Executive Summary

Proposed Design and Build of Covered and Buried (Open Type) Sewage Treatment Plant (STP) (Module 1: 12,500 PE; Ultimate: 25,000 PE) at PTD 238497 & PTD 238498, Jalan Persiaran Scientex, Mukim Plentong, Daerah Johor Bahru, Johor Darul Takzim for Keck Seng (M) Berhad

Introduction

- Project Proponent proposed to build and design of covered and buried (open type) sewage treatment plant at the proposed project site to cater sewage generated from new development.
- The total area of the proposed project site is 3.38 acres of land.
- The implementation scheduled of the proposed project includes construction phase and operation and maintenance phase.

Legislative Requirement

Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, First Schedule,

- Prescribed Activity 14 (c): Sewage
  - (i) Construction of sewage treatment plant with 20,000 population equivalent or more

Project Location

The proposed project site is located at PTD 238497 & PTD 238498, Jalan Persiaran Scientex, Mukim Plentong, Daerah Johor Bahru, Johor Darul Takzim with Latitude N 1°31'31.0" and Longitude E 103°55'15.9".

Statement of Need

i. To cater sewage generated from new development at PTD 238497 & PTD 238498, Jalan Persiaran Scientex, Mukim Plentong, Daerah Johor Bahru, Johor Darul Takzim for Keck Seng (M) Berhad.
ii. To construct sewage treatment plant (Module 1) to cater sewage generated from the new development.
iii. To ensure sewage generated from the new development is well treated before being discharged to the watercourse and hence minimize the impact to Sungai Serai.
iv. To maintain clean water for the propagation and survival of fish and other aquatic life in Sungai Serai and avoid serious public health problem due to improper disposal or use of sludge and treated sewage water.

Project Proponent

Keck Seng (M) Berhad

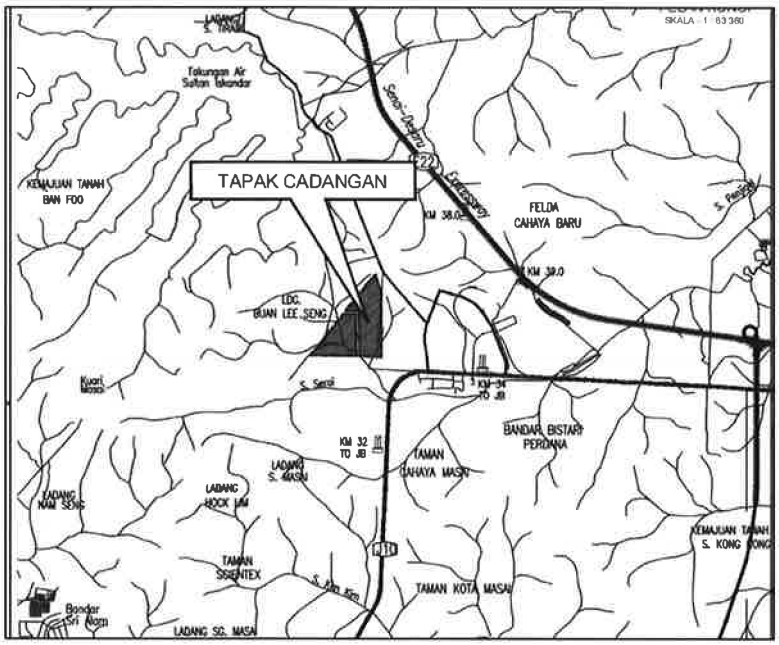
Jalan Tanjong Puteri, Tanjong Puteri Resort, 81700 Pasir Gudang, Johor

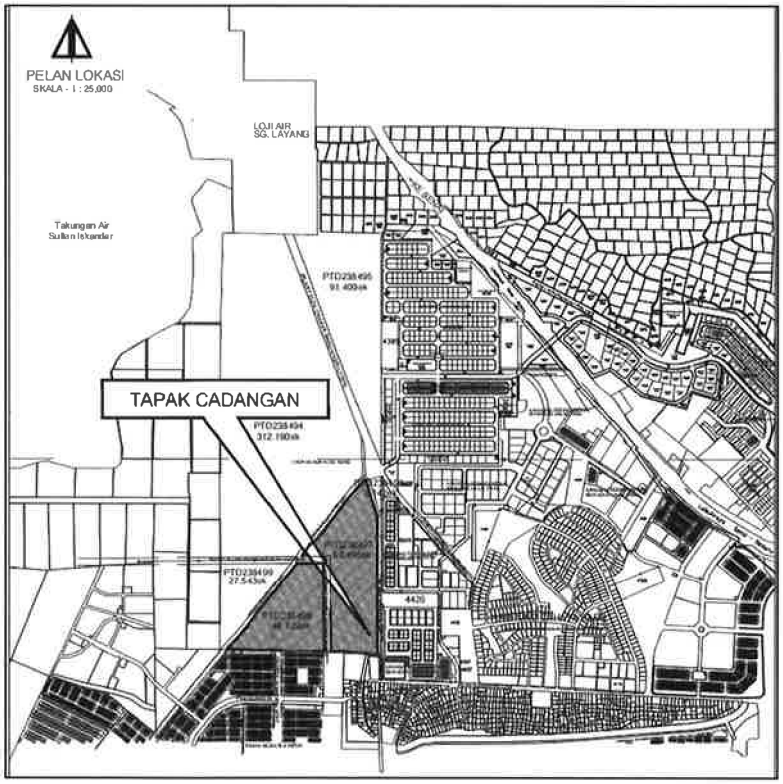
EIA Consultant

Ecochem Engineering Sdn Bhd

6B, Jalan Mutiara 1/14, Taman Mutiara Mas, 81300 Skudai, Johor

Key Plan & Location Plan





Project Boundary and Coordinates

Existing Environment

Topography

Slope: < 15° for all part of proposed project
Elevation: does not exceed 5 m above sea mean level

Climate

Senai Meteorological Station
Humidity: 84.8%
Temperature: 21.3°C - 35.8°C
Rainy Days: 194 days
Wind speed: 1.5 m/s

Water Quality

WQI at monitoring station W1, W2, W3, W5 and W6 fall under Class III, while WQI at monitoring station W4 fall under Class IV

Noise Level

The results of noise level for all monitoring stations are below 65 dBA (daytime) and 60 dBA (nighttime).

Air Quality

All monitoring stations comply to Malaysia Ambient Air Quality Standard, 2020.

Flood and Erosion

The risk of flood and erosion is minimal.

Traffic

Expressway:
Jalan Felda Cahaya Baru Masai,
Kampung Cahaya Baru,
Senai-Desaru Expressway

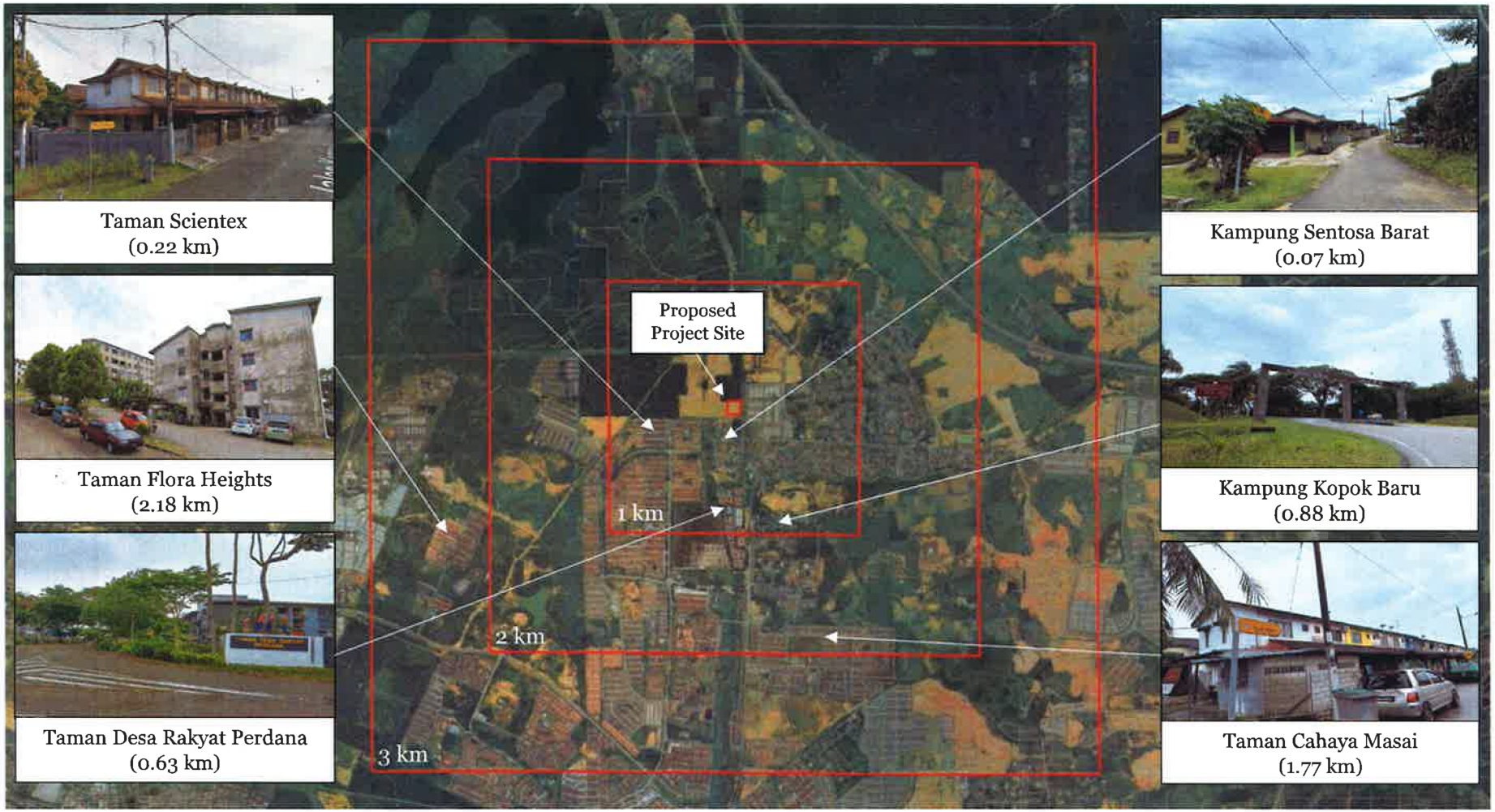
Peak hours:
7.00 a.m – 8.00 a.m
5.00 p.m – 7.00 p.m

Socio-economic

Nearest habitable area is 0.07 km and 0.22 km away from project site.

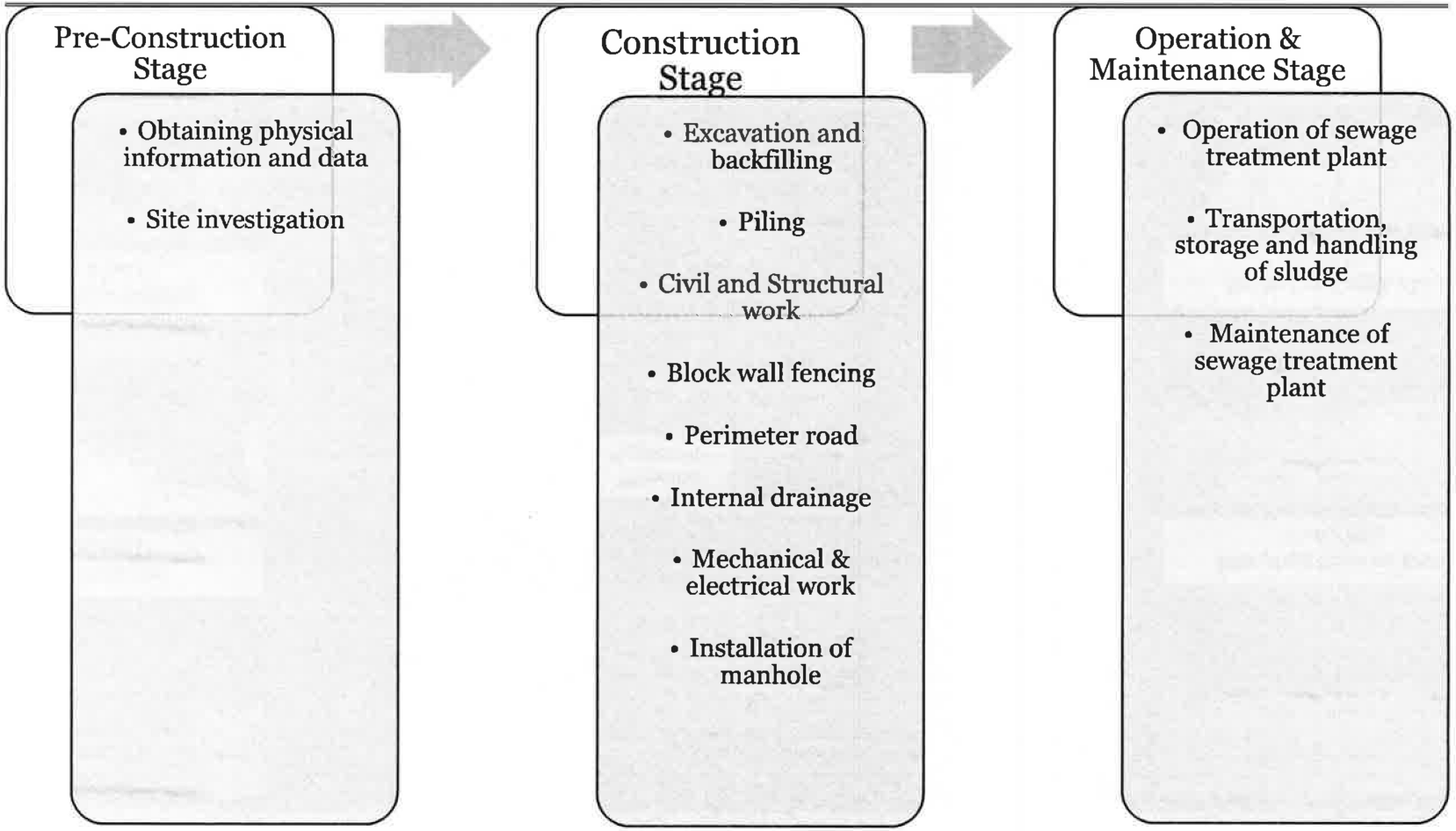
Existing Landuse

Existing environment at proposed project site



Land use map within 3 km radius surrounding the Proposed Project Site

Project Activities



Project Description

- The Project Proponent proposed to design and build of covered and buried (open type) sewage treatment plant (STP) module 1 with capacity of 12,500 PE and the ultimate capacity is 25,000 PE to cater the sewage generated from the new development.

- Currently, the proposed project site is an empty open land, intended for the construction of the sewage treatment plant to cater the sewage generated from new development.

- The proposed sewage treatment plant will be using covered and buried (open type) sewage treatment plant.

- This proposed project consists of 2 phases which are construction phase and operation & maintenance stage.

- The construction stage is estimated to be completed within ten (10) months including testing and commissioning of the new equipment for 30 days.

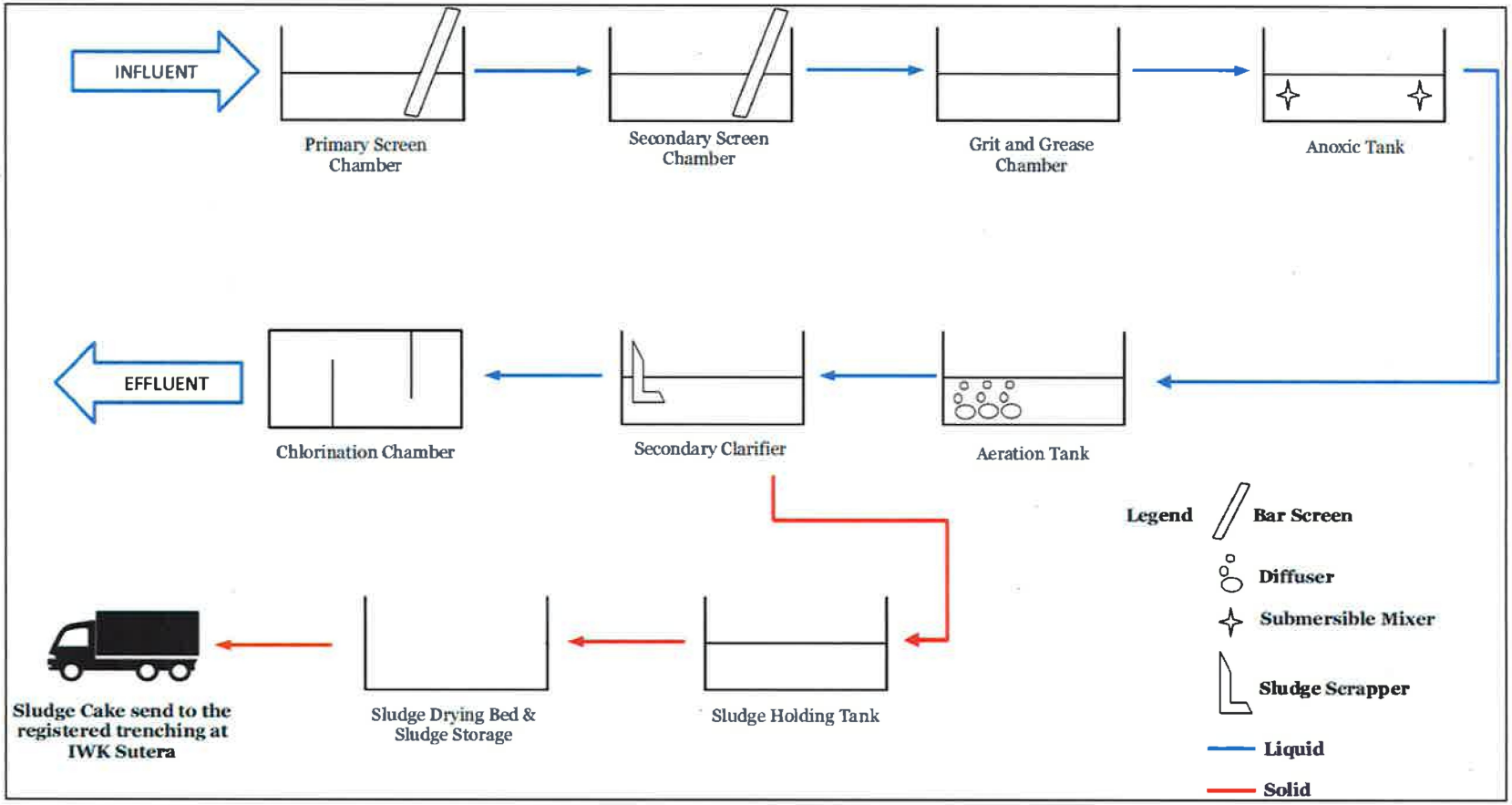
- The overall breakdown of population equivalent (PE) for the proposed sewage treatment plant (STP) is shown below:

No	Building/Development	Unit/Person	Acre	PE Rate	Total PE
Housing					
1	Rumah Teres 2 Tingkat (20'x70')	454	-	5 PE/Unit	2,270
2	Rumah Teres 2 Tingkat (20'x65')	95	-	5 PE/Unit	475
	Dasar Rumah Mampu Biaya Johor				
3	RMB A (RM42K) – 720 sqft	58	-	5 PE/Unit	290
4	RMB B (RM80K) – 850 sqft	115	-	5 PE/Unit	575
5	RMB C (RM150K) – 1,000 sqft	115	-	5 PE/Unit	575
6	RMB D (RM300K) – 1,400 sqft	115	-	5 PE/Unit	575
7	Kedai Kos Sederhana 1 Tingkat (20'x60')	58	1.43	3 PE/100 m^2	174
Commercial					
8	Kedai Pejabat 2 Tingkat (22'x70')	120	8.53	3 PE/100 m^2	1,036

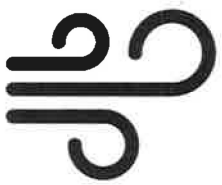
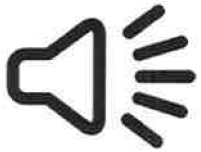
9	Plot Komersil 1	1	1.09	3 PE/100 m²	265
10	Plot Komersil 2	1	1.01	3 PE/100 m²	245
11	Plot Komersil 3	1	1.00	3 PE/100 m²	243
12	Plot Komersil 4	1	1.64	3 PE/100 m²	398
13	Plot Komersil 5	1	5.77	3 PE/100 m²	1,401
Facilities					
14	Surau (3 Unit)	600	-	0.2 PE/person	120
15	Dewan Orang Ramai	1	1.00	3 PE/100 m²	61
16	Balai Raya	1	0.50	3 PE/100 m²	30
17	Rizab MBJB	1	0.50	3 PE/100 m²	30
18	Tadika (2 Unit)	60	-	0.2 PE/person	12
Infrastructure and Utilities					
19	Loji Rawatan Kumbahan (1 Unit)	10	-	0.2 PE/person	2
20	Rumah Pam (1 Unit)	10	-	0.2 PE/person	2
21	Tangka Air	10	-	0.2 PE/person	2
22	Pencawang Pembahagi Utama	10	-	0.2 PE/person	2
Total PE (I)					**8,783**
Future Development					
23	Future Development on PTD 238499, Lot 5368, Lot 5369, Lot 5370, Lot 5371, and Part of Lot 5367 (79.27 acres)				5,962
24	Future Development on Part of PTD 238494, Part of Lot 5359, and Part of Lot 5367 (136.32 acres)				10,255
Total PE (II)					**16,217**
Grand Total PE (I+II)					**25,000**
Designed for					**25,000**

STP Process Flow Diagram

Population Equivalent
Ultimate: 25,000 PE
Module 1: 12,500 PE



Pollution Prevention and Mitigation Measures

	Potential Impact	Mitigation Measures
Air Quality 	Construction Stage • Dust generated from construction activities. • Dust generated by the movement of site vehicles such as lorry. Operation & Maintenance Stage • Gaseous emission from aeration process.	Construction Stage • Sprayed the project site with water to reduce dispersion of air borne particulate matter or fugitive dust. • Wash through to be install at the entrance of each access. Operation & Maintenance Stage • No hazardous gas is emitted from the process
Noise 	Construction Stage • Noise generated from heavy duty construction equipment such as piling activity. Operation & Maintenance Stage • Noise generated from plant equipment.	Construction Stage • Installation activities shall be carried out during daytime only. • Turn off machinery when not in use. Operation & Maintenance Stage • Enclosure shall be provided especially at the equipment that produce high noise levels such as pump and blower.

Water Quality 	Construction Stage • Surface runoff resulted from earthwork activity. Operation & Maintenance Stage • Discharge of untreated sewage from STP due to malfunctioning of equipment.	Construction Stage • Earth drain shall be constructed to channel surface runoff to the sediment basin. Operation & Maintenance Stage • Routine maintenance shall be carried out to ensure the efficiency of the STP in treating sewage.
Waste Management 	Construction Stage • Construction, municipal and scheduled waste generated. Operation & Maintenance Stage • Generation of solid waste and scheduled waste during operation stage	Construction Stage • Construction materials such as broken bricks, concrete blocks, and hardened cement should be disposed at designated areas. • Proper waste management according to Environmental Quality (Scheduled Waste) Regulations 2005. Operation & Maintenance Stage • Recyclables materials should be sent to relevant dealers for recycling purpose.

Soil Erosion and Sediment 	Construction Stage • Annual soil loss due to erosion is estimated at 66.4 ton/ha/yr without control measures and lowered to 1.66 ton/ha/yr with control measure.	Construction Stage • Provide temporary earth drain, sediment basin and check dam. • Conduct monitoring or inspection to make sure all BMPs are in good condition to increase its efficiency.
Odour 	Construction Stage • Presence of fly nuisance due to odour from food waste. Operation & Maintenance Stage • Odour emission from the sludge storage area and dewatering process. • Accumulation of odour at pumping station.	Construction Stage • Proper waste management shall be carried out to reduce the odour nuisance. Operation & Maintenance Stage • Suitable buffer shall be provided to minimize odour nuisance to the nearby residence.
Traffic & Transportation 	Construction & Operation Stage • Traffic impacts encountered during operational stage to the surrounding road networks.	Construction & Operation Stage • Transportation operator employed shall made ensure to be well trained in handling the vehicle, emergency response equipment. • Speed limit of not exceeding 90 km/hr on highways and 60 km/hr on normal is recommended.

Socio-economy 	No significant risk as the number of workers are relatively low and from local area.	No mitigation measures are required.
Biological Environment 	The proposed project is located at developed area. Thus, there is no endanger to the surrounding in biological aspect.	No mitigation measure is required.
Abandonment & Closure 	Construction Stage • Require the process of equipment dismantling and removal of construction materials from the project site. Operation & Maintenance Stage • Involve dismantling of plant components and demolition of all facilities and infrastructure.	Construction & Operation Stage • Preparation of detailed abandonment plan and to be submitted to DOE. • Appropriate project remediation after removing and clearing of facilities and infrastructure shall be implemented by providing proper cover crops on the cleared area to prevent soil erosion.

Monitoring Programme

Performance Monitoring (PM)

- Monitoring to ensure that the pollution control systems and other mitigation measures are perform in a good condition to reduce the adverse impacts from the proposed Project at a minimum level.

- Performance Monitoring (PM) for proposed project
  - ✓ Sediment Basin (during construction stage)
  - ✓ Sewage Treatment System (during operation and maintenance stage)

Compliance Monitoring (CM)

- Monitoring activities to be carried out to ensure that the EIA condition of approval (COAs) or any regulations under Environmental Quality Act 1974 are complied.

- An environmental audit may also be carried out to assess the overall project compliance.

- Compliance Monitoring (CM) during construction stage
  - ✓ Sediment Basin

- Compliance Monitoring (CM) during operation & maintenance stage
  - ✓ Final Discharge of Sewage Treatment Plant (STP)

Impact Monitoring (IM)

- Monitoring to verify that the findings of EIA study of potential impacts identified during EIA preparation stages are correct and effective in mitigation the adverse impacts to environment

- Impact monitoring (IM) during construction and operation & maintenance stage are;
  - ✓ Water Quality
  - ✓ Ambient Air
  - ✓ Noise

Proposed Monitoring Programme

Construction Stage

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Water Quality						
W1	1°31'37.70" N 103°55'19.21" E	Upstream of proposed STP discharge point	pH, DO, Temperature, BOD_5, COD, Total Suspended Solids, Oil and Grease (O&G), Ammoniacal Nitrogen, E.Coli, DO, Phosphorus, Nitrate, Salinity, Conductivity	National Water Quality Standards (NWQS) Malaysia	Impact monitoring (IM)	Monthly
W2	1°31'23.17" N 103°55'15.75" E	Downstream of proposed STP discharge point				
Ambient Air Quality						
A1	1°31'29.84" N 103°55'16.48" E	Project site boundary	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, CO, H_2S	Malaysia Ambient Air Quality Standard, 2020	Impact monitoring (IM)	Quarterly
A2	1°31'26.76" N 103°55'14.87" E	South from the project site at Kampung Sentosa Barat				
A3	1°31'27.48" N 103°55'7.68" E	Southwest from the project site at Taman Scientex				
Noise Quality						
N1	1°31'29.84" N 103°55'16.48" E	Project site boundary	Leq, Lmax, Lmin	Guidelines for Environmental Noise Limits and Control, 2019	Impact monitoring (IM)	Quarterly
N2	1°31'26.76" N 103°55'14.87" E	South from the project site at Kampung Sentosa Barat				

N3	1°31'27.48" N 103°55'7.68" E	Southwest from the project site at Taman Scientex				
Sediment Basin						
Sediment Basin	At project site		Turbidity, Total Suspended solid	Turbidity<250NTU TSS<50mg/l	Compliance Monitoring (CM)	Monthly and whenever, there are rain event and exceeds 12.5mm
			Maintenance for all BMPs components shall be conducted and maintenance report shall be prepared and kept well for inspection purpose.	-	Performance Monitoring (PM)	

Operation & Maintenance Stage

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Water Quality						
W1	1°31'37.70" N 103°55'19.21" E	Upstream of proposed STP discharge point	pH, DO, Temperature, BOD_5, COD, Total Suspended Solids, Oil and Grease (O&G), Ammoniacal Nitrogen, E.Coli, DO, Phosphorus, Nitrate, Salinity, Conductivity	National Water Quality Standards (NWQS) Malaysia	Impact monitoring (IM)	Monthly
W2	1°31'23.17" N 103°55'15.75" E	Downstream of proposed STP discharge point				
Ambient Air Quality						
A1	1°31'29.84" N 103°55'16.48" E	Project site boundary	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, CO, H_2S	Malaysia Ambient Air Quality Standard, 2020	Impact monitoring (IM)	Quarterly
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Noise Quality						
N1	1°31'29.84" N 103°55'16.48" E	Project site boundary	Leq, Lmax, Lmin	Guidelines for Environmental Noise Limits and Control, 2019	Impact monitoring (IM)	Quarterly
N2	1°31'26.76" N 103°55'14.87" E	South from the project site at Kampung Sentosa Barat				

N3	1°31'27.48" N 103°55'7.68" E	Southwest from the project site at Taman Scientex				
Final Discharge of Sewage Treatment Plant						
Sewage treatment plant	At project site		Temperature, pH, BOD_5, COD, Suspended Solids, Oil and Grease, Ammoniacal Nitrogen, Nitrate Nitrogen, Phosphorus	Environmental Quality (Sewage) Regulations 2009, Standard B	Compliance monitoring (CM)	Monthly
Sewage Treatment System						
Sewage treatment plant	At project site		Flowrate, pH, Temperature, BOD_5, COD, Suspended Solids, Dissolved oxygen, Oil and Grease, water color (The parameters shall be monitored accordingly to each STP unit treatment operations)	Guidebook on Performance Monitoring of Sewage Treatment System Operators	Performance monitoring (PM)	Daily Weekly Monthly