

**SECOND SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT
FOR
CADANGAN PROJEK PEMBINAAN SEL TAMBAHAN
TAPAK PELUPUSAN SISA PEPEJAL SUNGAI UDANG, MELAKA**

Executive Summary

Project Proponent:



Jabatan Pengurusan Sisa Pepejal Negara (JPSPN)

Environmental Consultant:

A S P E C

Asia Pacific Environmental Consultants Sdn Bhd

Project Brief

- This Project is for the expansion of the existing landfill, *Tapak Pelupusan Sisa Pepejal Sanitari (TPSPS) Sg Udang*.
- It is an immediate response to manage the incoming waste from the whole of Melaka as the current landfill (Cell 2) is rapidly nearing its critical capacity and will be exhausted before December 2025.

Project Location, Size and Current Landuse

- The Project is located next to the existing TPSPS and occupies an area of 30.58 ha (75.57 ac).
- Current landuse: Majority consists of oil palm plantation, durian orchards and other agricultural corps; whereas the remaining portions consist of secondary forests and patches of bare land.



Project Accessibility

- The Project is accessible from Lebuh SPA (Federal Route 33); also known as the Sg Udang – Paya Rumput – Ayer Keroh Highway. The road connects the Project site to Sg Udang in the west and Ayer Keroh in the east.
- From Lebuh SPA, a permanent access road, which was built in 2015 serves as the access to the TPSPS Sg Udang.

Statement of Need

- ✓ Ensure continued and sustainable management of solid waste within the state of Melaka.
- ✓ Manage and avert the potential waste management crisis and reduce environmental impacts from waste management and disposal.

Statutory Requirements

- The Project is mandatory under the Second Schedule of the *Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015*, under Section 34A Environmental Quality Act 1974.

Schedule	Prescribed Activity
Second Schedule	Activity 14: Waste Treatment and Disposal (b) Solid Waste: (ii) Construction of sanitary landfill facility.

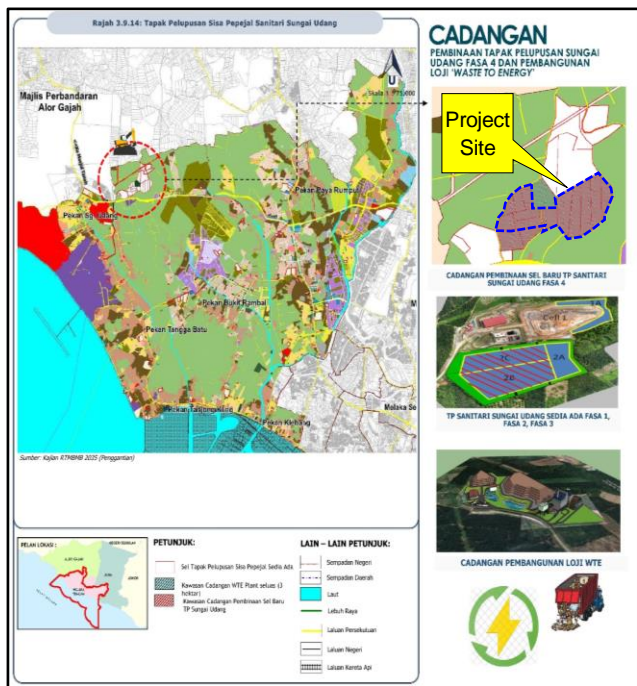
Policy Conformance

- The Project is in accordance with the national, state and district policies and development plans:
 - ✓ *Twelfth Malaysia Plan, 2021 – 2025*.
 - ✓ *Rancangan Fizikal Negara (RFN-4)*.
 - ✓ *National Solid Waste Management (NSWM) Policy 2016*.
 - ✓ *Rancangan Struktur Negeri (RSN) Melaka 2035*.
 - ✓ *Rancangan Tempatan Majlis Bandaraya Melaka Bersejarah 2035 (Penggantian) (RTMBMB 2035)*, gazetted on 16 September 2021 (No. Warta: 472, Jld.65, No.22).

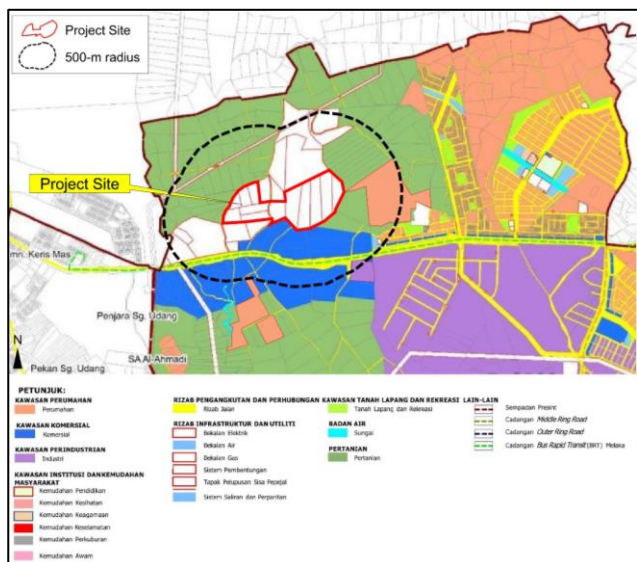


Environmentally Sensitive Receptor

Policy Conformance



- Project site is located within Precinct 4.4 – Bukit Rambai and has been zoned for infrastructure and utilities, specifically for municipal solid waste disposal.
- *RTMBMB 2035 (Penggantian)* also shows that the Project site is listed and is aligned under the Big Moves 4 AS 3: *Penambahbaikan Dalam Pengurusan Sisa Yang Lestari dan Mesra Alam*, specifically, AS 3.2, which focuses on providing a new cell for the existing TPSPS Sg Udang to accommodate future solid waste disposal.
- This plan is contingent on the completion of the proposed Waste-to-Energy (WTE) Plant by the planned milestone. If the WTE Plant is not completed on time, the new cell will be used instead.



AS 3.2 Cadangan Pembinaan Sel Baru Tapak Pelupusan Sanitari Sungai Udang Fasa 4

Di TP Sungai Udang, terdapat tiga (3) fasa yang terlibat bagi tapak pelupusan sisa pepejal sanitari di kawasan berkenaan. Sehubungan dengan itu, terdapat cadangan untuk memperluaskan tapak pelupusan dengan pembinaan Fasa 4 yang melibatkan keluasan tanah seluas 60.7 hektar

Jadual 3.9.18: Cadangan Pembinaan Sel Baru Tapak Pelupusan Sanitari Sungai Udang Fasa 4

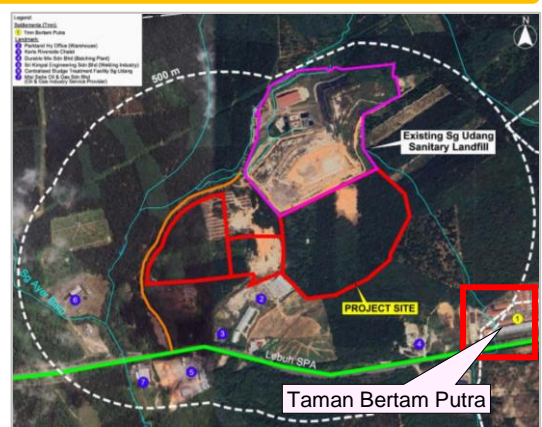
Perkara	Maklumat
Lokasi	<ul style="list-style-type: none"> ZP4 (Presint 4.4) Tapak Pelupusan Sanitari Sungai Udang
No. Lot	<ul style="list-style-type: none"> Lot 942, Lot 1642, Lot 1641, Lot 1640, Lot 940, Lot 939, Lot 938, Lot 937, Lot 1305, Lot 1239, Lot 1238, Lot 1237, Lot 1236, Lot 1235
Keluasan (Hektar)	<ul style="list-style-type: none"> 60.70 hektar
Justifikasi	<ul style="list-style-type: none"> Menyediakan tapak pelupusan sisa yang baharu jika pelaksanaan <i>WTE Plant</i> tidak dapat disiapkan mengikut carta perubatan yang telah ditetapkan Ini bagi menampung keperluan pelupusan sisa menjelang tahun 2035 – 2040.
Komponen / Cadangan	<ul style="list-style-type: none"> Proses memohon tanah ke atas lot yang telah disenaraikan. Kajian terperinci akan keperluan tapak pelupusan fasa 4. Tapak Pelupusan haruslah mempraktikkan jenis pelupusan sanitari, yang kurang memberi impak terhadap alam sekitar
Anggaran Kos	RM 250 Juta
Fasa Pembangunan	Fasa 3

Sumber: Kajian RTMBMB 2035 (Penggantian)

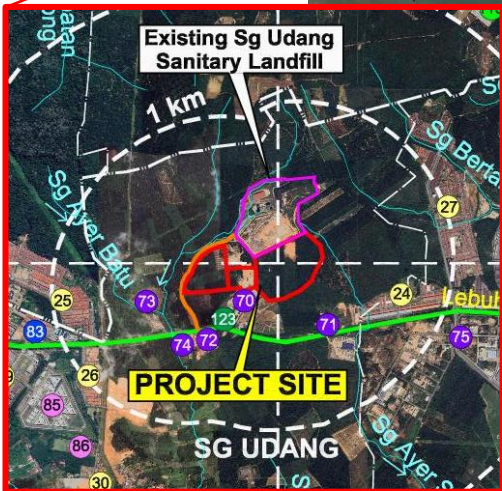
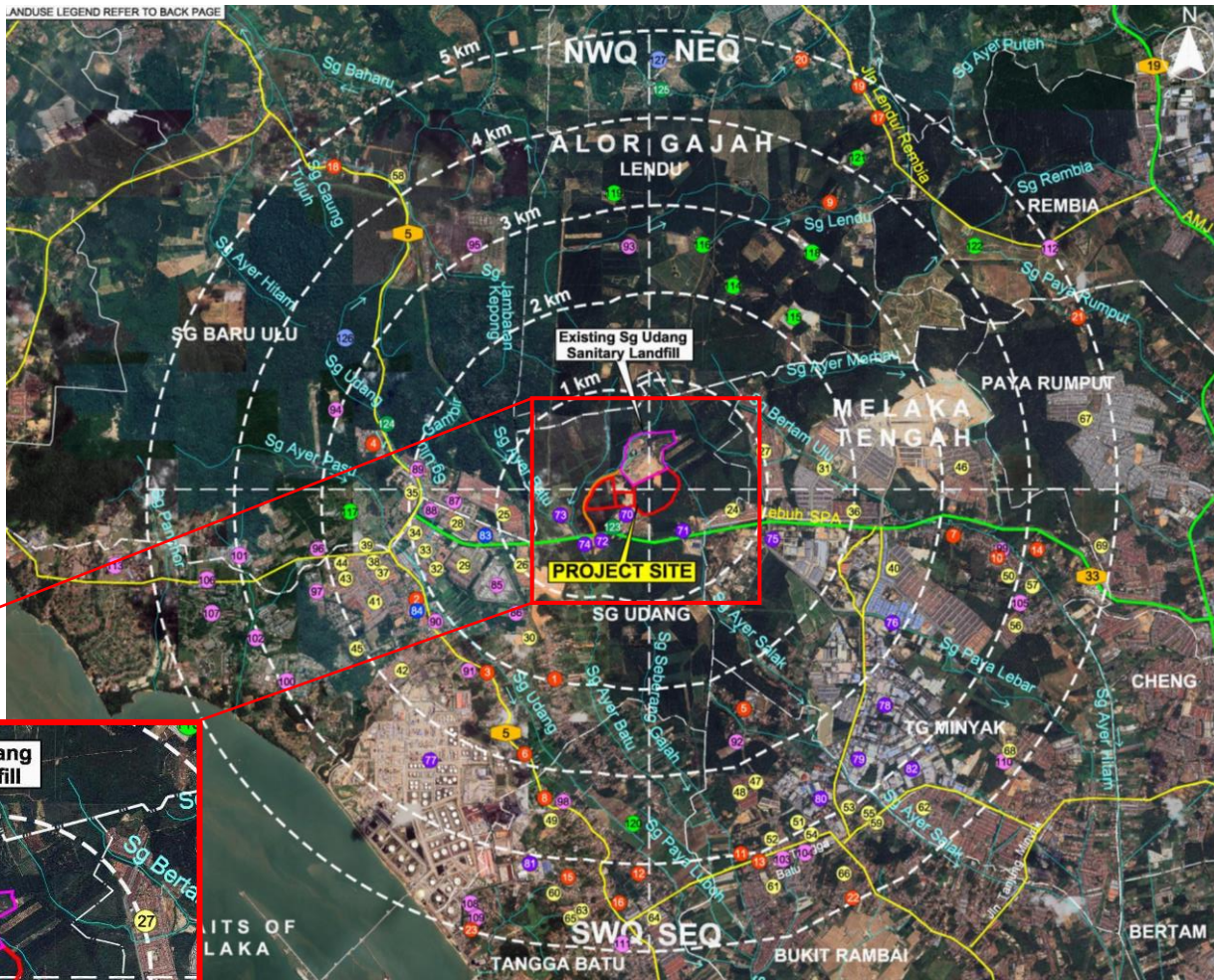
Source: *RTMBMB 2035 (Penggantian)*, PLANMalaysia@Melaka and MBMB, 2022.

Buffer Zone Requirement

- The *Rancangan Tempatan MBMB 2035 (Penggantian)* mandates a minimum 500-m buffer zone between landfills and residential zones, categorising the area as Environmentally Sensitive Area (ESA) Level 3.
- According to *Garis Panduan Khusus Kawasan Sensitif Alam Sekitar (KSAS)*, the buffer zone allows commercial and industrial use, but prohibits residential use, schools, hospitals, and groundwater extraction.
- The site is designated for solid waste disposal by the Melaka state government. However, encroachment by a new residential area located 380 m from the Project site, may have contravened the *RTMBMB 2035* guidelines.
- This is outside the jurisdiction of the PP.



Project Location and Surrounding



Legend:

Settlements (K):

- 1 Kg Paya Rumpit Jaya
- 2 Kg Baru Sg Udang
- 3 Kg Sg Udang
- 4 Kg Tanah Merah Baru
- 5 Kg Ayer Salak
- 6 Kg Sg Udang Jaya
- 7 Kg Bertam Ulu
- 8 Kg Bkt Salleh
- 9 Kg Bkt Hantu
- 10 Kg Alor Jaya
- 11 Kg Seberang Gajah
- 12 Kg Paya Luboh
- 13 Kg Bkt Kecil
- 14 Kg Ayer Supai
- 15 Kg Solok Tangga Batu
- 16 Kg Tangga Batu
- 17 Kg Lendu
- 18 Kg Pulau Semut
- 19 Kg Lendu Dalam
- 20 Kg Lendu Kecil
- 21 Kg Paya Rumpit
- 22 Kg Gedung Kelang
- 23 Kg Pantai Kundur

Settlements (T):

- 24 Tmn Bertam Putra
- 25 Tmn Indah
- 26 Tmn Keris Satria
- 27 Tmn Seri Bertam
- 28 Tmn Bandar Sg Udang
- 29 Tmn Keris Laksamana
- 30 Tmn Sg Udang
- 31 Tmn Desa Bertam
- 32 Tmn Desa Taming Sari
- 33 Flat Desa Taming Sari
- 34 Tmn Keris Emas

- 35 Tmn Terendak Height
- 36 Tmn Bertam Impian
- 37 Tmn Pahlawan
- 38 Tmn Leech Avenue
- 39 Tmn Seri Terendak
- 40 Tmn Tg Minyak Perdana
- 41 Tmn Terendak Permai
- 42 Tmn Peruna
- 43 Tmn Bkt Terendak
- 44 Tmn Hang Tuah
- 45 Tmn Desa Tun Razak (Flat)
- 46 Tmn Bertam Setia
- 47 Tmn Ayer Salak
- 48 Tmn Rambai Idaman
- 49 Pangsapuri Tmn Desa Ria
- 50 Tmn Bertam Permai
- 51 Tmn Rambai Sutera
- 52 Tmn Bkt Rambai Sek2
- 53 Tmn Rambai Indah
- 54 Tmn Rumah Awam Datin Fatimah
- 55 Tmn Rambai Setia
- 56 Tmn Bertam Indah
- 57 Rumah Awam Bertam Ulu
- 58 Tmn Masjid Tanah
- 59 Tmn Rambai Permai
- 60 Tmn Tangga Batu Sek1
- 61 Tmn Bkt Rambai Sek1
- 62 Tmn Rambai Jaya
- 63 Tmn Tangga Batu
- 64 Tmn Tangga Batu Perdana
- 65 Pangsapuri Tmn Tangga Batu
- 66 Tmn Rambai Murni 2
- 67 Tmn Paya Rumpit Perdana
- 68 Tmn Tanjung Minyak Utama
- 69 Tmn Paya Emas

Industry (ID):

- 70 Parkland HQ Office (Warehouse)
- 71 Durable Miz Sdn Bhd (Batching Plant)
- 72 Sri Kimpalan Engineering Sdn Bhd (Welding Industry)
- 73 Centralised Sludge Treatment Facility Sg Udang
- 74 Misi Setia Oil & Gas Sdn Bhd (Oil & Gas Industry Service Provider)
- 75 Tmn Perindustrian Bukit Rambai
- 76 Tmn Perindustrian Tg Minyak
- 77 Petronas Penapisan (Melaka) Sdn Bhd
- 78 Tmn Perindustrian Bukit Rambai Fasa 3
- 79 Tmn Perindustrian Bukit Rambai Fasa 2
- 80 Tmn Perindustrian Bukit Rambai Fasa 1
- 81 Kawasan Perindustrian Tangga Batu
- 82 Tmn Perindustrian Bukit Rambai Fasa 4

Commercial (C):

- 83 Bandar Baru Sg Udang Commercial Area
- 84 Plaza Sg Udang

Institution (IN):

- 85 Kompleks Penjara Melaka
- 86 SMK Agama JAIM Al-Ahmadi
- 87 Sek Men Sains Alor Gajah
- 88 SMK Sg Udang
- 89 Pusat Latihan RELA Wilayah Selatan
- 90 SJK(C) Sungai Udang
- 91 SK Sg Udang
- 92 SJK(C) St Mary
- 93 Pusat R&D dan Latihan Industri Ayam Daging Lapang Sasar
- 94 Kem Masji Tanah & Kem 96 DPP Masjid Tanah
- 95 Markas 10 Briged Para
- 96 73 Batalion Ordnans Diraja
- 97 SK Tangga Batu
- 98 SJK(C) Bertam Ulu & SRA JAIM Bertam Hulu

- 100 Kem Sg Udang
- 101 Maktab Rendah Sains Mara (MRSM) Terendak
- 102 SK Terendak 2
- 103 SK Taman Bukit Rambai
- 104 SMK Bukit Rambai
- 105 SK Bertam Hulu
- 106 Kem Terendak
- 107 SRA JAIM Terendak
- 108 SK Pantai Kundur
- 109 SRA JAIM Pantai Kundur
- 110 SK Tanjung Minyak 2
- 111 SJK(C) Poh Lan
- 112 Pusat Memandu Zapcity Sdn Bhd (Driving Training Centre)
- 113 SK Terendak 1

Agriculture (AG):

- 114 Chop Cheong Bee Sdn Bhd (Poultry Farm)
- 115 Chong Wei Chit Sdn Bhd (Poultry Farm)
- 116 Dragon Fruit Farm
- 117 Melaka Tropical Fruit Farm
- 118 Chong Wei Chit Sdn Bhd (Poultry Farm)
- 119 Poultry Farm
- 120 Paddy Field
- 121 Chong Yee Nam Sdn Bhd (Poultry Farm)
- 122 Ladang Kemuning (Divisyen Rumbia)

Industry (ID):

- 123 Keris Riverside Chalet
- 124 Hutan Rekreasi Sg Udang
- 125 Sunfield Eco Farm

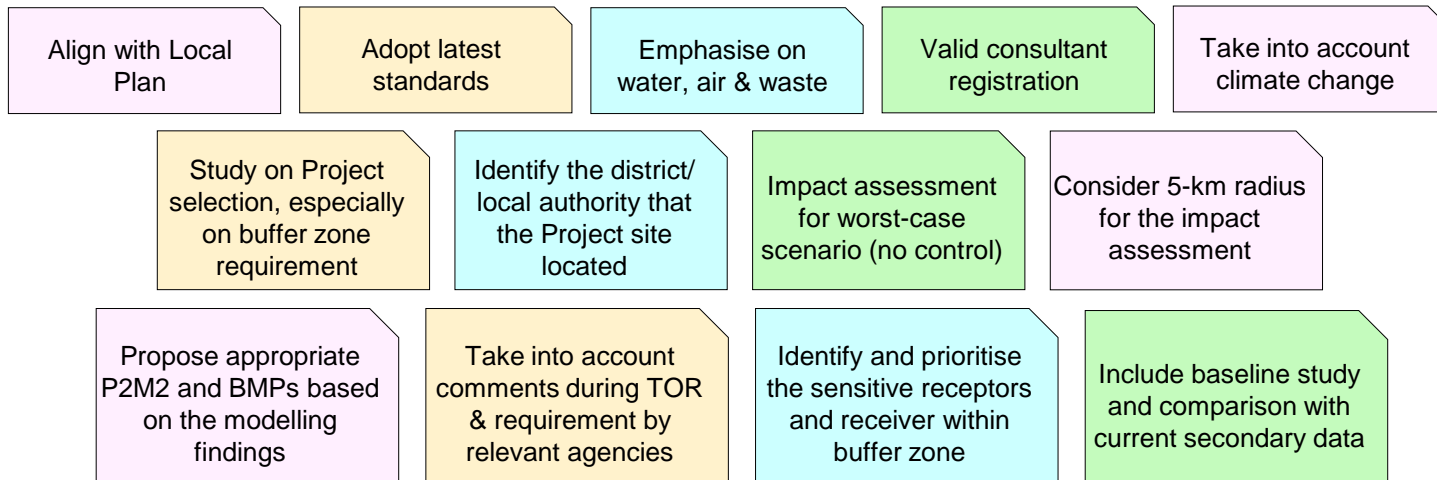
Landmark (L):

- 126 Hutan Simpan Sg Udang
- 127 Stesen Satelit Bumi Melaka

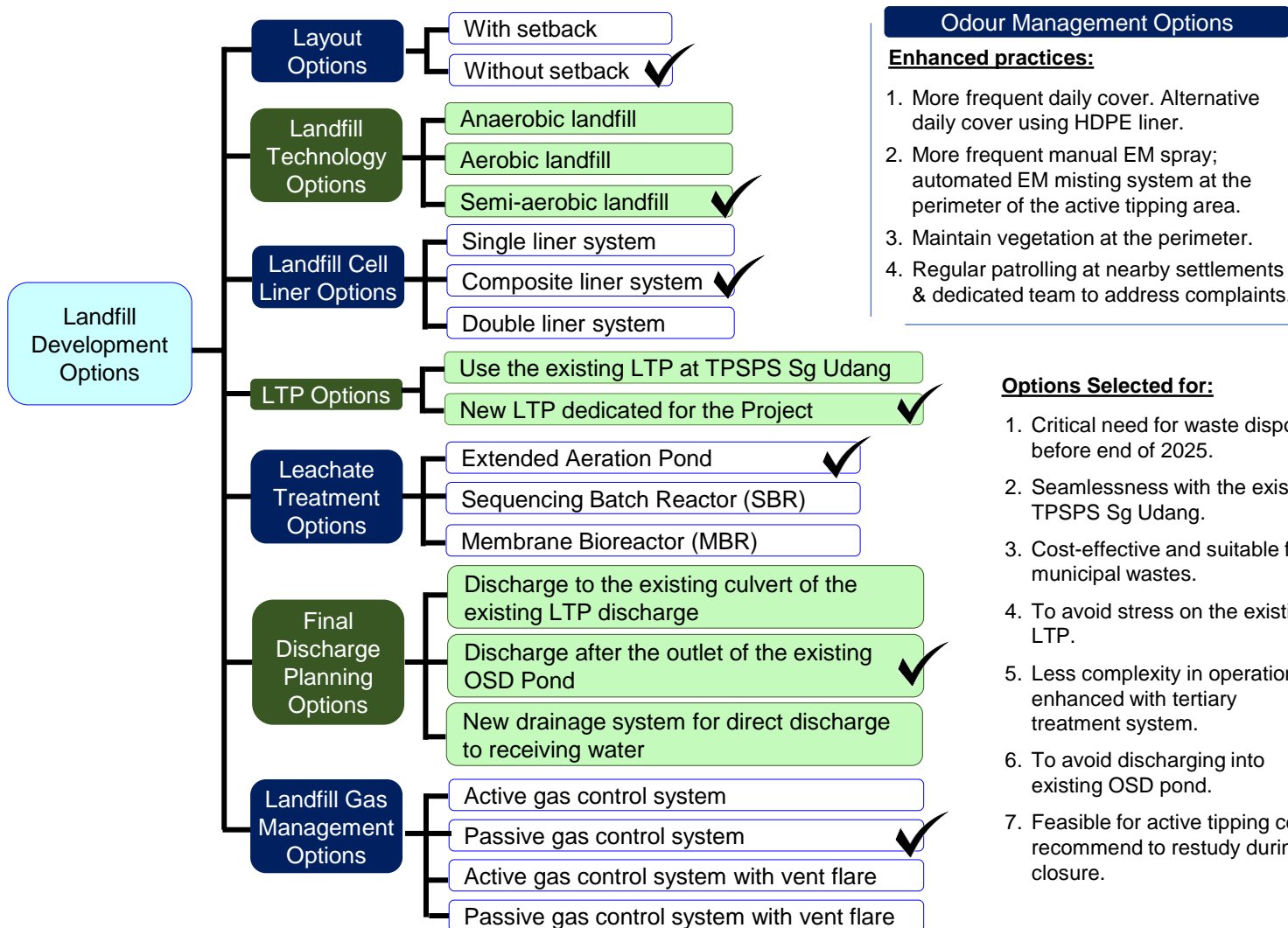
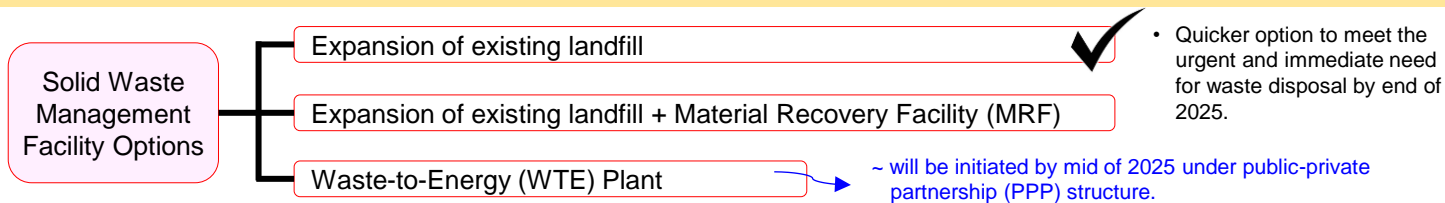
Terms of Reference

TOR OF EIA STUDY

Approved on 28 October 2024
[ref: JAS 600-2/13/42 Jld 2 (7)]



Project Option



Existing *Tapak Pelupusan Sisa Pepejal Sanitari (TPSPS) Sg Udang*

Existing Landfill Component

Aerial View of the Existing *Tapak Pelupusan Sisa Pepejal Sanitari (TPSPS) Sg Udang*



1

Leachate Treatment Plant (LTP)



- Capacity: 400 m³/s
- To be upgraded to: 800 m³/s

- Using Sequencing Batch Reactor (SBR) with activated sludge process.
- Final discharge into: tributary of Sg Ayer Batu.

3

Weighbridge Station



4

Administrative Building, Facilities and Supporting Facilities

- Administrative building.
- Elevated water tank.
- Genset and double chamber substation.
- Toilet.

2

Material Recovery Facility (MRF)



- Not in operation

Existing Tapak Pelupusan Sisa Pepejal Sanitari (TPSPS) Sg Udang

Existing Landfill Operation



Landfill Operator

- Greenviro Solutions Sdn Bhd



Landfill Operating Time

- 8.00 am to 7.00 pm
- Extended operating hours: 3.00 to 5.00 am (night-time) for waste collected from public cleansing activities in Melaka city centre.



Acceptable Wastes

- Acceptable: Controlled solid waste (i.e., commercial solid waste, construction solid waste, household solid waste, industrial solid waste, institutional solid waste and public solid waste), sludge and other solid waste (i.e. silica waste, sand).
- Prohibited: Scheduled waste listed in the First Schedule of *Environmental Quality (Schedule Waste) Regulation 2005*.



Incoming Wastes of Existing Operation

- January to December 2024: Received an average of 1,091 tonne/day.
- Dominant waste category: Domestic household waste (197,526.96 tonnes or 49.51% in year 2024).



Odour Control

- Daily cover is applied onto the inactive tipping platform every day & during night time, after operating hours.



- Effective Microorganism (EM) spray is applied manually twice a day (morning and evening) at active tipping area.



Environmental Monitoring Programme

- **Impact monitoring** conducted quarterly for groundwater quality, air quality, odour and noise; monthly for river water quality.
- **Compliance monitoring** for raw leachate and LTP final discharge (quarterly).
- **Performance monitoring** for leachate treatment plant aeration tanks (quarterly).



Landfill Gas Management

- LFG is passively collected and vented into the atmosphere via vertical HDPE vent pipes.



Leachate Management

- Leachate from landfill cell is channeled to the existing LTP (capacity of 400 m³/day) to meet the discharge standards of the *Second Schedule of the Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009*.
- Final discharge into tributary of Sg Ayer Batu.
- As the current leachate generated (700 m³/day in average) exceeds the LTP design capacity, excess untreated leachate is pumped back into the landfill cell for temporary relief.



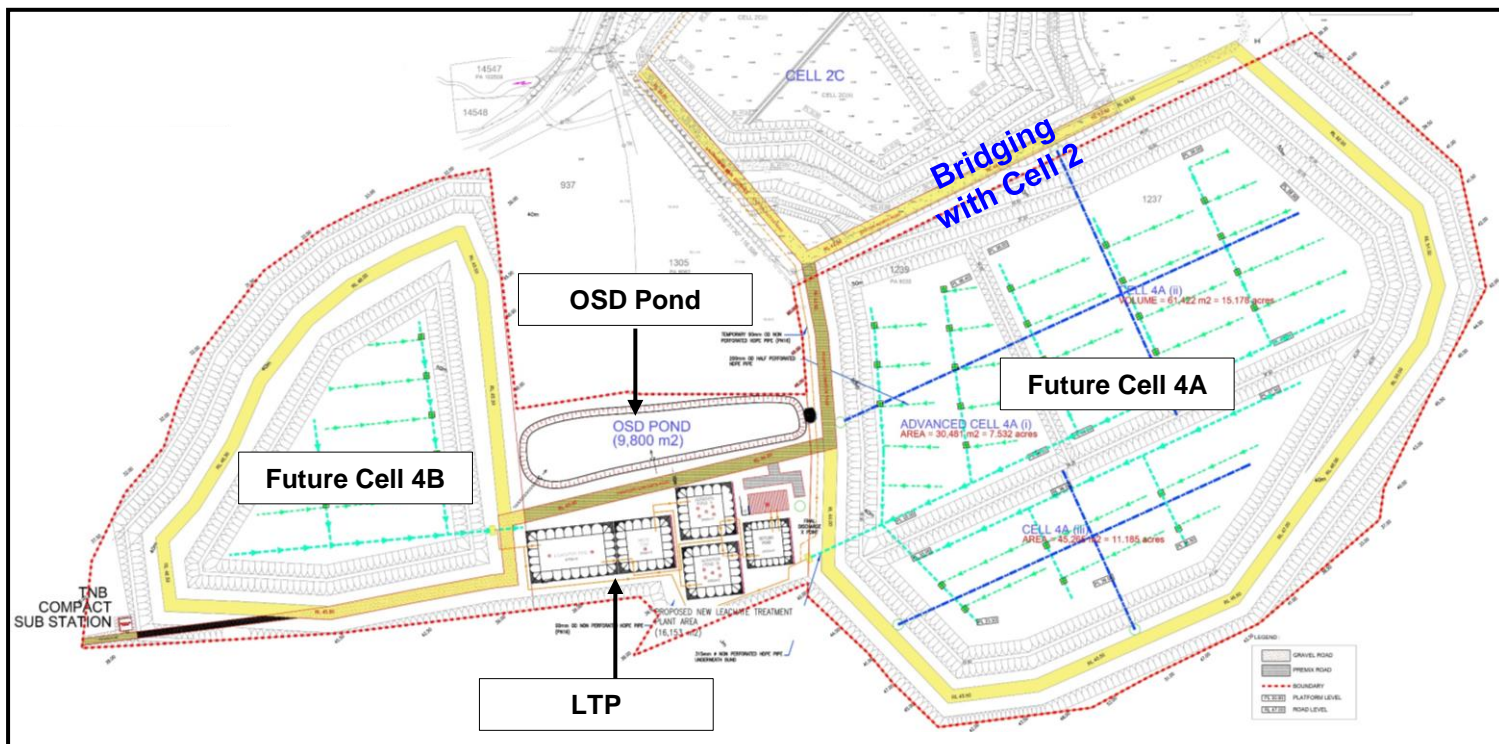
Schedule Waste Management

- Scheduled waste generated from the existing TPSPS Sg Udang are mainly from the workshop and LTP.
- Scheduled wastes are managed in accordance to *Environmental Quality (Scheduled Wastes) Regulations 2005*, by the sub-contractor responsible for maintenance and repairs.
- Sludge from the LTP is dewatered, form into a sludge cake, and disposed off into the landfill cell.

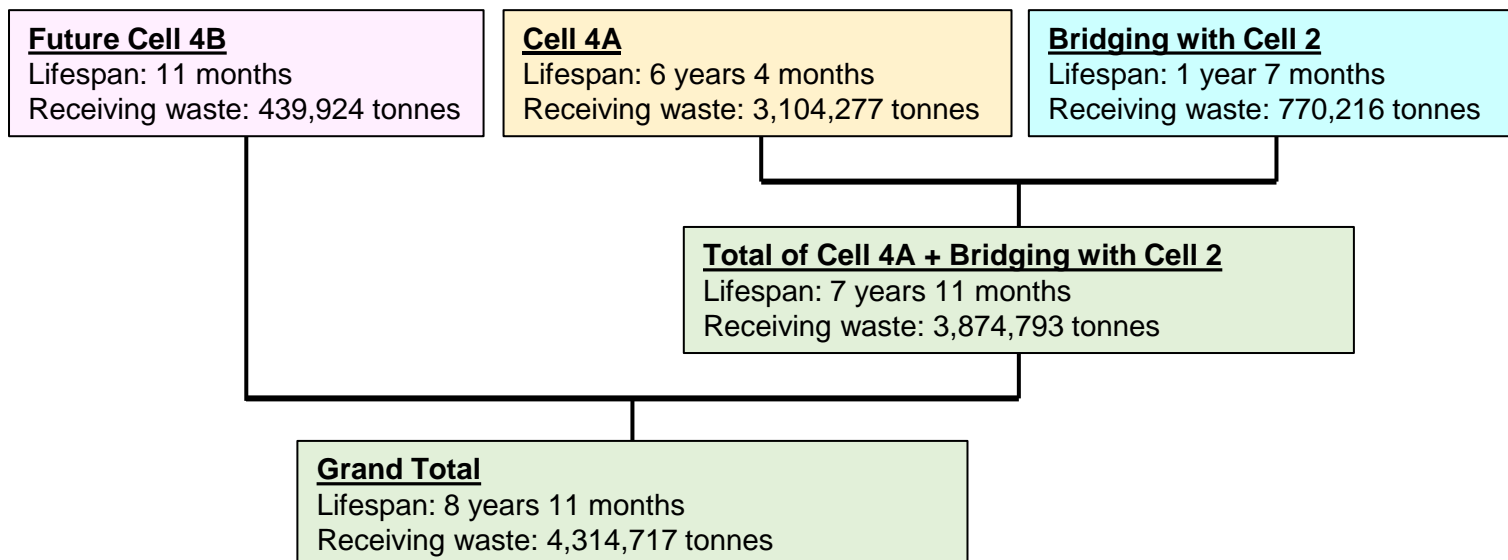
Project Description

Project Layout Plan

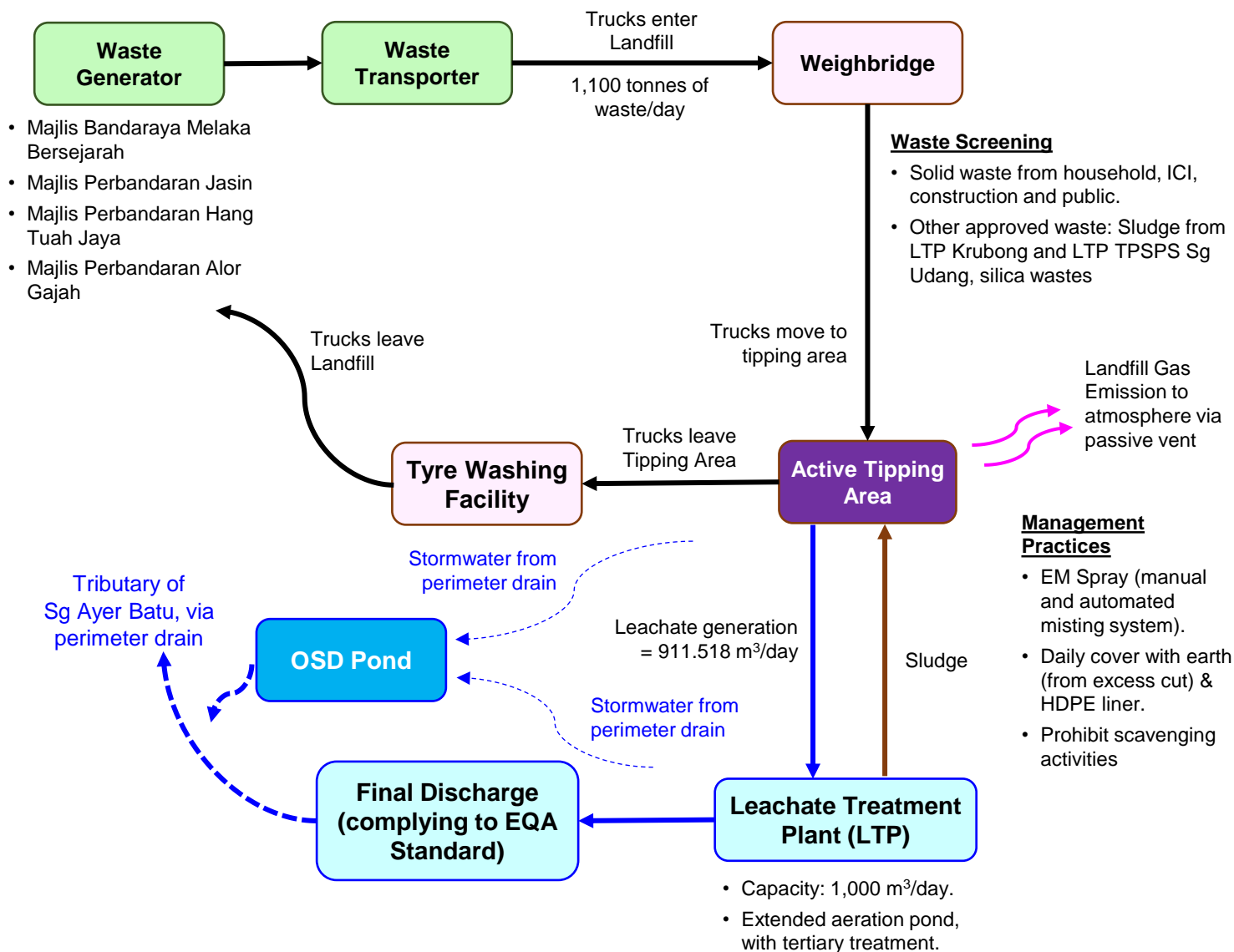
No.	Component	Area	
		ha	%
1.	Cell 4A	18.56	60.70
2.	Cell 4B	8.27	27.03
3.	New On-site Detention (OSD) Pond	1.42	4.65
4.	New Leachate Treatment Plant (LTP)	2.24	7.33
5.	TNB Compact Sub-station	0.09	0.29
Total		30.58	100.00



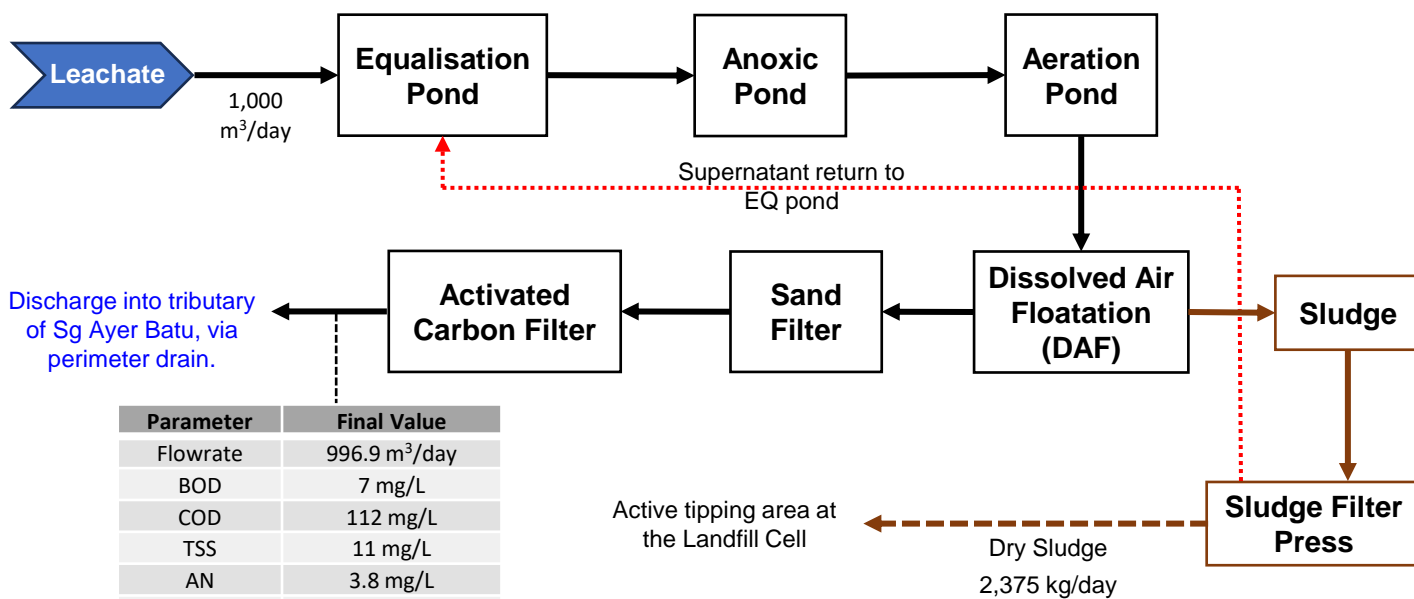
Design Capacity



Project Operation



Leachate Treatment Plant (LTP)



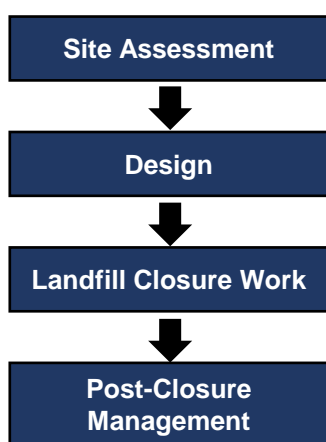
Parameter	Final Value
Flowrate	996.9 m ³ /day
BOD	7 mg/L
COD	112 mg/L
TSS	11 mg/L
AN	3.8 mg/L
Cu	0.1 mg/L
Mn	0.1 mg/L
Zn	1.6 mg/L
Fe	2.5 mg/L
Boron	0.7 mg/L
O&G	3.7 mg/L
Colour	74 ADMI

Project Description

Landfill Capping and Safe Closure

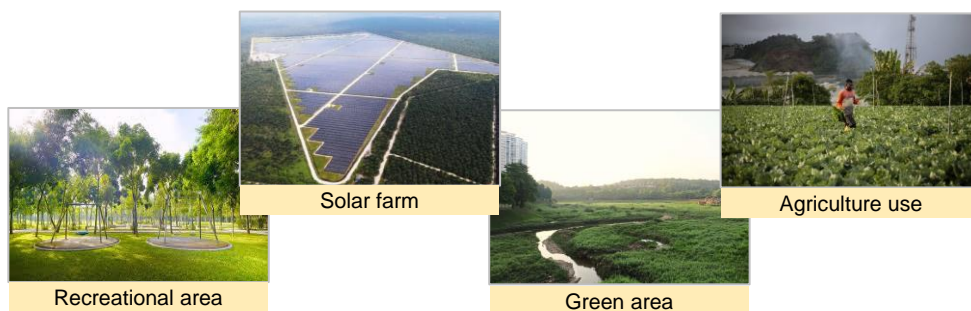
- Landfill capping and closure will be carried out at the Project site and the overall TPSPS Sg Udang; involving two (2) stages:
 - **Temporary closure:** Temporary closure of landfill cell using earth materials and geotextile.
 - **Final safe closure:** Final landfill capping and safe closure when all landfill cells are full/expansion is not possible.
- Requirements/ guidelines:
 - Malaysian Standard, Landfill Safe Closure – Requirements [Department of Standards (DOS) Malaysia, 2014].
 - The Study on the Safe Closure and Rehabilitation of Landfill Site in Malaysia, Volume 3, Guideline for Safe Closure and Rehabilitation of MSW Landfill Sites [Japan International Cooperation Agency (JICA), 2004].
 - Pemuliharaan dan Pembangunan Kawasan Sensitif Alam Sekitar (KSAS) Bekas dan Tapak Pelupusan Sisa Pepejal [PLANMalaysia, 2017]

Planning and Implementation



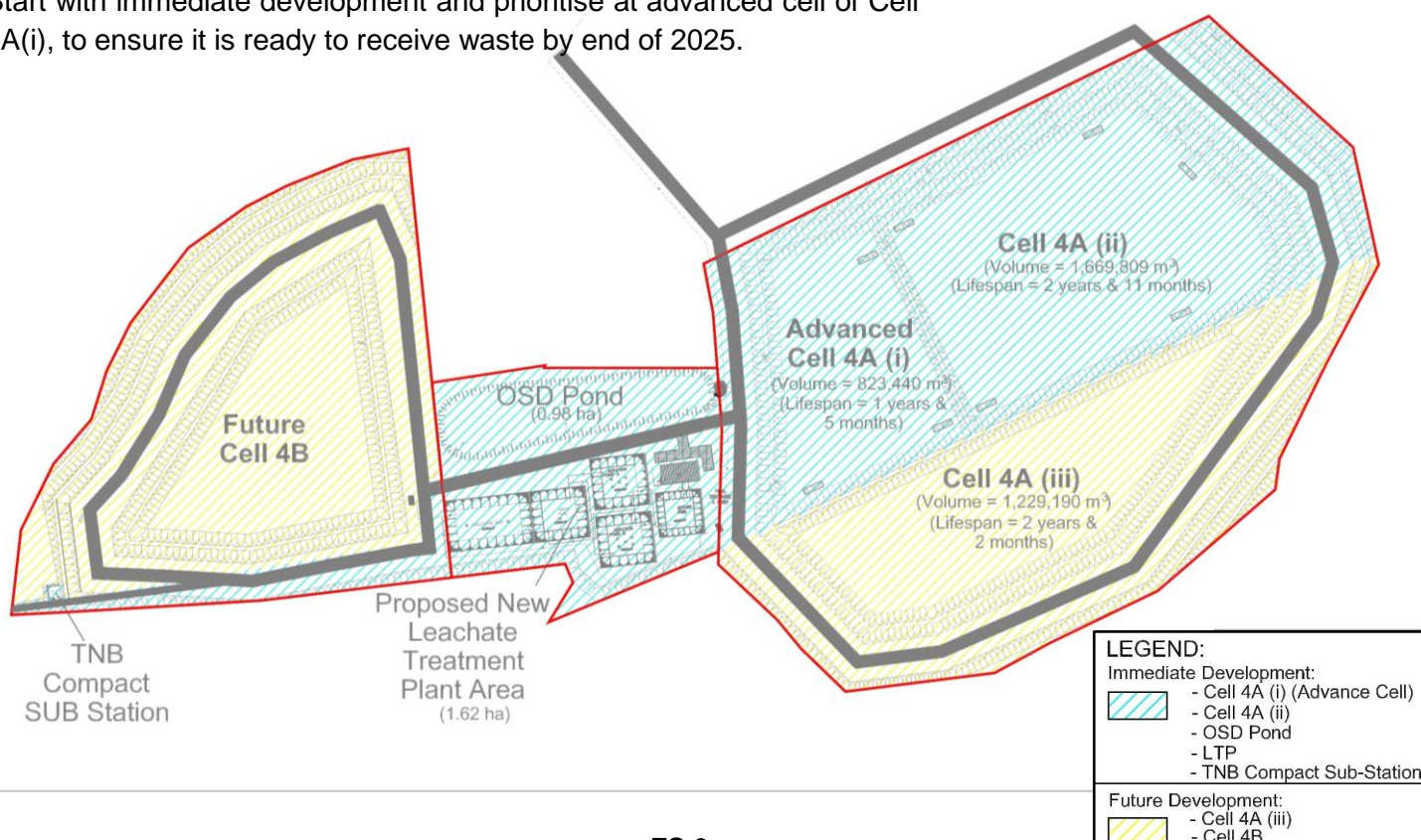
Post-Closure Planning Landuse

- As closed landfill are not suitable for development for at least 30 years, detailed/ feasibility studies shall be conducted for the potential redevelopment. Examples include:



Project Phasing and Implementation

- Start with immediate development and prioritise at advanced cell of Cell 4A(i), to ensure it is ready to receive waste by end of 2025.



Project Description

Overall Planning Schedule

Development Stage/ Phase	Implementation (Year)									
	1	2	3	4	5	6	7	8	9	10
Immediate Development										
Advance Cell • Cell 4A(i)	█									
• LTP • OSD Pond • TNB Substation • Cell 4A(ii)	█	█	█							
Bridging between two sub-cells and with Cell 2			█	█	█	█				
Future Development										
Phase 3 • Cell 4A(iii) • Bridging with sub-cells						█	█	█	█	
Phase 4 • Cell 4B								█	█	█

Note: The implementation of each landfill cells, in year, include the construction and operations over the designed lifespan.

Tentative Implementation Schedule for Immediate Development

- The construction of the immediate development is planned to start in June 2025.
- The advance cell of Cell 4A(i) will be first constructed and ready for operations by end of 2025; while the construction of Cell 4(ii) and new infrastructures will continue.
- The construction of Cell 4(ii) and other infrastructures is targeted to complete by May 2026, aligning with the designed lifespan of Cell 4A(i). New LTP and OSD pond will be ready before the operations of Cell 4(ii).
- During the immediate development, the Cell 4A(iii) and Cell 4B area will also be cleared for temporary stockpile of the excess earth cut materials.






Activities	Implementation Schedule (Month)																			
	2025						2026													
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2 Cell 4A (i)																				
2.1 Site clearing	█																			
2.2 Earthwork		█	█	█	█	█	█													
2.3 Landfill cell construction (i.e. lining and piping work)							█	█	█	█	█	█								
2.4 Operation								█	█	█	█	█	█	█	█	█	█	█	█	█
3 OSD Pond																				
3.1 Site clearing	█																			
3.2 Earthwork		█	█	█	█	█	█													
3.3 Drainage work							█	█	█	█	█	█								
3.4 Operation								█	█	█	█	█	█	█	█	█	█	█	█	█
4 LTP																				
4.1 Site clearing	█																			
4.2 Earthwork		█	█	█	█	█	█													
4.3 Pond lining work							█	█	█	█	█	█								
4.4 Piping and equipment installation										█	█	█	█	█	█	█	█	█	█	█
4.5 Operation										█	█	█	█	█	█	█	█	█	█	█
5 Cell 4A (ii)																				
5.1 Site clearing	█																			
5.3 Earthwork		█	█	█	█	█	█	█	█	█	█	█								
5.3 Landfill cell construction (i.e. lining and piping work)													█	█	█	█	█	█	█	█
5.4 Operation													█	█	█	█	█	█	█	█
6 Cell 4A (iii) (as temporary stockpile)																				
6.1 Site clearing		█																		
6.2 Stockpiling			█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
7 Cell 4B (as temporary stockpile)																				
7.1 Site clearing			█																	
7.2 Stockpiling				█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

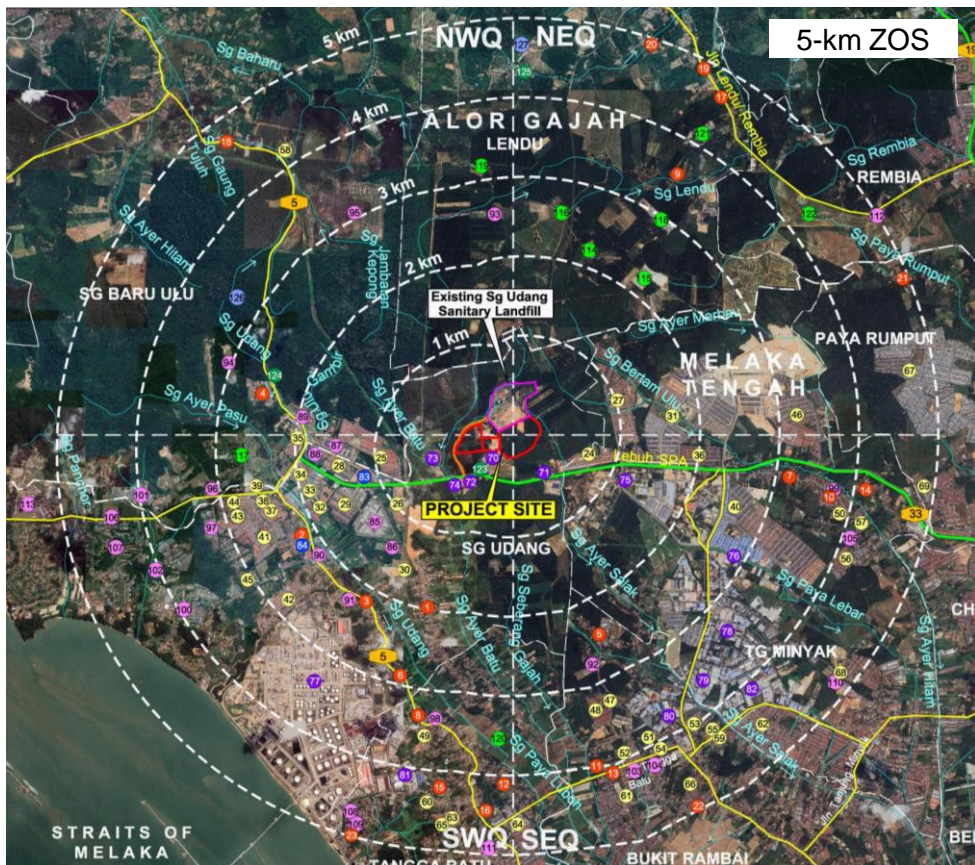
EXISTING ENVIRONMENT

Study Area

1. Project site (in red)
2. 5-km radius from the site boundary – Zone of Study (ZOS)
3. 1-km corridor along the main river of Sg Lereh Catchment and Sg Ayer Salak Catchment – Corridor of Study (COS)

Landuse

	ZOS		COS
	32	Kampung	18
	46	Taman	39
	13	Industrial	5
	2	Commercial	
	28	Institutions	



Landuse Zoning 500-m ZOS

1. Agriculture west and north of the site.
2. Commercial south of the site.
3. Agriculture and residential west of the site.

Environmental Sensitive Area (ESA)

1. Project site is ESA Level 2, and its 500-m radius is ESA Level 3.
2. HSK Sg Udang, ~550 m west = ESA Level 2.

REFER TO BACK PAGE

EXISTING ENVIRONMENT

Baseline Environmental Monitoring

Baseline Environmental Monitoring

River Water

Riverbed sediment

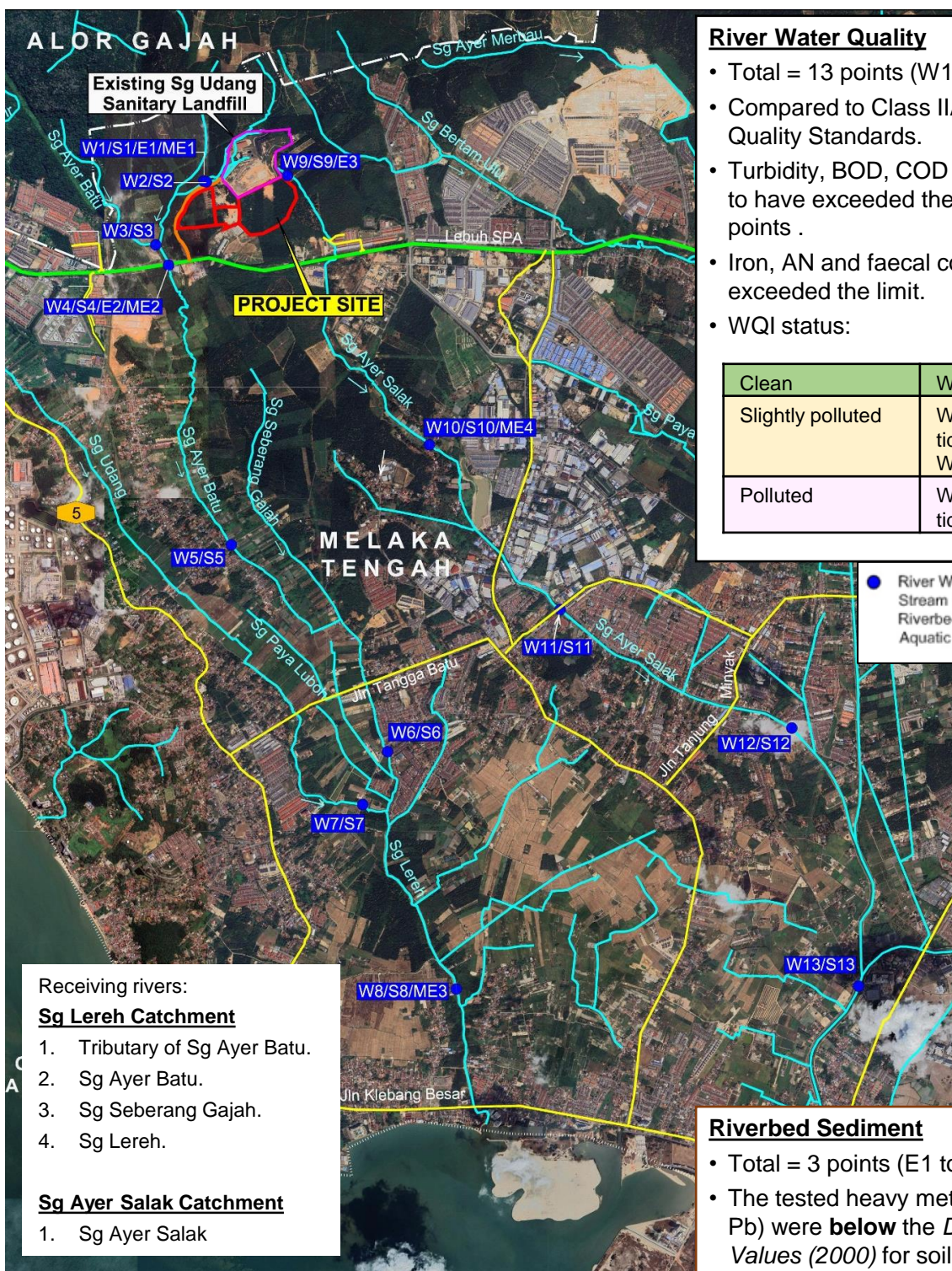
Groundwater

Air Quality

Odour

Noise

River Water & Riverbed Sediment



River Water Quality

- Total = 13 points (W1 to W13).
- Compared to Class IIA/IIB of National Water Quality Standards.
- Turbidity, BOD, COD and, Manganese were found to have exceeded the limits at a few sampling points .
- Iron, AN and faecal coliform of all sampling points exceeded the limit.
- WQI status:

Clean	W1
Slightly polluted	W3, W4, W7, W8 (low and high tides during spring tide), W10 to W13
Polluted	W2, W5, W6, W8 (low & high tides during neap tide), W9

● River Water Quality Monitoring Points (W1 - W13);
 ● Stream Gauging Points (S1 - S13);
 ● Riverbed Sediment Sampling Points (E1 - E3);
 ● Aquatic Ecology Survey/ Sampling Points (ME1 - ME4).

Receiving rivers:

Sg Lereh Catchment

1. Tributary of Sg Ayer Batu.
2. Sg Ayer Batu.
3. Sg Seberang Gajah.
4. Sg Lereh.

Sg Ayer Salak Catchment

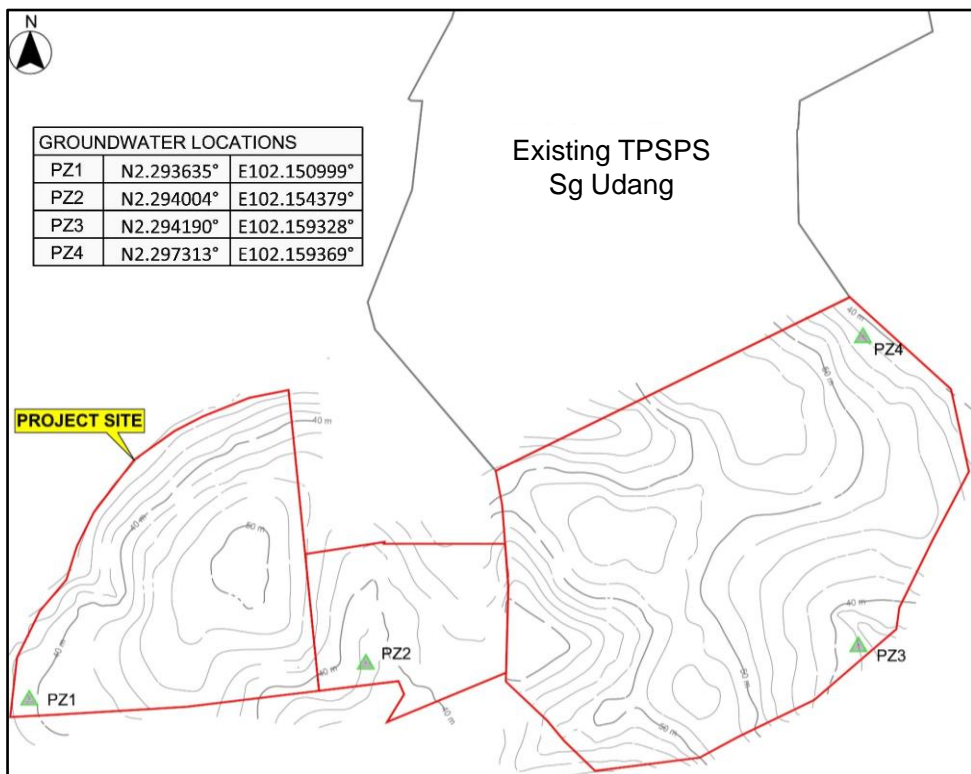
1. Sg Ayer Salak

Riverbed Sediment

- Total = 3 points (E1 to E3).
- The tested heavy metals (As, Cd, Cr³⁺, Cu, Hg, Ni, Pb) were **below** the *Dutch Target and Intervention Values (2000)* for soil contamination.

EXISTING ENVIRONMENT

Groundwater

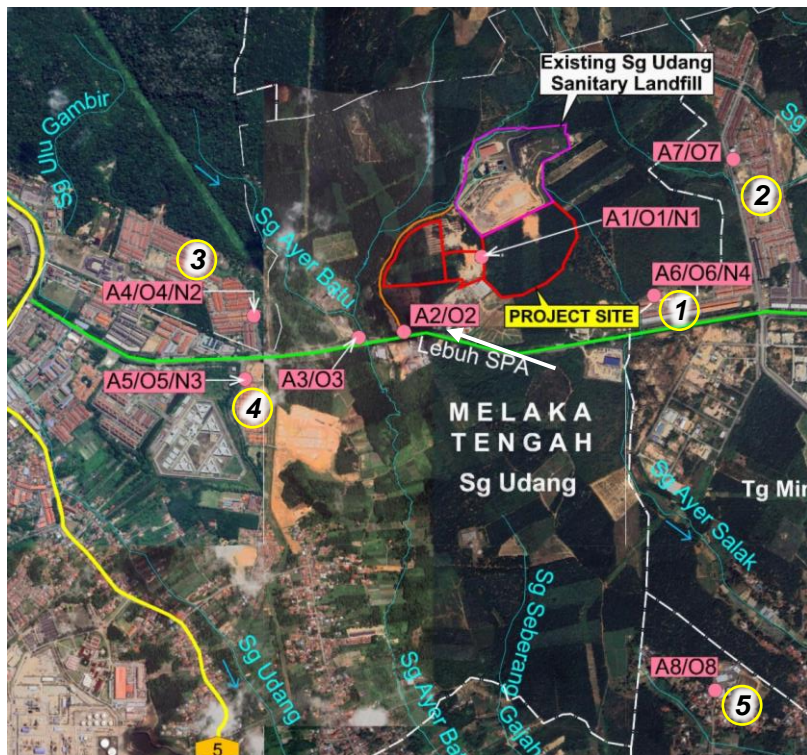


Groundwater Quality

- Total = 4 points (PZ1 to PZ4).
- Compared to *Groundwater Quality Standards for Conventional Raw Water Treatment (Drinking Water), Malaysia Groundwater Quality Standard and Index* (DOE, 2019).
- Tested parameters at PZ1 and PZ3 to DOE's standards.
- pH, COD, Pb and Fe at PZ2 & Pb and Fe at PZ4 exceeded the DOE's Standards.
- GWQI status:

Very Clean	PZ1 and PZ2
Clean	PZ3 and PZ4

Air Quality, Odour and Noise



Ambient Air Quality

- Total = 8 points (A1 to A8).
- All **complied** with the *Standard 2020 of Malaysian Ambient Air Quality Standard (MAAQS)*.

Odour

- Total = 8 points (O1 to O8).
- Compared with *Enforceable Permit Odour Limits* (Charles McGinley P.E., 2000).
- Noticeable odour (D/T 2) was detected:
 - O1 (morning; Project)
 - O2 (night; Lebuh SPA)
 - O4 (morning; Tmn Indah)
 - O6 (morning; Tmn Bertam Putra)
- No odour was detected at O3, O5 (Tmn Keris Satria), O7 (Tmn Seri Bertam) and O8 (Kg Ayer Salak).

Noise

- Total = 4 points (N1 to N4).
- Compared to *Second Schedule of Guidelines for Environmental Noise Limits and Control, 3rd Edition, Reprint* (DOE, 2021).
- Noise level at all points were below the recommended permissible noise level during day and night time.

Sensitive Receptors within 1-km

1. Taman Bertam Putra [A6/O6/N4]
2. Taman Seri Bertam [A7/O7]
3. Taman Indah [A4/O4/N2]
4. Taman Keris Satria [A5/O5/N3]

Beyond 1-km

5. Kg Ayer Salak [A8/O8]

EXISTING ENVIRONMENT

Physical Environment

Topography & Slope

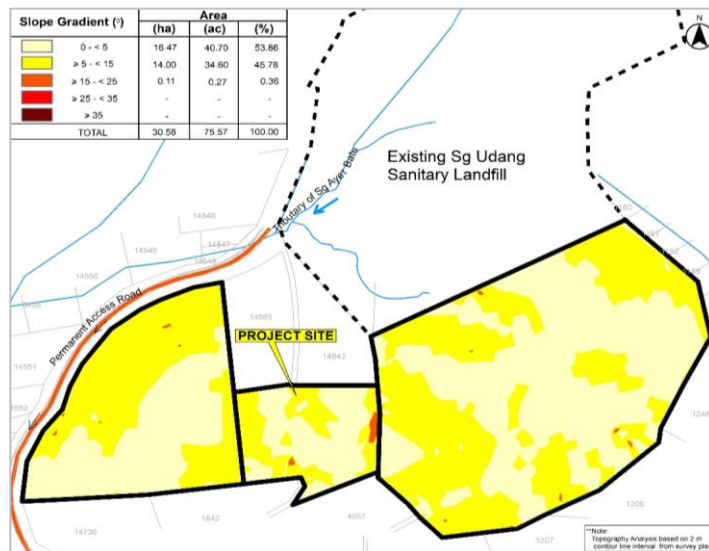
- **Elevation:** 32 to 54 m MSL.
- **Slope:** 99.64% Class I & 0.36% Class II.

Geology, Soil & Hydrogeology

- **Soil:** Malacca-Munchong-Tavy Soil Association.
- **Geology:** meta-sedimentary bedrocks, comprising phyllites, schists and slates.
- **Hydrogeology:** falls within low aquifer potential region.
- **Groundwater level:** 1.24 to 10.12 m below ground level.

Climate

- **Average annual rainfall:** 2,223.7 mm (2015 – 2024)
- **Wind:** 35.3% blow from northeast with strongest wind 5.5 – 7.9 m/s.



Biological Environment

Flora

- Visual Encounter Survey.
- Project site: 34 species recorded, such as oil palm, fruit trees (e.g. durian, nangka, rambutan, mango), secondary forest vegetation, bushes/shrubs.
- **Conservation status:** least concern or not evaluated.
- **Estimated biomass:** 708.76 tonnes



Fauna

- Visual Encounter Survey: direct & indirect observation.
- Project site and surrounding area:

Mammals	6 species recorded, e.g. long tailed macaques, Malaysian field rat, plantain squirrel, domestic dog, etc.
Birds	20 species recorded; Cattle Egret, Common Mynas and House Crows were found within the active Landfill Cell 2.
Herpetofauna	8 species of reptiles and amphibians.

- Human-Wildlife Conflict: 308 cases (2021 to 2024), species involved were mainly long-tailed macaques.

Aquatic

- Plankton sampling: 4 points (ME1 to ME2)
- Phytoplankton: low densities and moderate diversity.
- Zooplankton: low densities and low diversity.
- Fish: only 2 species caught at ME4 (upstream of Sg Ayer Salak)

Social Environment

Survey by affected group

378 respondents



79 respondents

Aquaculture/ Fishery

Commercial/ Industrial

112 respondents



Agriculture/ Livestock



59 respondents

Total = 628 respondents



Primary Zone (0 – 3 km ZOS)

Agree Rate

29.5%



Secondary Zone (0 – 3 km ZOS)

68.0%

Focus Group Discussion (FGD)

Main concerns

- Unsustainable landfill location.
- Environmental impacts, i.e. odour, water pollution.
- Health impact and pest issues.
- Strong preference towards transitioning to modern waste processing technologies, i.e. incinerator or WTE Plant.

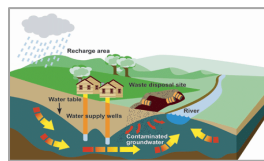
Key Environmental Concerns



River Water Pollution



Air Quality & Odour



Groundwater Pollution



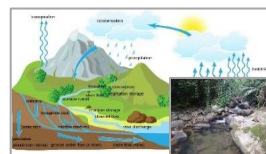
Socio-economy



Public Health



Soil Erosion and Sedimentation



Hydrology and Drainage



Risk



Landuse & Visual Effect



Traffic Disruption



River Water Quality

Modelling Software

WASP version 8.32

Construction Phase

Operational Phase

Main concern = turbid runoff

Sg Lereh Catchment

- With mitigation measures, TSS concentration will slightly increase; then will be diluted to be close to its ambient concentrations before the confluence of Sg Ayer Batu and Sg Seberang Gajah.

Sg Ayer Salak Catchment

- Worst-case scenario: no implementation of erosion and sediment control measures.
- Without mitigation measures, turbid runoff from Cell 4A will flow into Sg Ayer Salak, significantly increasing the TSS concentrations where no significant reduction will be expected up until the bridge of Jalan Kampung Setulang Daeng.

Normal Flow

Low Flow

Main concern = leachate

Sg Lereh Catchment

- Compliance to the Second Schedule, Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009 was sufficient to preserve the ambient water quality of Sg Ayer Batu, Sg Seberang Gajah and Sg Lereh for most modelled parameters.
- However, water quality of the Tributary of Sg Ayer Batu (after discharge from landfill and before confluence with Sg Ayer Batu) will deteriorate even if the discharge effluent quality complies to standards.

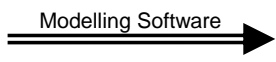
Sg Ayer Salak Catchment

- No impact on Sg Ayer Salak catchment, unless from Cell 4A overflow into Sg Ayer Salak.
- If raw leachate enters Sg Ayer Salak (worst-case), highly severe impact on the river water will be expected, with significant increases in the concentration of all parameters, posing a serious environmental threat.

IMPACT EVALUATION



Groundwater



MODFLOW



Construction Phase

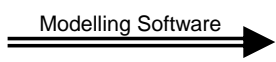
- Reduction in groundwater pressure head.
- Flow direction remain unchanged.

Operational Phase

- Groundwater contamination by Arsenic (As) remains within the Project boundaries; the concentration will be reduced over the years.
- Cadmium (Cd) contamination will remain in Cell 4B boundary.
- For Cell 4A, Cd contaminant will migrate and interact with the upstream of Sg Ayer Salak with minimum concentration.



Air Quality



AERMOD

Construction Phase



Operational Phase



Main concern = fugitive dust

With mitigation

- High concentration of dust confined within the Project site.
- Increments of <math><1\text{ to }5\ \mu\text{g}/\text{m}^3</math> of PM_{10} and <math><0.5\text{ to }1\ \mu\text{g}/\text{m}^3</math> of $\text{PM}_{2.5}$ at the surrounding identified sensitive receptors. Considering the baseline air quality, the ground level concentration (GLC) will still be below the Standard 2020 of MAAQS.

Worst Case (without mitigation)

- Significant impact: increased fugitive dust within the Project site.
- Increments of <math><5\text{ to }10\ \mu\text{g}/\text{m}^3</math> of PM_{10} and <math><1\text{ to }2.5\ \mu\text{g}/\text{m}^3</math> of $\text{PM}_{2.5}$ at the surrounding identified sensitive receptors, especially Taman Bertam Putra, Taman Indah and Keris Riverside Chalet. But, still below the MAAQS Standard 2020.

Main concern = H₂S

Normal Operation (proper working procedures)

- Localised increment of H₂S; 50 – 129 $\mu\text{g}/\text{m}^3$ at the active cell and reduced to 1 – 10 $\mu\text{g}/\text{m}^3$ at the Project boundary.
- The predicted H₂S level at Keris Riverside Chalet will be 4 – 5 $\mu\text{g}/\text{m}^3$ and <math><1\text{ to }2\ \mu\text{g}/\text{m}^3</math> at Taman Bertam Putra.
- The predicted levels will be below the reference limit of 7 $\mu\text{g}/\text{m}^3$.



Odour



AERMOD



Operational Phase

Normal Operation (proper working procedures)

- High concentration of odour will be concentrated at the landfill site; noticeable by below objectionable threshold (<math><7\ \text{ou}/\text{m}^3</math>).
- Odour levels at site remain generally high at nighttime.
- Odour dispersion pattern shows negligible increments of odour (<math><0.1\ \text{ou}/\text{m}^3</math>) at the identified sensitive receptors.



Soil Erosion and
Sediment Yield

Calculation

RUSLE & MUSLE

- High erosion rate and sediment yield are expected during construction, due to the land clearing and earthwork, especially when no mitigation measures is implemented.

Scenario		Average Soil Loss (t/ha/yr)	Soil Erosion Risk Class	Sediment Yield (tonnes/ storm)
Pre-construction phase		34.419	Moderate	56.85
Construction phase	Without mitigation measures	186.835	Very High	331.83
	With mitigation measures	16.437	Moderate	29.2
Operational phase		13.414	Moderate	21.52
Post-closure phase	Without safe closure	13.414	Moderate	21.52
	With safe closure	2.432	Low	0.5

Other Study Component	Impacts
Hydrology and Drainage	<ul style="list-style-type: none"> Modelling software = XP-SWMM. Main concern: alteration of flow within the Project site. Discharge into tributary of Sg Ayer Batu = $Q_{post} < Q_{pre}$, with the provision of OSD pond; thus, reduce the flood risk at the downstream area.
Traffic	<ul style="list-style-type: none"> Modelling software = SIDRA. Insignificant impact during the opening year of 2025. Decline in performance of the junction accessing the Project site and the road at the vicinity of the site in year 2035; however, it is caused by the increase of public vehicles on Lebuhraya SPA, instead of the Project's operation.
Landuse	<ul style="list-style-type: none"> Permanent conversion of existing landuse. Existing environmental impacts persist into the Project implementation. Landuse issues within the 500-m buffer zone. Reduced aesthetics towards the surrounding environment and community.
Noise	<ul style="list-style-type: none"> Noise from the Project activities may cause disruption and nuisance to the sensitive receptors. Noise simulation showed only slight increases in noise levels at Taman Bertam Putra.
Biological Resources	<ul style="list-style-type: none"> Loss of vegetation. Human-wildlife conflict. Scavengers and pests concerning public health and safety. Water pollution may affect aquatic life.
Waste Generation	<ul style="list-style-type: none"> Potential waste generated during Project activities: municipal waste, biomass, scheduled waste, sullage. Improper management may pose environmental and health impacts.

MITIGATION MEASURES



Soil Erosion and Sediment Yield

Construction Phase:

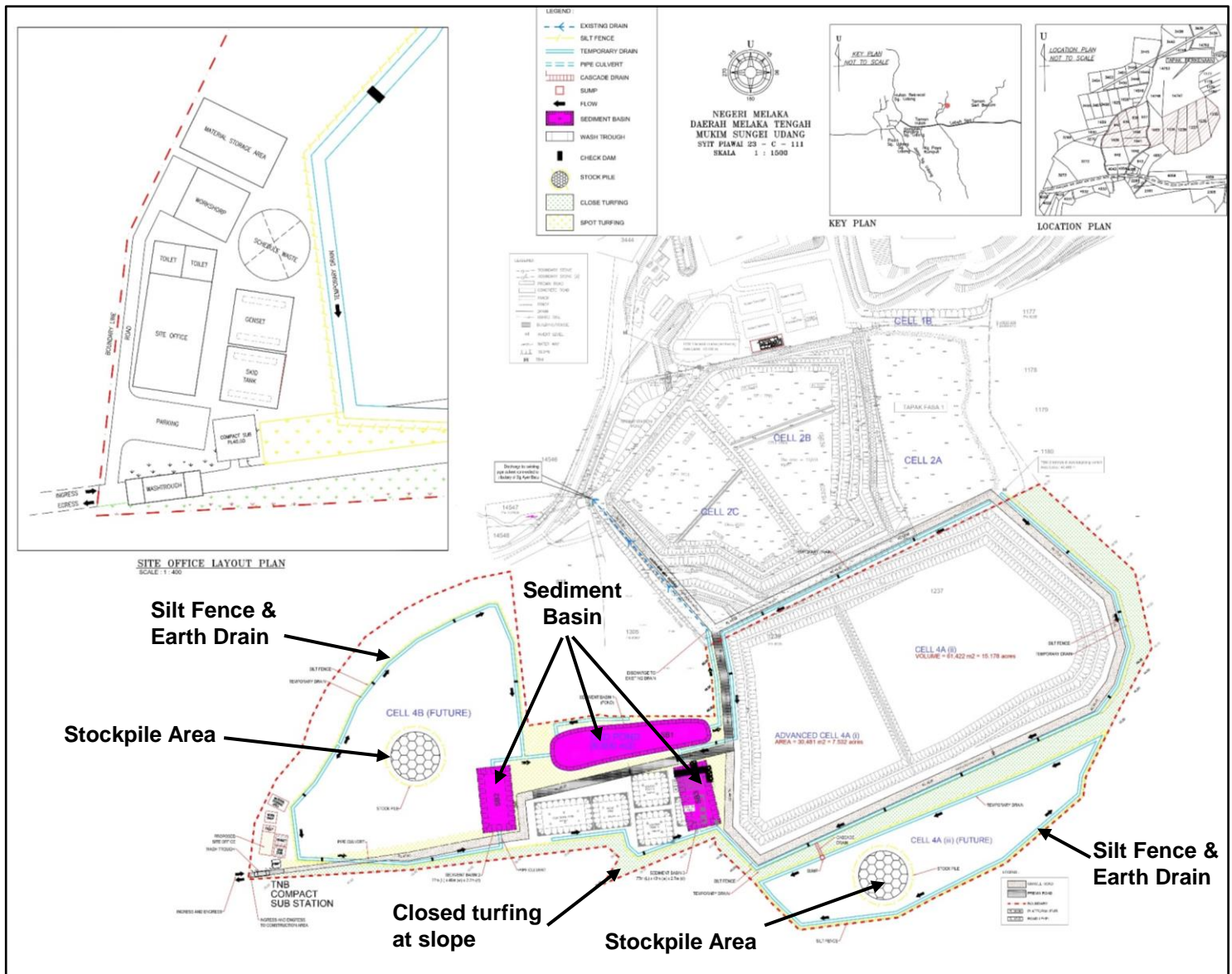
- Planning and implementation of LD-P2M2 and BMPs for:
 - (i) Runoff management
 - (ii) Erosion control
 - (iii) Sediment control

Operational Phase:

- Ensure turfing, slope stabilisation measures are properly constructed and well-maintained.
- Proper and regular inspection of erosion and sediment control measures.

Closure Phase:

- Temporary closure using earth materials or geotextile.
- Erosion control measures should be implemented and drainage system should be installed.



MITIGATION MEASURES



River Water
Quality

Construction Phase:

- Apply all recommended P2M2 and BMPs for erosion and sediment control as detailed in LD-P2M2 document.
- Proper stockpile management, i.e. for earth material, spoils and construction material.
- Proper waste management.
- Proper fuel and chemical management.
- Periodical monitoring of river water quality at Sg Ayer Batu and its tributaries.

Operational Phase:

- LTP effluent discharge abide to LTP designed discharge limits, which is more stringent compare to EQA's standard.
- Practise proper waste management.
- Professionally address any complaints received from nearby locals.
- Conduct regular LTP maintenance and performance monitoring.



Groundwater
Quality

Construction Phase:

- Install proper drainage system to stabilised the groundwater system after construction.

Operational Phase:

- Leachate collection piping or sump should made of concrete or laid with HDPE liners.
- Leachate piping and LTP should constructed in accordance to the engineering design.
- Regular groundwater monitoring.



Air Quality

Construction Phase:

- Phase construction works.
- Limit dusty work on windy days.
- Apply dust suppression measures when needed.
- Use wind erosion controls, e.g. wind-breaks.
- Enclose storage, handling areas.
- Dampen and cover the earth stockpile; turfing.
- Impose speed limit on heavy vehicles.
- Prohibit open burning.
- Regular maintenance of construction machinery, equipment, vehicles and vessels.

Operational Phase:

- Regular checking of landfill gas vent for clogging, physical damages or erosion at vent openings.
- Regular water spraying along the internal haulage road.
- Proper maintenance of wheel washing facility.
- Maintain perimeter vegetation.
- Periodic air quality monitoring and gas monitoring.



Odour

Operational Phase

- Increase frequency of daily cover. Alternative daily cover material = HDPE liner.
- Regular maintenance of waste trucks to reduce leachate spillage and leaking during transportation.
- Maintain vegetation at the Project boundary.
- Increase frequency of EM spray and install perimeter EM misting system.
- Periodic odour monitoring.
- Regular patrolling in settlements surrounding the landfill.

MITIGATION MEASURES



Social Impact

Construction Phase:

- Implement all BMPs and P2M2s.
- Establish communication & involve the community in all aspects likely to affect them.
- Implement effective traffic control for public safety.
- Undertake daily housekeeping.
- Provide adequate PPE to all workers.
- Ensure all workers adhere to safety protocols and SOP.
- Regular inspection and period monitoring.

Operational Phase:

- Keep the community informed, address concerns & provide regular updates/ feedback channels.
- Establish a public complaint & response mechanism and a dedicated team.
- Regular monitoring and maintenance.
- Worker's safety protocols.
- Traffic management and safety.
- Solid waste management public education and awareness programmes.



Risk Management

Operational Phase

- Strictly enforce "no smoking" rules to limit potential fire or explosions.
- Ensure fire alarms and firefighting systems are well maintained.
- Practice routine emergency drills to improve worker's awareness.
- Ensure an Emergency Response Plan is provided on-site as a comprehensive safety guide.



Public Health

Construction Phase - General

- Adhere to all occupational health and safety regulations as per DOSH regulations/ requirement.
- All workers must be card holders registered with the Construction Industry Development Board (CIDB)
- Waste disposal at the construction site, must be managed properly to prevent attracting pests and scavengers
- Stagnant water on-site must be eliminated.

Operational Phase - General

- Sustainable Solid Waste Management: e.g. Engineered Sanitary Landfill, Integrated Waste Management, proper and effective landfill management, community education and engagement, enforcement of regulations, etc.
- Disease vector control of zoonotic – rodents; vector - mosquitoes and flies.



Hydrology & Drainage

Construction Phase:

- Implement all P2M2 and BMPs detailed in the LD-P2M2 Plan for surface erosion and sediment management.
- Prepare temporary drainage system channelled to sediment basin(s)/ silt traps prior to construction activities.
- Establish drainage outlet protection.

Operational Phase:

- Construct permanent drainage as per the engineering designs.
- Channel runoff to on-site detention pond and discharge into the receiving stream (i.e. tributary of Sg Ayer Batu) in a controlled manner.
- Maintain detention pond regularly.
- Regular inspection and maintenance of the drainage system to ensure no blockage of flow.

MITIGATION MEASURES



Traffic

Construction Phase:

- Wheel cleaning/ tyre washing.
- Schedule transportation to avoid peak hours.
- Provision of adequate warning signages and flagmen.
- Impose and adhere to permissible speed limits to minimise accidents and road damages.
- Establish dedicated construction ingress and egress.

Operational Phase:

- Upgrade existing junction connecting Lebuhr SPA to permanent access to TPSPS Sg Udang.
- To be undertaken by the local authority.



Landuse

Construction Phase:

- Implement all BMPs and P2M2s for pollution control.

Operational Phase:

- Implement all pollution control measures, especially on deodorisation.
- Ensure provisioning & maintenance of adequate buffer zones between sensitive receptors & Project site by restricting to only allowable activities, by the local authority.
- Respond to public complaints promptly.
- Enhance communication with nearby affected community.

Post-Closure Phase:

- Conduct proper post-closure landuse planning & zoning control.



Noise

Construction Phase – General:

- Limit high noise work during the day time only.
- Proper maintenance of equipment and machinery.
- Comply with *The Occupational Safety and Health (Noise Exposure) Regulations 2019 (OSHA 1994)* and *the Environmental Quality (Motor Vehicle Noise) Regulation 1987 of the Environmental Quality Act (EQA) 1974*.
- Provide PPE for workers.
- Regular ambient noise monitoring at identified sensitive areas.

Operational Phase – General:

- Provide workers with adequate PPE and training prior to operation.
- Proper maintenance of machineries and vehicles.
- Impose speed limits.
- Conduct periodic boundary noise monitoring.
- Address complaints promptly.



Biological Resource

Construction Phase:

- Proper removal of vegetation (e.g., markings, supervision, etc.) and reuse cleared vegetation as mulch.
- Maintain tree/ vegetation screen along Project perimeters.
- Address public complaints of HWC promptly.
- Water pollution management.

Operational Phase:

- Maintain vegetation screen along the Project perimeter boundary
- Proper waste management.
- Pests and scavenger management.
- Prevention of wildlife habituation.
- Report on any HWC cases.



Waste Management

Construction & Operational Phases:

- All scheduled wastes to be handled and managed in accordance to Environmental Quality (Scheduled Waste) Regulations 2005.
- Designated temporary biomass disposal site.
- Stockpile overburden and protect it by windbreakers or compactions, unless taken out for dumping.
- Provide adequate rubbish bins at strategic locations and open burning is prohibited.
- Regular desludging of septic tanks.
- Inspect and screen waste loads to ensure that only accepted wastes are collected.



ENVIRONMENTAL MONITORING AND SURVEILLANCE PLAN

Impact Monitoring during Construction Phase

River Water Quality

LOCATION

W1 – W7

PARAMETERS

Temperature, pH, turbidity, DO, BOD, COD, TSS, AN, O&G, Faecal Coliform, Total Coliform, Conductivity

STANDARDS

Class IIA/IIB, NWQS; COAs (if any); baseline river quality

FREQUENCY

Monthly by EnvMC

Air Quality

LOCATION

A1 – A3

PARAMETERS

NO₂, SO₂, CO, O₃, PM_{2.5}, PM₁₀, Weather conditions

STANDARDS

Standard 2020, MAAQS; COAs (if any)

FREQUENCY

Monthly by EnvMC

Noise Level

LOCATION

N1 – N3

PARAMETERS

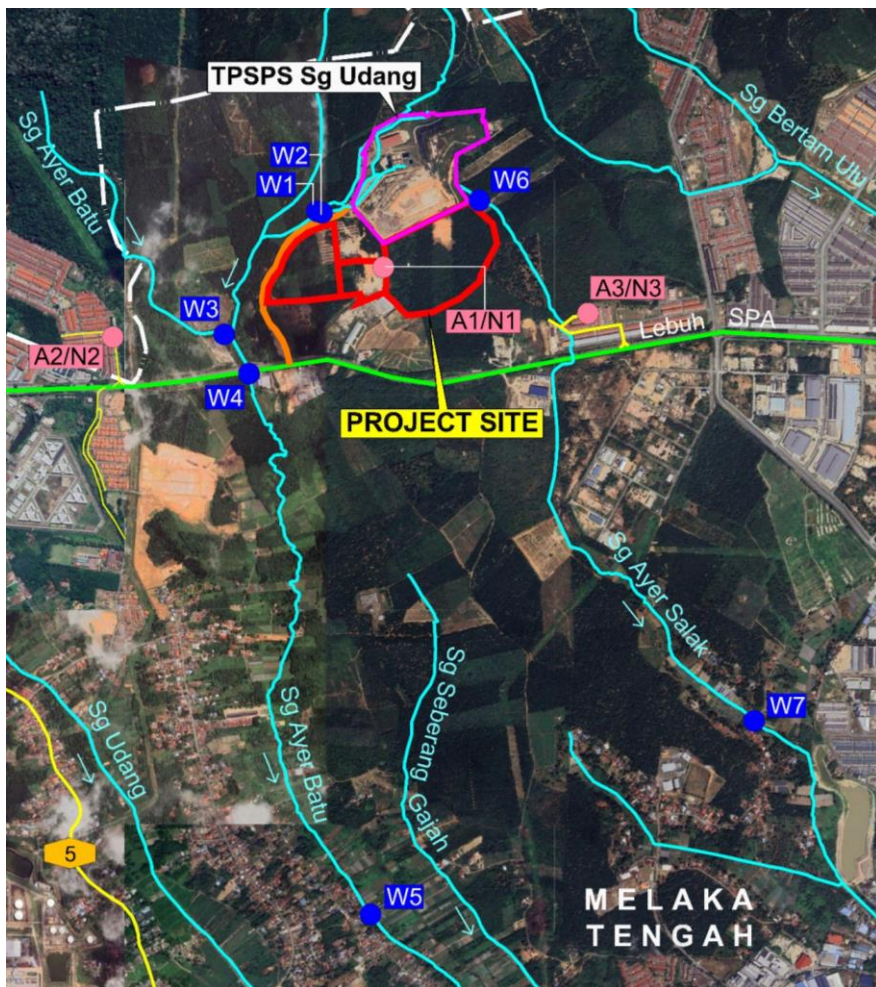
L_{Aeq}, L₁₀, L_{max}

STANDARDS

Second, Third and Sixth Schedule, *Guidelines for Environmental Noise Limits and Control, Third Edition, reprint* (DOE, 2021); COAs (if any)

FREQUENCY

Monthly by EnvMC



- River Water Quality Monitoring Point (W1 - W7);
- Ambient Air Quality Monitoring Point (A1 - A3); Noise Monitoring Points (N1 - N3).

LEGEND:

- Project Site (Area = 30.58 ha/ 75.57 ac)
- Existing Tapak Pelupusan Sisa Pepejal Sg Udang (TPSPS Sg Udang)
- Permanent Access Road
- Expressway
- Road
- River
- Flow Direction
- District Boundary

ENVIRONMENTAL MONITORING AND SURVEILLANCE PLAN

Compliance and Performance Monitoring during Construction Phase



Component	Compliance Requirement	No. of Points/ Location	Frequency
Compliance Monitoring			
Discharge Quality from Sediment Basin	COAs (if any).	Outlets of proposed SB1.	<ul style="list-style-type: none"> After every rain event ≥ 12.5 mm, by EO. Monthly by EnvMC
Sewage Effluent (Note: If the cumulative P.E. ≤ 150)	<ul style="list-style-type: none"> SPAN's septic tanks effluent discharge standard: <ul style="list-style-type: none"> (i) BOD₅ = 50 mg/L (ii) Suspended solid = 100 mg/L COAs (if any). 	Septic tank's effluent discharge point.	Monthly by EnvMC
Performance Monitoring			
Functionality of the BMPs for Erosion and Sediment Control	<ul style="list-style-type: none"> ESCP layout and report approved by DID. LD-P2M2. COAs (if any). 	All BMPs proposed in the LD-P2M2 and ESCP approved by DID.	<ul style="list-style-type: none"> Weekly and after every heavy rain event ≥ 12.5 mm, by EO. Monthly by EnvMC.
Solid Waste Management (i.e., Biomass, Construction, Domestic Wastes)	<ul style="list-style-type: none"> Environmental Quality Act 1974. Solid Waste and Public Cleansing Management Act 2007. Local Government Act 1976, Sections 69 – 71. COAs (if any). 	Within the Project site.	<ul style="list-style-type: none"> Daily by EO. Monthly by EnvMC.
Scheduled Waste Management	<ul style="list-style-type: none"> <i>Environmental Quality Act 1974.</i> <i>Environmental Quality (Scheduled Wastes) Regulations 2005.</i> <i>Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia (DOE, 2014).</i> COAs (if any). 	<ul style="list-style-type: none"> Storage areas for scheduled wastes. Workshop. Active work areas. 	<ul style="list-style-type: none"> Daily by EO. Monthly by EnvMC.



ENVIRONMENTAL MONITORING AND SURVEILLANCE PLAN

Impact Monitoring during Operational Phase

River Water Quality

LOCATION

W1 – W8

PARAMETERS

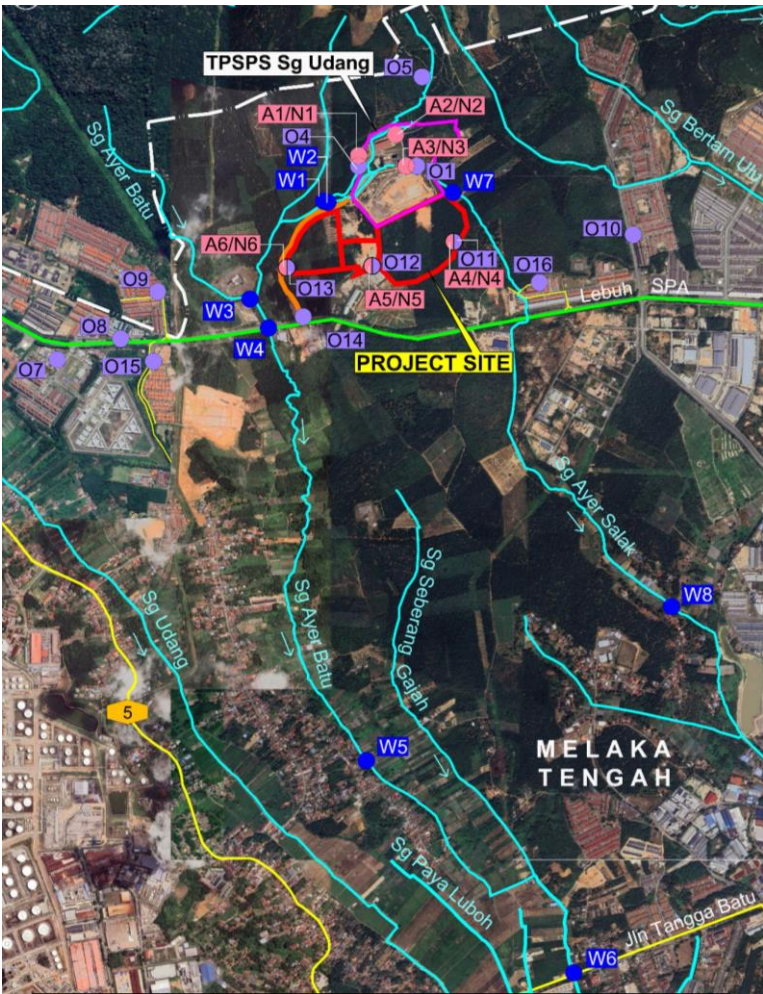
Temperature, pH, turbidity, DO, Conductivity, Salinity, TSS, BOD, COD, AN, O&G, Nitrate, Phenol, Phosphorus, Formaldehyde, Cyanide, Faecal Coliform, Total Coliform, Hg, Cr³⁺, Cr⁶⁺, As, Al, Pb, Cu, Mn, Cd, Mg, Ni, Sn, Zn, B, Fe, Ag.

STANDARDS

Class IIA/IIB, NWQS; COAs (if any);
baseline river quality

FREQUENCY

Monthly by EnvMC



- River Water Quality Monitoring Point (W1 - W8);
- Ambient Air Quality Monitoring Point (A1 - A6); Noise Monitoring Points (N1 - N6).
- Odour Monitoring Points (O1, O4 - O16);

Groundwater Quality

LOCATION

B1, B8, PZ1 – PZ3

PARAMETERS

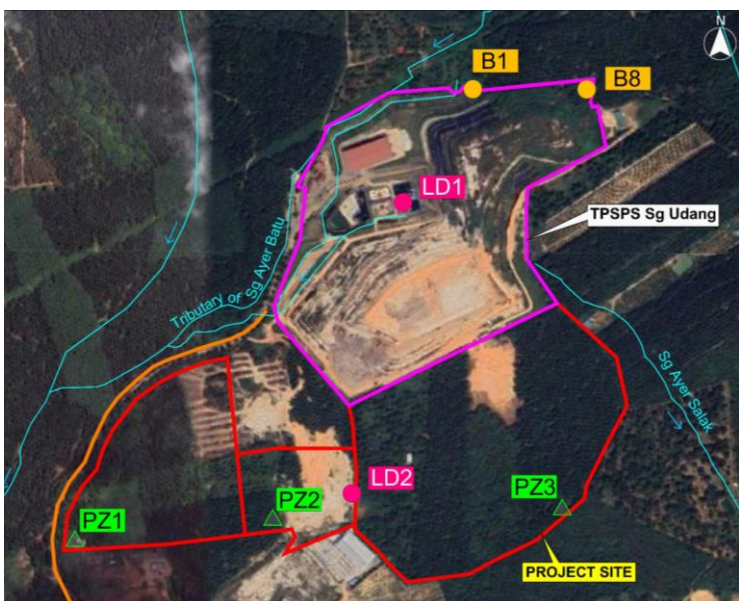
Temperature, pH, Turbidity, Colour, TDS, Conductivity, Total hardness, AN, MBAS, TSS, Total Solids, Organic Matter, BOD, COD, O&G, Calcium, Nitrate, Nitrite, Phenol, Fluoride, Sulphate, Chloride, Cyanide, Total Coliform, Faecal Coliform, *E.coli*, Hg, Cr, As, Al, Pb, Cu, Mn, Cd, Mg, Ni, Zn, Fe, Ag, Na, Se

STANDARDS

Groundwater Quality Standards for Conventional Raw Water Treatment (Drinking Water), Malaysia Groundwater Quality Standard and Index (DOE, 2019).

FREQUENCY

Monthly by EnvMC



- LTP Final Discharge Quality Monitoring Points (LD1 - LD2)
- Groundwater Quality Monitoring Points:
 - B1 & B8
 - ▲ PZ1 - PZ3

Air Quality, Noise & Odour

LOCATION

A1 – A6; N1 – N6; O1, O4 – O16

PARAMETERS

CO₂, CO, H₂S, Ammonia, CH₄, PM_{2.5}, PM₁₀
Temperature,
L_{Aeq}, L₁₀, L_{max} ;
Stench, Odour Level

STANDARDS

Standard 2020, MAAQS;
Second, Third and Sixth Schedule, *Guidelines for Environmental Noise Limits and Control, Third Edition, reprint* (DOE, 2021);
Baseline Odour Result

FREQUENCY

Quarterly by EnvMC; Quarterly by EnvMC;
Monthly by EnvMC



ENVIRONMENTAL MONITORING AND SURVEILLANCE PLAN

Compliance and Performance Monitoring during Operational Phase

Component	Compliance Requirement	No. of Points/ Location	Frequency
Compliance Monitoring			
Discharge Quality from LTP	<ul style="list-style-type: none"> Second Schedule, Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009. COAs (if any). 	Final discharge point of the existing LTP and new LTP.	Monthly by EnvMC
Sewage Effluent (Note: If the cumulative P.E. ≤ 150)	<ul style="list-style-type: none"> SPAN's septic tanks effluent discharge standard: <ul style="list-style-type: none"> (i) BOD₅ = 50 mg/L (ii) Suspended solid = 100 mg/L COAs (if any). 	Effluent discharge point of the septic tank of the TPSPS Sg Udang.	Monthly by EnvMC
Performance Monitoring			
Functionality of the LTP	Compare with performance data for each unit operation designed by LTP Consultant.	Each unit of operation.	<ul style="list-style-type: none"> Real time monitoring. As per the monitoring frequency proposed by the LTP Consultant
Scheduled Waste Management	<ul style="list-style-type: none"> <i>Environmental Quality Act 1974.</i> <i>Environmental Quality (Scheduled Wastes) Regulations 2005.</i> <i>Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia (DOE, 2014).</i> COAs (if any). 	<ul style="list-style-type: none"> Storage areas for scheduled wastes. Workshop. 	<ul style="list-style-type: none"> Daily by EO or personnel with CePSWaM
General Housekeeping Cleanliness	<ul style="list-style-type: none"> Landfill SOP COAs (if any) 	<ul style="list-style-type: none"> Within the Project site, i.e. the appurtenant facilities area, landfill entrance. Along the permanent access road to the landfill. Junction connecting to Lebih SPA. 	<ul style="list-style-type: none"> Daily by EO.

Potential Impact

Construction Phase



Soil Erosion and Sedimentation



River Water Pollution



Vegetation Removal & Biological Resources



Hydrology and Drainage



Noise Pollution



Air Pollution



Traffic Disruption



Socio-economy



Waste Generation

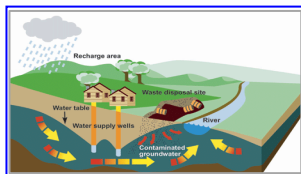


Geotechnical Hazards

Operational Phase



River Water Pollution



Groundwater Pollution



Air Quality & Odour



Traffic Disruption



Public Health



Landuse & Visual Effect



Risk



Socio-economy

P2M2s

- Mitigation measures, best technological and management practices were provided to mitigate the adverse impacts.
- Residual impacts are expected during the Project development.

Conclusion

- The Project is an expansion of the existing landfill, i.e. *Tapak Pelupusan Sisa Pepejal Sanitari (TPSPS) Sg Udang*, to cater to the future solid waste disposal in Melaka state. It occupies an area of 30.58 ha or 75.57 ac that is located next to the existing landfill.
- This Project is a critical measure to address Melaka's escalating waste management demands. With the current landfill (Cell 2) nearing maximum capacity and projected to be exhausted before December 2025, urgent action is essential to prevent a potential waste crisis in the State.
- Environmental and socio-economic impacts are anticipated during construction and operation; therefore, the project proponent must implement the proposed P2M2 measures and best management practices (BMPs) outlined in this EIA to mitigate these adverse effects.