Executive Summary

The Proposed Upgrading of Existing Open Sewage Treatment Plant (STP) with Ultimate: 30,000 PE; Module 2: 15,000 PE at Lot 812, Geran 237417, Mukim Senai, Daerah Kulaijaya, Johor Darul Takzim for Scientex Quatari Sdn Bhd.

Introduction

- Project Proponent proposed to build an Open Type Extended Aeration (EA) system sewage treatment plant (STP) module 2 at the existing project site to cater sewage generated from new development.
- The total area of the site is 3.79 acres of land and module 2 occupied about 2.02 acres.
- 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 LOT 812, Geran 237417, Mukim Senai, Daerah Kulaijaya, Johor Darul Takzim with Latitude N 1°37'53.9" and Longitude E 103°41'10.5".

Statement of Need

i. The existing STP module 1 is almost over capacity, hence the new STP module 2 need to be built immediately to cater the sewage generated from the existing development of previous phase and the new development.
ii. To properly construct and operate Sewage Treatment Plant (STP) to treat sewage generated from the new development.
iii. To ensure the sewage generated from the new development is well treated before being discharged to the watercourse, hence minimize the pollution loading to the river.
iv. To maintain clean water for the propagation and survival of fish and other aquatic life in Sungai Tebrau and avoid serious public health problems due to improper disposal or use of sludge and sewage.

Project Proponent

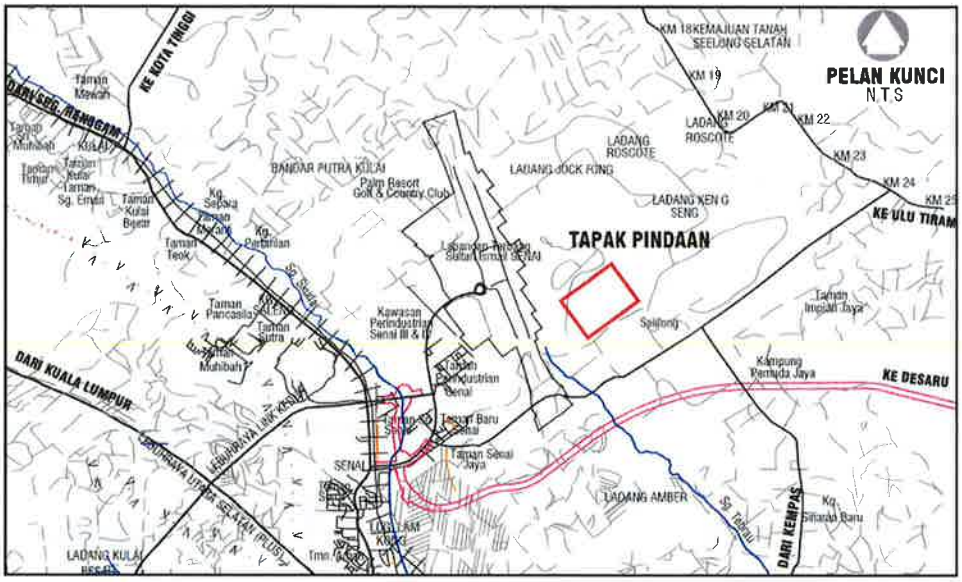
Scientex Quatari Sdn Bhd

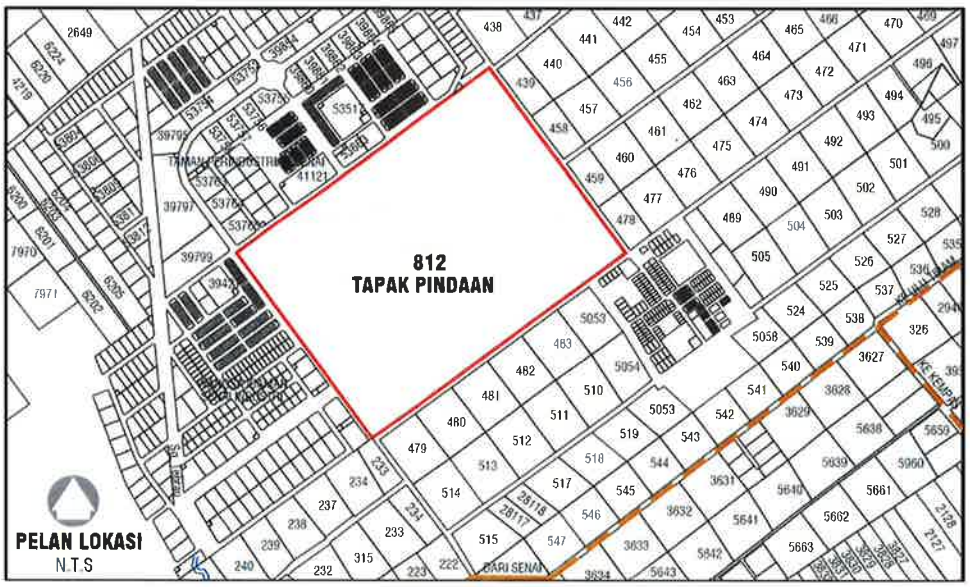
EIA Consultant

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 5m 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,W4, W5 and W6 fall under Class III

Noise Level

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

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:
Skudai Highway,
Second Link Expressway

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

Socio-economic

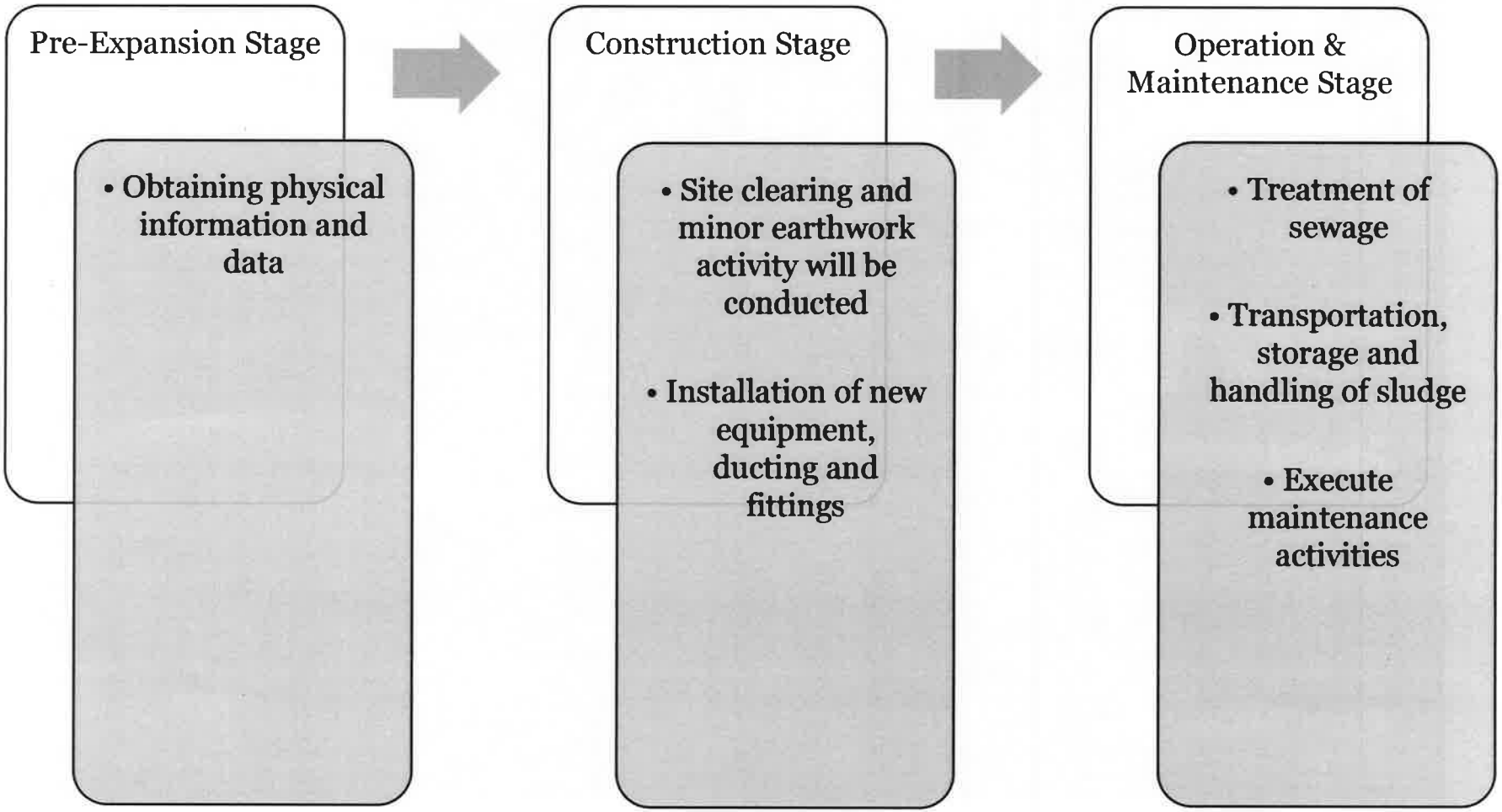
Nearest habitable area is 0.05 km away from project site.

Existing Landuse

Existing environment at proposed project site

Land use map within 5 km radius surrounding the Proposed Project Site

Project Activities



Project Description

- The Project Proponent proposed to upgrading an Open Type Extended Aeration (EA) system sewage treatment plant (STP) module 2 with capacity of 15,000 PE and the ultimate capacity is 30,000 PE to cater the sewage generated from the new development.

- Currently, there is an existing sewage treatment plant (STP) module 1 at the existing project site which is to cater the sewage generated from existing development of previous phases.

- The proposed sewage treatment plant will be using Open Type Extended Aeration (EA) system.

- 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:

Building/Development	Module 1			Module 2		
	Gross Area m^2 / unit	PE/m^2 or PE/unit	Total PE	Gross Area m^2 / unit	PE/m^2 or PE/unit	Total PE
A) Perumahan						
1. Rumah teres	1,495	5	7,475			
2. Rumah Mampu Milik Johor Jenis Town House 2 Tingkat	502	5	2,510			
B) Perdagangan						
1. Kedai Pejabat 2 tingkat	97	9	873			
2. Kedai Sederhana Rendah 1 Tingkat	68	4	272			
3. Lot Komersial (Plot Ratio 1)	3.50 acre / 14,167 m^2	0.03	425			
4. Pangsapuri Perkhidmatan on Lot 92249 a) Block A - Pangsapuri Perkhidmatan 12 Tingkat						
i) Pangsapuri -169 unit				169	5	845
ii) Kedai - 1 unit				30 m^2	0.03	1.0
iii) Pejabat Pengurusan-1 unit				50 m^2	0.03	1.50
iv) Kiosk Makanan - 3 unit				50 m^2	0.03	1.50
						849
b) Block B - Pangsapuri Perkhidmatan 12 Tingkat						
i) Pangsapuri - 173 unit				173	5	865

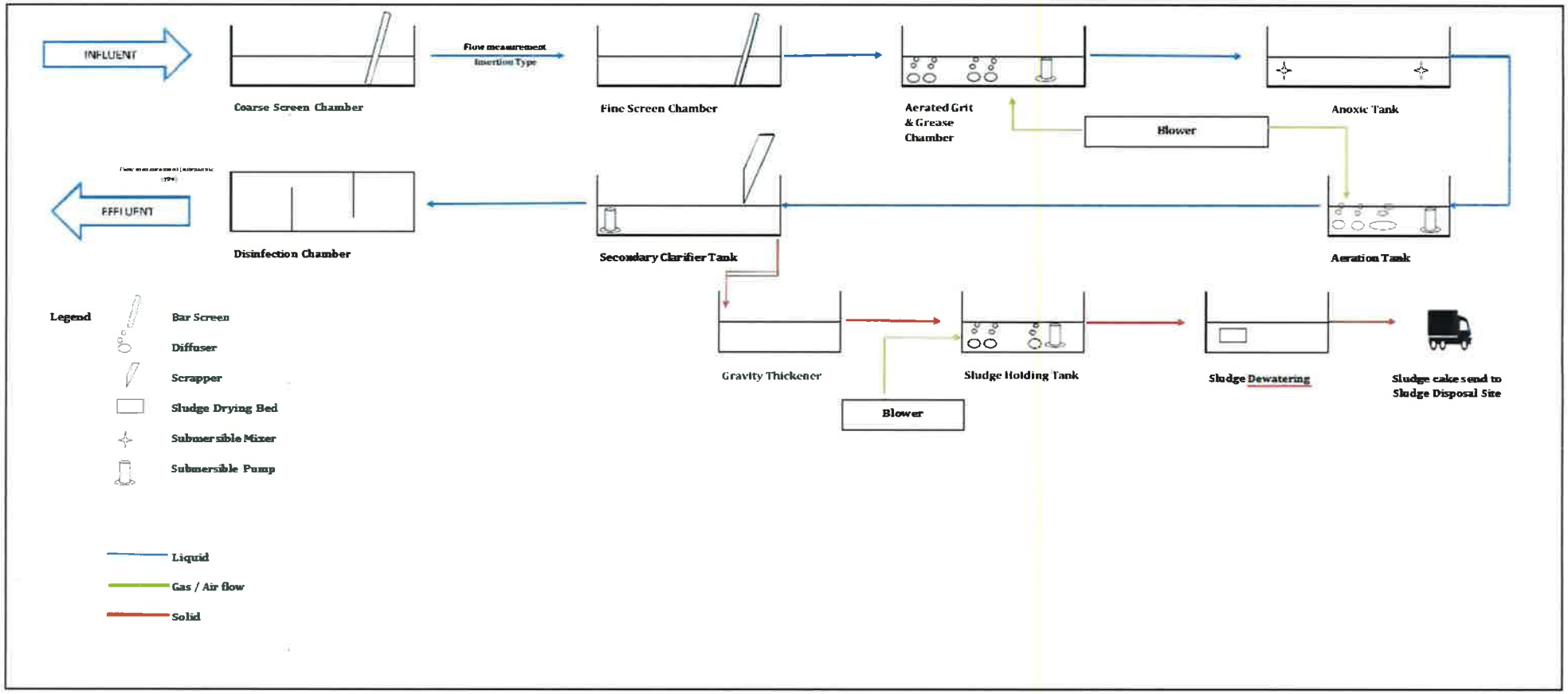
c) Block C - Pangsapuri Perkhidmatan 12 Tingkat i) Pangsapuri - 174 tingkat ii) Pondok Pengawal				174 3 person	5 1 PE/person	870 3	} 873
d) Block D -Pangsapuri Perkhidmatan 12 Tingkat -174 unit				174	5	870	
e) Block E - Pangsapuri Perkhidmatan 12 Tingkat -174 unit				174	5	870	
f) Block F - Pangsapuri Perkhidmatan 12 Tingkat -174 unit				174	5	870	
						5,197	
5. Pangsapuri Perkhidmatan on Lot 92250 (Lot lama PTD 107457) a) Block A - Pangsapuri Perkhidmatan 12 Tingkat							
i) Pangsapuri -169 unit ii) Kedai - 4 unit iii) Pejabat Pengurusan -1 unit				169 126 m^2 50 m^2	5 0.03 0.03	845 3.5 1.5	} 853.5
b) Block B - Pangsapuri Perkhidmatan 12 Tingkat i) Pangsapuri - 174 unit				174	5	870	

c) Block C - Pangsapuri Perkhidmatan 12 Tingkat i) Pangsapuri - 174 unit				174	5	870
d) Block D- Pangsapuri Perkhidmatan 12 Tingkat i) Pangsapuri - 174 unit				174	5	870
e) Block E - Pangsapuri Perkhidmatan 12 Tingkat i) Pangsapuri - 174 unit				174	5	870
f) Block F - Pangsapuri Perkhidmatan 12 Tingkat ii) Pangsapuri - 173 unit				173	5	870
g) Block G - Pangsapuri Perkhidmatan 12 Tingkat i)Pangsapuri - 173 unit ii) Pondok pengawal				174 3 person	5 1 PE/person	870 3 } 873
						6,068
C) Perindustrian						
1) Industri Ringan Berkembar	44	12	528			
2) Industri Ringan Kluster	80	6.5	520			
D) Kemudahan Awam						
1) Tangki Air	1	5 PE/unit	5			

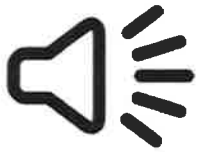
2) Balairaya (3 unit)	200 person/unit	0.2 PE/person	120			
3) Masjid	500 person	0.2 PE/person	100			
4) Surau (2 Unit)	100 person/unit	0.2 PE/person	40			
5) Sekolah Rendah	1000 student	0.2 PE/person	200			
6) Sekolah Agama	1000 student	0.2 PE/person	200			
7) Tadika (3 unit)	50 person/unit	0.2 PE/person	30			
8) Klinik	500 person	0.2 PE/person	100			
9) Balai Polis	500 person	0.2 PE/person	100			
10) Rizab Awam	500 person	0.2 PE/person	100			
11) Tapak Ibadah	50 person	0.2 PE/unit	10			
12) PPU	1	5 PE/uni	5			
Total:			**13,613 PE**			**11, 265 PE**

STP Process Flow Diagram

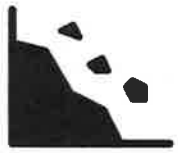
Population Equivalent
Ultimate: 30,000 PE
Module 2: 15,000 PE



Pollution Prevention and Mitigation Measures

	Potential Impact	Mitigation Measures
Air Quality 	Construction Stage • Dust generated from construction activities. 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 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 • Discharge of untreated sewage from STP due to malfunctioning of equipment as the plant is still in operation	Construction Stage • Earth drain shall be constructed to channel surface runoff to the sediment basin • Routine maintenance shall be carried out to ensure the efficiency of the STP in treating sewage
	Operation & Maintenance Stage • Discharge of untreated sewage from STP due to malfunctioning of equipment	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	Construction Stage • Construction materials such as broken bricks, concrete blocks, and hardened cement should be disposed at designated areas
	Operation & Maintenance Stage • Generation of solid waste and scheduled waste during operation stage	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 65 ton/ha/yr without control measures and lowered to 1.63 ton/ha/yr with control measure	Construction Stage • Provide temporary earth drain, sediment basin and check dam
Odour 	Construction Stage • Presence of fly nuisance due to odour from food waste • Odour emission from the sludge storage area and dewatering process as the plant is still in operation 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 • Planting trees as a vegetation buffer around the sewage treatment plant area to minimize the odour emission to the surrounding area 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	N 1°37'57.52" E 103°41'15.59"	Upstream of the 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	N 1°37'42.64" E 103°41'5.98"	Downstream of the proposed STP discharge point				
Ambient Air Quality						
A1	N 1°37'52.79" E 103°41'13.95"	Project site boundary	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, H_2S, CO	Malaysia Ambient Air Quality Standard, 2020	Impact monitoring (IM)	Quarterly
A2	N 1°37'53.67" E 103°41'8.69"	Taman Scientex Jaya				
A3	N 1°37'56.63" E 103°41'18.85"	Taman Scientex Senai				
Noise Quality						
N1	N 1°37'52.79" E 103°41'13.95"	Project site boundary	Leq, Lmax, Lmin	Guidelines for Environmental Noise Limits and Control, 2019	Impact monitoring (IM)	Quarterly
N2	N 1°37'53.67" E 103°41'8.69"	Taman Scientex Jaya				
N3	N 1°37'56.63" E 103°41'18.85"	Taman Scientex Senai				

Sediment Basin					
Sediment Basin	At project site	Turbidity, Total Suspended solid	Turbidity<250NTU TSS<50mg/l	Compliance Monitoring	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	
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 A	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 Colour (The parameters shall be monitored accordingly to each STP unit treatment operations)	Guidance Document On Performance Monitoring Of Sewage Treatment System	Performance Monitoring (PM)	Daily Weekly Monthly

Operation & Maintenance Stage

Point	Coordinates	Description	Parameters	Compliance Standards	Type of monitoring	Monitoring Frequency
Water Quality						
W1	N 1°37'57.52" E 103°41'15.59"	Upstream of the 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	N 1°37'42.64" E 103°41'5.98"	Downstream of the proposed STP discharge point				
Ambient Air Quality						
A1	N 1°37'52.79" E 103°41'13.95"	Project site boundary	PM_{10}, $PM_{2.5}$, SO_2, NO_2, O_3, H_2S, CO	Malaysia Ambient Air Quality Standard, 2020	Impact monitoring (IM)	Quarterly
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Noise Quality						
N1	N 1°37'52.79" E 103°41'13.95"	Project site boundary	Leq, Lmax, Lmin	Guidelines for Environmental Noise Limits and Control, 2019	Impact monitoring (IM)	Quarterly
N2	N 1°37'53.67" E 103°41'8.69"	Taman Scientex Jaya				
N3	N 1°37'56.63" E 103°41'18.85"	Taman Scientex Senai				

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 A	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)	Guidance Document On Performance Monitoring Of Sewage Treatment System	Performance monitoring (PM)	Daily Weekly Monthly