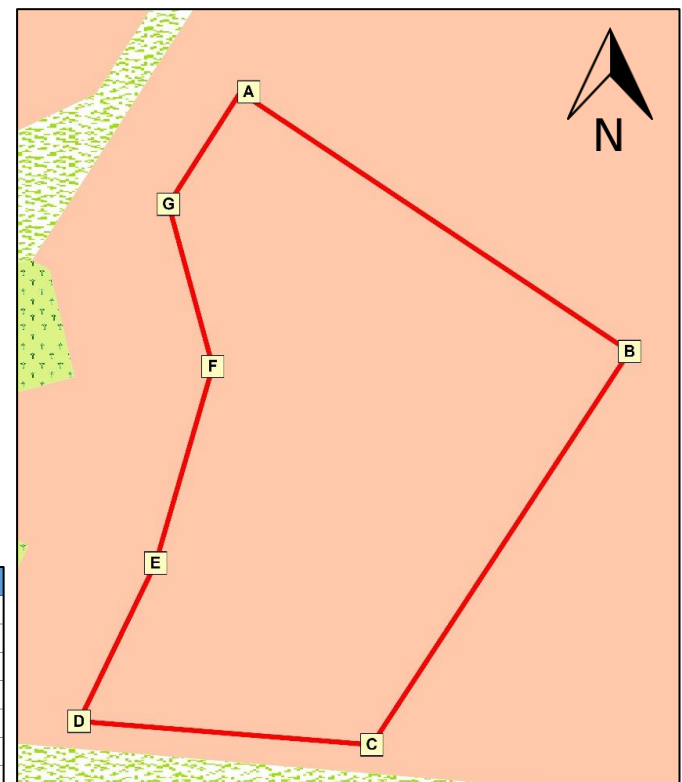
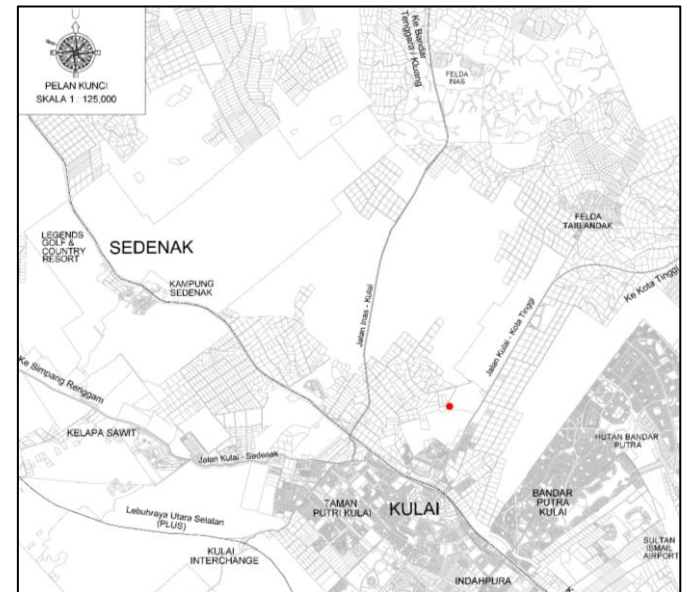
First Schedule  
14. Waste Treatment and Disposal  
(c) Sewage  
(i) Construction of sewage treatment plant with 20,000 population equivalent or more

## STATEMENT OF NEEDS

- Scientex Lestari Sdn Bhd intends to develop an area of 426.68 acres (213.14 hectares) into mixed development, which includes residential (double-storey house and Rumah Mampu Milik Johor (RMMJ)), commercial areas and public facilities at PTD 112721, PTD 112722 and PTD 112723.
- Sewage from ongoing and upcoming development of Scientex Lestari will be treated at the proposed STP.
- The STP consists of two (2) Modules and the capacity of each Module is 20,000 PE with ultimate capacity of 40,000 PE.
- The proposed STP employs an open Intermittently Sequencing Batch Reactor (SBR) system that is capable to achieve Standard A discharge as per IWK requirement.

## KEY PLAN AND PROJECT LOCATION

The proposed STP is located on 5.24 acres (2.12 ha) of land at PTD 112722 within Scientex Lestari's development at Mukim Senai, Daerah Kulai, Johor Darul Takzim.



Point	Lat	Long
A	1° 41' 2.573" N	103° 36' 26.952" E
B	1° 40' 59.842" N	103° 36' 30.962" E
C	1° 40' 55.708" N	103° 36' 28.247" E
D	1° 40' 55.953" N	103° 36' 25.164" E
E	1° 40' 57.617" N	103° 36' 25.971" E
F	1° 40' 59.685" N	103° 36' 26.571" E
G	1° 41' 1.391" N	103° 36' 26.107" E

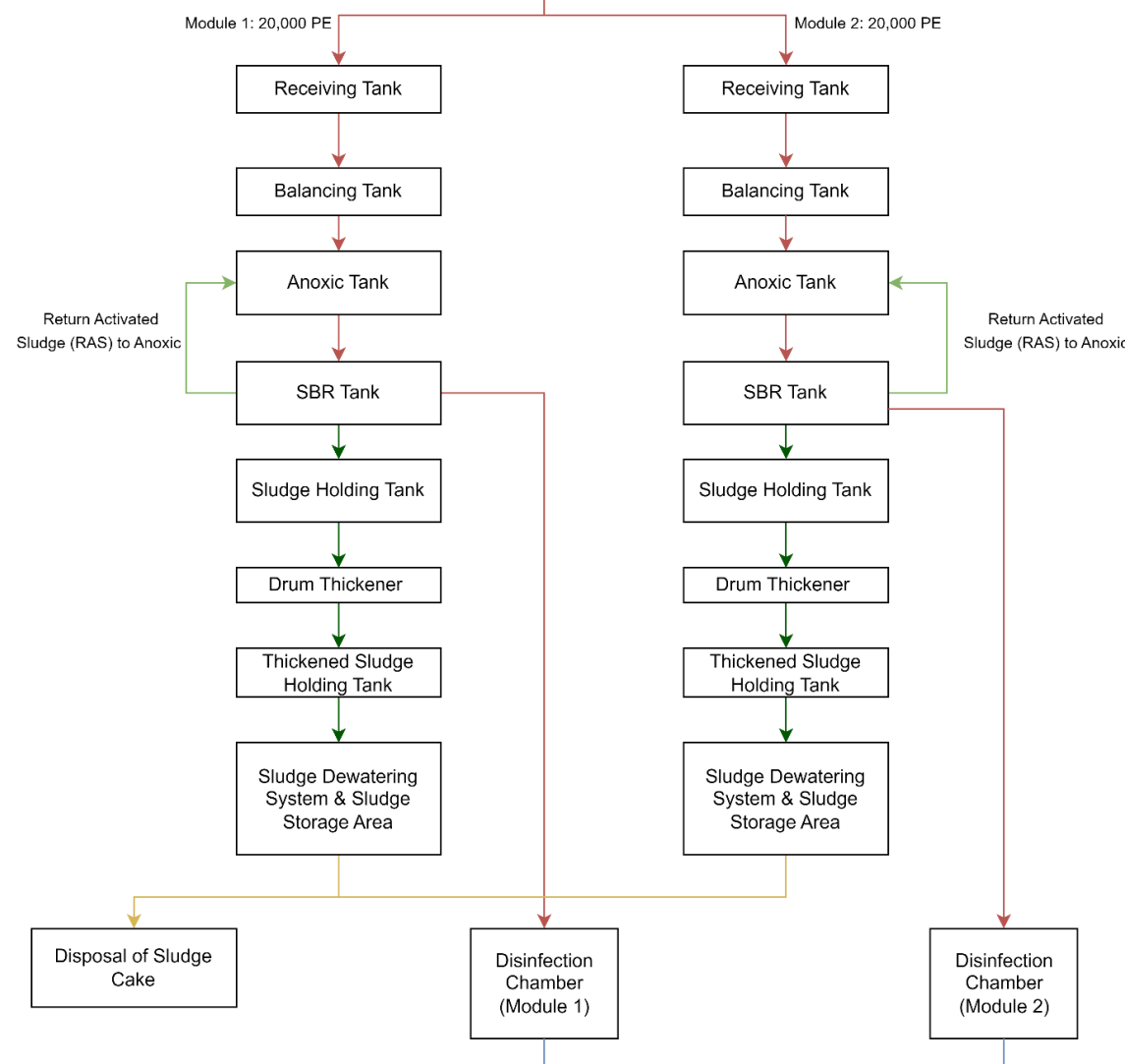
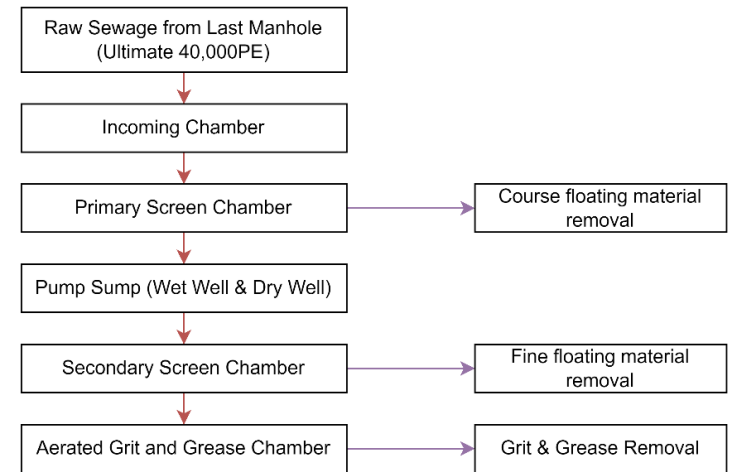
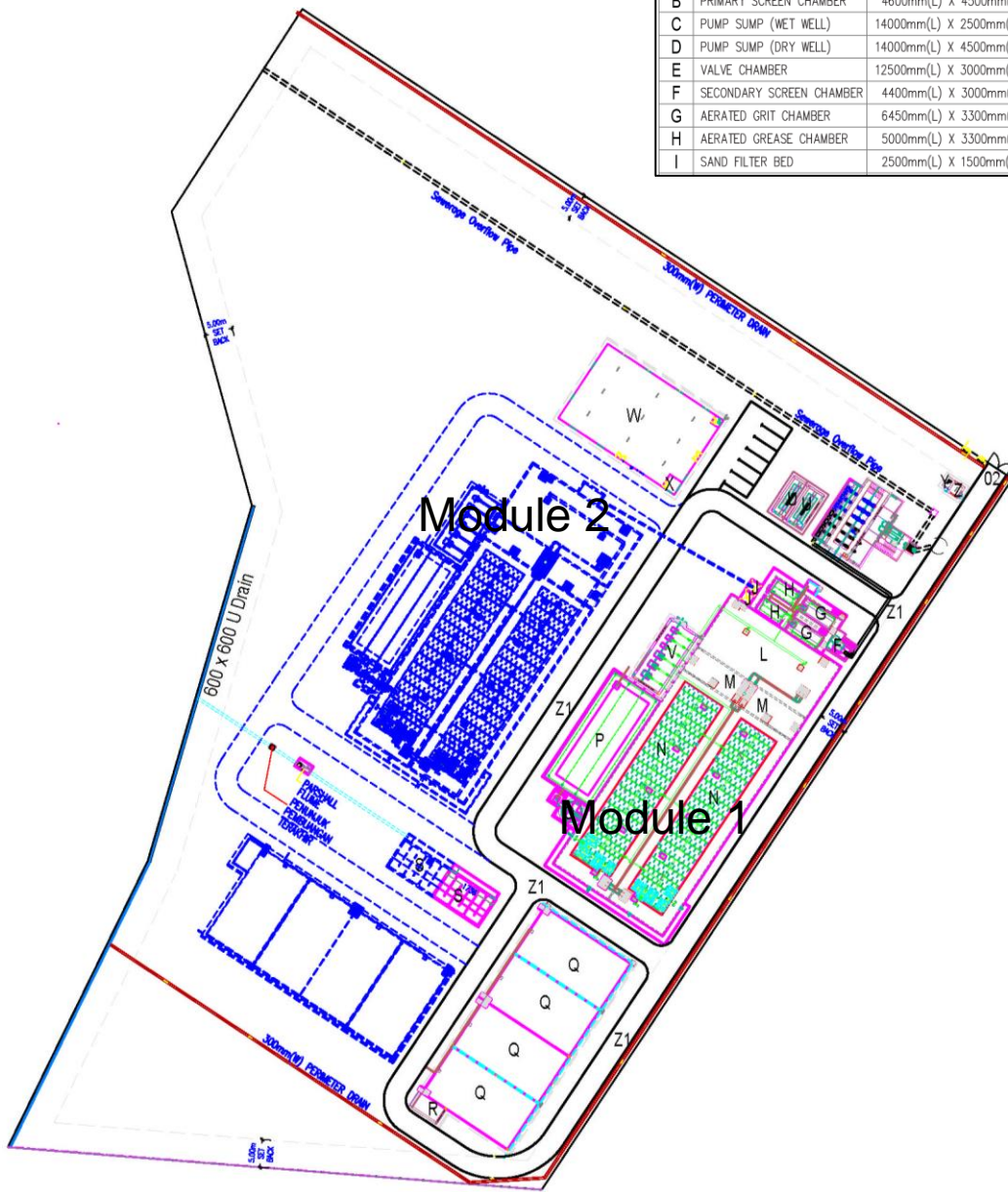
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## PROJECT LAYOUT

OVERALL LEGEND (ULT 40,000PE; MODULE 1&2: 20,000PE)				
ITEM	DESCRIPTION (ULT 40,000PE)	DIMENSION/TANK	MODULE 1	MODULE 2
A	INCOMING CHAMBER	1500mm(L) X 1500mm(W) X 6400mm(D)	1	-
B	PRIMARY SCREEN CHAMBER	4600mm(L) X 4500mm(W) X 6400mm(D)	1	-
C	PUMP SUMP (WET WELL)	14000mm(L) X 2500mm(W) X 9600mm(D)	1	-
D	PUMP SUMP (DRY WELL)	14000mm(L) X 4500mm(W) X 9600mm(D)	1	-
E	VALVE CHAMBER	12500mm(L) X 3000mm(W) X 1200mm(D)	1	-
F	SECONDARY SCREEN CHAMBER	4400mm(L) X 3000mm(W) X 1000mm(D)	1	-
G	AERATED GRIT CHAMBER	6450mm(L) X 3300mm(W) X 2700mm(D)	2	-
H	AERATED GREASE CHAMBER	5000mm(L) X 3300mm(W) X 2500mm(D)	2	-
I	SAND FILTER BED	2500mm(L) X 1500mm(W) X 1000mm(D)	1	-

ITEM	DESCRIPTION (20,000PE)	DIMENSION/TANK	MODULE 1	MODULE 2
J	DISTRIBUTION CHAMBER	2000mm(L) X 2000mm(W) X 1000mm(D)	1	1
K	RECEIVING TANK	3000mm(L) X 2000mm(W) X 4000mm(D)	-	1
L	BALANCING TANK	23300mm(L) X 11000mm(W) X 4600mm(D)	1	1
M	ANOXIC TANK	11500mm(L) X 4500mm(W) X 4600mm(D)	2	2
N	SBR TANK	42000mm(L) X 11500mm(W) X 4400mm(D)	2	2
O	GRAVITY SLUDGE THICKENER	4600mm(φ) X 1600mm(φbt) X 4000mm(D)	1	1
P	SLUDGE HOLDING TANK	20000mm(L) X 11500mm(W) X 4000mm(D)	1	1
Q	SLUDGE DRYING BED	18500mm(L) X 10000mm(W) X 3150mm(H)	4	4
R	SLUDGE STORAGE AREA	5000mm(L) X 3000mm(W) X 1800mm(H)	1	1
S	DISINFECTION CHAMBER	5500mm(L) X 9550mm(W) X 2500mm(D)	1	1
T	CHLORINATION ROOM	3000mm(L) X 3000mm(W) X 3000mm(H)	1	-
U	CONTROL ROOM	7000mm(L) X 3000mm(W) X 4000mm(H)	1	1
V	BLOWER ROOM	12400mm(L) X 5500mm(W) X 3000mm(H)	1	1
W	ADMIN BUILDING	25000mm(L) X 16000mm(W) X 3000mm(H)	1	-
X	SCADA ROOM	2500mm(L) X 2500mm(W) X 3000mm(H)	1	-
Y	TOILET	1500mm(L) X 1200mm(W) X 3000mm(H)	1	-
Z	GUARD HOUSE	2000mm(L) X 2000mm(W) X 3000mm(H)	1	-



### STP Components

Module 1 and 2 will be sharing the same headworks as follows:-

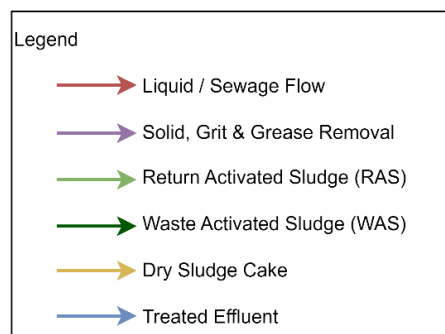
- Incoming chamber
- Primary screen chamber
- Pump sump (wet well, dry well and valve chamber)
- Secondary screen chamber
- Aerated grit and grease chamber

The modular components of each module are as follows:-

- Distribution chamber
- Receiving tank
- Balancing tank
- Anoxic tank
- Sequencing batch reactors (SBR)
- Sludge thickening system
- Sludge holding tank
- Sludge drying bed
- Sludge storage area
- Disinfection chamber
- Blower room

In addition, the associated buildings are as follows:-

- Toilet
- Guard house
- Administration building
- Control room
- Supervisory Control and Data Acquisition (SCADA) room
- Chlorination room

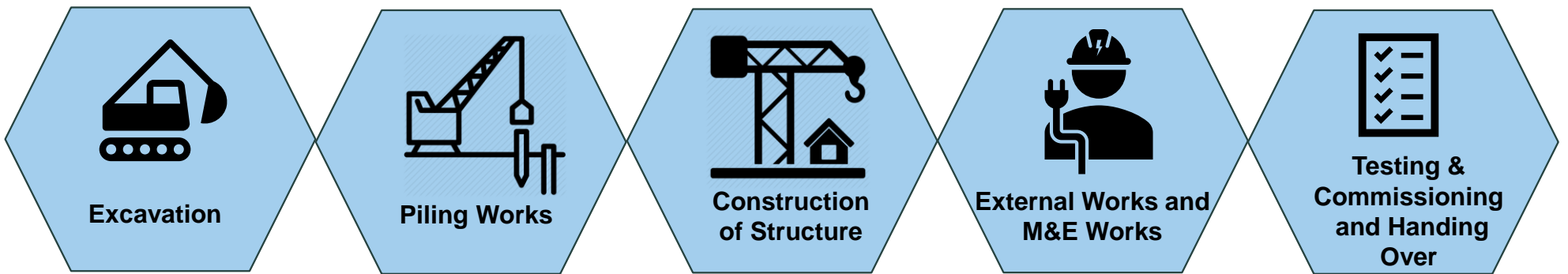


Treated effluent will be discharged to public drain

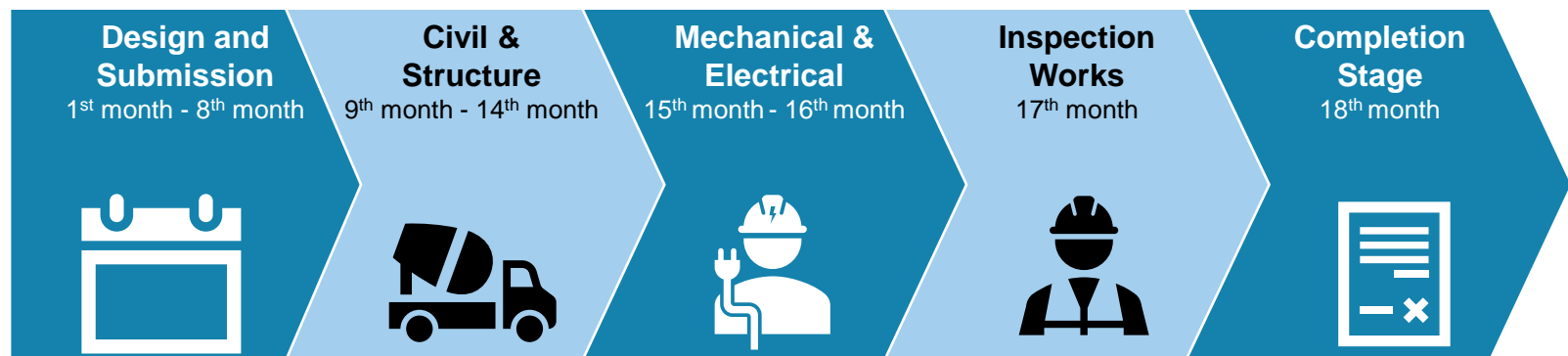
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### PROJECT ACTIVITIES



### PROJECT IMPLEMENTATION SCHEDULE



### EXISTING ENVIRONMENT

**Topography and Land Use**  
Elevation of the Project site is 53 m above mean sea level. The land uses within 5 km radius from the Project site consist of industrial, residential, commercial and other facilities.

**Geology and Soil**  
The Project site lies in acid intrusives (undifferentiated) area. One (1) borehole was drilled within the proposed STP area in October 2023.

**Climate & Meteorology**  
Based on Senai Meteorological data, the dominant wind direction is from north to south. The monthly mean rainfall amount at Senai for year 2015 – 2024 was in the range of 102.7 – 324.8 mm.

**Hydrology**  
The Project site is located within Sg. Skudai basin. Discharge from the Project site flows for about 2.4 km before entering Sg Skudai. After the confluence, Sg Skudai meanders about 24 km before discharging into Selat Johor.

**Water Quality**  
River water was sampled at ten (10) stations. Water Quality Index (WQI) for all stations fell between Class II to Class IV.

**Noise Level**  
Noise measurement was carried out at two (2) stations. All noise levels are below the limits of 65 dBA for day-time and 60 dBA for night-time.

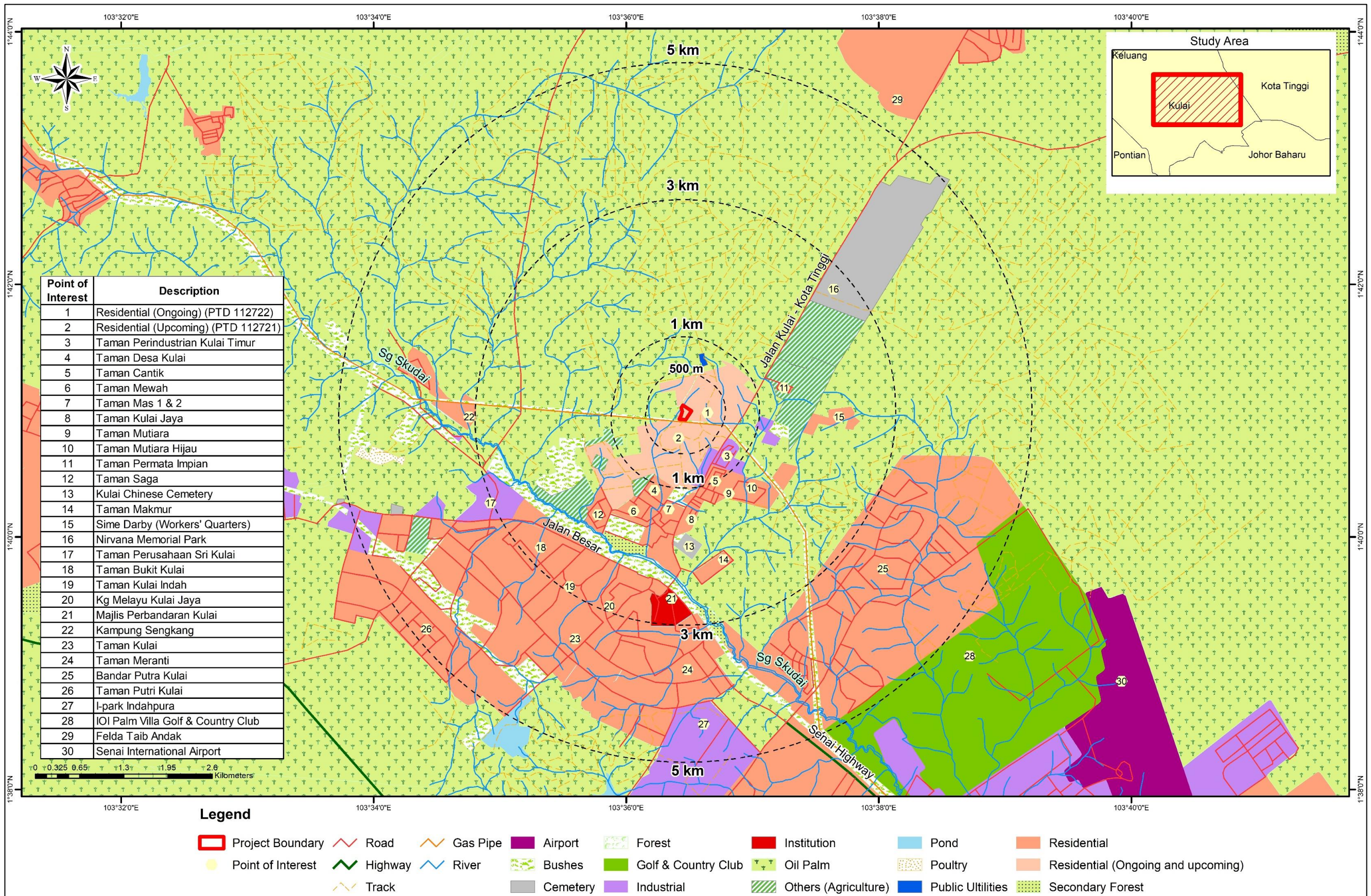
**Ambient Air Quality**  
Sampling of ambient air was carried out at two (2) stations. All measured parameters are well below the specified limits except PM<sub>2.5</sub> at station A1.

**Socio-economic**  
Local authority is Majlis Perbandaran Kulai (MPKu). The Project site is located within *Blok Perancangan Kecil BPK 2:7 Kulai 4*.

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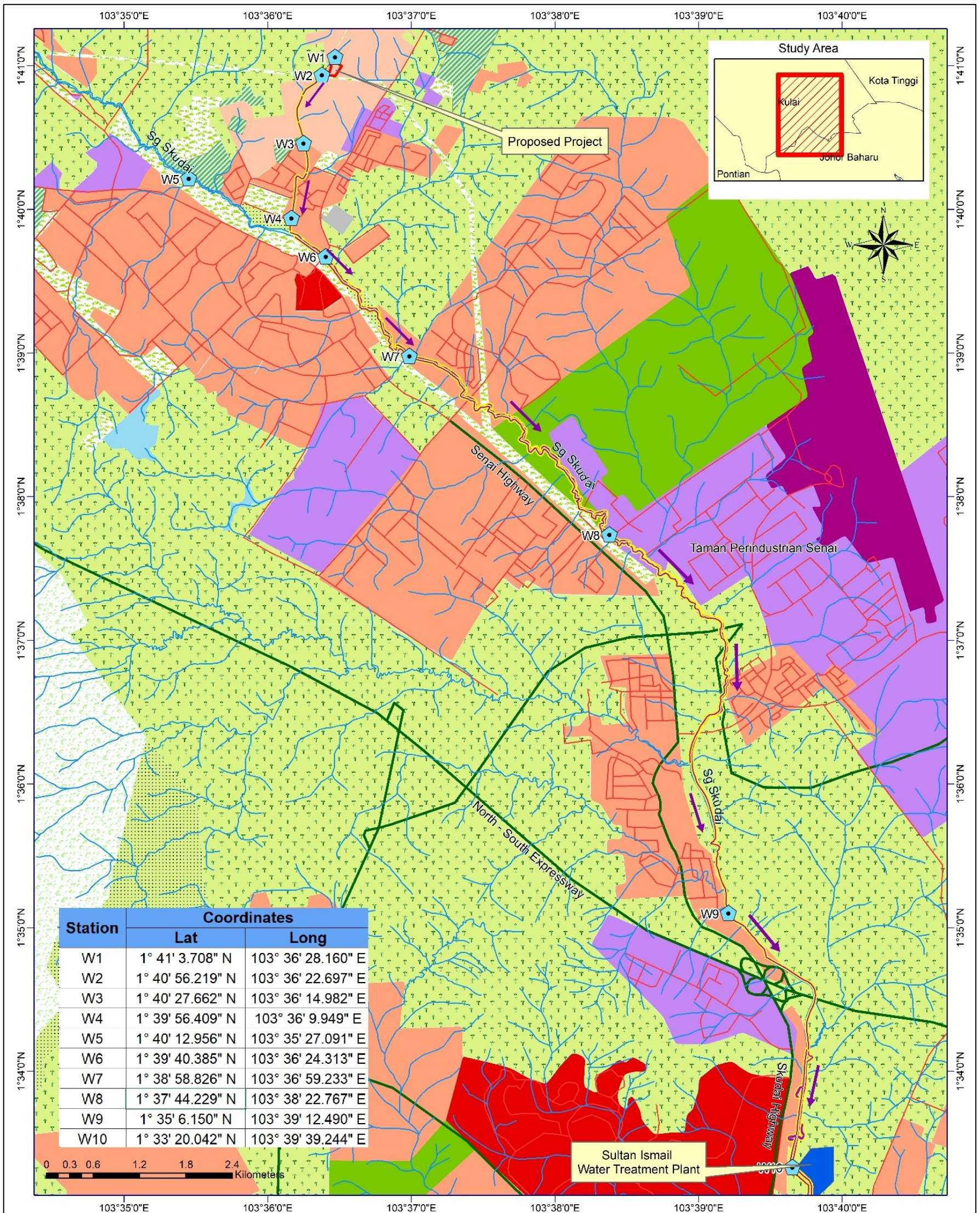
### LAND USE 5 KM RADIUS



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### SAMPLING STATIONS FOR WATER QUALITY



Station	Coordinates	
	Lat	Long
W1	1° 41' 3.708" N	103° 36' 28.160" E
W2	1° 40' 56.219" N	103° 36' 22.697" E
W3	1° 40' 27.662" N	103° 36' 14.982" E
W4	1° 39' 56.409" N	103° 36' 9.949" E
W5	1° 40' 12.956" N	103° 35' 27.091" E
W6	1° 39' 40.385" N	103° 36' 24.313" E
W7	1° 38' 58.826" N	103° 36' 59.233" E
W8	1° 37' 44.229" N	103° 38' 22.767" E
W9	1° 35' 6.150" N	103° 39' 12.490" E
W10	1° 33' 20.042" N	103° 39' 39.244" E

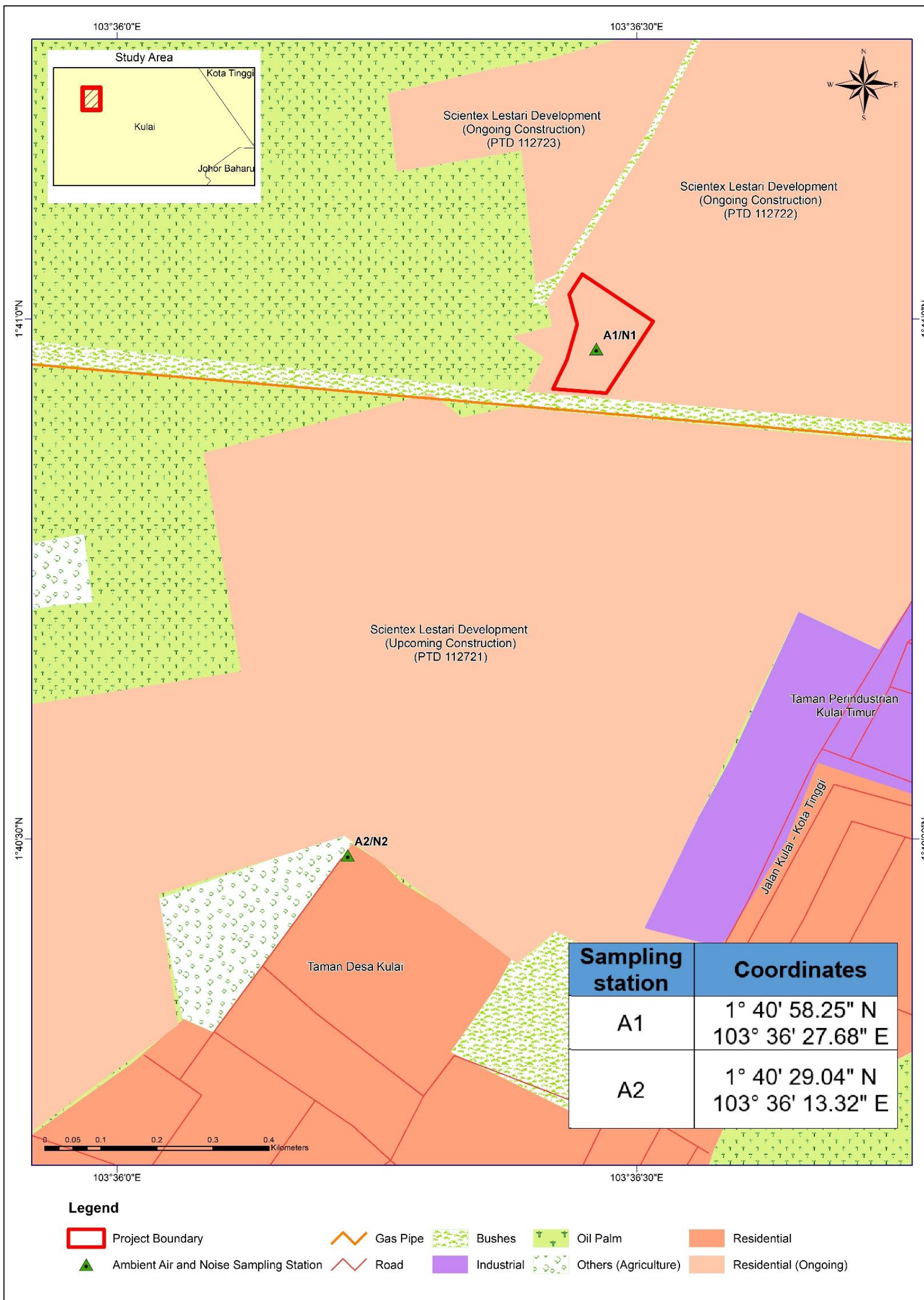
#### Legend

- Project Boundary
- Direction Flow
- River
- Airport
- Golf & Country Club
- Others (Agriculture)
- Secondary Forest
- River Water Sampling Station
- RiverFlow
- Road
- Bushes
- Industrial
- Pond
- Water Treatment Plant
- Highway
- Cemetery
- Institution
- Residential
- Forest
- Oil Palm
- Residential (Ongoing)

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### SAMPLING STATIONS FOR AMBIENT AIR QUALITY AND NOISE LEVEL



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### RESULTS OF WATER QUALITY

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

Parameter	<sup>1</sup> W1	Class	<sup>1</sup> W2	Class	<sup>2</sup> W3	Class	<sup>3</sup> W4	Class	<sup>2</sup> W5	Class	<sup>2</sup> W6	Class	<sup>3</sup> W7	Class	<sup>3</sup> W8	Class	<sup>1</sup> W9	Class	<sup>1</sup> W10	Class
Dissolved Oxygen (mg/L)	7.27	I (> 7)	4.64	III (3-5)	6.70	II (5-7)	4.22	III (3-5)	6.55	II (5-7)	6.62	II (5-7)	5.93	II (5-7)	6.55	II (5-7)	5.83	II (5-7)	2.48	IV (1-3)
BOD <sub>5</sub> at 20°C (mg/L)	15	V (> 12)	23	V (> 12)	3	III (3-6)	4	III (3-6)	3	III (3-6)	< 1	I (< 1)	4	III (3-6)	4	III (3-6)	90	V (> 12)	8	IV (6-12)
COD (mg/L)	42	III (25-50)	73	IV (50-100)	12	II (10-25)	19	II (10-25)	23	II (10-25)	< 2	I (< 2)	12	II (10-25)	13	II (10-25)	298	V (> 100)	18	II (10-25)
Total Suspended Solids (mg/L)	60	III (50-150)	24	I (< 25)	6	I (< 25)	< 1	I (< 25)	527	V (> 300)	37	II (25-50)	13	I (< 25)	33	II (25-50)	284	IV (150-300)	19	I (< 25)
									*29	I (< 25)	*17	I (< 25)								
Ammoniacal Nitrogen (mg/L)	1.45	IV (0.9-2.7)	0.96	IV (0.9-2.7)	0.33	III (0.3-0.9)	3.29	V (> 2.7)	0.16	II (0.1-0.3)	1.22	IV (0.9-2.7)	2.03	IV (0.9-2.7)	2.53	IV (0.9-2.7)	1.65	IV (0.9-2.7)	2.55	IV (0.9-2.7)

Note:

<sup>1</sup> - Sampled on 14<sup>th</sup> February 2025

<sup>2</sup> - Sampled on 4<sup>th</sup> December 2024

<sup>3</sup> - Sampled on 7<sup>th</sup> October 2023

\*resampled on 21<sup>st</sup> February 2025

### Water Quality Index (WQI)

Parameter	Sampling Station									
	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10
Water Quality Index (WQI)	66.5	56.1	88.3	66.3	77.1	83.9	75.3	75.4	38.2	58.4
Class	III (51.9-76.5)	III (51.9-76.5)	II (76.5-92.7)	III (51.9-76.5)	II (76.5-92.7)	II (76.5-92.7)	III (51.9-76.5)	III (51.9-76.5)	IV (31-51.9)	III (51.9-76.5)
					II (76.5-92.7)	II (76.5-92.7)				

### RESULTS OF AMBIENT AIR QUALITY

Parameter	Concentration (µg/m <sup>3</sup> ) at sampling station		*Limit (µg/m <sup>3</sup> )
	<sup>1</sup> A1	<sup>2</sup> A2	
Particulate Matter less than 10 micron (PM <sub>10</sub> )	83.3	69.4	100 (24 hours)
Particulate Matter less than 2.5 micron (PM <sub>2.5</sub> )	41.7	27.8	35 (24 hours)
Carbon Monoxide (CO)	< 0.1	< 0.1	30,000 (1 hour) 10,000 (8 hours)
Sulphur Dioxide (SO <sub>2</sub> )	< 1	< 1	80 (24 hours)
Nitrogen Dioxide (NO <sub>2</sub> )	< 1	< 1	70 (24 hours)
Hydrogen Sulphide (H <sub>2</sub> S)	< 1.0	< 1.0	4 <sup>#</sup> (24 hours)

Note:-

<sup>1</sup>: sampled on 12<sup>th</sup> October 2023

<sup>2</sup>: sampled on 9<sup>th</sup> December 2024

\*Malaysia Ambient Air Quality Standards (MAAQQ) (2020)

<sup>#</sup> Alberta Ambient Air Quality Objectives

### RESULTS OF NOISE LEVEL

Sampling Station	Noise Level L <sub>Aeq</sub>	*DOE Recommended Noise Level
<b>Day Time</b>		
<sup>1</sup> N1	43.8	65 dBA
<sup>2</sup> N2	45.9	
<b>Night Time</b>		
<sup>1</sup> N1	42.5	60 dBA
<sup>2</sup> N2	41.2	

\*Guidelines for Environmental Noise Limits and Control (DOE Malaysia, 2019) – Second Schedule; Permissible Sound Level (L<sub>Aeq</sub>) by Receiving Land Use for Existing Built Up Areas; Suburban and Urban Residential, Mixed Development.

<sup>1</sup> : measured on 12<sup>th</sup> October 2023

<sup>2</sup> : measured on 9<sup>th</sup> December 2024

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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 Best Management Practices (BMPs) such as sediment basin, check dam, silt fence and wash trough.

#### Hydrology

##### IMPACT

- Change of land use will increase the amount of surface runoff.

##### MITIGATION

- Proper implementation of BMPs such as earth drain to collect surface runoff into sediment basin, providing sufficient sediment basin and regular maintenance (i.e. desilting) will help to mitigate the risk of flooding at the Project site.
- Provision of detention ponds to regulate the post development flow.

#### River Water

##### IMPACT

- During construction phase, the main concern to water quality is discharge of surface runoff with high Total Suspended Solids (TSS).
- Untreated sewage flow into water bodies.

##### MITIGATION

- Proper planning of earthwork and implementation of BMPs such as sediment basin, check dam, silt fence and wash trough.
- Treated sewage discharge from the proposed STP shall comply with Standard A of the Environmental Quality (Sewage) Regulation 2009.

#### 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.
- During operational phase, the treatment of sewage will generate odour i.e. H<sub>2</sub>S emission.

##### 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.
- Sufficient buffer of 30 m has been provided as required in MSIG for development of STP.

##### IMPACT

- During construction phase, the operation of stationary and mobile equipment or machineries may contribute to the noise level.
- During operational phase, the blower for SBR tank and grit & grease chamber will generate noise.

#### Noise Level

##### MITIGATION

- Practice sequence of operations so that piling and other ground impacting operations do not occur in the same period.
- All construction vehicles must be checked for proper installation of engine silencer to reduce emitted noise level.
- During operational phase, the blower will be housed in an enclosed building to contain the emanating noise. Noise shall be controlled to level below 65 dB at a distance of 2 m from the boundary of housed noise source as per MSIG requirement.

##### IMPACT

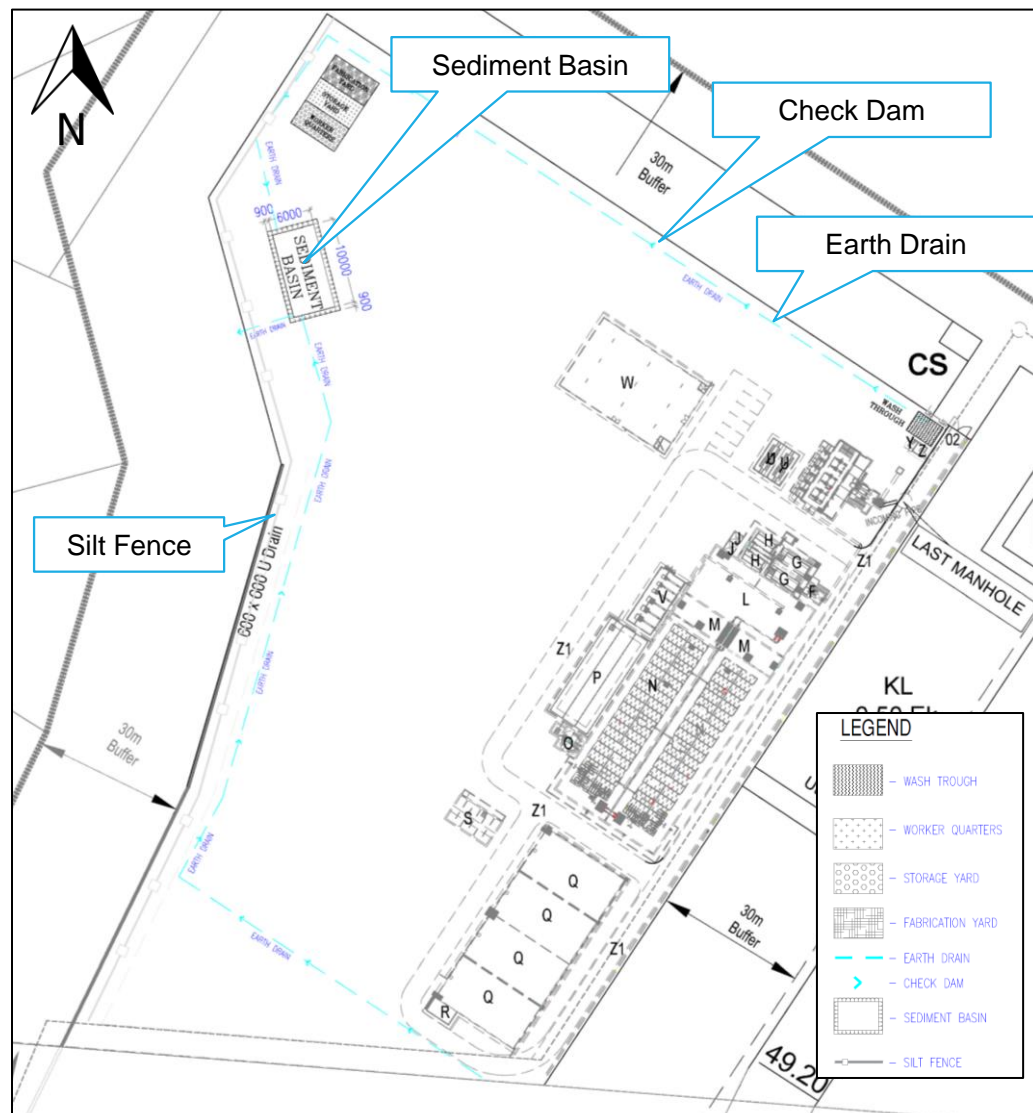
- Activities during construction and operational phase will generate scheduled waste and solid waste.
- Generation of sludge during operational phase.

#### Waste Management

##### MITIGATION

- Scheduled waste should be managed in accordance with the Environmental Quality (Scheduled Wastes) Regulations 2005 during construction phase. Solid waste shall be disposed of at the disposal site approved by the local authority during construction and operational phase.
- The generated sludge will be disposed of at Tapak Pelupusan Sisa Enapcemar Kering Indah Water Konsortium (IWK) Jemaluang, Johor after following all the regulations pertaining to sludge management specified in Environmental Quality (Sewage) Regulations 2009.

### LAYOUT OF LAND-DISTURBING POLLUTION PREVENTION AND MITIGATING MEASURES (LD-P2M2)



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### PROPOSED ENVIRONMENTAL MONITORING PROGRAM

#### CONSTRUCTION PHASE

##### Impact Monitoring



###### Water quality

- Three (3) water quality monitoring stations.
- Comparison with National Water Quality Standards (NWQS).

###### Ambient air



- Two (2) ambient air monitoring stations.
- Compliance with Malaysia Ambient Air Quality Standards (MAAQS) 2020.

###### Noise level



- Two (2) noise monitoring stations.
- Noise level limit: Day-time: < 65 dBA and Night-time: < 60 dBA

##### Performance Monitoring



###### Sediment basin

- Monitor silt storage zone and basin outlet.
- Daily checking and desilting for every 3 months or as needed.



###### Wash trough

- Monitor catch basin.
- Daily checking and desilting for every 3 months or as needed.



###### Temporary earth drain

- Monitor drain.
- Daily checking and desilting for every 3 months or as needed.



###### Access road

- Road should be well-paved to prevent dust generation and prevent damage to vehicles using the road.

##### Performance Monitoring



###### Stockpile area

- Stockpile should be covered during storm.



###### Silt fence

- Monitor silt collection area.
- Daily checking

##### Compliance Monitoring



###### Sediment basin

- Monitor discharge point of sediment basin during storm event more than 12 mm.

#### OPERATIONAL PHASE

##### Performance Monitoring

###### STP components



###### SBR tank

- DO, BOD, MLSS, SVI, pH,  $Q_{RAS}$ ,  $Q_{WAS}$ , MLVSS (from MLSS analysis), F/M ratio

###### Note:

F/M: Food/microorganism ratio  
MLSS: Mixed Liquor Suspended Solid  
MLVSS: Mixed Liquor Volatile Suspended Solid  
 $Q_{RAS}$ : Flow rate of Return Activated Sludge  
 $Q_{WAS}$ : Flow rate of Waste Activated Sludge  
SVI: Sludge Volume Index

##### Impact Monitoring



###### Water quality

- Three (3) water quality monitoring stations.
- Comparison with National Water Quality Standards (NWQS).

##### Compliance Monitoring

###### Treated sewage discharge point

- Monitor parameters listed in Environmental Quality (Sewage) Regulations 2009.
- Compliance with Standard A of Environmental Quality (Sewage) Regulations 2009



#### DECOMMISSIONING PHASE

##### Impact Monitoring



###### Water quality

- Three (3) water quality monitoring stations.
- Comparison with National Water Quality Standards (NWQS).



###### Ambient air

- Two (2) ambient air monitoring stations.
- Compliance with Malaysia Ambient Air Quality Standards (MAAQS) 2020.

###### Noise level



- Two (2) noise monitoring stations.
- Noise level limit: Day-time: < 65 dBA and Night-time: < 60 dBA

##### Compliance Monitoring



###### Solid waste

- Collection and disposal of waste from dismantling of structures.
- Compliance with local authority guidelines for disposal upon demolition work.



###### Scheduled waste

- Monitor for chemicals (solid and/or liquid).
- Compliance with Environmental Quality (Scheduled Wastes) Regulations 2005.