

EXECUTIVE SUMMARY

EUROPASIA ENGINEERING SERVICES SDN BHD

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONSTRUCTION OF A SOLID WASTE TREATMENT AND DISPOSAL FACILITY (SANITARY LANDFILL, INERT WASTE CELL, CONSTRUCTION & DEMOLITION WASTE MATERIAL RECOVERY FACILITY, COMPOSTING PLANT AND LEACHATE TREATMENT PLANT) ON LOT 13675 & 13676 (61.156 ACRES/24.75 HA) AT TAPAK PELUPUSAN SISA PEPEJAL SG. SABAI, MUKIM KALUMPANG, DISTRICT OF HULU SELANGOR, SELANGOR DARUL EHSAN.

PROJECT PROPONENT:



WORLDWIDE HOLDINGS BERHAD

Mercu Worldwide, No.7, Persiaran Sukan, Laman Seri Business Park, Seksyen 13, 40100 Shah Alam, Selangor Darul Ehsan
Attn.: En. Rosli Ismail

ENVIRONMENTAL CONSULTANT:



Engineering Services Sdn. Bhd.

EUROPASIA ENGINEERING SERVICES SDN. BHD.

No. 63A-2 & 65-2, Petaling Utama Avenue, Jalan PJS1/50, Taman Petaling Utama, 46150 Petaling Jaya, Selangor Darul Ehsan
Attn. : Mdm. Geetha P. Kumaran
(CEP – CS0033) (EIA Study Team Leader)



JURISDICTION

- Majlis Perbandaran Hulu Selangor (MPHS)



PROJECT AREA

- 61.156 acres (24.75 hectares)



LEGAL STATUS

First Schedule

Item 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°.

- **7.2% project area is slope of 25° - 35°**

Item 14: Waste Treatment and Disposal

(b) Solid Waste:

- (i) Construction of Composting Plant.
- (ii) Construction of Recovery Plant or Recycling \ Plant.

Second Schedule

Item 14: Waste Treatment and Disposal

(b) Solid Waste:

- (ii) Construction of sanitary landfill facility.



PROJECT SCOPE

SSSL and Associated Facilities

- *SSSL (13 Phases) – 21.2 acres
- Capacity 220 ton/day
- Inert Waste Landfill – 7.72 acres
- Capacity 60 ton/day
- Construction & Demolition Waste MRF – 0.74 acres
- Capacity 10 ton/day
- Composting Plant – 0.67 acres
- Capacity 10 ton/day
- New Leachate Treatment Plant – 1.40 acres
- Operating Hours: Monday – Saturday, 8am – 5pm

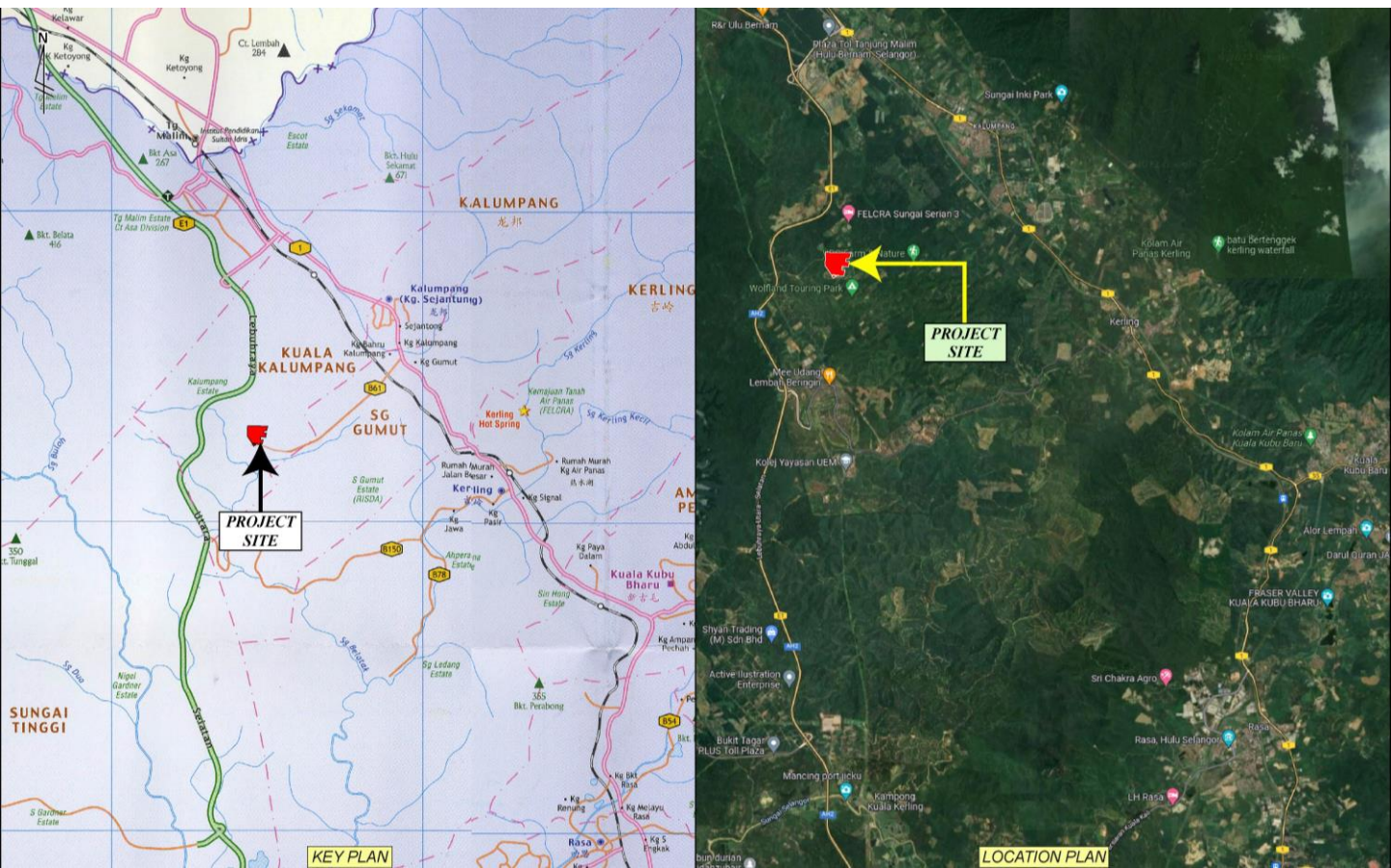
* SSSL – Sungai Sabai Sanitary Landfill



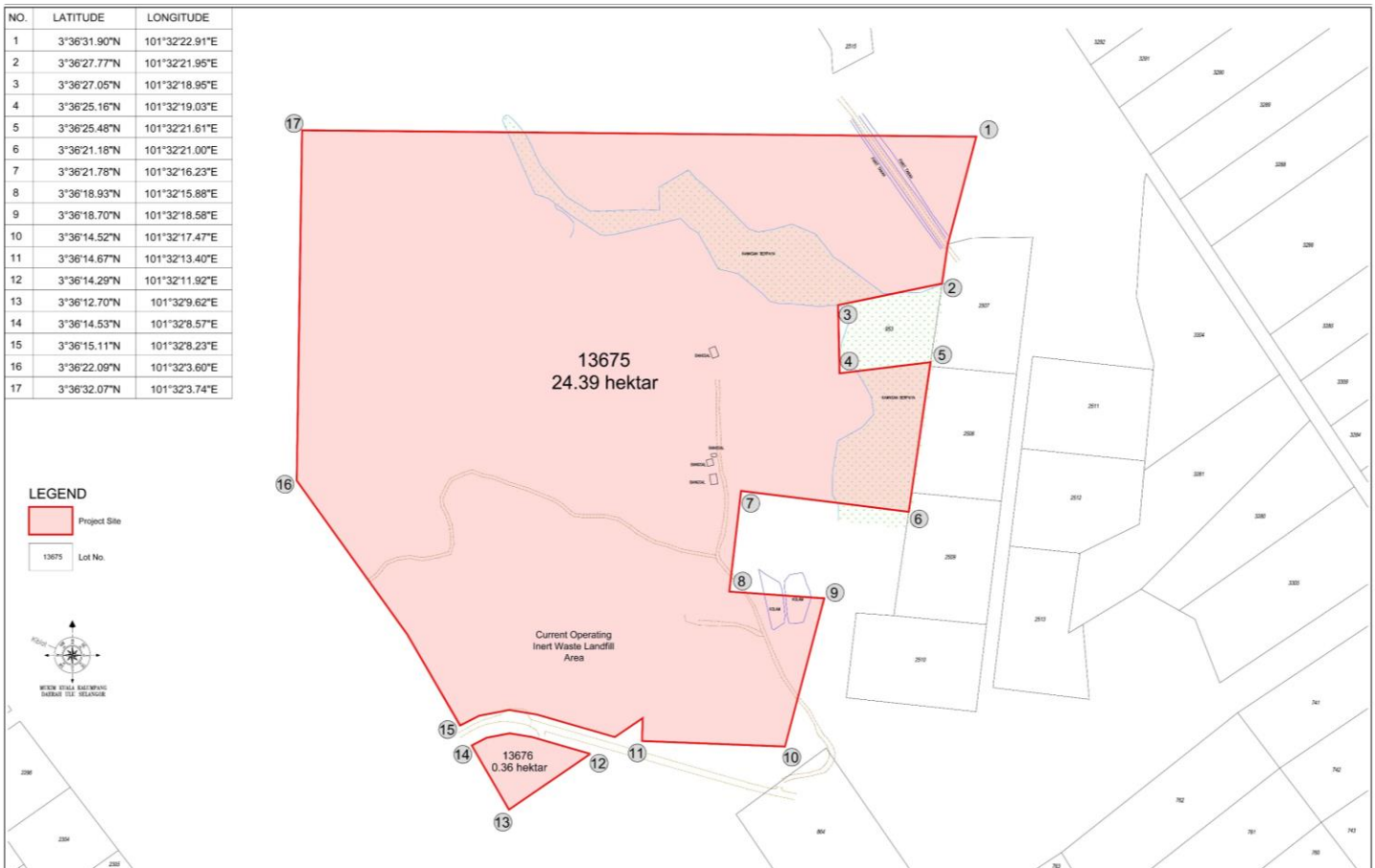
ZONING COMPATIBILITY

- Based on the Rancangan Tempatan Daerah Hulu Selangor 2035 (Penggantian), the proposed Sg. Sabai Sanitary Landfill development falls under infrastructure and utility zoning which allows for solid waste disposal.

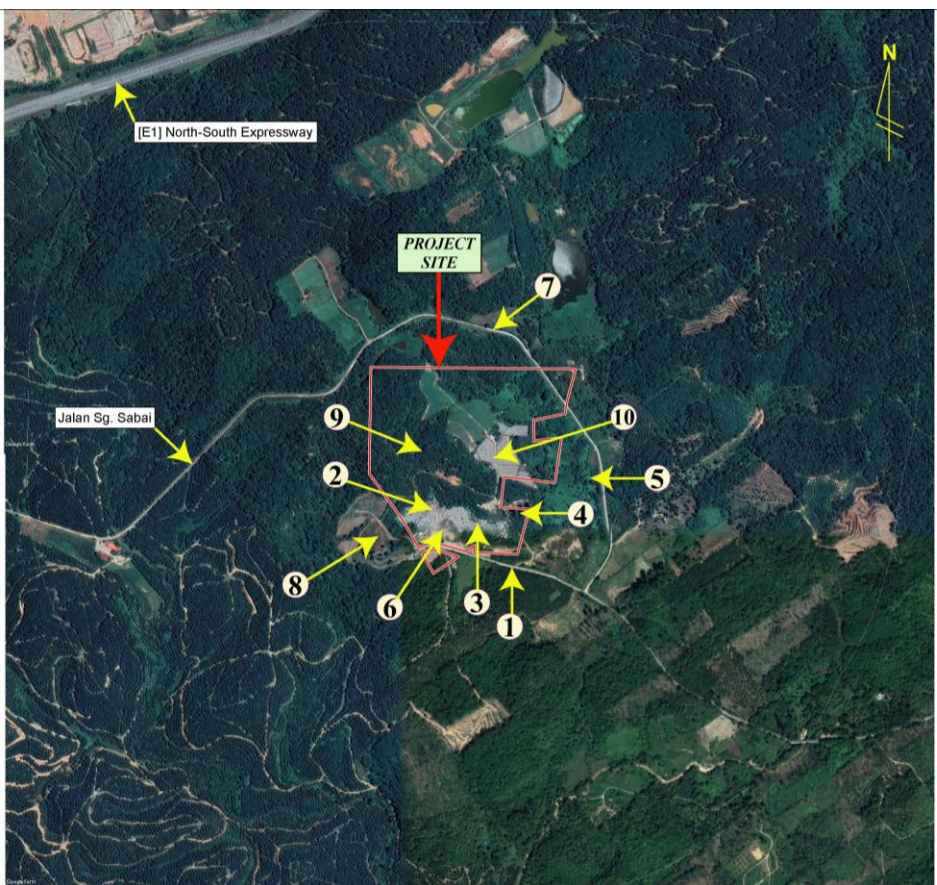
KEY AND LOCATION PLAN



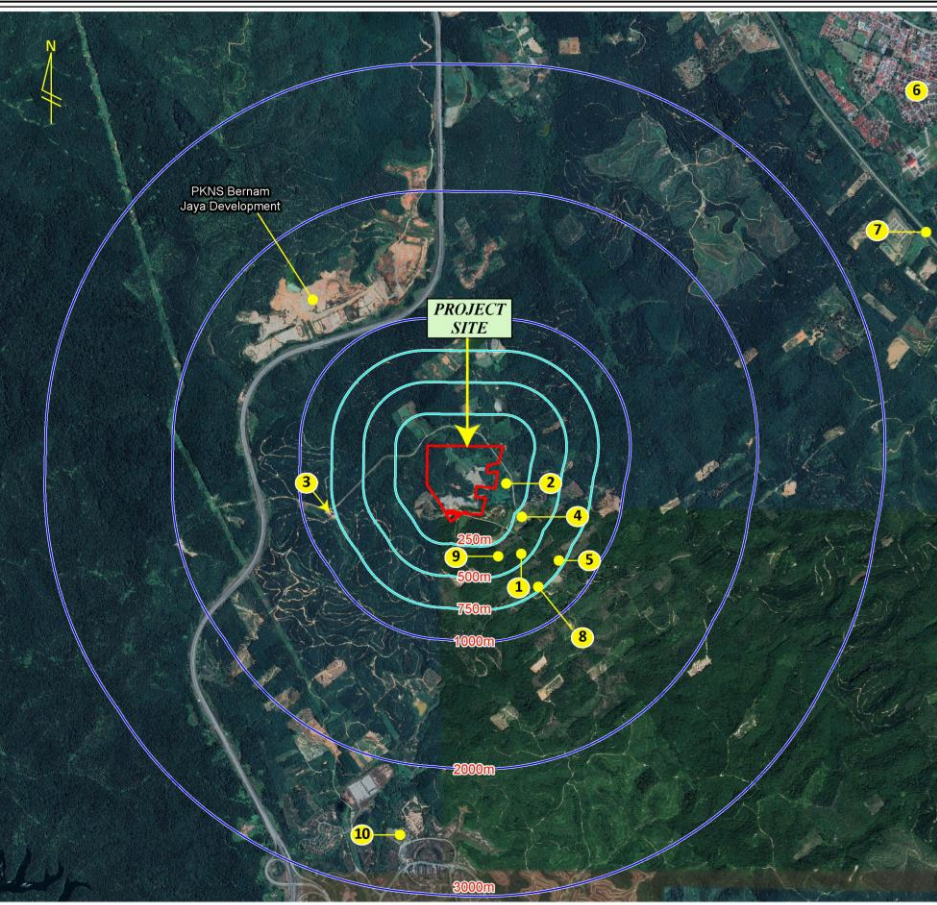
LOT DEMARCATON



CURRENT SITE CONDITION

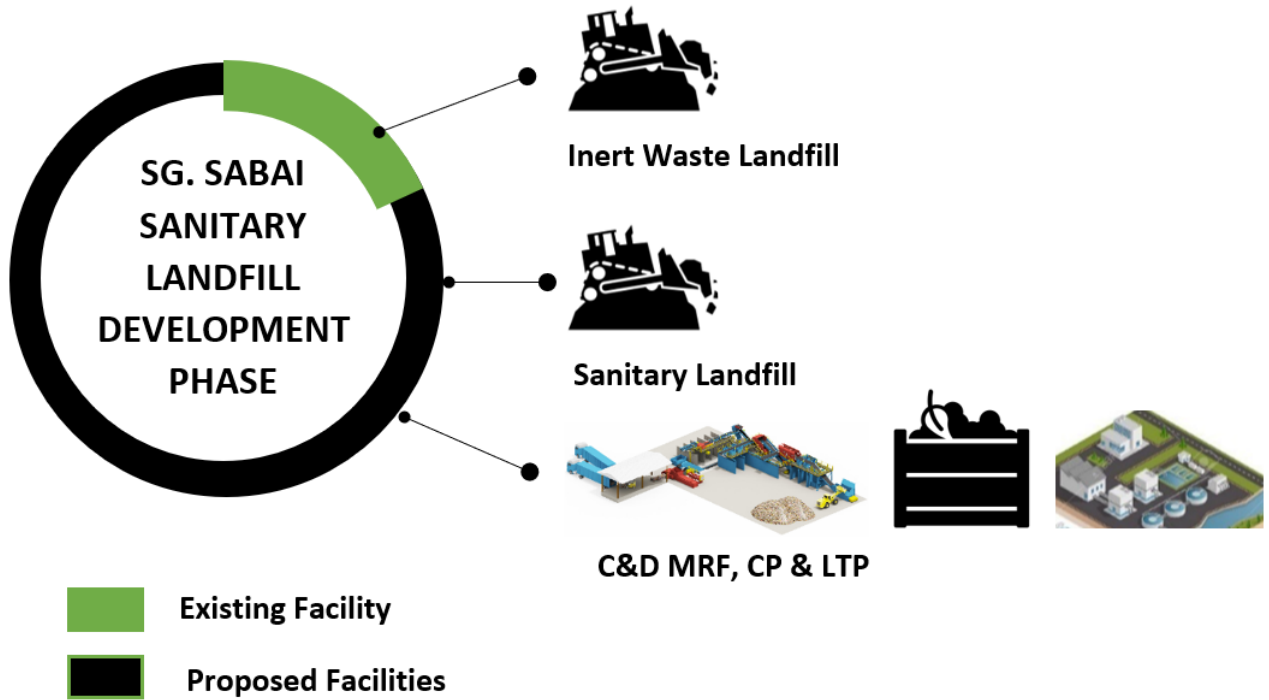


NEAREST RECEPTORS TO THE PROJECT SITE





PROJECT SCHEDULE



Development Schedule (Overall): Quarter 1 2022 – Quarter 4/2024 (3 Years)

Operation Schedule (SSSL): Quarter 1 2025 – Quarter 4/2039 (15 years)

Operation Schedule (Inert Waste) : Existing – Quarter 4/2045 (21 years)

Operation Schedule (C&D MRF): Quarter 1 2025 – Quarter 4/2045 (21 years)

Operation Schedule (CP): Quarter 1 2025 – Quarter 4/2045 (21 years)

Activity (Sg. Sabai Sanitary Landfill)																				
	2022				2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
EIA and SIA Stage for SSSL Project																				
EIA & SIA Award																				
Preparation and submission of S2 EIA																				
Project approval from DOE & PLAN Malaysia																				
Pre-Development Stage (Extension Area)																				
Land acquisition																				
Landfill detailed design																				
Project approval from Local Authorities																				
Construction Stage																				
Landfill Construction																				
Operation Stage																				
Current Operating Inert Waste Landfill																				
Landfill Operation (SSSL)																				
C&D MRF & Composting Plant																				
Landfill Closure Stage																				
Sequential landfill closure																				
Final closure works																				



STATEMENT OF NEED

STRATEGIC LOCATION & HIGH ACCESSIBILITY

- It is located at the existing Sg. Sabai Landfill.
- Besides that, it is also located close to:
 - i. Lembah Beringin – 2.5 km
 - ii. Kalumpang – 4.5km
 - iii. Kerling – 7.5 km
 - iv. Tanjung Malim - 8 km
 - v. Kuala Lumpur – approximately 55 km
- No established residential areas nearby.

LANDUSE OPTIMIZATION

- Upgrade the economic state of land.
- Optimize the usage of land, which is presently an unproductive oil palm estate.
- Congruent with the surrounding area landuse;
- Create more job opportunities.

ENVIRONMENTAL CONSIDERATION

- The current biodiversity of the flora and fauna composition of the site will be affected as the current remaining secondary shrubs vegetation, orchard and swampy area will have to be sacrificed during the construction state.
- The proposed development includes in its concept the development of greening areas and appropriate buffer zone with its surroundings. This is further improving/reducing the anticipated Sg. Sabai landfill pollution (i.e., air, noise, water, leachate, groundwater etc.) generated as the nature green elements will be utilized as part of vegetative buffer.

OTHER SUPPORTING MATTERS

- Increase in state and nation's revenue through issuance of licenses and collection of taxes.
- These include employment and income of the surrounding residents, reducing emissions of greenhouse gases and solid waste disposal facilities and garbage burning.
- More wastes can be recycled through Construction & Demolition Material Recovery Facility (C&D MRF) and Composting Plant (CP).
- Reduce carbon emission and transportation cost as wastes from District of Hulu Selangor to be managed at Sg. Sabai Sanitary Landfill.
- Reduce financial stress of RM200-300 thousand per year to the MPHS. without sending it to Bukit Tagar Sanitary Landfill (BTSL).
- WHB has 25 years of experience in solid waste management sector and is one of the leading industry leader in Malaysia.




CONFORMANCE OF TO THE UNITED NATION SUSTAINABLE DEVELOPMENT GOALS

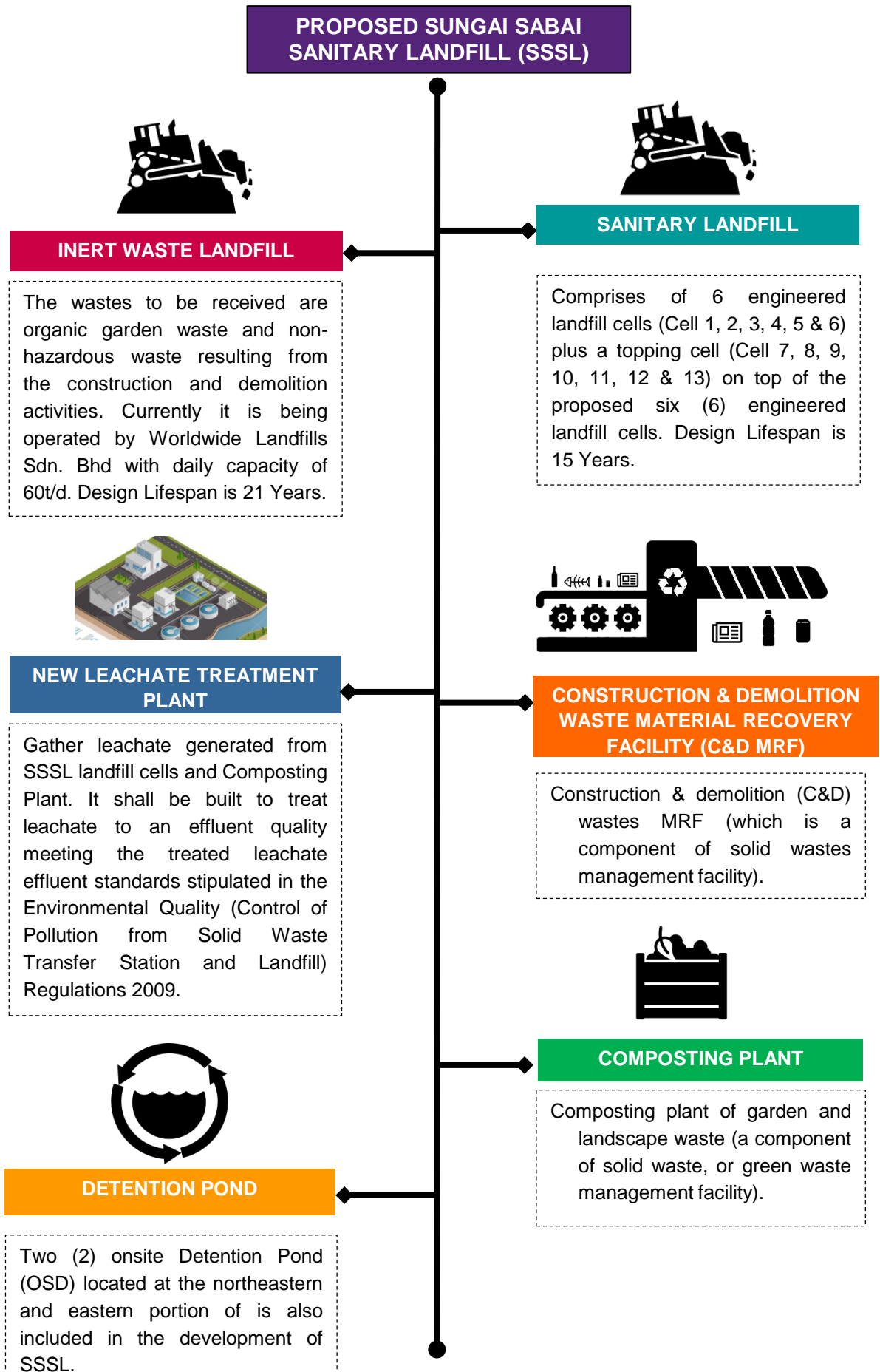
4 sustainable development goals are matched with the proposed SSSL Project as below:





PROJECT OPTIONS

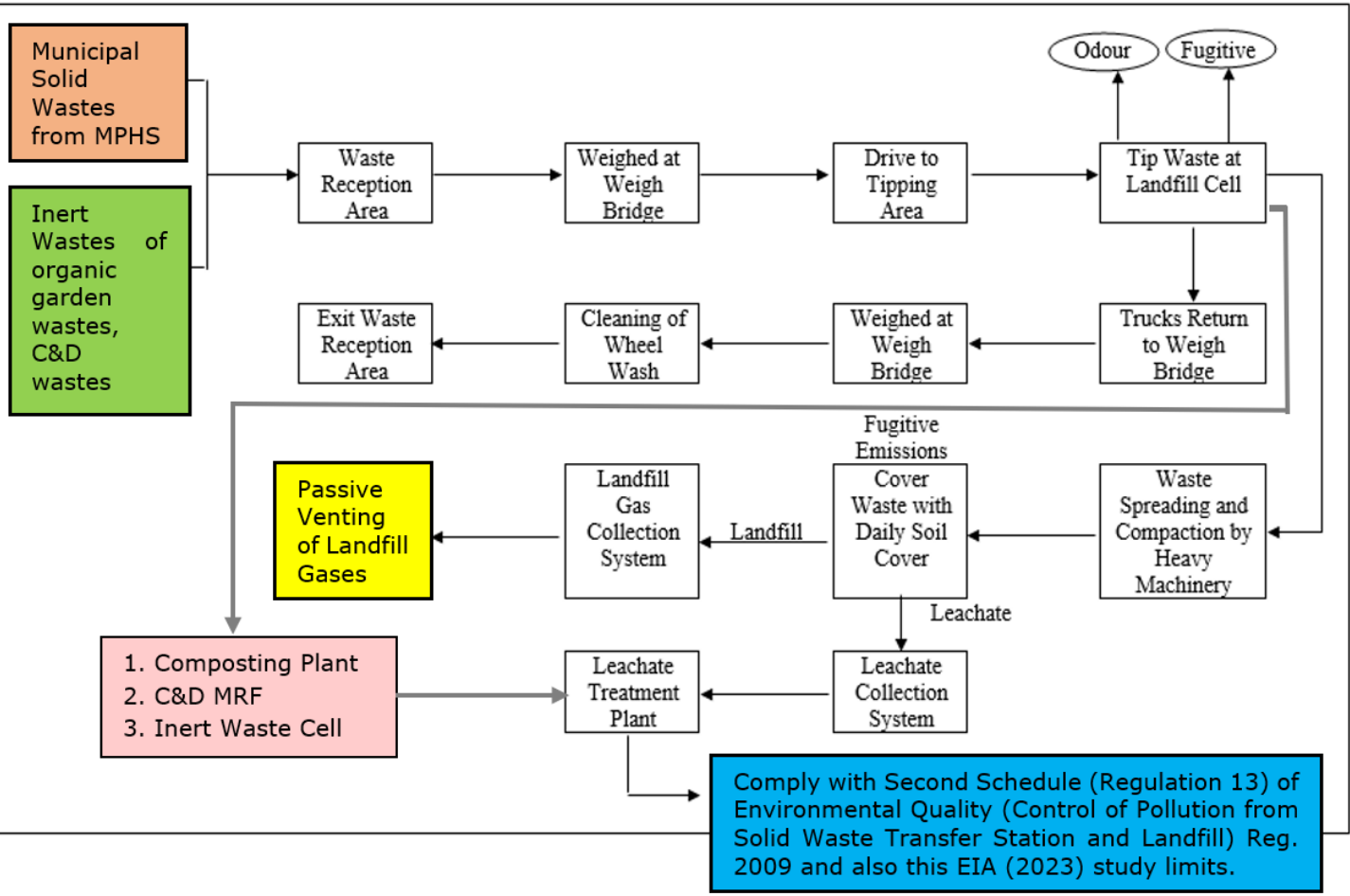
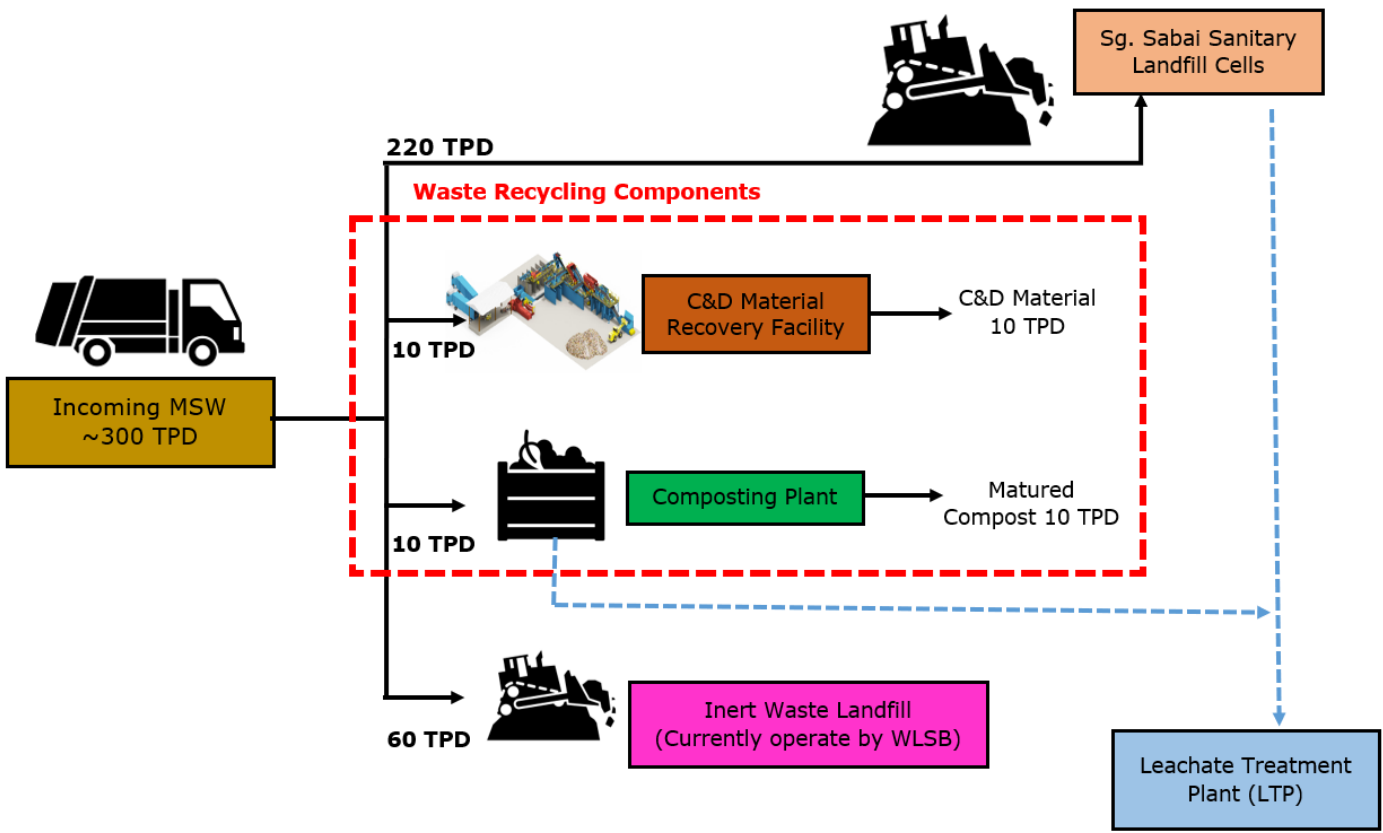
 Agriculture	 Sg. Sabai Sanitary Landfill	 No Development
<p>Does not compliment the Selangor State Government decision to approve the upgrading of the Sg. Sabai Landfill.</p>	<p>Sanitary Landfill, C&D MRF, Composting Plant and New Leachate Treatment Plant can handle solid waste up to 300 tonnes/day</p>	<p>No alternative to dispose the increasing municipal waste.</p>
<p>Generate revenue to the government in long term basis</p>	<p>Increase in state and nation's revenue through issuance of licenses and collection of taxes</p> <p>Reduce financial stress of RM200-300 thousand per year to the MPHS.</p>	<p>Majlis Perbandaran Hulu Selangor (MPHS) is expected to have a financial stress of RM200-300 thousand per year due to disposal of Municipal Solid Wastes to BTSL which is very far.</p>
<p>Provide job opportunities</p>	<p>Provide job opportunities for both blue-collars and white-collars</p>	<p>There will be no designated area to recycle, handle and dispose the increasing amount of municipal solid waste (MSW) and inert wastes generated from the District of Hulu Selangor.</p>
<p>Site is strategically located within the existing Sg. Sabai Landfill and surrounded by other non-residential areas.</p>		



OVERALL MASTER LAYOUT PLAN



WASTE FLOW IN THE PROPOSED SUNGAI SABAI SANITARY LANDFILL



DETAIL CALCULATION FOR SANITARY LANDFILL

OVERALL										Waste Capacity without Daily Cover		Daily Cover (Earthfill)		Waste Capacity with Daily Cover		Life span		Remarks
No.	Tier	Height (m)	Cells		bottom area (m²)	top area (m²)	Volume (m³)	Conversion (tonnes)	Volume (m³)	Conversion (tonnes)	Volume, m³ (Waste-Earthfill)	Volume, tonnes (Waste-Earthfill)	(years)	(months)	Remarks			
1	1	3	Phase 1 (Bund)		10,600	12,300	34,350.00	27,480.00	6,870.00	12,366.00	27,480.00	21,984.00	0.27	4.1	top level			
2	1	3	Phase 1 (1st slope)		12,300	8,900	31,800.00	25,440.00	6,360.00	11,448.00	25,440.00	20,352.00	0.25	3.8	53.00			
3	1	3	Phase 2 (Bund)		9,400	11,200	30,900.00	24,720.00	6,180.00	11,124.00	24,720.00	19,776.00	0.25	3.7	50.00			
4	1	3	Phase 2 (1st slope)		11,200	6,300	26,250.00	21,000.00	5,250.00	9,450.00	21,000.00	16,800.00	0.21	3.1	53.00			
5	1	3	Phase 3 (Bund)		6,400	8,000	21,600.00	17,280.00	4,320.00	7,776.00	17,280.00	13,824.00	0.17	2.6	50.00			
6	1	3	Phase 3 (1st slope)		8,000	5,300	19,950.00	15,960.00	3,990.00	7,182.00	15,960.00	12,768.00	0.16	2.4	53.00			
7	1	3	Phase 4 (Bund)		6,100	7,700	20,700.00	16,560.00	4,140.00	7,452.00	16,560.00	13,248.00	0.16	2.5	50.00			
8	1	3	Phase 4 (1st slope)		7,700	5,400	19,650.00	15,720.00	3,930.00	7,074.00	15,720.00	12,576.00	0.16	2.3	53.00			
9	1	3	Phase 5 (Bund)		9,300	11,100	30,600.00	24,480.00	6,120.00	11,016.00	24,480.00	19,584.00	0.24	3.7	50.00			
10	1	3	Phase 5 (1st slope)		11,100	6,200	25,950.00	20,760.00	5,190.00	9,342.00	20,760.00	16,608.00	0.21	3.1	53.00			
11	1	3	Phase 6 (Bund)		11,100	12,900	36,000.00	28,800.00	7,200.00	12,960.00	28,800.00	23,040.00	0.29	4.3	50.00			
12	1	3	Phase 6 (1st slope)		12,900	9,800	34,050.00	27,240.00	6,810.00	12,258.00	27,240.00	21,792.00	0.27	4.1	53.00			
13	1	6	Phase 7 (Merging P1 - P6)		41,900	69,000	332,700.00	266,160.00	66,540.00	119,772.00	266,160.00	212,928.00	2.65	39.8	53.00			
14	1	6	Phase 8		69,000	70,100	417,300.00	333,840.00	83,460.00	150,228.00	333,840.00	267,072.00	3.33	49.9	59.00			
15	1	6	Phase 9		70,100	53,700	371,400.00	297,120.00	74,280.00	133,704.00	297,120.00	237,696.00	2.96	44.4	65.00			
16	1	6	Phase 10		53,700	35,800	268,500.00	214,800.00	53,700.00	96,660.00	214,800.00	171,840.00	2.14	32.1	71.00			
17	1	4	Phase 11		35,800	25,300	122,200.00	97,760.00	24,440.00	43,992.00	97,760.00	78,208.00	0.97	14.6	75.00			
18	1	4	Phase 12		25,300	11,400	73,400.00	58,720.00	14,680.00	26,424.00	58,720.00	46,976.00	0.59	8.8	79.00			
19	1	4	Phase 13		11,400	2,500	27,800.00	22,240.00	5,560.00	10,008.00	22,240.00	17,792.00	0.22	3.3	83.00			
TOTAL										1,945,100.00	1,556,080.00	389,020.00	700,236.00	1,556,080.00	1,244,864.00	15.51		

Remarks:-		MSW		Inert		Earthfill	
220 tonne daily Waste		Density (Mg/m3) :		0.8		1	
1 m3 MSW						1.8	
1 m ³ earth fill							

1 m3 MSW 0.8 tonne MSW
1 m³ earth fill 1.8 tonne earthfill

PHASE DEVELOPMENT – ZERO WASTE



PHASE 13 - FINAL CLOSURE SANITARY LANDFILL



FINAL CLOSURE FOR INERT WASTE



DETAIL CALCULATION FOR INERT WASTE LANDFILL

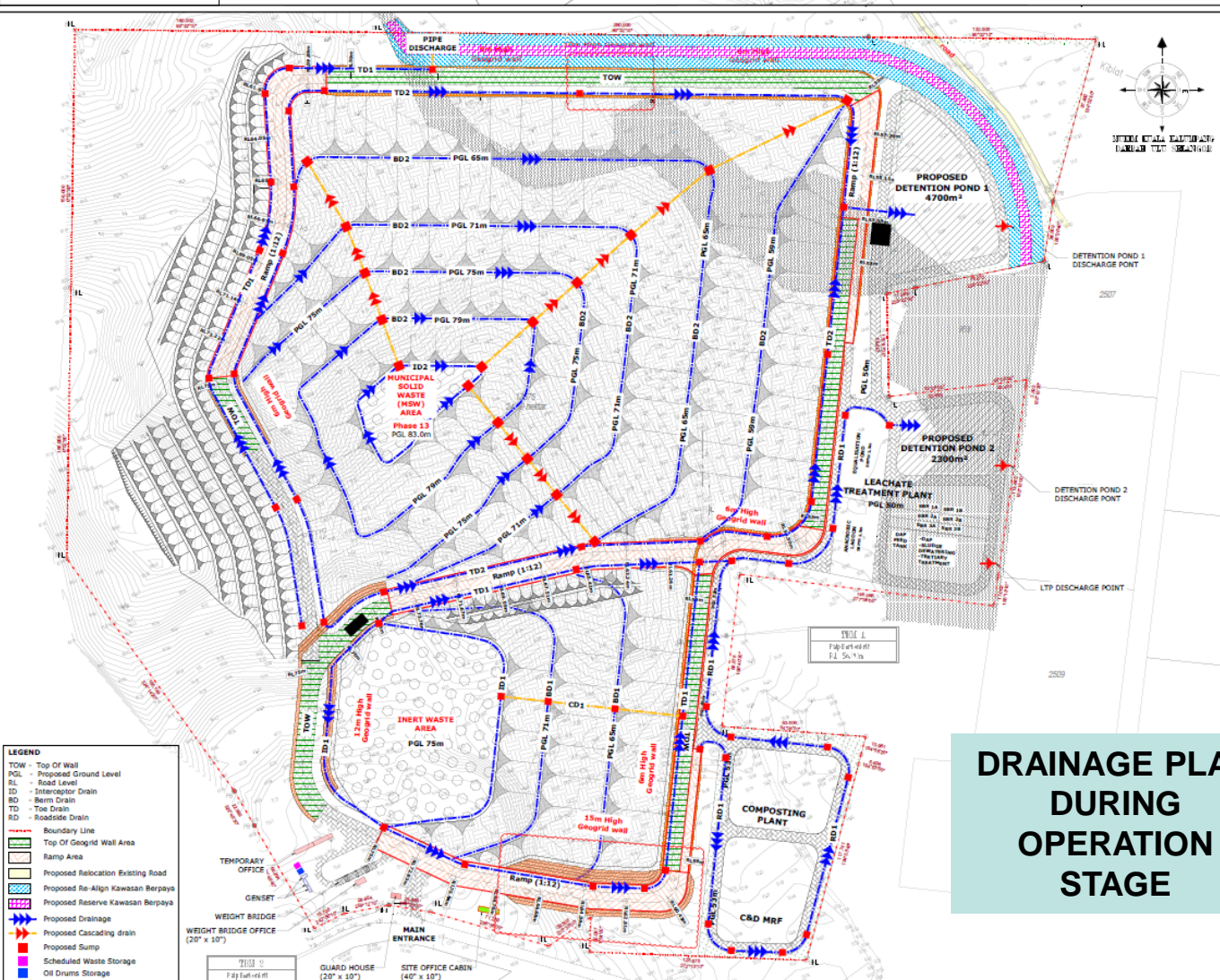
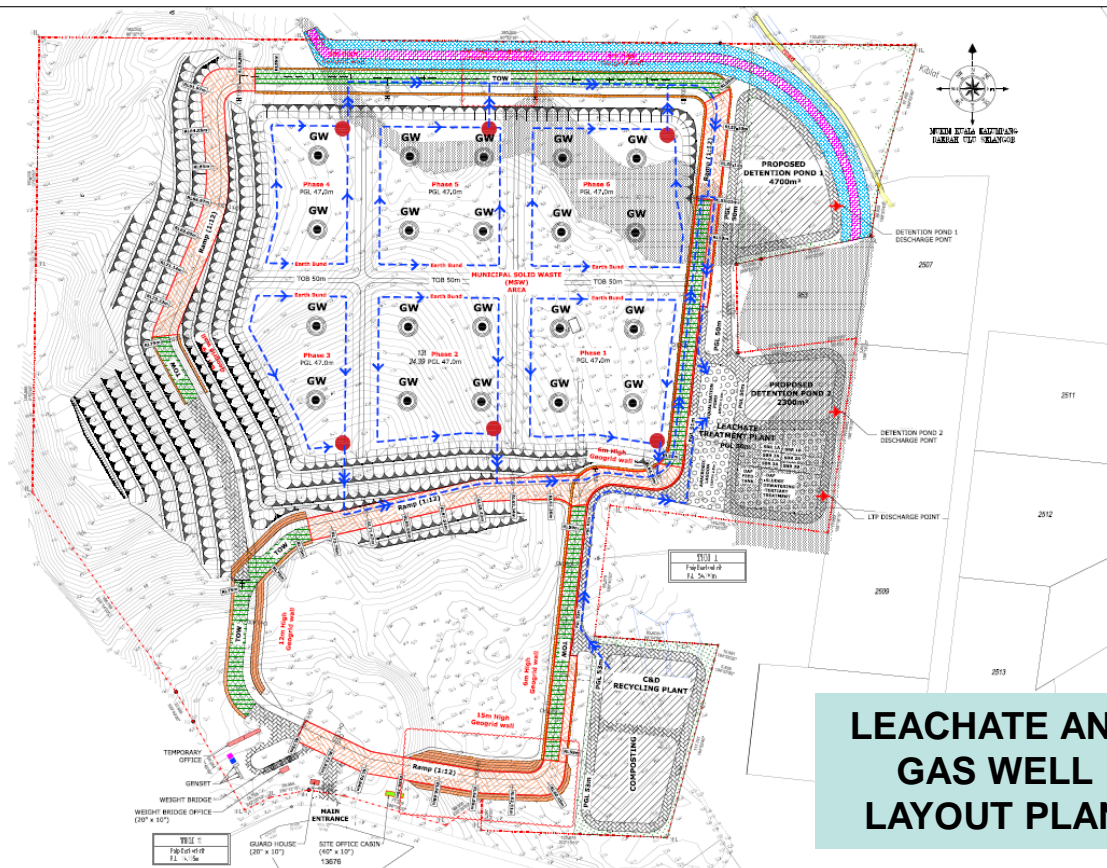
OVERALL

						Waste Capacity without Daily Cover		Life Span	Remarks
No.	Tier	Height (m)	Cells	bottom area (m²)	top area (m²)	Volume (m³)	Conversion (tonnes)		
1	1	9	Average 9m high Bund	23,232	41,209	289,984.50	289,984.50	13.24	Inert
2	1	6	6m high 1st waste slope	41,209	16,129	172,014.00	172,014.00	7.85	
3	1	6	6m high 2nd waste slope	16,129	3,025	57,462.00	57,462.00	2.62	
TOTAL						461,998.50	461,998.50	21.10	

Remarks:-

60 tonne daily Waste

	MSW	Inert	Earthfill
Density (Mg/m3) :	0.8	1	1.8



WASTE GENERATION

CONSTRUCTION STAGE



✓ Biomass waste

Type	Extent (Ha)	Average AGB (tonnes/ Ha)	Total AGB (tonnes)
Secondary forest trees	9.90	46.6	461.34

✓ Domestic waste

Generation of 100 kg/day (100 PE)

✓ Construction waste

Particularly from the construction of C&D MRF, Composting, LTP and infrastructure.

✓ Scheduled waste

Expected to generate SW305, SW306, SW408, SW409, SW410, etc.

✓ Sewage waste

Estimated to generate 22,500 L/day (for 100 workers with 100PE)

OPERATIONAL STAGE



✓ Solid Waste

Solid Waste	Estimated Quantity (MT/d)
Administrative & Domestic waste i. Food waste and packaging ii. Empty bottles and cans iii. Papers	0.02 [Calculated based on 1kg/person/day]
i. Inert wastes from C&D waste MRF ii. Inert wastes from Composting plant	10 Minimal

✓ Sewage waste

Estimated to generate 4,500 L/day (for 20 workers with 20PE)

✓ Scheduled waste

-Expected to generate **SW305, SW306, SW409, SW410** and to be disposed to licensed scheduled waste facility.

-**SW204** Sludge from leachate treatment plant (3.6m³/day from SBR 1a, 1b, 1c, 1d, 1e, 1f and 11.6m³/day from secondary DAF).

-Shall be required to be disposed to Sungai Sabai Sanitary Landfill under Special Waste Management, if approved by DOE or to licensed Scheduled Waste Facility.

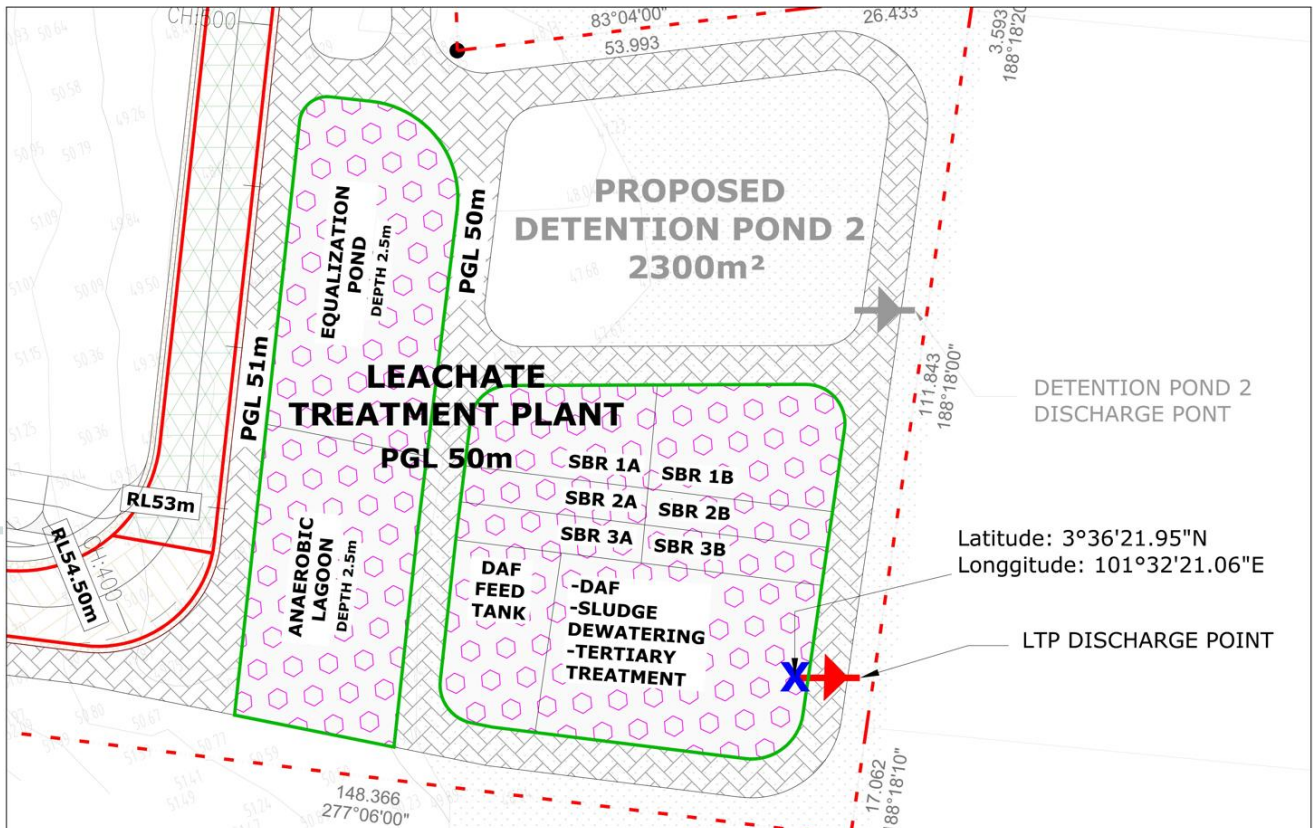


LEACHATE MANAGEMENT



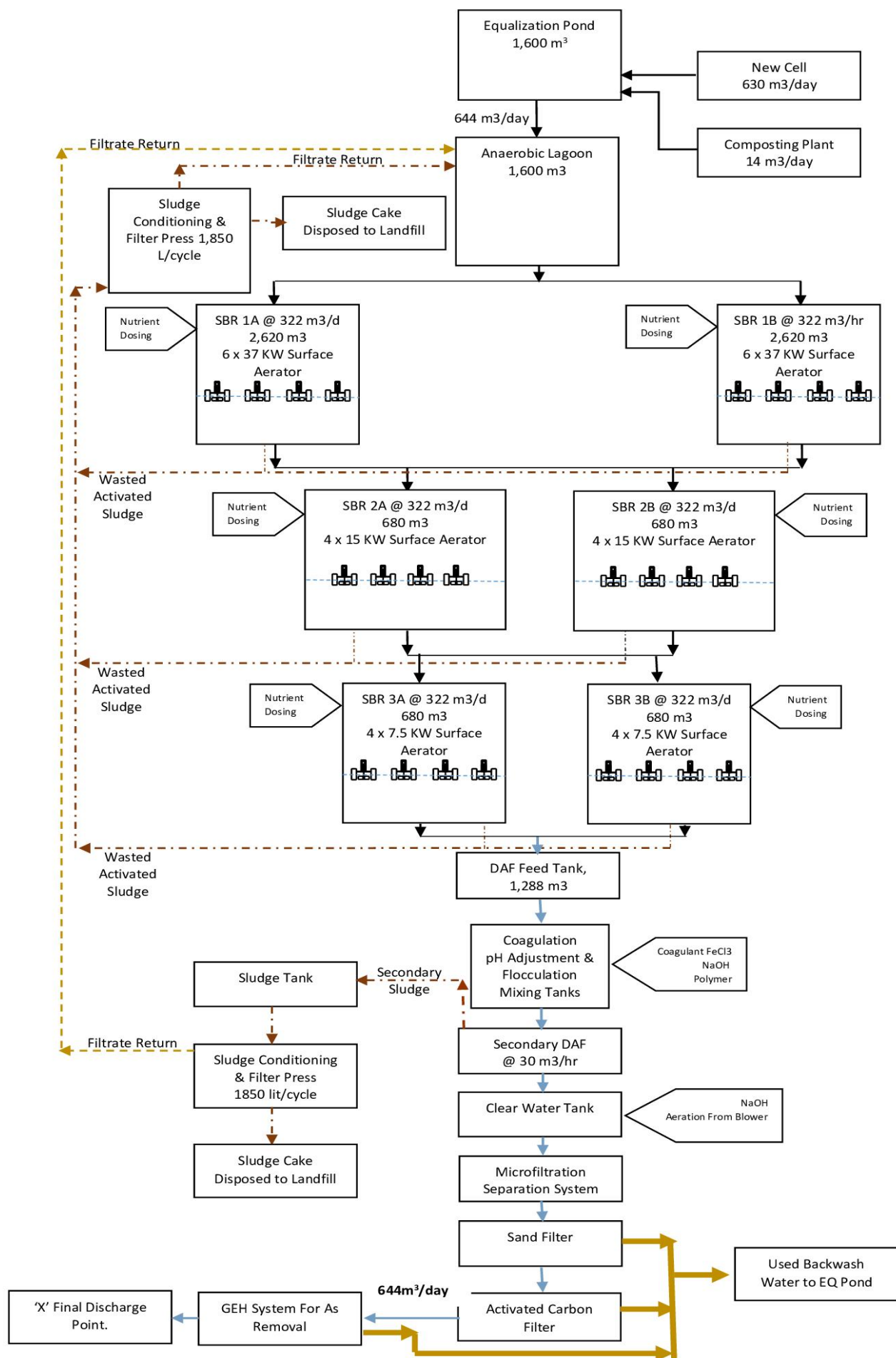
Design Flowrate For the LTP

NO	SOURCE OF LEACHATE	DESIGN FLOW RATE (M ³ /DAY)
1	New Sanitary Landfill	630
2	Composting Plant	14
	Total	644



- ✓ As a minimum requirement, leachate water shall be treated to meet Acceptable Conditions for Discharge of Leachate, Second Schedule (Regulation 13) of the Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulation 2009.

PROCESS FLOWCHART



EXISTING ENVIRONMENT – PHYSICAL ENVIRONMENT



TOPOGRAPHY

The eastern portion of the proposed Sg. Sabai Sanitary Landfill site is characterised as gentle sloping terrains with the elevations ranging from GL48.0m to GL60.0m above mean sea level (msl) while the western portion is characterised as undulating to hilly terrains with the elevations ranging from GL60.0m to GL100.0m above msl.

- The highest point - approximately GL109.09m msl) which is situated on the top of the hill in western portion of the site
- The lowest point - approximately GL47.02m msl) which is situated at the swampy area in the eastern portion of the site.



HYDROLOGY

- The Project Site drained by existing seasonal stream and man-made earth drains that flow into Sg. Ayer Hitam which flows southwards into Sg. Beletak which flows towards southeast into Sg. Kerling and eventually into Sg. Selangor prior to discharging into the Straits of Melaka.
- Rantau Panjang water intake point at Kg. Rantau Panjang and Sg. Selangor Phases I, II and III water intake points near Kg. Sg. Darah are located approximately 49km and 53km downstream of the Project Site.



GEOLOGY

- The regional geology of the proposed SSSL Site is situated on Argillaceous Series of the Terolak Formation which was deposited in a marine environment as evident from the fossils.



SOIL INVESTIGATION

The soil within the Project Site is **sedimentary soil/rocks namely the Serdang-Kedah Association**

- Subsoil Layer 1 ($N \leq 15$) – Soft to Firm Sandy SILT, CLAY, Silty CLAY – 1.5m to 9m thick
- Subsoil Layer 2 ($15 < N \leq 50$) – Very Stiff Sandy SILT, medium Dense SAND and Silty SAND – 1m to 15.5m thick
- Subsoil Layer 3 ($N > 50$) – Hard sandy SILT with some gravels and Clayey SILT at RL1.00m to RL18.00m.

EXISTING ENVIRONMENT – PHYSICAL ENVIRONMENT



GROUNDWATER

The nearest tube well was near Kalumpang Town which was approximately 5km northeast from the proposed Project Site. These active tube wells indicate that the groundwater could yield between >10.0 - <20.0 meter³/hour.



LANDUSE

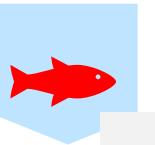
- I. Agricultural areas are the prevalent land use, with a total area of 12,867.99 acres (58.44% of the impact area). The main cultivated crops in the vicinity of the Project Site are traditional mixed horticulture (village), orchard and oil palm.
- II. Forest areas are the second predominant landuse of the total impact area which consists of lowland forest. This component covers about 5,324.97 acres or 24.18%.
- III. The settlements & associated non-agricultural areas in the impact area with a total of 913.68 acres or 4.15%. These urbanized areas are usually in the form of townships and settlements/ villages areas in the vicinity to the Project Site i.e. Taman Tempua Bistari, Pekan Kalumpang, Taman Bernam Jaya, Bandar Baru Lembah Beringin.
- IV. Other component within the zone of impact is cleared land, water body, open and recreation area which makes up to about 1,813.53 (8.24%) acres out of the total impact area.
- V. The Project Site covers approximately 0.278% of the total impact area which is currently existing Sg. Sabai Landfill, orchard farm and secondary forest.

EXISTING ENVIRONMENT – BIOLOGICAL ENVIRONMENT



FLORA AND FAUNA

- The proposed project site is located within existing Sg. Sabai Landfill, not within ESA.
- Secondary forest trees still dominated at the northern and western portion of the Project Site. Eastern portion of the Project Site is dominated with orchard farm.
- Common fauna species in the plantations, orchard, secondary forest setting are found and likely found in the Project Site.



AQUATIC SPECIES

- A total of 62 aquaculture operators listed by Selangor Fisheries Department (2022) which located within Sg. Selangor river basin. At least three (3) operators were located downstream from proposed Sg. Sabai Sanitary Landfill (Aquaculture no 52, 53, and 59). Most of the fish caught were adults.
- All ponds for aquaculture no 52, 53 and 59 were utilised to farm breeding *Clarias spp.* (Keli) and *Pangasius spp.* (Patin) and catfishes.
- Based on DOF Selangor (2022), At least 29 aquaculture operators in Hulu Selangor is breeding *Oreochromis niloticus* (Tilapia merah), followed by at least 23 operators that breed *Clarias spp.* (Keli), other operators include *Anabas testudineus* (Puyu); *Tor tambroides* (Kelah), *Scleropages formosus* (Crossback arowana) and *Oreochromis mossambicus* (Tilapia Hitam).



SOCIO-ECONOMIC AND HUMAN ENVIRONMENT

A total of 378 respondents from the identified 27 residential areas within the 5-km ZOI was surveyed on 28 – 30 December 2022. The final respondent count was at 388 respondents with Primary and Secondary Zones being 89.95% and 10.05% of the total respondents. Main issues Raised during the FGD are as below:

Attendees	Issue/ Problem	Suggestions
Penghulu and Village Heads of Mukim Kalumpang	<ol style="list-style-type: none"> River water pollution <ul style="list-style-type: none"> Concerned that the landfill will not fully be equipped with the necessary components which will lead to production of leachate/ effluent that will cause river pollution Inquired on the leachate management and quality control for treated leachate prior to it being discharged into the river. Traffic related issues <ul style="list-style-type: none"> Concerned on the amount of expected garbage trucks (20 – 30 trucks) that will be using Jalan Sg Sabai as its main access road to the Project site. They perceived that there will be an increase in road damage and accidents. Queried on the possibility of providing an alternative route to the Project Management and monitoring of Garbage Trucks (odour and cleanliness) <ul style="list-style-type: none"> Spilled leachate from the garbage trucks currently produces odour as well as attracting disease vector insects. This has caused disruption to the business operators as well as affecting the villagers' quality of life. Cited that complaints typically fall on deaf ears and villagers will have to take matter into their own hands. Monitoring of garbage trucks is of paramount importance. Supported the Project provided that only waste from Hulu Selangor is dumped here. Others <ul style="list-style-type: none"> Hopes that the issues and concerns raised here are taken seriously and are mitigated accordingly. 	The villages requested for the Project Proponents assurance and commitment to combatting the issues raised.
Attendees	Issue/ Problem	Suggestions
Representative of Homestay Owners	<ol style="list-style-type: none"> Economic impact on Eco-Tourism <ul style="list-style-type: none"> Concerned on the negative impacts towards to the economic situation brought on by the Project. Had highlighted that much of the earnings as a homestay owner was due to the fact that Hulu Selangor is a centre for eco-tourism. The term "Back to Nature" tourism was used during the FGD. The earnings of the homestay owners will be affected by poor management practices carried out for the waste transport vehicles and at the landfill. Waste Management (Odour Pollution, Road Cleanliness and Road Accidents) <ul style="list-style-type: none"> Had brought that they are currently experiencing odour issues and disease vector insects due to presence of chicken coops Informed that the local government were not enforcing or implementing waste segregation, in particular, organic food waste – which produces leachate. The leachate when spilled on road will produce odour and will cause road accidents. Hence, waste management during transportation is important. Had hoped that the garbage truck drivers are disciplined and are safe drivers. Had proposed road widening/ regular road cleaning to deal with traffic issues. 	Had proposed that a mini-incinerators be placed at the homestay area. This also serves as an education program on the importance of waste management and segregation as well as recycling for children from a young age.

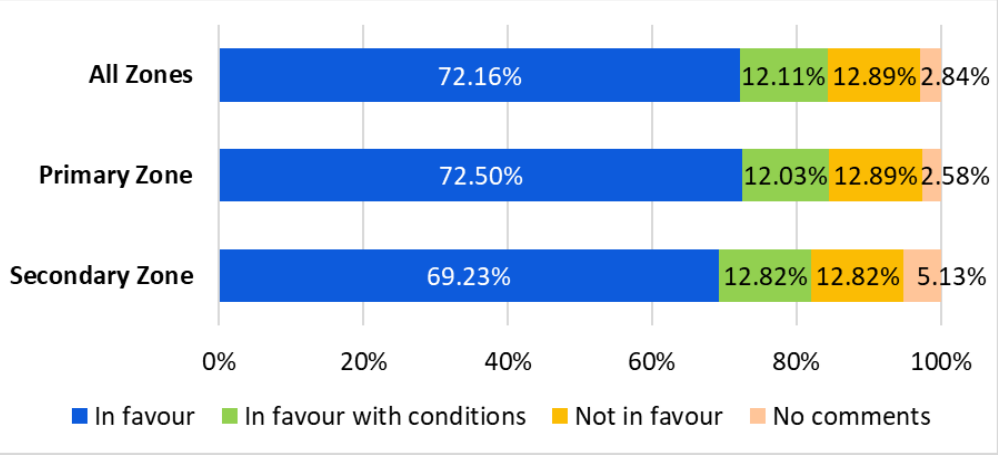
EXISTING ENVIRONMENT – SOCIO-ECONOMIC & HUMAN ENVIRONMENT



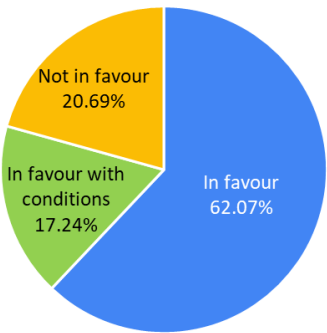
Existing Social Issues and Problems



Level of Acceptance Towards the Project



Level of Acceptance Towards the Project (Business Operators)



EXISTING ENVIRONMENT – PUBLIC HEALTH ENVIRONMENT



PUBLIC HEALTH ENVIRONMENT

- Morbidity statistics on diseases related to the environment were obtained from Klinik Kesihatan Kalumpang and Hospital Kuala Kubu Bharu for a period of one year, from January to December 2022.

	Klinik Kesihatan Kalumpang	Hospital Kuala Kubu Bharu
Eye and respiratory diseases	Represented by conjunctivitis, upper respiratory tract infections and asthma made up 17.5% and 54.5% of all adult and children cases.	Represented by conjunctivitis, upper respiratory tract infections, asthma, tuberculosis, pneumonia and bronchitis made up 20.7% and 18.4% of all adults and children cases.
Cardiovascular diseases	Represented by hypertension, heart failure, ischaemic heart disease and cerebrovascular accident made up of 35.5% of all adult cases only.	Represented by hypertension, heart failure, ischaemic heart disease and cerebrovascular accident made up of 9.2% of all adult cases only.
Disease cases related to water pollution	No disease case related to water pollution.	Represented by dysenteries and food poisoning made up 1.9% and 10.4% of all adult and children cases.
Disease cases related to animal vectors and reservoirs	Only dengue fever and dengue hemorrhagic fever cases were reported, and they made up only 0.2% and 0.5% of all adult and children cases. Therefore, vector borne diseases are also uncommon in the area.	Only dengue cases and 1 malaria reported. These animal vector and reservoir related disease cases made up of 7.7% and 3.0% of all adult and children cases.
Skin disease cases	Cutaneous abscess/furuncle and carbuncle, cellulitis, dermatitis and eczema, psoriasis, urticaria and erythemas made up only 1.1% and 0.7% of all adult and children cases.	Only cellulitis among adults, and it made up only 1.8% of all adult cases.

EXISTING ENVIRONMENT – TRAFFIC

Existing Traffic at Existing Road Network in Year 2023



Road Segment	Direction	Capacity (pcu/hour)	Peak hour Traffic Flow (pcu/hour)		Volume/ Capacity (LOS)	
			AM	PM	AM	PM
Jalan Kuala Lumpur – Tanjung Malim (Federal Route 1)	Both way	1,700	987	1,063	0.58 (A)	0.62 (B)
Jalan Sungai Sabai	Both way	1,000	217	250	0.22 (A)	0.25 (A)

- The results show that existing road within the vicinity of the development site is still operating below the road capacity and it still in good LOS.

EXISTING ENVIRONMENT – PHYSICAL ENVIRONMENT
(BASELINE WATER MONITORING)

WATER QUALITY

No.	Parameter (mg/L, unless otherwise stated)	SAH1	SAH2	SAH3	SB1	SB2	SB3	SB4	SB5	SB6	SB7	SB8	SK1	SS1	SS2	SS3	SS4	SS5	SS6	Class IIA (DOE)	Recommended Raw Water Quality Criteria (MOH)
*WQI Parameters																					
1	pH ^{ab}	6.54	6.81	6.79	5.81	7.29	6.29	ND	6.01	6.49	6.82	6.86	7.12	7.07	6.92	6.81	6.79	6.73	6.75	6.0 – 9.0	5.5 – 9.0
2	Temperature, °C ^{ab}	28.9	27.6	26.9	30.7	31.9	26.1	ND	26.5	27.1	27.2	26.6	27.7	27.4	27.5	27.4	27.6	27.6	27.5	-	-
3	Chemical Oxygen Demand (COD) ^{ab}	13	26	12	147	180	11	ND	10	14	25	10	13	10	12	6	32	12	13	25	10
4	Biochemical Oxygen Demand (BOD) ₅ ^{ab}	2	5	1	41	64	1	ND	1	2	2	1	2	1	1	1	7	1	2	3	6
5	Dissolved Oxygen (DO) ^{ab}	4.56	4.61	5.24	2.70	4.08	4.89	ND	5.05	5.09	5.12	5.12	6.01	5.51	5.49	5.43	5.44	5.39	5.31	5-7	-
6	Total Suspended Solids (TSS) ^{ab}	7	18	9	31	41	8	ND	10	8	6	10	40	38	17	17	28	48	53	50	1500
7	Oil & Grease (Mineral)(OSG) ^{ab}	<1	<1	<1	<1	<1	<1	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	7; N	-
8	Ammonical Nitrogen, NH ₃ -N ^{ab}	0.7	7.3	2.9	57	**97	0.7	ND	0.6	1.1	0.9	0.5	0.5	0.4	0.9	0.5	0.7	0.8	1.2	0.3	-
9	Faecal Coliform, count/100ml ^{ab}	157	423	247	1700	2840	197	ND	290	670	485	400	625	840	525	555	567	950	585	100	-
10	Total Coliform, count/100ml ^{ab}	400	5700	2800	1900	13400	1400	ND	1800	13500	2500	3500	9100	12200	9600	10400	9600	13900	11200	5000	5000
11	Turbidity, NTU ^c	18	20	20	164	137	18	ND	13	21	20	26	22	24	18	17	22	25	30	50	1000
12	Salinity, ppt ^a	<1	<1	<1	<1	<1	<1	ND	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	-
13	Conductivity, µS/cm ^a	42	166	75	1749	1747	25	ND	19	21	138	34	29	29	75	32	40	54	78	1000	-
**Heavy Metals																					
14	Mercury (Hg) ^{ab}	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001
15	Cadmium (Cd) ^{ab}	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	0.003
16	Chromium Trivalent Cr ³⁺ ^{ab}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-
17	Chromium Hexavalent CrVI ^{ab}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	-
18	Arsenic (As) ^{ab}	<0.005	<0.005	<0.005	0.007	0.008	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	0.01
19	Cyanide (CN) ^{ab}	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	ND	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02	0.07
20	Lead (Pb) ^{ab}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	0.05
21	Copper (Cu) ^{ab}	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.02	1.0
22	Manganese (Mn) ^{ab}	0.055	0.080	0.069	0.552	0.121	0.167	ND	0.139	0.053	0.043	0.051	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.1	0.2
23	Nickel (Ni) ^{ab}	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	-
24	Tin (Sn) ^{ab}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-
25	Zinc (Zn) ^{ab}	<0.005	<0.005	<0.005	0.025	0.041	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	5.0	3.0
26	Boron (B) ^{ab}	<0.005	0.007	<0.005	0.776	0.365	0.010	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	1.0	-
27	Iron (Fe) ^{ab}	1.98	2.37	2.00	15.7	5.77	2.51	ND	2.06	1.84	1.67	2.02	1.80	1.61	2.04	1.75	1.22	1.35	0.925	1.0	1.0
28	Argentum/Silver (Ag) ^{ab}	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	ND	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.05	0.05
29	Selenium (Se) ^{ab}	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	0.01
30	Barium (Ba) ^{ab}	<0.01	<0.01	<0.01	0.11	<0.01	<0.01	ND	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1	-
Other parameters																					
31	Fluoride (F) ^{ab}	0.4	0.3	0.3	0.6	0.5	0.3	ND	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	1.5	1.5
32	Formaldehyde ^{ab}	<0.1	<0.1	<0.1	0.2	0.2	<0.1	ND	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	-	-
33	Phenol ^{ab}	<0.001	<0.001	<0.001	0.017	0.040	<0.001	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	10	0.002
34	Sulphide (S ²⁻) ^{ab}	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-
35	Colour, ADM ^{ab}	10	32	18	150	295	10	ND	<5	146	6	<5	5	6	14	12	8	14	12	150 TCU	300 TCU
		(pH 6.9)	(pH 6.8)	(pH 7.0)	(pH 6.8)	(pH 7.9)	(pH 7.3)	(pH 7.2)	(pH 7.1)	(pH 6.3)	(pH 6.2)	(pH 6.4)	(pH 6.7)	(pH 6.7)	(pH 6.5)	(pH 6.5)	(pH 7.0)	(pH 6.5)	(pH 6.5)		
36	Nitrate Nitrogen, NO ₃ -N	0.4	0.5	0.9	1.0	11.3	0.1	ND	0.2	0.4	0.3	0.3	0.2	0.4	0.3	0.3	1.1	0.4	0.6	-	-
37	Total Phosphorus, TP	<0.1	0.1	0.3	0.6	0.4	0.1	ND	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.2	0.1	0.2	-
38	% DO saturation	102	103	101	63.9	96.4	92.5	ND	97.5	111	108	89	109	101	99.4	95.7	92.8	97.5	90.4	-	-
39	Leptospira CFU/100ml	-	-	-	-	-	-	-	-	<1	-	-	-	<1	-	-	-	-	-	-	-
40	Enterococci CFU/100ml	-	-	-	-	-	-	-	-	<1	-	-	-	<1	-	-	-	-	-	-	-
41	Cyanobacteria cells/mL	-	-	-	-	-	-	-	-	Absent	-	-	-	Absent	-	-	-	-	-	-	-
42	Flow rate m ³ /hr	74.41	397.02	1467.18	-	33.50	1446.36	-	3084.96	3397.26	3538.58	5530.48	10628.1	15583.7	8443.61	12960.5	58385.7	62501.2	136352	-	-

➤ Most of the parameters were recorded within the limits of Class IIA, National Water Quality Standards for Malaysia and MOH Drinking Water Quality Standard: Recommended Raw Water Quality (2004).

➤ Exceedance recorded for Ammoniacal Nitrogen (NH₃-N), Faecal Coliform & Total Coliform for all sampling points, pH level (at SB1 only), Dissolved Oxygen (at SAH1 & SAH2), Turbidity at SB1 & SB2, BOD & COD at SAH2, SB1, SB2 and SS4.

➤ For Heavy metal, exceedance recorded for Manganese (at SB1, SB2, SB3 and SB5) and Iron at all sampling points.

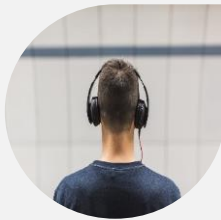
EXISTING ENVIRONMENT – PHYSICAL ENVIRONMENT (BASELINE MONITORING)

AIR QUALITY



- The baseline air quality conducted in 5th to 9th December 2022 at:
 - A1 - within the Sg. Sabai Landfill,
 - A2 – Taman Lembah Beringin
 - A3 – Taman Tempua Bistari
 - A4 – Ladang Johawaki 4
- All parameters are **within** the respective limits stated in the Malaysia Ambient Air Quality Standard (2020).

NOISE LEVEL



- All noise sampling locations during night-time were within the permissible limits against Guidelines for Environmental Noise Limits and Control, Third Edition 2021; Second Schedule (Limited Sound Level (LAeq) by Receiving Land Use for Existing Built Up Areas) - Receiving Land Use Category of Low-Density Residential Areas (55 dBA (night-time)).
- Meanwhile, noise level at all sampling points were exceeded the limit (60 dBA) during daytime.

GROUND WATER QUALITY



- Baseline groundwater monitoring for SSSL Site was conducted on 15th March 2023 at four (4) monitoring wells at the Proposed Sg. Sabai Landfill .
- During baseline sampling, COD, Arsenic, Iron and Manganese had exceeded the MOH Acceptable Value for Recommended Raw Water Quality of National Drinking Water Quality Standards, 2004 and DOE National Groundwater Quality Standard for Conventional Treated Drinking Water, 2017 at all four (4) points, i.e., GW1, GW2, GW3 and GW4.
- Exceedance of COD, Arsenic, Iron and Manganese could be caused by current landfill activities, surrounding orchard farm and oil palm estate.

ODOUR ASSESSMENT

It could be observed that the highest D/T perceived for unpleasant smell (landfill smell) was 4 D/T at Entrance of Project Site (O1).



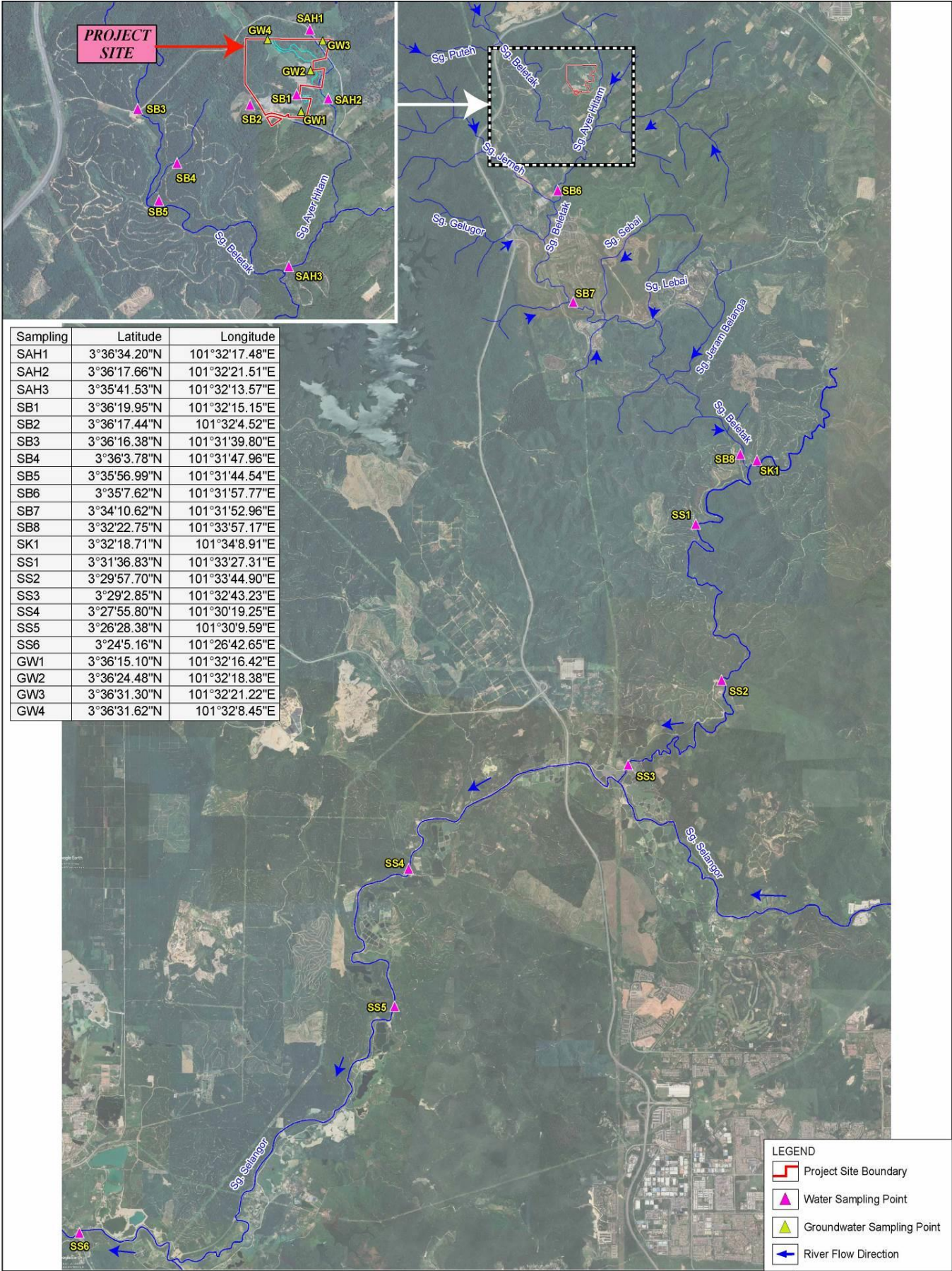
LAND CONTAMINATION – SOIL ANALYSIS



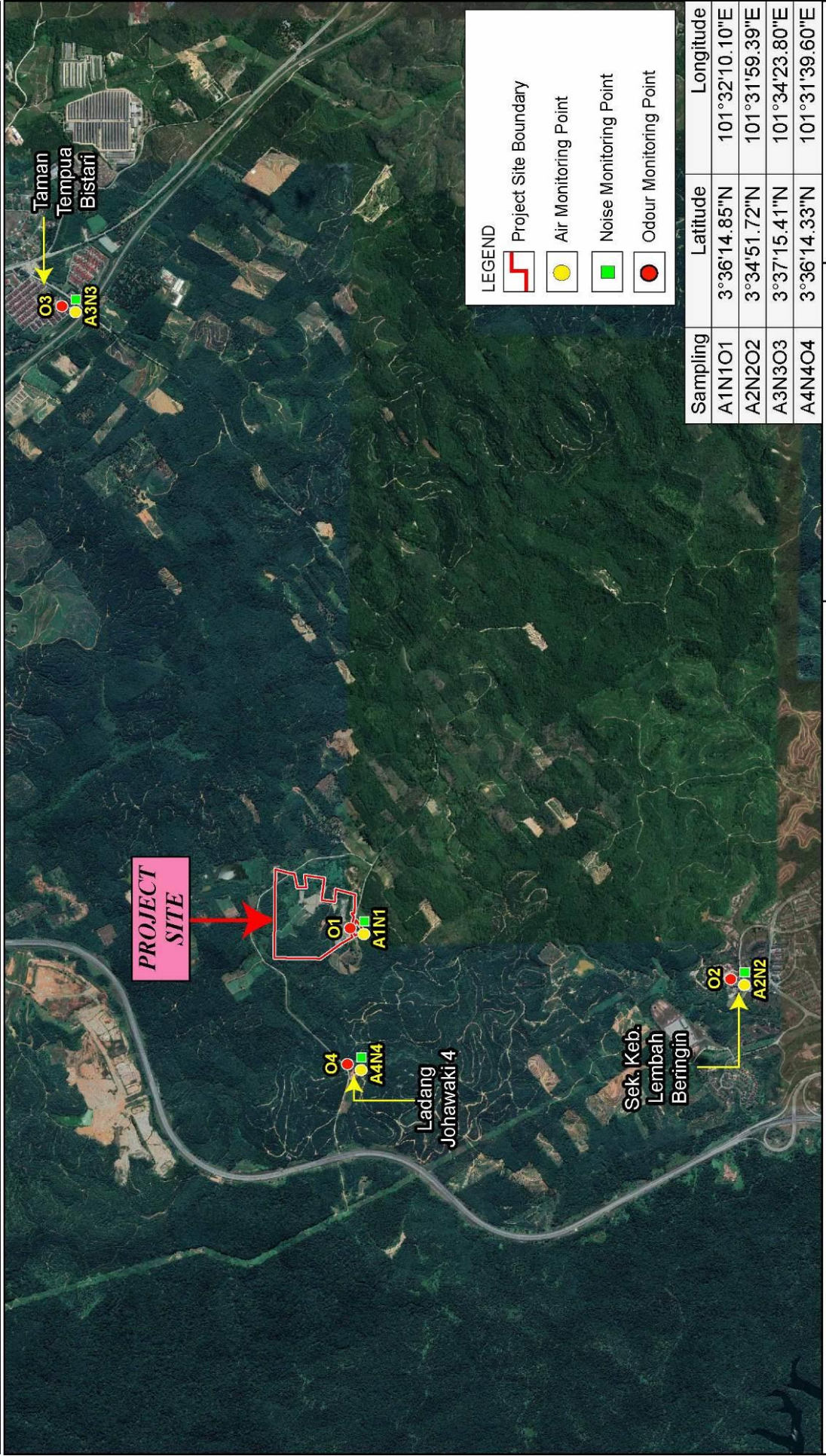
- All parameters of soil samples assessed at BH1, BH5 & BH6 are within the compliance standards against Dutch Pollutant Standards and also DOE Malaysia Contaminated Land Management and Control Guidelines No. 1: Malaysian Recommended Site Screening Levels for Contaminated Land, Appendix D TYPICAL RANGE OF NATURAL OCCURRING METALS CONCENTRATIONS except Barium and Copper at BH6.
- Higher Barium and copper could be caused by oil palm plantation and orchard farming activities.



BASELINE SAMPLING LOCATIONS (RIVER WATER & GROUNDWATER)




BASELINE SAMPLING LOCATIONS (AIR, NOISE & ODOUR)




CONSTRUCTION PHASE

ACTIVITIES	: Site Clearing, Earthworks, Construction of Access Road, Sg. Sabai Sanitary Landfill SSSL (Phase 1-13), LTP, C&D MRF and Composting Plant
RECEPTORS	: Sg. Ayer Hitam, Sg. Beletak, Ladang Johawaki 4, Taman Tempua Bistari


IMPACTS



Land clearing and earthworks **increases soil erosion risk** at the Project Site which will increase suspended solids in Sg. Ayer Hitam and Sg. Beletak.



Workers Quarters: Untreated sewage and sullage discharge from portable toilets or individual septic tanks will increase levels of DO, BOD, COD & NH₃-N in the rivers.



Improper discharge or spillage at construction sites leading to river water & soil contamination e.g., grease, diesel, etc.

POLLUTION PREVENTION AND MITIGATING MEASURES

- Proper design and implementation of **LD-P2M2** :
 - o Erosion control : turfing, mulching
 - o Surface runoff control : temporary drains, check dams, sumps
 - o Sedimentation control : one (1) Sediment basin

Sewage Management

- Portable toilets or toilets with septic tank
- All discharge treated to Standard A of EQ (Sewage) Regulations 2009.

Fuel, Oil and Lubricant Spillage Management

- Provision of skid tanks, oil spill kits, containment bunds and implementation of SW management in accordance with Environmental Quality (Scheduled Wastes) Regulation 2005
- **Emergency Response Plan (ERP)** and contingency plans for accidental spill incidents

OPERATION PHASE

ACTIVITIES	: Operation of SSSL, C&D MRF, Composting Plant and LTP
RECEPTORS	: Sg. Ayer Hitam, Sg. Beletak, Ladang Johawaki 4, Taman Tempua Bistari

IMPACTS

Leachate from SSSL and composting plant if not treated properly will increase levels of BOD, COD, NH₃-N, Nitrate & Total Phosphorus and resulting in extensive organic pollution at Sg. Ayer Hitam and Sg. Beletak.

POLLUTION PREVENTION AND MITIGATING MEASURES

Leachate Treatment

- **New LTP** to be constructed at SSSL.
- To treat the leachate to the Second Schedule (Regulation 13) of EQ (Control of Pollution from Solid Waste Transfer Station and Landfill) Reg. 2009: Acceptable Conditions for discharge of Leachate before final discharge into the Sg. Ayer Hitam and Sg. Beletak.



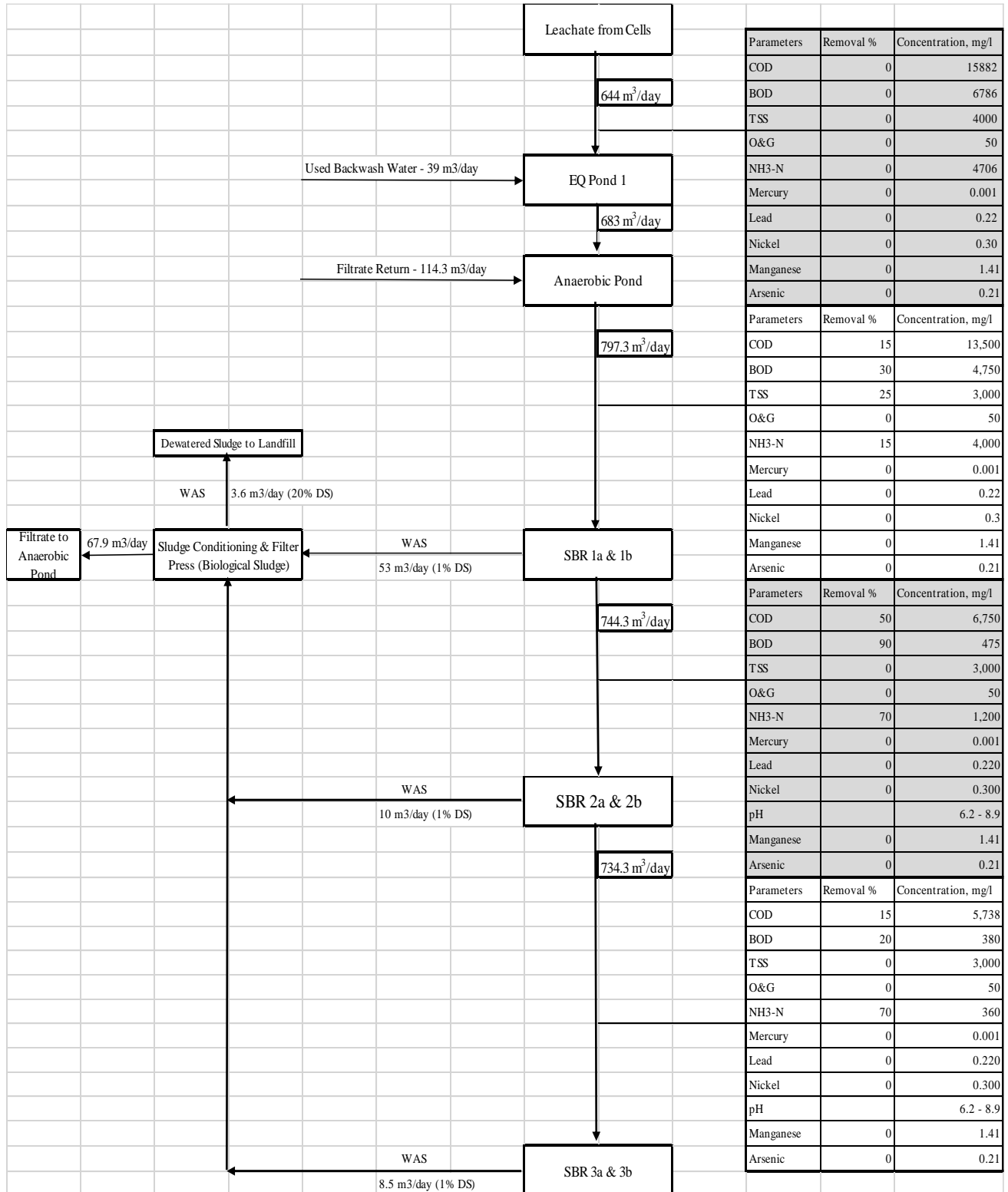


OPERATION PHASE

ACTIVITIES:

1. The total daily incoming flow rate of the waste leachate is 644m³/d from SSSL (630m³/d) and Composting Plant (14m³/d).

MITIGATION MEASURES: PROPOSED LEACHATE MANAGEMENT SYSTEM AT LTP

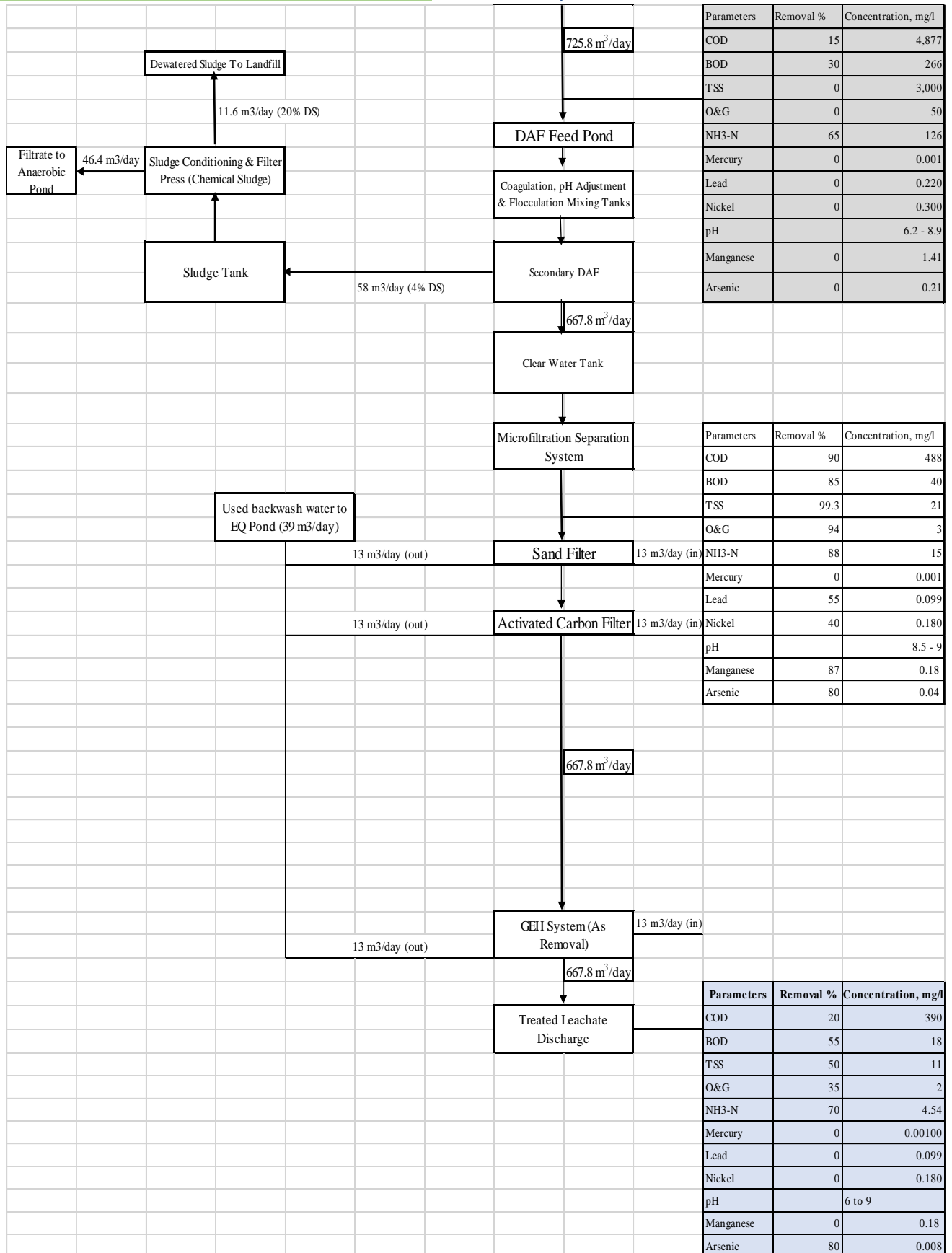




OPERATION PHASE

MITIGATION MEASURES: PROPOSED LEACHATE MANAGEMENT SYSTEM AT LTP

Continue from the
previous page





CONSTRUCTION PHASE

ACTIVITIES	: Site Clearing, Earthworks, Construction of Access Road, Sg. Sabai Sanitary Landfill SSSL (Phase 1-13), LTP, C&D MRF and Composting Plant
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms

IMPACTS



Increased **level of TSP/PM10** due to spillage or wind-blown dust from uncovered material which may have some effects on aesthetic value and health aspects.



Traffic movement on dirt road will churn up the surface and may incite hazy condition especially during dry and windy periods.



Leveling of ground and the use of heavy machinery for the compaction of the fill material during earthwork and construction activities will give rise to dust pollution.

POLLUTION PREVENTION AND MITIGATING MEASURES

- Provision of **wash trough**.
- Constant wetting and cleaning of roads connecting the Site to external public roads.



- **Traffic management** through speed limits and regular maintenance of vehicles / machinery

- **Continuous air quality monitoring** during construction stage.

OPERATION PHASE

ACTIVITIES	: Operation of SSSL, C&D MRF, Composting Plant and LTP
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms

IMPACTS



Landfill Gas emission from Sg. Sabai Sanitary Landfill.

Dust from landfill operation.



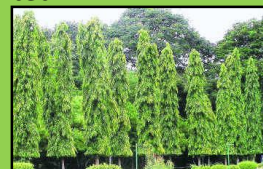
Odorous gases generated in the landfill waste cells and composting plant.

POLLUTION PREVENTION AND MITIGATING MEASURES

- **Daily cover** material is introduced at the end of the day of operation at the Landfill.



- Sorting activities at the C&D MRF should be conducted on the same day to avoid overnight accumulation;
- Garbage trucks leaving the landfill site to be cleansed thoroughly to prevent any spillage of leachate on the haulage route
- Use of **odour neutralizing** sprays and additives where odours cannot be prevented.
- Landscape & vegetative buffer at the site perimeter.





CONSTRUCTION PHASE

ACTIVITIES	: Site Clearing, Earthworks, Construction of Access Road, Sg. Sabai Sanitary Landfill SSSL (Phase 1-13), LTP, C&D MRF and Composting Plant
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms

IMPACTS

Nearest residential receptors shall experience **minimal noise level** emitted from tractors, scrappers, dozers, loaders, graders, excavators and trucks.



POLLUTION PREVENTION AND MITIGATING MEASURES

- Noisy construction activities should be done only during day-time to preserve tranquility of night-time.
- Continuous **monitoring** during construction stage.

OPERATION PHASE

ACTIVITIES	: Operation of SSSL, C&D MRF, Composting Plant and LTP
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms

IMPACTS

Minimal noise level emitted from tractors, scrappers, dozers, loaders, graders, excavators as well as vehicles noise such as rubbish trucks in SSSL.



POLLUTION PREVENTION AND MITIGATING MEASURES

- Proposed **vegetative buffer** at the site perimeter as natural air and noise barrier.



- To periodically **maintain/service** the garbage truck to ensure it is at its optimal operating conditions at all times;
- **Impose speed** limit of 35km/hr for garbage truck going through the village road.





MAIN IMPACTS FOR GROUNDWATER

OPERATION PHASE

ACTIVITIES	: Operation of SSSL, C&D MRF, Composting Plant and LTP.
RECEPTORS	: Groundwater aquifer and Sg. Ayer Hitam & Sg. Beletak.

IMPACTS

Possibilities of **groundwater contamination** of heavy metal during operation.



POLLUTION PREVENTION AND MITIGATING MEASURES

- Proper **handling** of scheduled waste at site.
- A **proper drainage system** should be designed in the project area to stabilize the groundwater system after the construction.
- **Groundwater sampling**, and monitoring within the Project Site in accordance with the requirements of DOE Malaysia.



MAIN IMPACTS FOR ECOLOGY

CONSTRUCTION PHASE

ACTIVITIES	: Site Clearing, Earthworks, Construction of Access Road, Sg. Sabai Sanitary Landfill SSSL (Phase 1-13), LTP, C&D MRF and Composting Plant
RECEPTORS	: Sg. Ayer Hitam, Sg. Beletak, Aquatic species

IMPACTS

Loss of secondary forest trees and generation of **461.34 tons biomass**.

POLLUTION PREVENTION AND MITIGATING MEASURES

- Open burning is **prohibited**.
- The biomass will be disposed off to the existing Sg. Sabai Landfill.



OPERATION PHASE

ACTIVITIES	: Final discharge of treated Leachate from LTP
RECEPTORS	: Sg. Ayer Hitam, Aquatic species in Sg. Beletak, Sg. Kerling, Sg. Selangor and Aquaculture farm downstream

IMPACTS

- It could possibly affect these downstream aquaculture activities if polluting activities within the Sg. Sabai Sanitary landfill and its LTP are not properly mitigated especially leachate leakages.



POLLUTION PREVENTION AND MITIGATING MEASURES

- **Final discharge of the LTP** to Sg. Ayer Hitam must **comply** with limit as per the Second Schedule, Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009.





MAIN IMPACTS FOR WASTE MANAGEMENT



CONSTRUCTION PHASE

ACTIVITIES	: Operation of SSSL, C&D MRF, Composting Plant and LTP
RECEPTORS	: Sg. Ayer Hitam, Sg. Beletak, Ladang Johawaki 4, Taman Tempua Bistari

IMPACTS



Generation of **461.34 tons biomass**.



Generation of **construction and demolition waste** from site clearing and construction activities



Generation of scheduled waste from maintenance of machinery at and domestic waste at base camps

POLLUTION PREVENTION AND MITIGATING MEASURES

- **Biomass dispose** off to the Sg. Sabai Landfill.
- **Reuse & recycle**: segregate waste onsite for recycling at other construction sites, sell valuable resources to recycling facilities
- Unsuitable material to be disposed to SSL.
- Scheduled waste to be **managed** in accordance with the EQ (Scheduled Waste) Regulations 2005
- Domestic waste should be recycled (provision of recycle bins) where possible or disposed at Bukit Tagar Sanitary Landfill (BTSL).

OPERATION PHASE

ACTIVITIES	: Incoming Daily Solid Wastes of 300MT
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms

IMPACTS



- **Improper disposal** of solid waste may affect aesthetic quality, a source of water contamination and proliferation of disease vectors.



- **Sludge** generation from the Leachate Treatment Plant.
- **Other SWs** from the maintenance workshop.

POLLUTION PREVENTION AND MITIGATING MEASURES

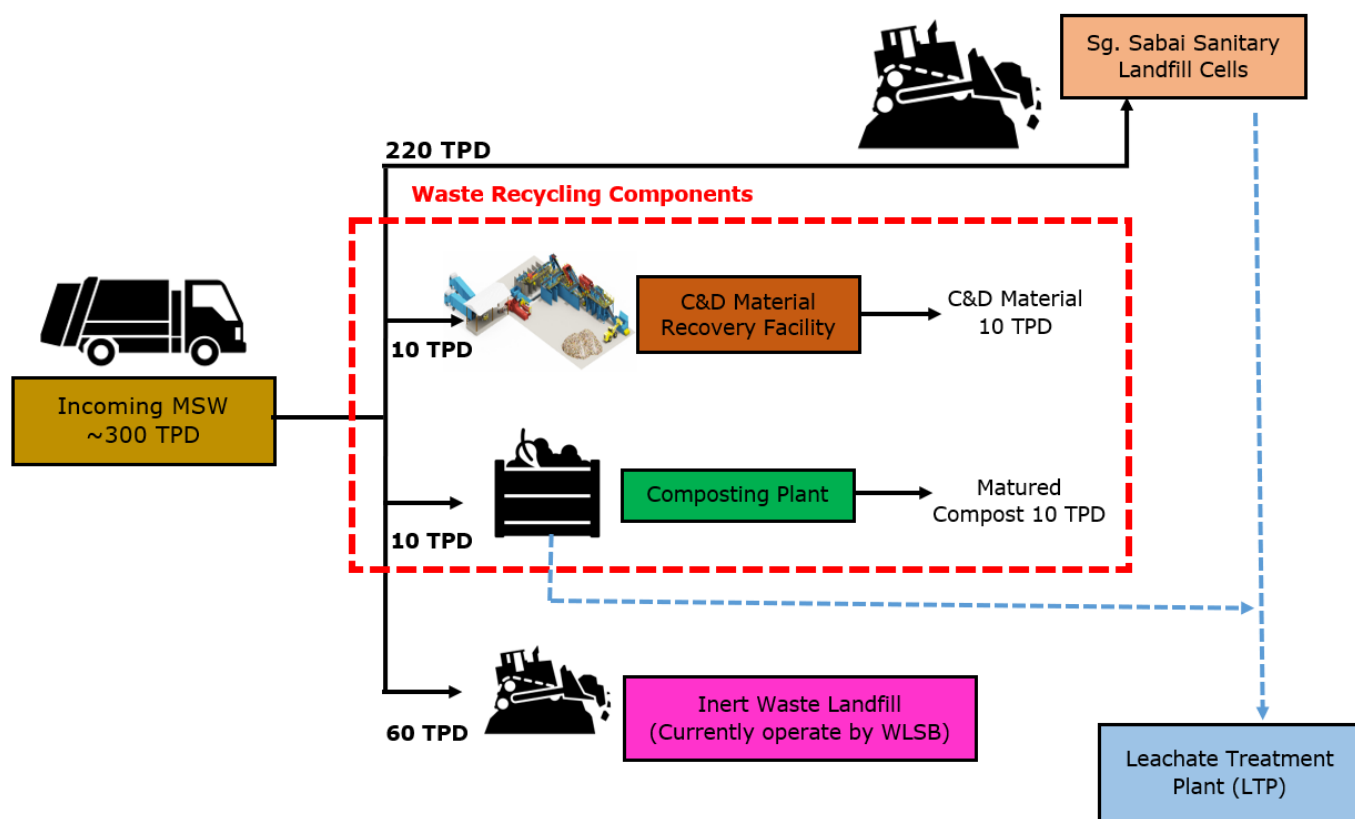
- Provision of C&D MRF to encourage recovery of reusable portions of construction wastes for the use of daily cover in Landfill.
- Provision of composting plant and the product can be sold as fertilizer.



- **Sludge** from LTP will be disposed of to the landfill, if with DOE approval.
- **Scheduled wastes** to be managed in accordance with the EQ (Scheduled Waste) Regulations 2005



OPERATION PHASE



No.	Type	Category of Waste	Disposal Method
Leachate Treatment Plant (LTP)			
1.	Sludge (Leachate treatment residue)	SW204	Total sludge is 15.2m ³ /day. Sludge to be landfilled at the engineered landfill cells once (*only applicable with DOE Approval of Special Management of Scheduled Waste).
Maintenance Workshops			
2.	Spent lubricating oil	SW 305	Disposal to Licensed SW contractor.
3.	Spent hydraulic oil	SW 306	Disposal to Licensed SW contractor.
4.	Rags, plastic, paper or filter contaminated with scheduled wastes.	SW 410	Disposal to Licensed SW contractor.

MAIN IMPACTS FOR SOCIO-ECONOMY ENVIRONMENT

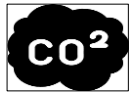
CONSTRUCTION PHASE

ACTIVITIES	: Site Clearing, Earthworks, Construction of Access Road, Sg. Sabai Sanitary Landfill SSSL (Phase 1-13), LTP, C&D MRF and Composting Plant
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms

IMPACTS



Influx of foreign workers causing security and social concerns



Dust and noise disturbance

Positive Impacts

- Stimulates economy growth at the national, regional and local levels
- Creation of job opportunities



POLLUTION PREVENTION AND MITIGATING MEASURES

- Provision of **base camps** and centralized labour quarters to minimize interaction with local communities
- Project proponent to monitor worker activities
- Implementing **good housekeeping** and **best management practices (BMP)**.
- **Prioritizing** locals for employment and business opportunities.

OPERATION PHASE

ACTIVITIES	: Operation of SSSL, C&D MRF, Composting Plant and LTP
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms

IMPACTS



- **Increase current status of living** of the local population residing nearby in terms of infrastructures and increase employment opportunities.

- **Residual impacts** from the operation of the SSSL, i.e., noise, air emission, odour, LTP effluent discharge.



POLLUTION PREVENTION AND MITIGATING MEASURES

- Implementation of **Social Impact Management Plan**
- Continual engagement and **corporate social responsibility (CSR)** with surrounding communities.



- Final discharge of the LTP to Sg. Ayer Hitam must **comply** with the limit of Second Schedule (Regulation 13) of EQ (Control of Pollution from Solid Waste Transfer Station and Landfill) Reg. 2009: Acceptable Conditions for Discharge of Leachate.



CONSTRUCTION PHASE

ACTIVITIES	: Site Clearing, Earthworks, Construction of Access Road, Sg. Sabai Sanitary Landfill SSSL (Phase 1-13), LTP, C&D MRF and Composting Plant
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farm.

IMPACTS



Localized **air pollution** due to suspended particulates or airborne dust



Dengue fever outbreak

Covid'19 cluster

COVID-19

POLLUTION PREVENTION AND MITIGATING MEASURES

- Implementing **good housekeeping and best management practices**.
- Maintain **cleanliness** of the construction site and CLQ. Regular fogging whenever necessary to destroy adult mosquitoes.
- Implementation of **Standard Operation Procedures (SOP)** in the Workplace.

OPERATION PHASE

ACTIVITIES	: Operation of SSSL, C&D MRF, Composting Plant and LTP
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farms, Sg. Ayer Hitam, Sg. Beletak, Aquaculture ponds downstream & Water Treatment Plant

IMPACTS

- Landfill gases from the landfill will be released into the atmosphere.

- Leachate from landfill are expected to contain heavy metals like lead, nickel, arsenic and mercury, which may find its way into Sungai Ayer Hitam and Sg. Beletak.



POLLUTION PREVENTION AND MITIGATING MEASURES

- **Daily cover** material is introduced at the end of the day of operation at the Landfill.
- Leachate will be treated by LTP and final discharge to comply with Second Schedule (Regulation 13) of EQ (Control of Pollution from Solid Waste Transfer Station and Landfill) Reg. 2009: Acceptable Conditions for Discharge of Leachate.
- Parameter Arsenic in the LTP discharge to comply to a better discharge limit 0.01 mg/l (limit of MOH Drinking Water Quality Standard, 2004).



MAIN IMPACTS FOR TRAFFIC

CONSTRUCTION PHASE

ACTIVITIES	: Site Clearing, Earthworks, Construction of Access Road, Sg. Sabai Sanitary Landfill SSSL (Phase 1-13), LTP, C&D MRF and Composting Plant
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farm.

IMPACTS



Lorries and trucks delivering building materials, aggregate, etc. will increase traffic flow of the area especially at Jalan Sg. Sabai and FR1 Jalan Tanjung Malim - Kalumpang.

POLLUTION PREVENTION AND MITIGATING MEASURES



Traffic management is necessary to control traffic movements especially during peak hours.

OPERATION PHASE

ACTIVITIES	: Incoming daily solid wastes of 300MT
RECEPTORS	: Ladang Johawaki 4, Taman Tempua Bistari, Surrounding Orchard farm.

IMPACTS

- Jalan Sg. Sabai and FR1 Jalan Tanjung Malim - Kalumpang. is expected to receive the **increased traffic** volume from the proposed development

POLLUTION PREVENTION AND MITIGATING MEASURES

- Designing the facilities on the trucks/vehicles to minimize the likelihood of spillage occurring;
- Scheduling of the transportation trucks to ensure the truck turn-around time is not delayed and to prevent truck-waiting within the site, which will lead to a line-up of truck along the internal road along the Jalan Sg. Sabai.
- Strict adherence to the relevant regulations pertaining to road transport.
- Waste Flow on **e-World System**.



PROPOSED ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Environmental Management Plan (EMP)

Competent Persons



Landfill Closure

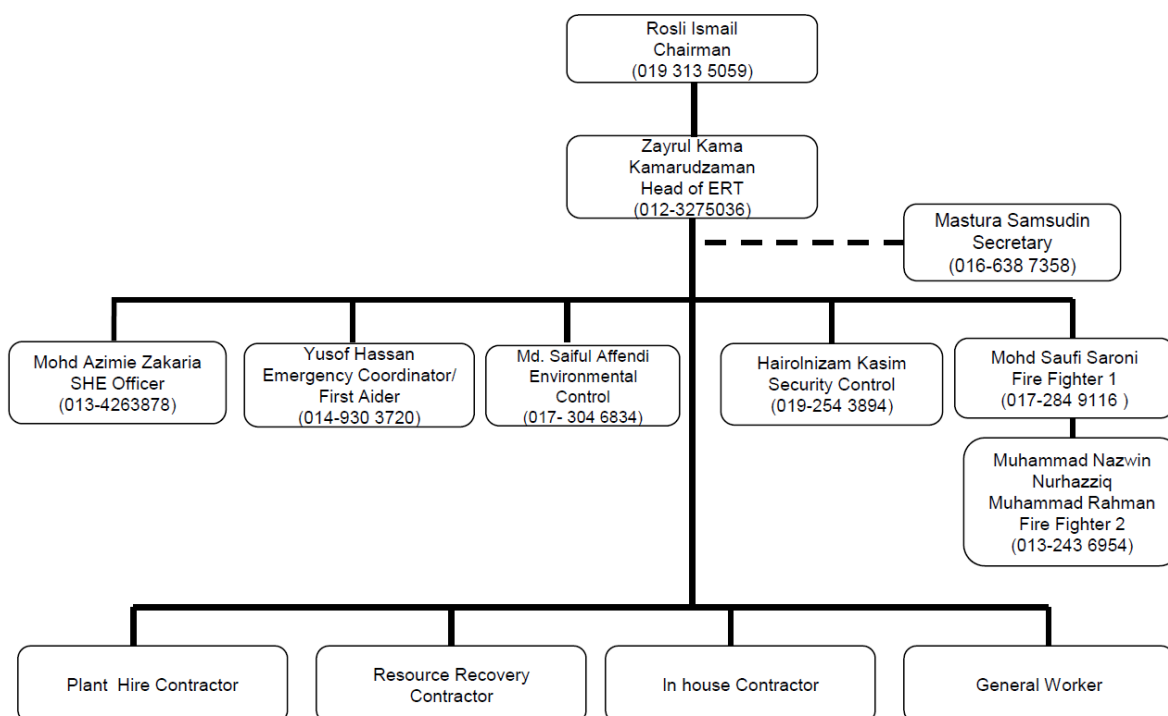
- Monitoring, Reporting & Auditing

- Environmental Officer, Competent person for the Leachate Treatment Plant (LTP) and Scheduled Wastes (CePSWaM).

- Guideline for Safe Closure and Rehabilitation of MSW Landfill Sites by Ministry of Urban Wellbeing, Housing and Local Government, MUWHLG (2006).



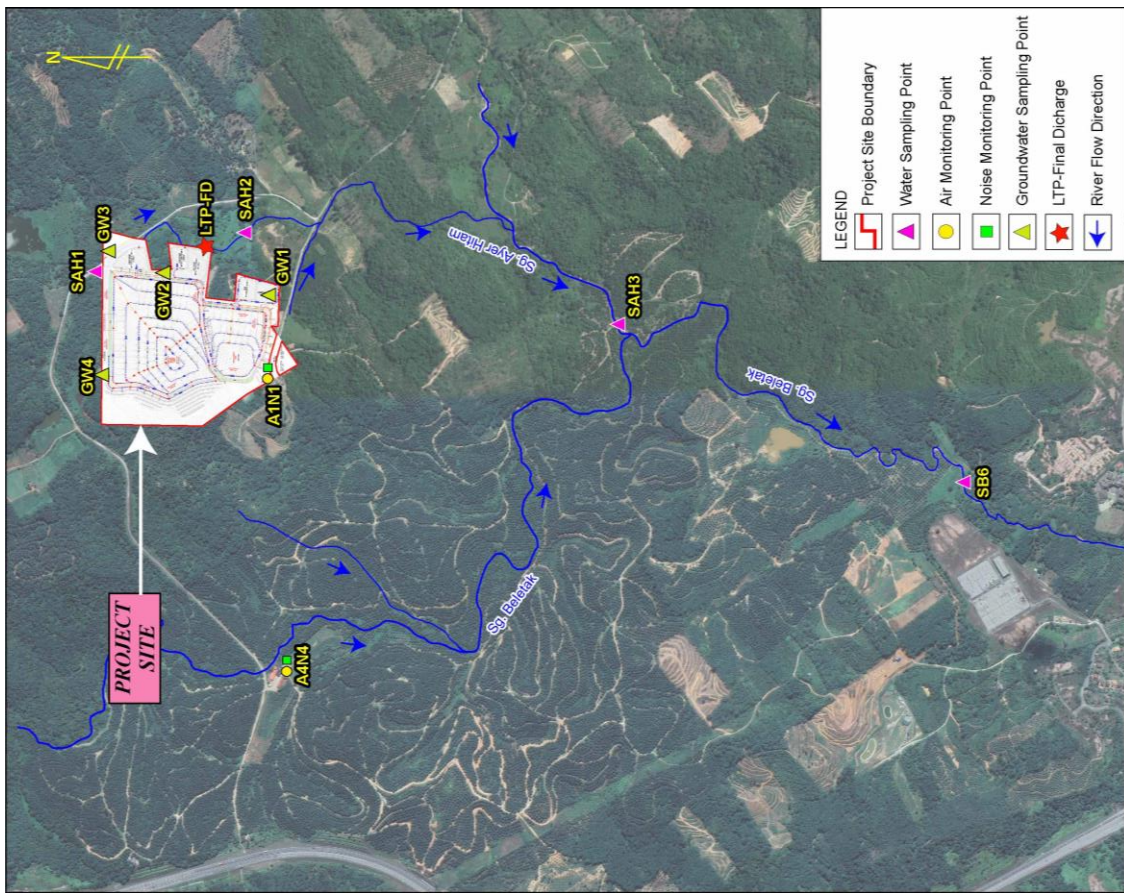
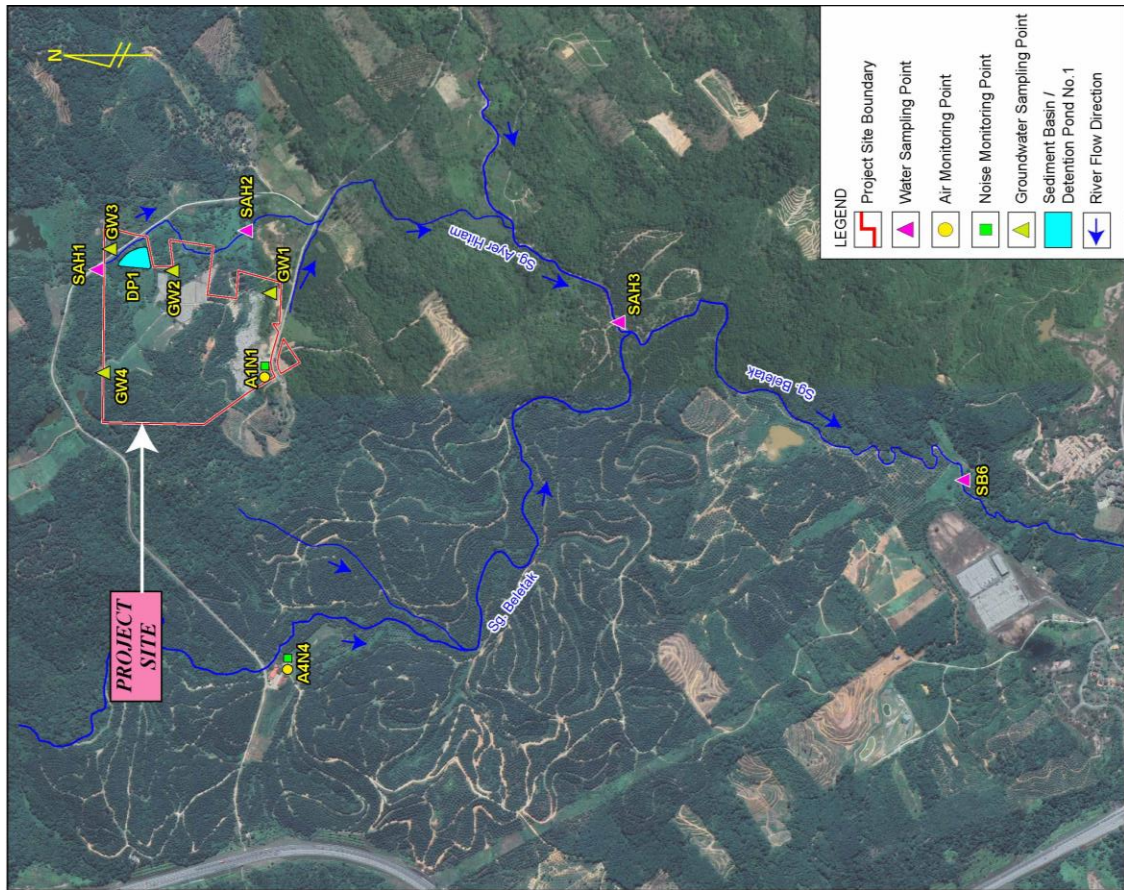
EXISTING ENVIRONMENTAL MANAGEMENT ORGANIZATION AND ERT COMMITTEE



PROPOSED ENVIRONMENTAL MONITORING PROGRAM

CONSTRUCTION PHASE

OPERATION PHASE



- The proposed Sg. Sabai Sanitary Landfill development is **in conformance** with Rancangan Tempatan Daerah Hulu Selangor 2035 (Penggantian).
- Daily incoming wastes expected at 300 t/d. 220t/d municipal solid wastes (MSWs) to SSSL, 10 t/d wastes to be recycled at C&D MRF, 10t/d wastes to composting plant and 60t/d inert waste to be handled at current operating inert waste cell.
- The total daily incoming flow rate of the waste leachate is 644m³/d and shall be treated to comply with the Second Schedule (Regulation 13) of the Environmental Quality (Control Pollution from Solid Waste Transfer Station and Landfill) Regulation 2009 before discharging into Sg. Ayer Hitam and Sg. Beletak.



- Based on water quality modelling, compliance of the LTP effluent to DOE limits did not exhibit obvious impacts towards Sg. Beletak, Sg. Kerling and Sg. Selangor for most modeled parameters.
- Based on groundwater quality modeling, the contaminant transport model indicates that contaminant leakage in the LTP not spread into the surrounding area for reactive such as Arsenic.
- Based on Air Quality Modelling, the predicted concentrations of the odourous gases were within the acceptable adopted levels (i.e. Ontario's Ambient Air Quality Criteria recommended limit) at the identified sensitive receptors except for 1-hours predicted MAIC at the ASR4 (Ladang Johawaki 4). ASR4 may experience H₂S of 7.8 µg/m³ (Odour) about 0.34% of the time in a year i.e., about 30 hours.
- Arsenic Polishing in the treated leachate via GEH Adsorber Unit to a better discharge limit of 0.01 mg/l (limit of MOH Drinking Water Quality Standard, 2004) is recommended as of Health Impact Assessment findings.
- In terms of scheduled wastes, there will be sludge generation of 15.2m³/day from the Leachate Treatment Plant (LTP) and the sludge from LTP is classified as scheduled waste SW204. The Project Proponent shall apply special management of scheduled waste from DOE Malaysia and only with DOE approval to dispose Sludge (SW204) of the LTP to the SSSL.
- To conclude, the proposed SSSL and its associated facilities development can be carried out within the context of a carefully planned and managed project that will be ultimately beneficial to contribute towards the social acceptability and better solid waste management for the District of Hulu Selangor, Selangor Darul Ehsan.