

EXECUTIVE SUMMARY

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PROPOSED UPGRADING OF TEMPORARY SEWAGE TREATMENT PLANT (STP) FROM EXISTING MODULE 1 STP (8,333 PE) TO ULTIMATE CAPACITY OF 25,000 PE AT PTD 4831, GERBANG NUSAJAYA (PACKAGE B), MUKIM PULAI, DAERAH JOHOR BAHRU, JOHOR DARUL TAKZIM

INTRODUCTION



PROJECT PROPONENT

Nusajaya Rise Sdn Bhd
Level 6, Imperia Office Tower
Jalan Laksamana 1, Puteri Harbour
79000 Johor Bahru
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

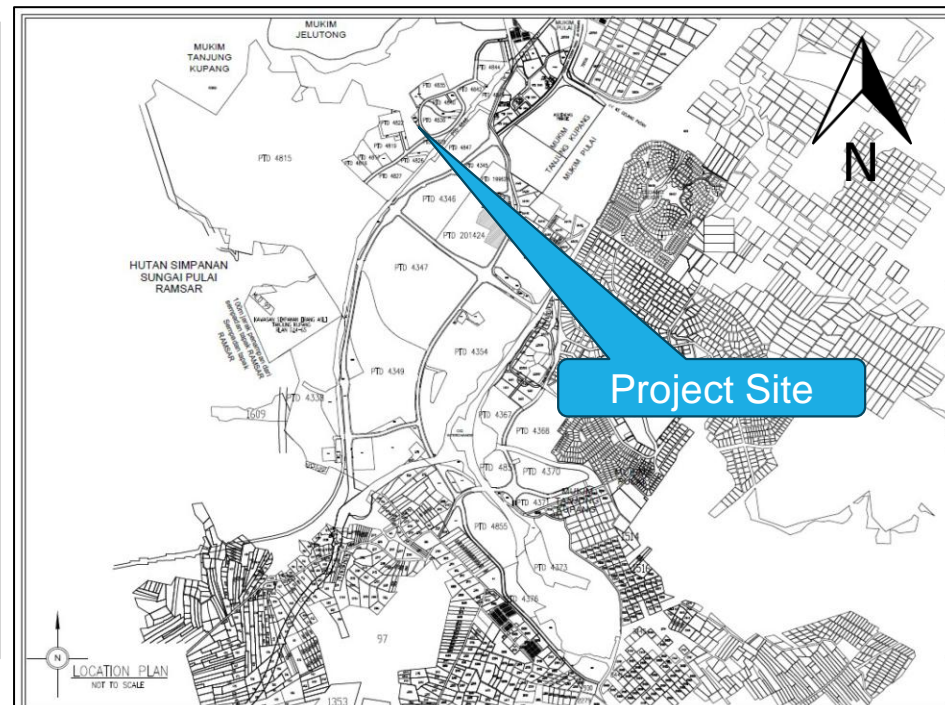
First Schedule
14. Waste Treatment and Disposal
(c) Sewage
(i) Construction of sewage treatment plant with 20,000 population equivalent or more

STATEMENT OF NEEDS

- Nusajaya Rise Sdn Bhd is currently developing an area of 4,016.13 acres (1,625.27 ha) into mixed development, which includes residential (double-storey house and Rumah Makmur Johor), commercial areas and public facilities at Gerbang Nusajaya, Mukim Pulai, Johor Darul Takzim
- Sewage from the completed development is treated in the temporary STP that consists of the existing Module 1 (8,333 PE), which is to be upgraded into its ultimate capacity (with addition of Module 2 and Module 3).
- The temporary STP at its ultimate capacity will be handed over to Indah Water Konsortium (IWK) by the Project Proponent in June 2025.
- In future, Nusajaya Rise Sdn Bhd will construct a permanent STP which is located at 6.97 km southeast of the temporary STP.
- Upon completion of the permanent STP, the temporary STP will be converted into pumping station (SPS 1).

PROJECT LOCATION, BOUNDARY COORDINATES AND CADASTRAL MAP

The proposed temporary STP is located on 0.829 ac (0.34 ha) of land at PTD 4831 which is part of Gerbang Nusajaya development at Mukim Pulai, Daerah Johor Bahru, Johor Darul Takzim.

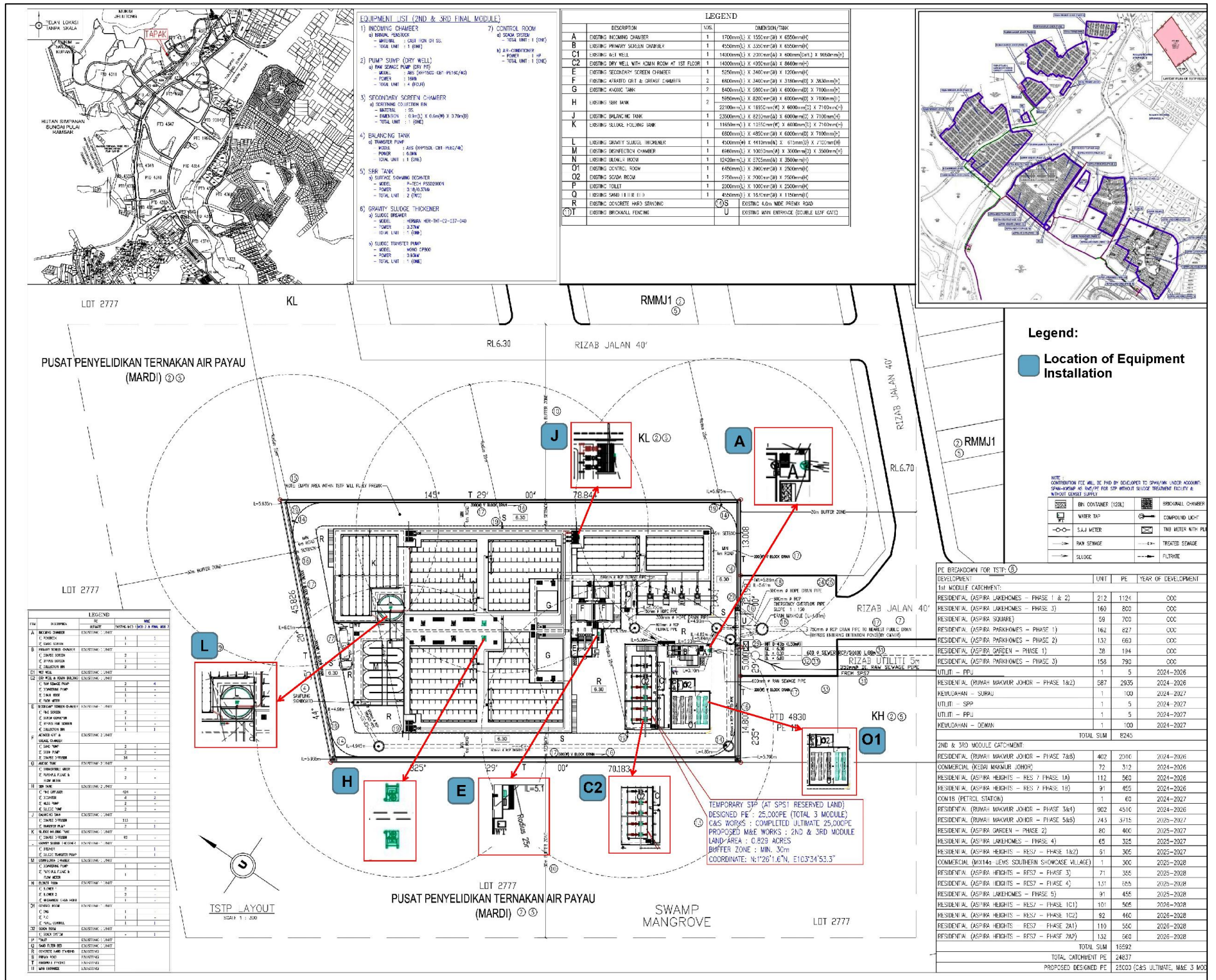


ID	Latitude	Longitude
A	1°26'0.555"N	103°34'52.057"E
B	1°26'1.641"N	103°34'53.153"E
C	1°25'59.494"N	103°34'54.572"E
D	1°25'58.651"N	103°34'53.393"E

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LAYOUT OF THE TEMPORARY STP



LIST OF EQUIPMENT INSTALLATION FOR MODULE 2 AND 3 AT THE TEMPORARY STP

Label No.	Component	Installed Equipment
A	Incoming chamber	Manual penstock
C2	Pump sump (dry well)	Raw sewage pump
E	Secondary screen chamber	Screening collection bin
H	SBR tank	Surface skimming decanter
J	Balancing tank	Transfer pump
L	Gravity sludge thickener	Sludge breaker and sludge transfer pump
O1	Control room	SCADA system and air-conditioner

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COMPONENTS OF THE TEMPORARY STP

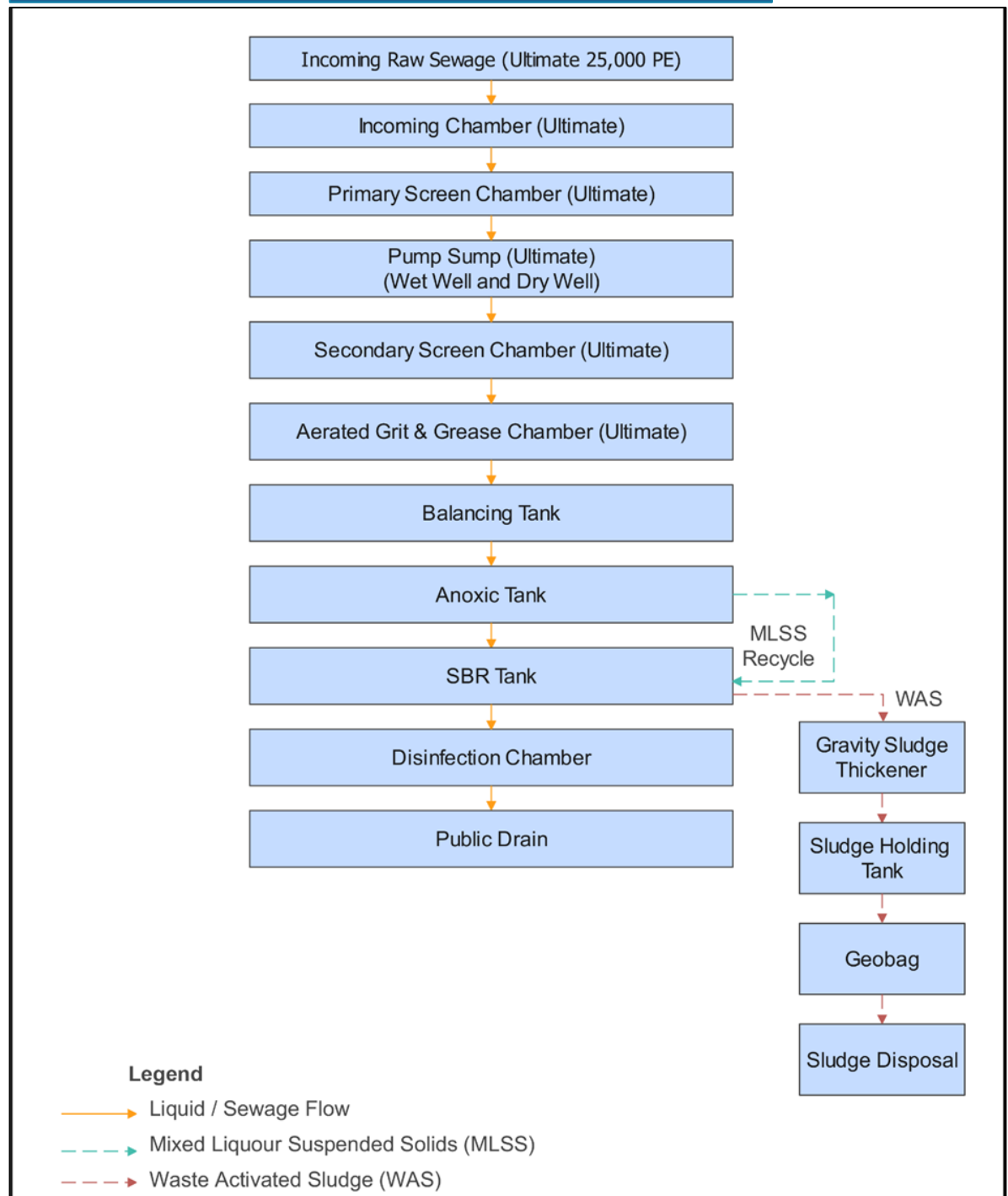
The components of the temporary STP at its ultimate capacity are as follows:-

- Incoming chamber
- Primary screen chamber
- Pump sump (wet well and dry well)
- Secondary screen chamber
- Aerated grit and grease chamber
- Balancing tank
- Anoxic tank
- SBR tank
- Disinfection chamber
- Gravity sludge thickener
- Sludge holding tank
- Geobag

In addition, the associated building works are as follows:-

- Blower room
- Control room
- Scada room
- Toilet

FLOWCHART OF THE TEMPORARY STP



PROJECT ACTIVITIES

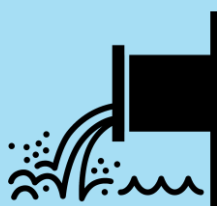
Construction Stage

- External Works and M&E Works
- Equipment installation at the existing structure of the temporary STP.
- Testing & Commissioning and Handing Over



Operational Stage

- Sewage treatment at the temporary STP
- Generation of solid waste and sludge
- Facility maintenance at the temporary STP



Decommissioning Stage

- In the event of project decommissioning, the plant owner will notify DOE Johor.
- Necessary report will be submitted to relevant authorities to address the management of potential impacts during decommissioning stage.



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PROJECT IMPLEMENTATION SCHEDULE

- The equipment installation works (for Module 2 and Module 3) were completed in February 2025.
- There were no structural construction at the Project site. Currently, the temporary STP is under the process of obtaining necessary approvals including EIA.
- After completion, the temporary STP at its ultimate capacity of 25,000 PE will be handed over to Indah Water Konsortium (IWK) by the Project Proponent in June 2025.

EXISTING ENVIRONMENT



Topography and Land Use

Elevation of the Project site is 7.0 m to 19.5 m above mean sea level. The land uses within 5 km radius from the Project site consist of residential, public facilities, commercial and industrial areas.



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 2014 – 2023 was in the range of 112.9 – 331.2 mm.



Hydrology

The Project site is located within Sg. Pulai river basin. The discharge from the Project site flows into an effluent discharge drain located within the temporary STP site and then towards monsoon drain located at southwest of the Project site before being directed to Sg. Senapang and subsequently into Sg. Gelang Patah.



Water Quality

River water was sampled at six (6) stations. Water Quality Index (WQI) at stations that were not affected by tidal (W1, W2, W3) fell under Class II, meanwhile, stations W4, W5 and W6 which were affected by tidal fell between Class III and IV.



Noise Level

Noise measurement was carried out at three (3) 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 three (3) stations. All measured parameters are well below the specified limits.



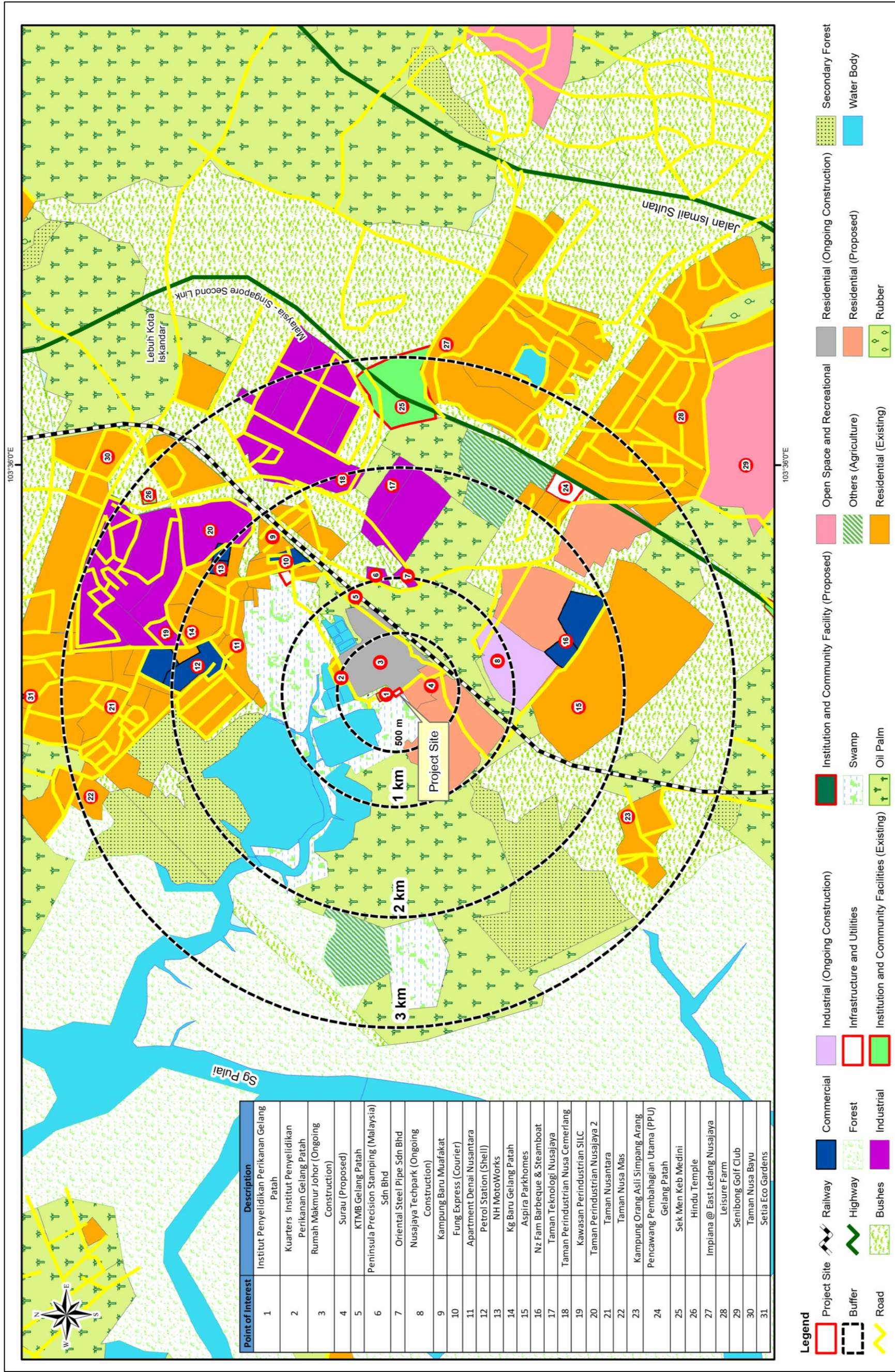
Socio-economic

The Project site is located under local authority of Majlis Bandaraya Iskandar Puteri (MBIP).

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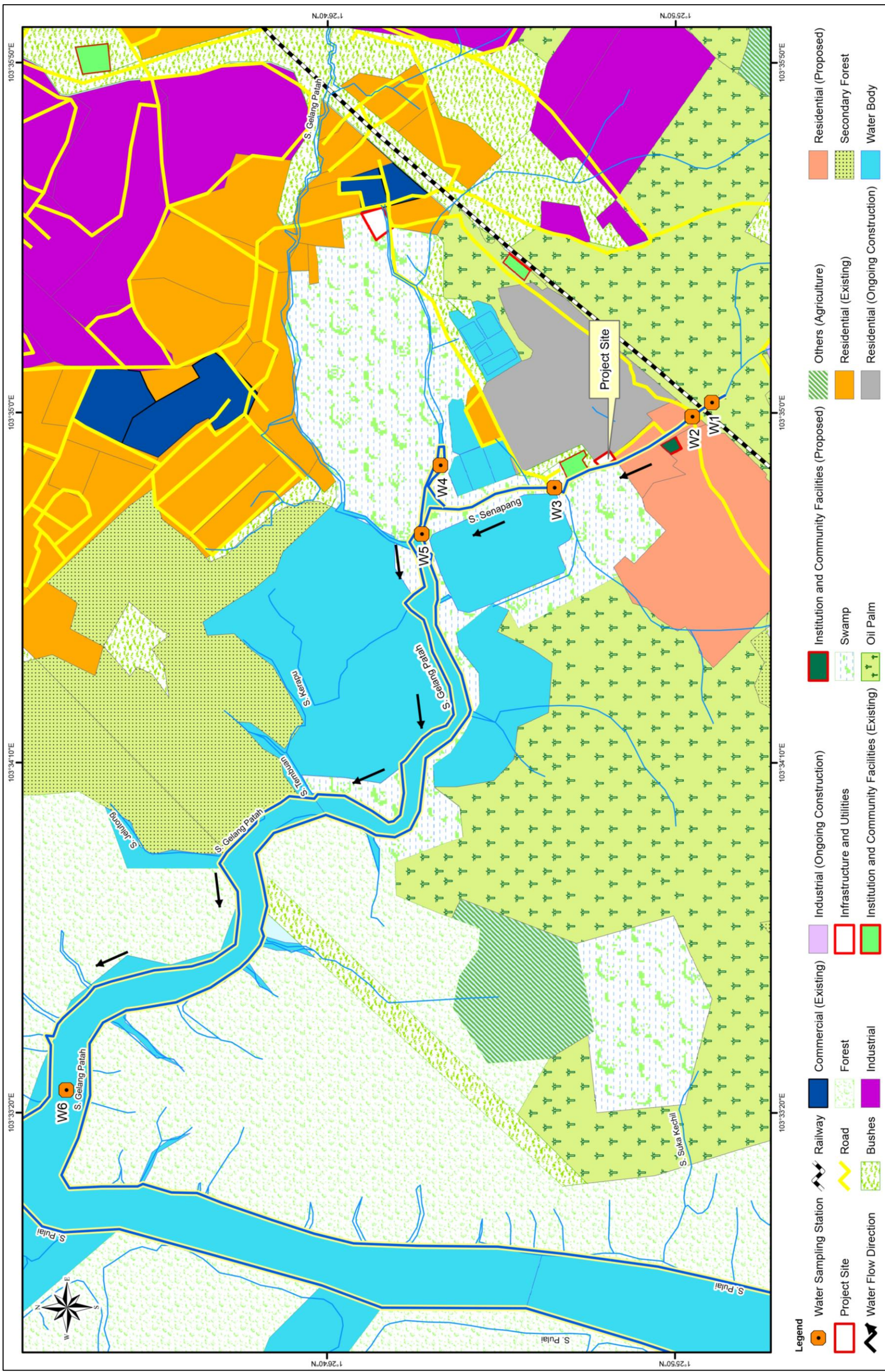
LAND USE 3 KM RADIUS



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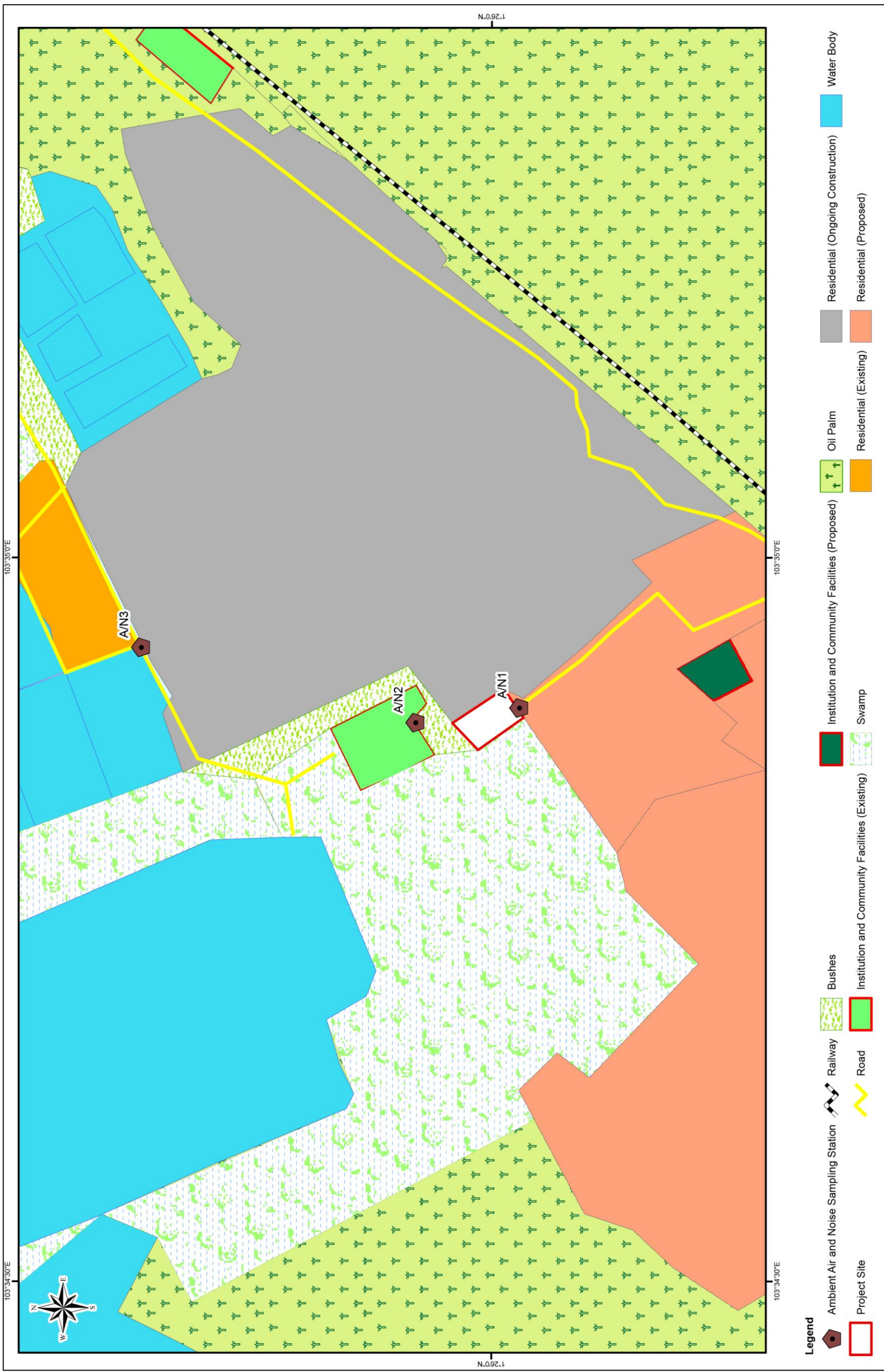
SAMPLING STATIONS FOR WATER QUALITY



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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 Quality Standards for Malaysia (Sampled on 22nd November and 7th December 2024)

Parameter	W1	Class	W2	Class	W3	Class	W5	Class	W6	Class
Date	22.11.24		22.11.24		22.11.24		22.11.24		07.12.24	
DO (mg/l)	7.43	I (>7)	5.96	II (5-7)	2.79	IV (1-3)	1.94	IV (1-3)	4.87	III (3-5)
BOD ₅ at 20°C (mg/l)	9	IV (6-12)	4	III (3-6)	2	II (1-3)	40	V (>12)	42	V (>12)
COD (mg/l)	18	II (10-25)	6	I (<10)	6	I (<10)	119	V (>100)	126	V (>100)
Total Suspended Solids (mg/l)	79	III (50-150)	815	V (>300)	22	I (<25)	25	II (25-50)	26	II (25-50)
Ammoniacal Nitrogen (mg/l)	0.26	II (0.1-0.3)	0.26	II (0.1-0.3)	0.06	I (<0.1)	1.15	IV (0.9-2.7)	0.01	I (<0.1)

Classification of Water Quality Based on National Quality Standards for Malaysia (Sampled on 18th until 20th January 2025) – Part 1

Parameter	W1	W2	W3	W4															
Date	19.01.25						18.01.25						19.01.25						
Class / Low / High Tide	-	Class	-	Class	-	Class	¹ LT (A)	Class	¹ HT (A)	Class	² LT (B)	Class	² HT (B)	Class	¹ LT (A)	Class	¹ HT (A)	Class	
DO (mg/l)	7.28	I (<7)	6.58	II (5-7)	6.7	II (5-7)	4.56	III (3-5)	6.39	II (5-7)	3.58	III (3-5)	5.66	II (5-7)	4.88	III (3-5)	5.84	II (5-7)	
BOD ₅ at 20°C (mg/l)	8	IV (6-12)	1	II (1-3)	1	II (1-3)	24	V (>12)	43	V (>12)	26	V (>12)	32	V (>12)	19	V (>12)	44	V (>12)	
COD (mg/l)	13	II (10-25)	<2	I (<10)	<2	I (<10)	82	IV (50-100)	126	V (>100)	82	IV (50-100)	94	IV (50-100)	69	IV (50-100)	132	V (>100)	
Total Suspended Solids (mg/l)	149	III (50-150)	331	V (>300)	4	I (<25)	13	I (<25)	11	I (<25)	55	III (50-150)	14	I (<25)	14	I (<25)	7	I (<25)	
Ammoniacal Nitrogen (mg/l)	<0.0 1	I (<0.1)	0.06	I (<0.1)	0.0 3	I (<0.1)	0.66	III (0.3-0.9)	0.22	II (0.1-0.3)	0.62	III (0.3-0.9)	0.53	III (0.3-0.9)	1.25	IV (0.9-2.7)	0.30	III (0.3-0.9)	

Note:

¹LT (A) – Low Tide A (Day)

¹HT (A) – HighTide A (Day)

²LT (B) – Low Tide B (Night)

²HT (B) – HighTide B (Night)

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RESULTS OF WATER QUALITY

Classification of Water Quality Based on National Quality Standards for Malaysia (Sampled on 18th until 20th January 2025) – Part 2

Parameter	W4				W5															
	19.01.25		20.01.25		18.01.25						19.01.25						20.01.25			
	² LT (B)	Class	² HT (B)	Class	¹ LT (A)	Class	¹ HT (A)	Class	² LT (B)	Class	² HT (B)	Class	¹ LT (A)	Class	¹ HT (A)	Class	² LT (B)	Class	² HT (B)	Class
DO (mg/l)	3.88	III (3-5)	5.40	II (5-7)	5.03	II (5-7)	6.39	II (5-7)	4.35	III (3-5)	5.75	II (5-7)	4.58	II (5-7)	5.91	II (5-7)	4.28	III (3-5)	5.28	II (5-7)
BOD ₅ at 20°C (mg/l)	14	V (>12)	55	V (>12)	20	V (>12)	32	V (>12)	16	V (>12)	16	V (>12)	25	V (>12)	52	V (>12)	39	V (>12)	56	V (>12)
COD (mg/l)	38	III (25-50)	177	V (>100)	75	IV (50-100)	119	V (>100)	56	IV (50-100)	56	IV (50-100)	63	IV (50-100)	144	V (>100)	145	V (>100)	152	V (>100)
Total Suspended Solids (mg/l)	27	II (25-50)	1	I (<25)	25	II (25-50)	8	I (<25)	10	I (<25)	8	I (<25)	3	I (<25)	13	I (<25)	33	I (<25)	6	I (<25)
Ammoniacal Nitrogen (mg/l)	0.90	IV (0.9-2.7)	0.28	II (0.1-0.3)	0.62	III (0.3-0.9)	0.22	II (0.1-0.3)	2.00	IV (0.9-2.7)	0.81	III (0.3-0.9)	2.11	IV (0.9-2.7)	0.24	IV (0.9-2.7)	0.28	II (0.1-0.3)	0.28	II (0.1-0.3)

Classification of Water Quality Based on National Quality Standards for Malaysia (Sampled on 18th until 20th January 2025) – Part 3

Parameter	W6																
	18.01.25								19.01.25								20.01.25
	¹ LT (A)	Class	¹ HT (A)	Class	² LT (B)	Class	² HT (B)	Class	¹ LT (A)	Class	¹ HT (A)	Class	² LT (B)	Class	² HT (B)	Class	
DO (mg/l)	4.85	III (3-5)	7.62	I (>7)	5.14	II (5-7)	6.44	II (5-7)	6.41	II (5-7)	6.48	II (5-7)	5.74	II (5-7)	5.95	II (5-7)	
BOD ₅ at 20°C (mg/l)	50	V (>12)	49	V (>12)	38	V (>12)	52	V (>12)	25	V (>12)	31	V (>12)	30	V (>12)	60	V (>12)	
COD (mg/l)	138	V (>100)	144	V (>100)	100	V (>100)	157	V (>100)	75	IV (50-100)	113	V (>100)	88	IV (50-100)	196	V (>100)	
Total Suspended Solids (mg/l)	16	I (<25)	5	I (<25)	14	I (<25)	19	I (<25)	7	I (<25)	8	I (<25)	11	I (<25)	1	I (<25)	
Ammoniacal Nitrogen (mg/l)	0.41	III (0.3-0.9)	0.12	II (0.1-0.3)	0.60	IV (0.9-2.7)	0.40	III (0.3-0.9)	0.54	IV (0.9-2.7)	0.14	II (0.1-0.3)	0.95	IV (0.9-2.7)	0.17	II (0.1-0.3)	

Note:

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Water Quality Index (WQI)

Water Quality Index (WQI) of Sampling Stations (Sampled on 22nd November and 7th December 2024)

Parameter	W1	W2	W3	W5	W6
Date	22.11.24				07.12.24
Water Quality Index (WQI)	78.0	72.3	78.6	37.6	57.1
Class	II (76.5-92.7)	III (51.9-76.5)	II (76.5-92.7)	IV (31.0-51.9)	III (51.9-76.5)

Water Quality Index (WQI) of Sampling Stations (Sampled on 18th until 20th January 2025) – Part 1

Parameter	Sampling Station											
	W1	W2	W3	W4								
	18.01.25			18.01.25				19.01.25				20.01.25
	-	-	-	¹ LT (A)	¹ HT (A)	² LT (B)	² HT (B)	¹ LT (A)	¹ HT (A)	² LT (B)	² HT (B)	
Water Quality Index (WQI)	81.9	85.6	89.0	56.4	59.4	50.2	61.8	59.2	58.7	60.3	53.7	
Class	II (76.5-92.7)	II (76.5-92.7)	II (76.5-92.7)	III (51.9-76.5)	III (51.9-76.5)	IV (31.0-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	

Water Quality Index (WQI) of Sampling Stations (Sampled on 18th until 20th January 2025) – Part 2

Parameter	W5								W6									
	18.01.25				19.01.25				20.01.25	18.01.25				19.01.25				20.01.25
	¹ LT (A)	¹ HT (A)	² LT (B)	² HT (B)	¹ LT (A)	¹ HT (A)	² LT (B)	² HT (B)	5	¹ LT (A)	¹ HT (A)	² LT (B)	² HT (B)	¹ LT (A)	¹ HT (A)	² LT (B)	² HT (B)	
Water Quality Index (WQI)	59.3	62.3	59.6	68.9	55.2	57.8	52.2	53.4		50.8	62.5	58.9	57.4	65.1	65.8	60.7	56.7	
Class	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	IV (31.0-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	III (51.9-76.5)	

Note:

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RESULTS OF AMBIENT AIR QUALITY

Parameter	Concentration ($\mu\text{g}/\text{m}^3$) at sampling station			*Limit ($\mu\text{g}/\text{m}^3$)
	A1	A2	A3	
Date	23.11.2024	22.11.2024	24.11.2024	
Particulate Matter less than 10 micron (PM_{10})	69.4	69.4	55.6	100 (24 hours)
Particulate Matter less than 2.5 micron ($\text{PM}_{2.5}$)	27.8	13.9	13.9	35 (24 hours)
Carbon Monoxide (CO)	<1	<1	<1	30,000 (1 hour) 10,000 (8 hours)
Sulphur Dioxide (SO_2)	1	<1	<1	80 (24 hours)
Nitrogen Dioxide (NO_2)	<1	<1	<1	70 (24 hours)
Hydrogen Sulphide (H_2S)	<1	1	<1	4# (24 hours)

Note:

*Malaysia Ambient Air Quality Standards (MAAQG) (2020)

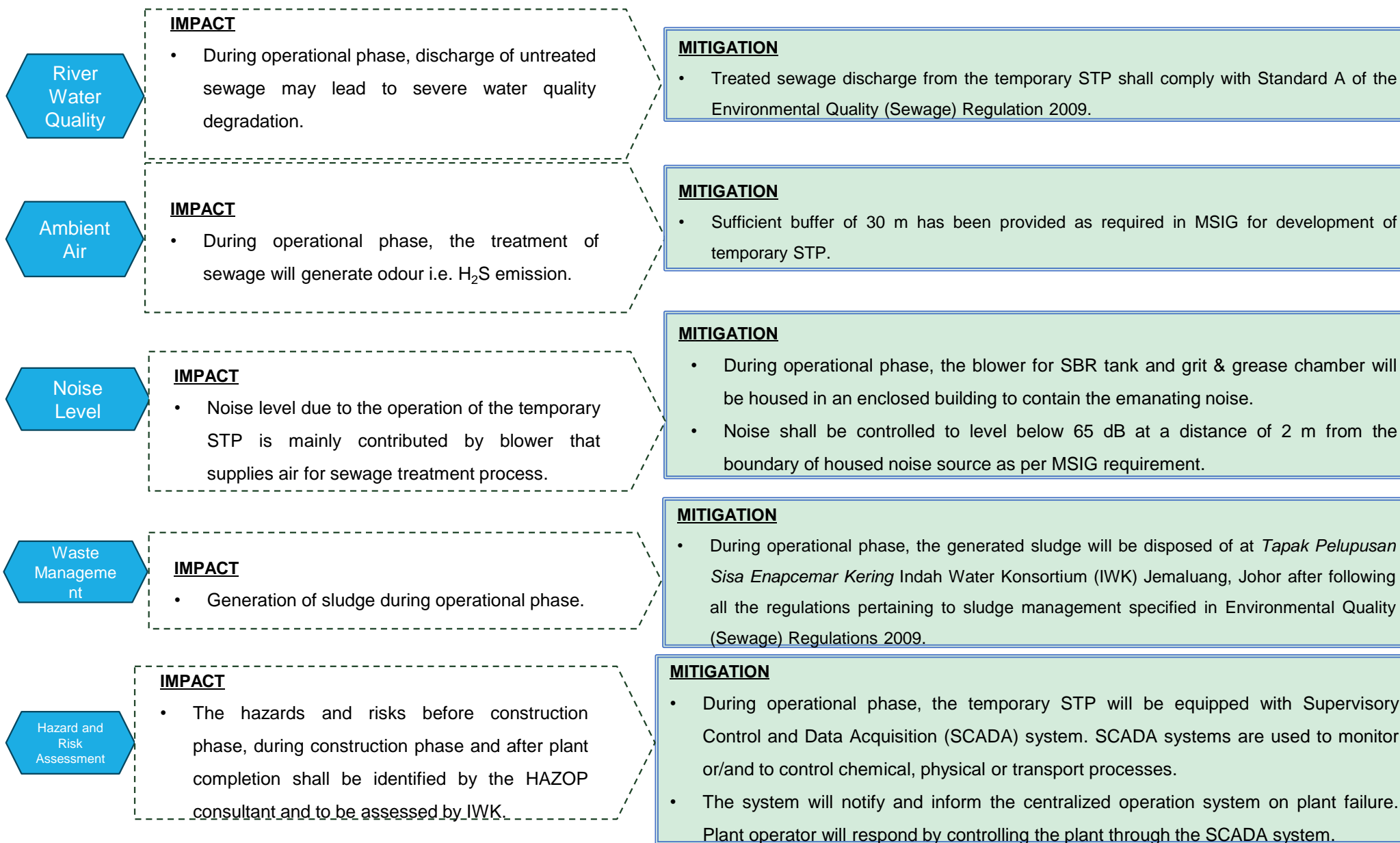
#Alberta Ambient Air Quality Objectives

RESULTS OF NOISE LEVEL

Sampling Station	Noise Level L_{Aeq}	*DOE Recommended Noise Level
Day Time		
N1	51.1	65 dBA
N2	48.5	
N3	50.7	
Night Time		
N1	45.0	60 dBA
N2	40.2	
N3	41.5	

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

POTENTIAL IMPACTS AND MITIGATIONS



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PROPOSED ENVIRONMENTAL MONITORING PROGRAM

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

Effluent Discharge

- 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

- Three (3) ambient air monitoring stations.
- Compliance with Malaysia Ambient Air Quality Standards (MAAQS) 2020.

Noise level

- Boundary of the Project site
- 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.