Ringkasan Eksekutif

PENILAIAN KESAN KEPADA ALAM SEKELILING JADUAL PERTAMA BAGI *CADANGAN PEMBANGUNAN BERCAMPUR (PLOT KOMERSIAL DAN PERUMAHAN) SECARA BERSTRATA DI ATAS PT24507 (H.S.D: 19365), GENTING PERMAI, MUKIM BENTONG, DAERAH BENTONG, PAHANG DARUL MAKMUR UNTUK TETUAN CASA INSPIRASI SDN BHD – YANG MELIBATKAN PEMBANGUNAN DI KAWASAN CERUN*

Penggerak Projek:

LBS

Casa Inspirasi Sdn Bhd (646082-U)
A Member of LBS Bina Group Berhad

Perunding Alam Sekitar:

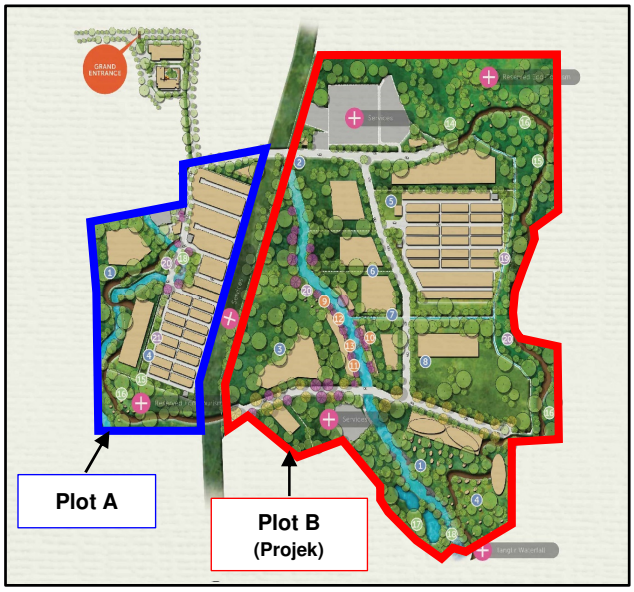
ASPEC

Asia Pacific Environmental Consultants Sdn Bhd
(199101012315)

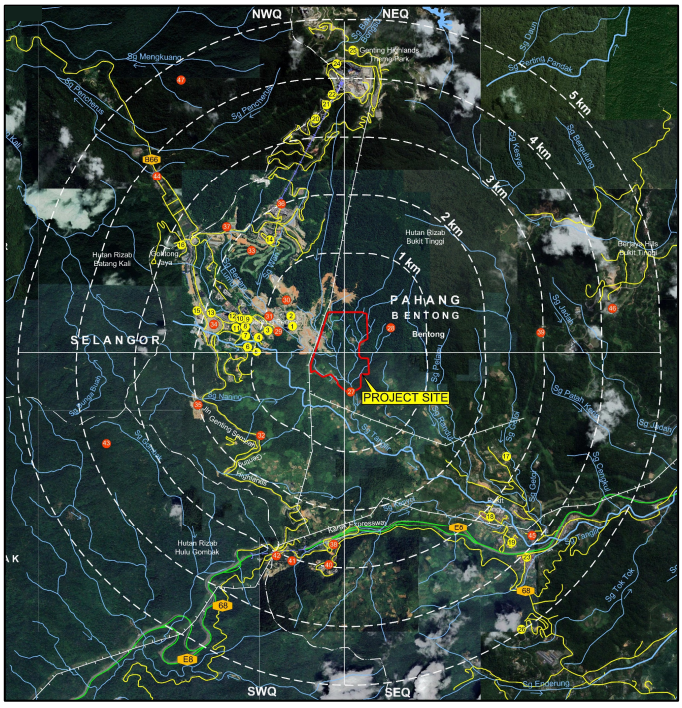
RINGKASAN EKSEKUTIF

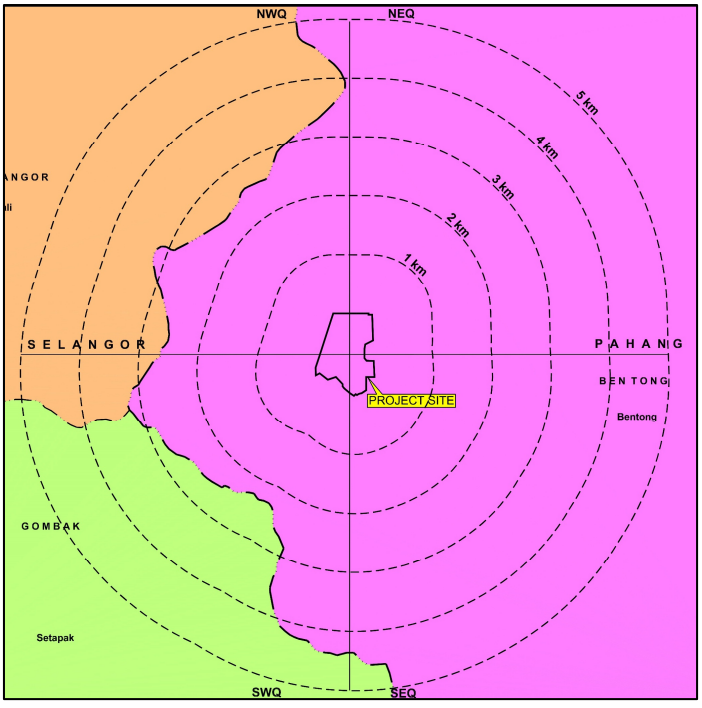
RINGKASAN PROJEK

- Projek ini terletak di pertengahan bukit Genting Highlands, Pahang. Ia meliputi kawasan seluas 98.31 ha (242.92 ek), tidak termasuk tanah seluas 2.22 ha (5.49 ek) yang bakal diserahkan kepada Tenaga Nasional Berhad (TNB) bagi tujuan rizab rentis dikeluarkan.
- Projek ini merupakan sebahagian daripad Pelan Induk Rimbawan@Genting Highlands, yang terdiri daripada lot perumahan dan komersial serta disokong oleh infrastruktur dan utility.
- Gunatanah semasa: Hutan sekunder, hutan Dijana semula dan lot pertanian.



Pelan Induk Rimbawan@Genting Highlands

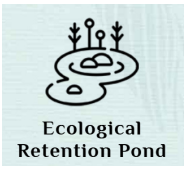




Konsep Projek

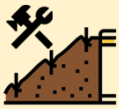
- Projek ini dirancang sebahagi pembangunan bercampur yang merangkumi rumah teres, rumah berkembar, rumah banglo dan plot komersial, serta disokong oleh kemudahan, infrastruktur dan utiliti.
- Projek ini sejajar dengan Pelan Induk Rimbawan@Genting Highlands, yang menekankan kehidupan yang mementingkan persekitaran dan pembangunan perbandaran mampan.
- Projek ini terdiri daripada empan zon berbeza di mana setiap satu zon tersebut direka untuk kehidupan berorientasikan komuniti yang mampan:

(i) *Eco-community*
(ii) *Eco-commercial*
(iii) *Eco-discovery*
(iv) *Eco-play*



Keperluan Perundangan

- EIA ini adalah mandatori di bawah **Jadual Pertama Perintah Kualiti dalam Sekeliling (Aktiviti yang Ditetapkan) (Penilaian Kesan Alam Sekeliling) 2015**, di bawah **Seksyen 34A Akta Kualiti Alam Sekeliling 127 (1974)** untuk aktiviti yang ditetapkan seperti berikut:

Aktiviti yang Ditetapkan	Butiran
 **Activiti 13: Pembangunan di Kawasan Cerun** Pembangunan atau pembersihan tanah yang meliputi kawasan yang kurang daripada 50% kawasan cerun yang berkecerunan melebihi atau sama dengan 25º tetapi kurang daripada 35º.	• Sebanyak **42.71%** daripada kawasan Projek terdiri daripada **cerun Kelas III and IV** yang berkecerunan melebihi 25º.
 **Activiti 14: Pengolahan dan Pelupusan Buangan** (c) Kumbahan: (i) Pembinaan loji pengolahan kumbahan dengan 20,000 kesetaraan populasi atau lebih.	• Sebuah loji rawatan kumbahan (STP) dengan kapasiti 73,000 P.E. akan dibina untuk Projek ini bagi menampung kumbahan yang dihasilkan daripada pembangunan.
 **Activiti 18: Bandar Baharu** Pembinaan bandar baharu yang terdiri daripada 2,000 unit kediaman atau lebih yang meliputi kawasan seluas 100 hektar atau lebih	• Projek ini dijangka akan menyediakan sejumlah 12,336 unit perumahan atau pangsapuri perkhidmatan.

Penyata Keperluan

Menyokong Dasar dan Pelan Pembangunan Negara dan Negeri

Selaras dengan pelan pembangunan negara dan negeri, seperti RFN4, RSN Pahang 2050, RTD Bentong Pahang 2035 (Penggantian).

Meningkatkan Stok Perumahan untuk Memenuhi Permintaan Masa Depan

Projek ini dijangka akan mengembangkan bekalan perumahan untuk memenuhi permintaan masa depan, merangsang pertumbuhan ekonomi, menarik pelabur, dan meningkatkan kualiti hidup.

Penyediaan Penginapan dan Kemudahan Pelancongan

Projek ini meningkatkan infrastruktur pelancongan untuk menyokong pertumbuhan wilayah, meningkatkan ekonomi tempatan, mewujudkan pekerjaan dan meningkatkan hasil cukai.

Menggalakkan Pembangunan dan Pertumbuhan Ekonomi

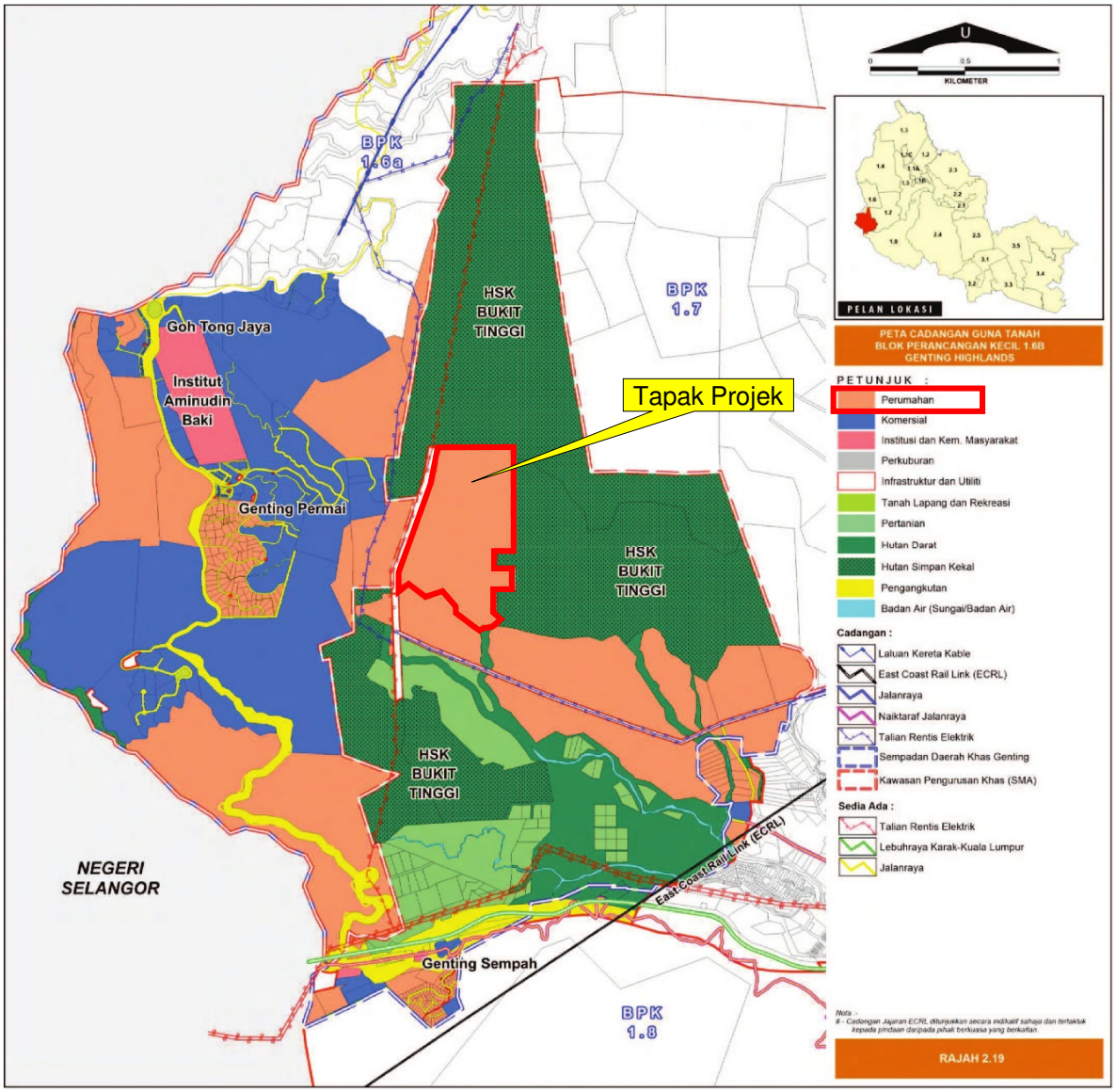
Projek ini menggalakkan pembangunan dengan meningkatkan ekonomi tempatan, menaraik pelaburan, mengembangkan infrastruktur pelancongan, dan menyokong pertumbuhan wilayah melalui peningkatan ketersambungan.

Pematuhan Dasar

Zon Gunatanah & Aktiviti yang Dibenarkan

- Dari segi gunatanah, Projek ini sejajar dengan zon Perumahan yang ditetapkan dalam *RTD Bentong, Pahang 2035 (Penggantian)* dan *RKK Genting Highlands, Bentong, Pahang*.
- Zon ini membenarkan pembangunan kediaman dan komersial bercampur, disokong oleh infrastruktur, utiliti dan kemudahan awam.
- Pembangunan yang dicadangkan juga mematuhi nisbah plot maksimum dan kawalan ketinggian bangunan yang ditetapkan dalam RKK, menunjukkan pematuhan kepada keperluan intensiti pembangunan.

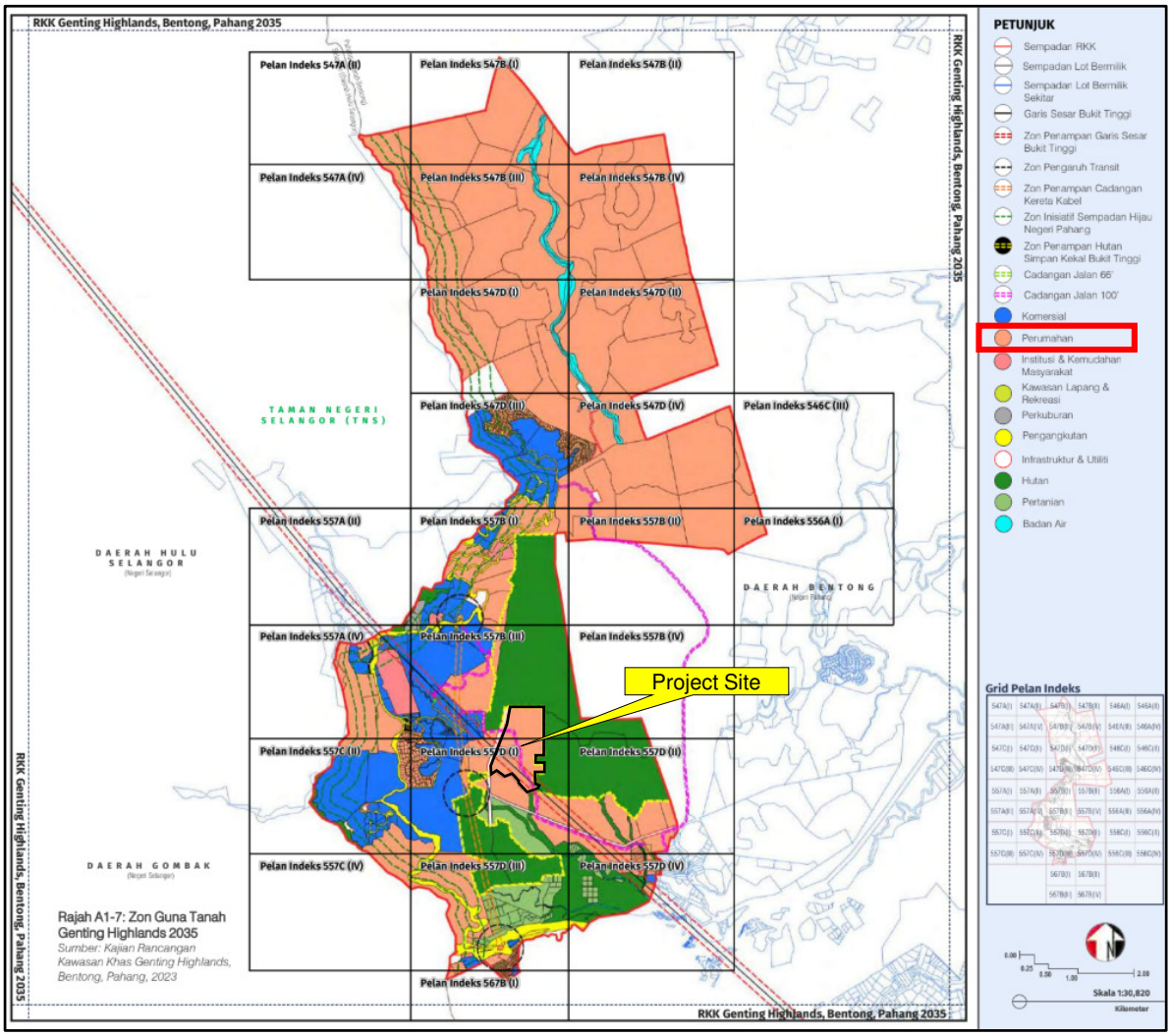
Sumber: Rancangan Tempatan Daerah Bentong, Pahang 2035 (Penggantian), Diwartakan pada 2 November 2023 (No. Warta: 2116)



Blok Perancangan Kecil (BPK)	Zon Gunatanah	Aktiviti yang Dibenarkan
BPK1.6B: Genting Highlands	"*Perumahan*"	A1: Perumahan Strata A2: Perumahan Bukan Strata B: Perniagaan dan Perkhidmatan D: Institusi dan Kemudahan Masyarakat E: Pengangkutan F: Infrastruktur dan Utiliti G: Tanah Lapang dan Rekresi

Pematuhan Dasar

Sumber: Rancangan Kawasan Khas (RKK) Genting Highlands, Bentong, Pahang, gazetted on 26 June 2025 (Gazettement No.:1212)



Parcel	Zon Gunatanah	Aktiviti yang Dibenarkan
Parcel 3: Genting Permai	"*Perumahan*"	A = Komersial; B = Perumahan; C = Institusi dan Kemudahan Masyarakat; D = Kawasan Lapang dan Rekreasi; E = Pengangkutan; F = Infrastruktur dan Utiliti; H = Pertanian

Kelas Kegunaan Tanah

Guna Tanah	Kelas Kegunaan Tanah	
	Dibenarkan (Guna Tanah Utama)	Dibenarkan Dengan Syarat (Guna Tanah Sokongan)
Komersial	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19	F1, F2, F3, F4, D1, D2
Perumahan	B1, B2, B3, B4	A1-2, A2, A3, A4, A5, A6, A7, C2, C3, C4, C5-2, C5-3, C5-4, C5-5, C7, D1, E1-4, E2-5, E2-7, F1-6, F1-7, F2-4, F3-1, F3-3, F4-4, H1-3, H2-1
Hutan	G1	F1, F2, F3, F4, I1, I2
Kawasan Lapang & Rekreasi	D1-1, D1-2, D1-3, D1-4	F1-6, F1-7, F2-4, F3-1, F3-3, F4-4, H1-4
Institusi & Kemudahan Masyarakat	C1, C2, C3, C4, C5, C6, C7	A1-2, A2, A3, A4, A5, A6, A7, D1, E1-4, E2-5, E2-7, F1-6, F1-7, F2-4, F3-1, F3-3, F4-4, H1-3, H2-1
Pengangkutan	E1, E2	F1, F2, F3, F4
Infrastruktur & Utiliti	F1, F2, F3, F4	E1-4

Pematuhan Dasar

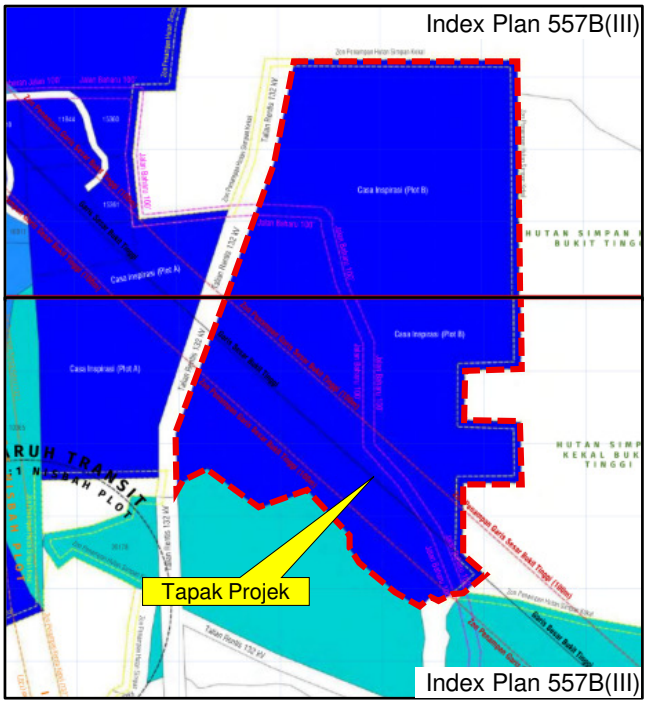
Keperluan Dasar Berkaitan Pembangunan di Kawasan Cerun

- Keperluan dasar dan keperluan berkaitan pembangunan di kawasan cerun telah dikaji, iaitu:

1. ***Garis Panduan Perancangan Pembangunan di Kawasan Bukit dan Tanah Tinggi* (PLANMalaysia, 2009)**
2. ***Kaedah-Kaedah Kawalan Perancangan (Pemajuan Tanah Bukit, Tanah Tinggi dan Lereng Bukit) (Pahang) 2019 (Gazetted on 31 July 2019)***
3. ***Rancangan Tempatan Daerah Bentong, Pahang 2035 (Penggantian) (Gazetted on 2 November 2023, Gazettement No.:2116)***
4. ***Rancangan Kawasan Khas Genting Highlands, Bentong, Pahang* (Gazetted on 26 June 2025)**

- Garis panduan umum yang berkaitan dengan ketinggian dan cerun tidak membenarkan pembangunan perumahan dan/atau komersial di kawasan yang berkecerunan Kelas I – IV dalam julat ketinggian 563 – 933 m atas paras laut. Walau bagaimanapun, RKK menggariskan kawalan khusus yang diutamakan dalam Kawasan Pengurusan Khas (SMA).
- MPB juga telah menyatakan bahawa kawasan berkecerunan Kelas IV boleh dibangunkan tertakluk kepada pematuhan garis panduan dan kawalan intensiti pembangunan yang dinyatakan dalam RKK.

Kawalan Intensiti dalam RKK



Kawalan & Insentif Khas Pembangunan

Intensiti Pembangunan & Zon Khas	Kawalan & Insentif Khas Pembangunan	
	Kawalan Ketinggian Bangunan	Insentif Nisbah Plot
1:4 Nisbah Plot	Maksimum **20 Tingkat**	-
1:6 Nisbah Plot	Maksimum **30 Tingkat**	-
1:8 Nisbah Plot	Maksimum **40 Tingkat**	-
Zon Pengaruh Transit	-	Bonus Tambahan 1:1 Nisbah Plot
Zon Penampan Kereta Kabel	-	Bonus Tambahan 1:0.5 Nisbah Plot

Nota: Maksimum ketinggian bangunan yang dibenarkan dikira bermula aras jalan *(road level)* termasuk aras podium tempat letak kenderaan. Aras separa bawah tanah yang mempunyai unit jualan (kediaman / ruang niaga) hanya dibenarkan maksimum 3 tingkat sahaja dan maksimum 7 tingkat tempat letak kenderaan dari aras jalan ke bawah

مجليس ڤربندرن بنتوڠ
Majlis Perbandaran Bentong
Jalan Ketari, 28700 Bentong, Pahang Darul Makmur

#MajuTerusPahang ***#Pahang1st***

Ruj. Tuan : Yuniqsb/754/MPB/Genting/ RimbawanPlotB/PT24507_(YDP01)
Ruj. Kami : MPBTG/PP/GH/5/6/2023 (22)

Tarikh : 4 Ogos 2025

Yuniq Planning Consultant Sdn. Bhd.
S-3-12, Emporis Kota Damansara
Persiaran Surian, 47810 Petaling Jaya
SELANGOR DARUL EHSAN

Tuan

PERMOHONAN KEBENARAN MERANCANG (PELAN ZONING) BAGI CADANGAN PEMBANGUNAN BERCAMPUR (PLOT KOMERSIAL, PERUMAHAN, EKO-PELANCONGAN, KEMUDAHAN DAN UTILITI) SECARA BERSTRATA DAN BAGI TUJUAN PENYERAHAN BALIK DAN PEMBERIMILIKAN SEMULA DI BAWAH SEKSYEN 204D KTN DI ATAS PT 24507 (HSD 19365) GENTING PERMAI, MUKIM BENTONG, DAERAH BENTONG, PAHANG DARUL MAKMUR UNTUK TETUAN CASA INSPIRASI SDN. BHD.

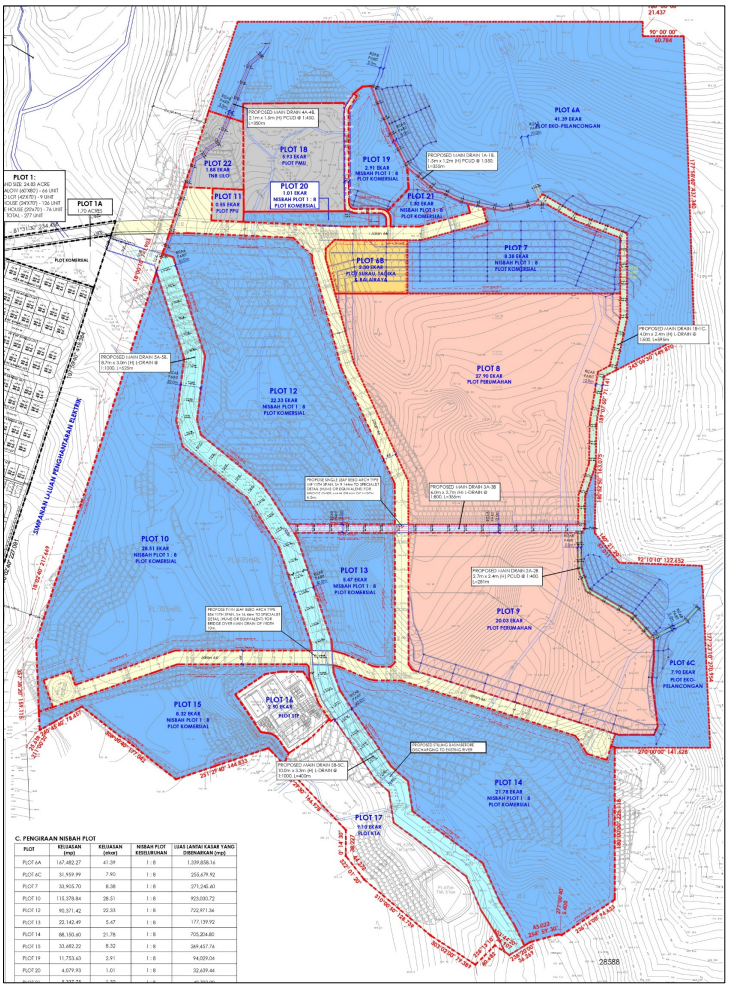
Dengan hormatnya surat tuan seperti rujkan dan perkara di atas bertarikh 24 Julai 2025 adalah berkaitan.

2. Adalah dimaklumkan bahawa berdasarkan Rancangan Kawasan Khas (RKK) Genting Highlands, kawasan ini adalah tertakluk di bawah kawasan pengurusan khas (Special Mangement Area) yang membenarkan pembangunan dalam Kelas IV tertakluk kepada garis panduan dan kawalan intensiti pembangunan yang ditetapkan dalam dokumen RKK selaras dengan Jadual B1-14.

Sekian, terima kasih.

MAJOR PROJECT DEVELOPMENT

Kawasan Pembangunan Utama = 98.31 ha (242.92 ek)



Plot	Komponen Pembangunan	Keluasan		
		ek	ha	%*
Komersial				
7	Plot Komersial	8.38	3.39	3.37
10	Plot Komersial	28.51	11.54	11.48
12	Plot Komersial	22.33	9.04	8.99
13	Plot Komersial	5.47	2.21	2.20
14	Plot Komersial	21.78	8.81	8.77
15	Plot Komersial	8.32	3.37	3.35
19	Plot Komersial	2.91	11.18	1.17
20	Plot Komersial	1.01	0.41	0.41
21	Plot Komersial	1.32	0.53	0.53
	Jumlah Kecil	**100.03**	**40.48**	**40.27**
Perumahan				
8	Plot Perumahan	27.90	11.29	11.23
9	Plot Perumahan	20.03	8.11	8.06
	Jumlah Kecil	**47.93**	**19.40**	**19.29**
Eko Pelancong				
6A	Plot Eko Pelancongan	41.39	16.75	16.66
6C	Plot Eko Pelancongan	7.90	3.20	3.18
	Jumlah Kecil	**49.29**	**19.95**	**19.84**
Serahan Kerajaan (Kemudahan)				
6B	Plot Surau, Tadika & Balairaya	2.30	0.93	0.93
	Jumlah Kecil	**2.30**	**0.93**	**0.93**
Serahan Kerajaan (Infrastruktur dan Utiliti)				
-	Infrastruktur Swasta (Jalan 66')	11.59	4.69	4.67
16	Loji Rawatan Kumbahan (STP)	2.50	1.01	1.01
17	Kolam Tadahan Air	9.11	3.69	3.66
-	Rizab Sungai/ Parit	11.81	10.15	4.75
11	Pemcawang Pembahagian Utama (PPU)	0.55	0.22	0.22
18	Pencawang Masuk Utama (PMU)	5.93	2.40	2.39
22	Infrastruktur Swasta (Jalan 66')	1.88	0.76	0.76
	Jumlah Kecil	**43.37**	**17.55**	**17.46**
	Jumlah Keseluruhan	**242.92**	**98.31**	**97.79**

Keluasan Projek	• Kawasan pembangunan utama = 98.31 ha (242.92 ek). • Kawasan kerja tanah tambahan di luar kawasan pembangunan utama = 1.689 ha (4.174 ek)
Komersial	• Sembilan (9) plot, meliputi 40.48 ha (100.03 ek), untuk pangsapuri servis dan menyediakan perkhidmatan awam asas.
Perumahan	• Dua (2) plot, meliputi 19.40 ha (47.93 ek), untuk pelbagai jenis rumah bertanah.
Kemudahan	• Lot seluas 0.93 ha (2.30 ek) untuk surau, tadika dan dewan orang ramai.
Eko pelancongan	• Dua (2) plot, meliputi 19.95 ha (49.29 ekar).

Fasiliti, Infrastruktur dan Utiliti

Permintaan Elektrik
Total of 48,787 kW; dibekalkan oleh TNB. Satu PMU dan satu PPU akan dibina di tapak Projek.

Permintaan Air
~19.24 juta L/hari; disalur terus dari loji rawatan air baharu (oleh Seri Aliran Sdn Bhd), yang terletak di barat layout dari tapak Projek.

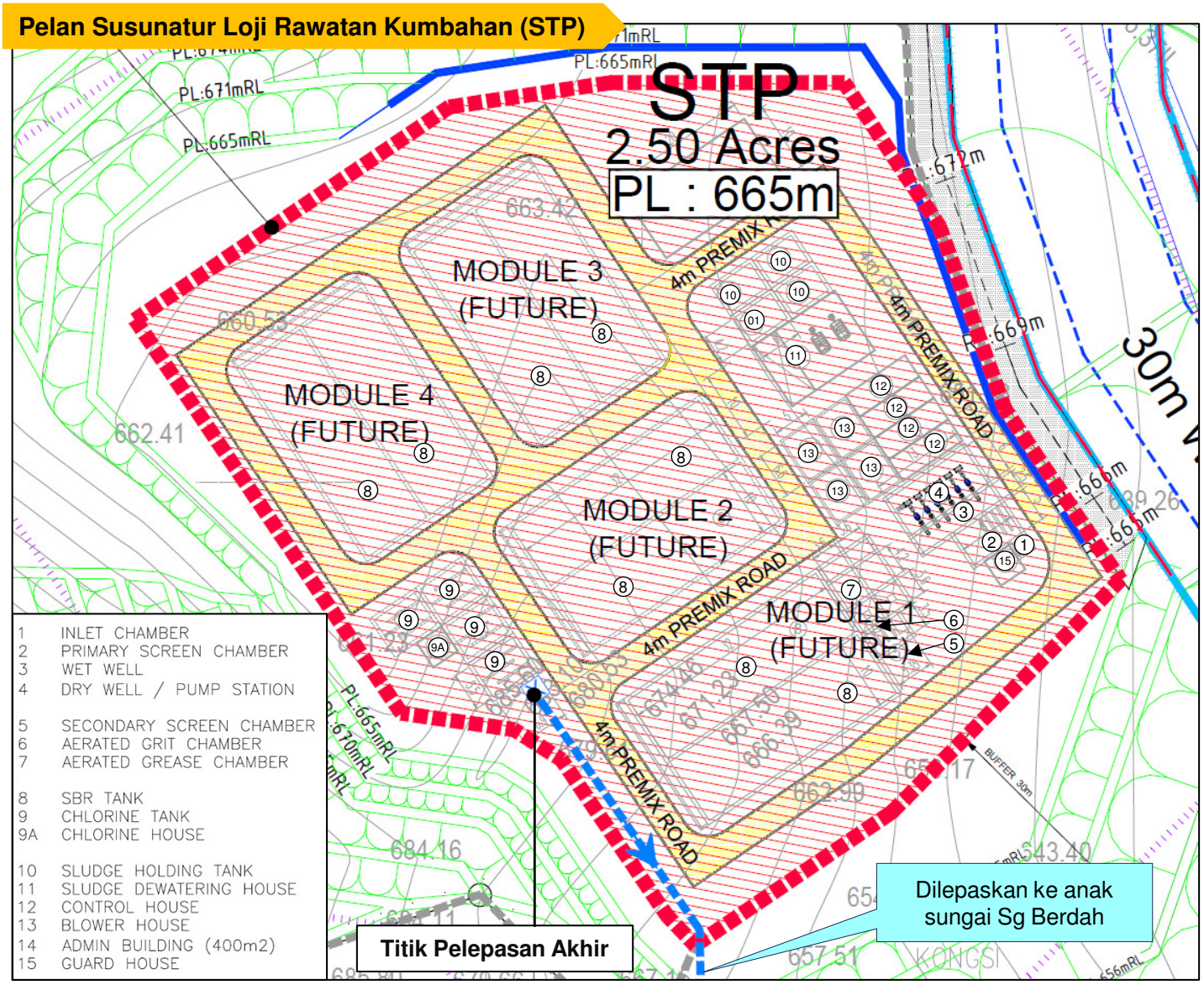
Kumbahan
59,736 P.E.; satu (1) loji rawatan kumbahan (STP) dengan kapasiti 73,000 P.E. akan dibina di bahagian selatan tapak Projek.

Saliran
Sungai sedia ada akan dijajarkan semula/ diluruskan dan dibentuk sebagai sebahagian daripada system saliran air larian permukaan. Kolam dan tangka tadahan air akan digunakan untuk pengurusan air larian di tapak

Rangkaian Jalan
Meliputi 4.67% keluasan tapak Projek (4.96 ha) yang terdiri daripada jalan raya tunggal empat lorong. Ia akan bersambung dari Plot A bersebelahan Rimbawan@Genting Highland untuk memudahkan pergerakan trafik.

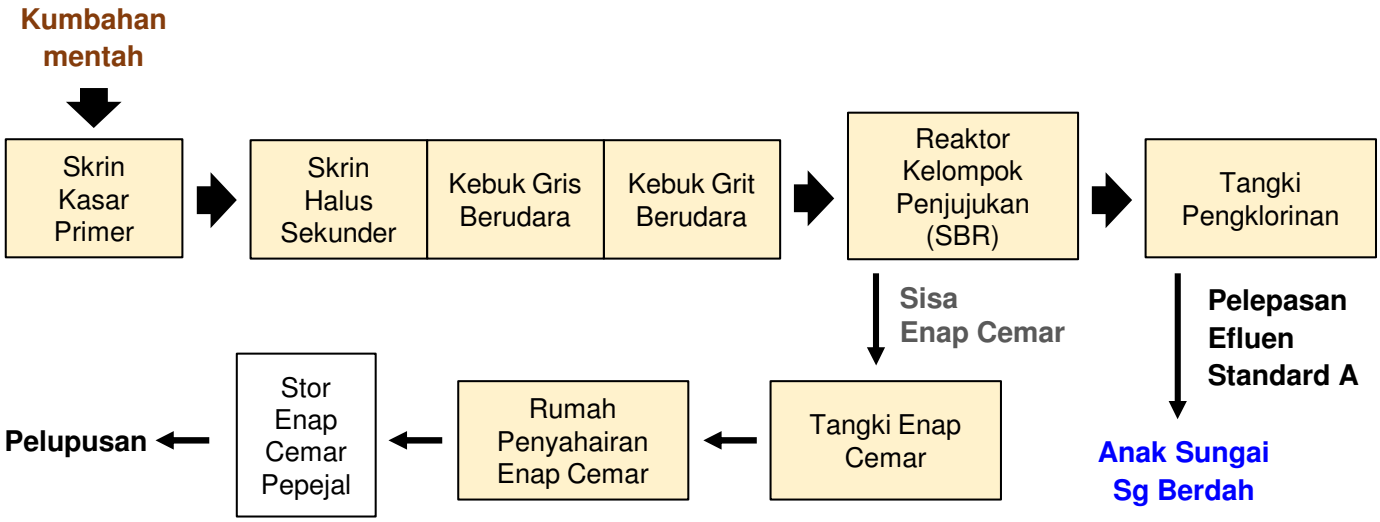
MAJOR PROJECT DEVELOPME

Pelan Susunatur Loji Rawatan Kumbahan (STP)



Kapasiti STPL 73,000 P.E., dapat menampung kumbahan dari Projek dan Plot A yang bersebelahan.

Carta Aliran STP:



AKTIVITI PROJEK

Fasa Pra-Pembinaan

- Perancangan projek.
- Tinjauan awal.
- Reka bentuk konseptual dan reka bentuk kejuruteraan.
- Pengumpulan data dan tinjauan kerja lapangan.

Fasa Pembinaan

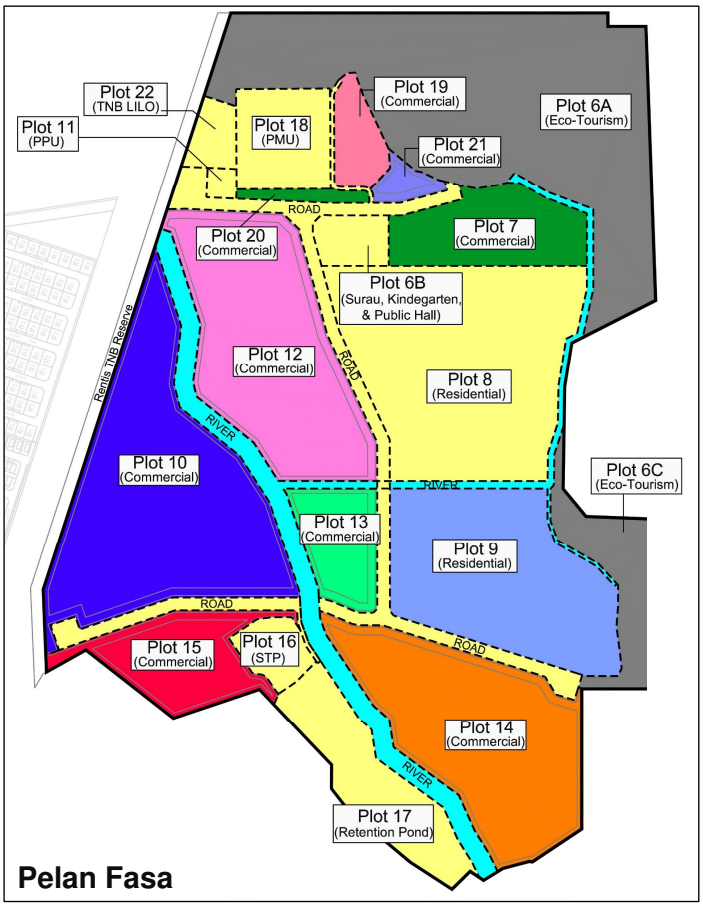
- Penyediaan tapak & penempatan tenaga kerja.
- Pembersihan tanah.
- Kerja tanah dan penggalian batu.
- Penyediaan platform, pembinaan infrastruktur dan utiliti.
- Kerja landskap.

Fasa Operasi

- Operasi dan penyelenggaraan infrastruktur, utiliti dan kemudahan.

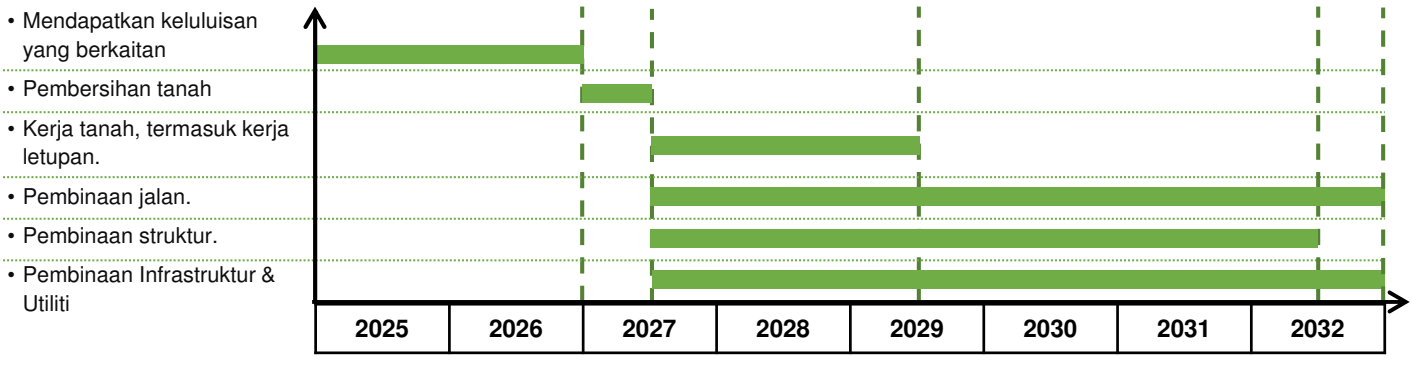
JADUAL PELAKSAAN PROJEK

- **Projek ini akan dibangunkan dalam 10 fasa selama 24 tahun (2027 to 2050).**



Fasa	Komponen	Dijangka Siap (Tahun)
1	Jalan	2030
	Plot 11 – Pemcawang Pembahagian Utama (PPU)	2030
	Plot 16 – Loji rawatan kumbahan (STP)	2030
	Plot 17 – Kolam tadahan air	2030
	Plot 18 – Pencawang Masuk Utama (PMU)	2030
	Plot 22 – TNB LILO	2030
	Plot 8 – Plot Perumahan	2032
	Plot 6B – Surau, Tadika & Balairaya	2034
2	Plot 9 – Plot Perumahan	2032
3	Plot 7 – Plot Komersial	2036
	Plot 20 – Plot Komersial	2036
4	Plot 12 – Plot Komersial	2040
5	Plot 13 – Plot Komersial	2042
6	Plot 10 – Plot Komersial	2044
7	Plot 19 – Plot Komersial	2044
8	Plot 21 – Plot Komersial	2045
9	Plot 14 – Plot Komersial	2048
10	Plot 15 – Plot Komersial	2050

Garis Masa Pembangunan Fasa 1



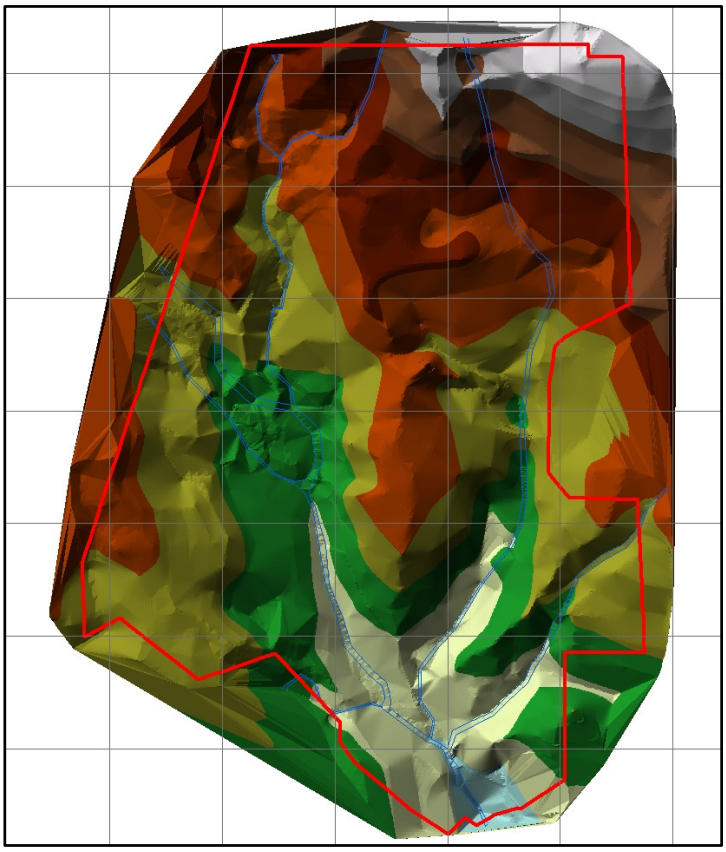
PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

TOPOGRAFI & CERUN

Persekitaran Sedia Ada

Topografi

- Dicirikan oleh rupa bumi yang berbukit, dengan ketingian antata 563 – 949 dari paras laut (MSL).
- Kawasan tertinggi terletak di timur laut tapak Projek.

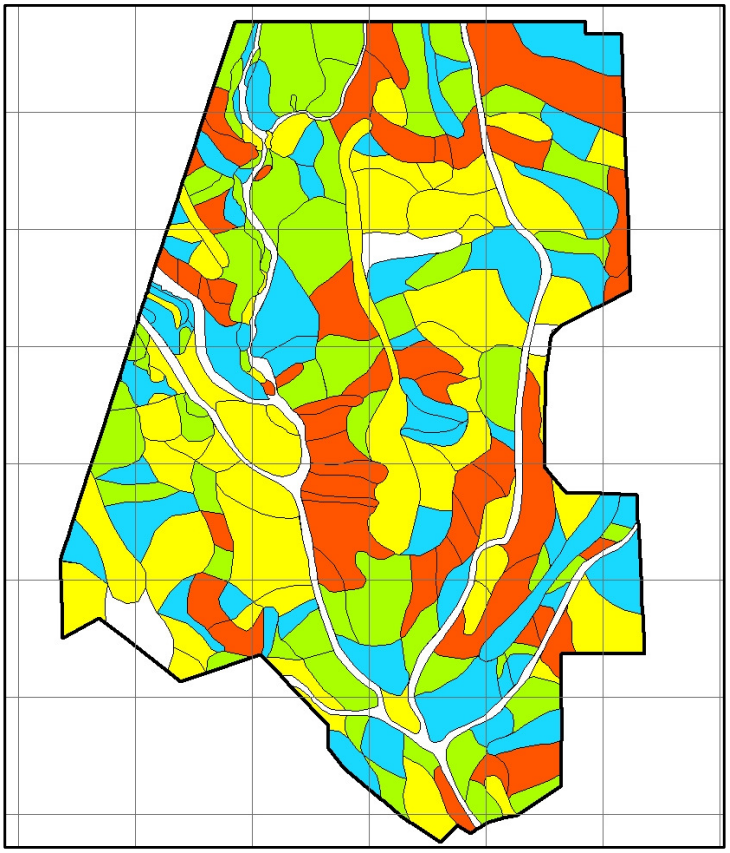


Cerun

- Cerun Kelas I & II = 58.65%.
- Cerun Kelas III & IV = 41.75%.

Pengkelasan	Cerun (°)	Keluasan (%)
Kelas I	0 – <5	8.26
	≥ 5 – <15	28.49
Kelas II	≥ 15 – <25	21.50
Kelas III	≥ 25 – <35	21.16
Kelas IV	≥ 35	20.59

Sumber: Geo Solution Resources, 2025.



PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

HAKISAN TANAH DAN HASIL SEDIMEN

Potensi Impak

Fasa Pembinaan

- Hakisan tanah dijangka akan berlaku semasa aktiviti pembersihan tanah dan kerja tanah.
- Mendapan sedimen di alur air berdekatan dijangka akan berlaku.

Fasa Operasi

- Hakisan tanah dan hasil sedimen yang lebih rendah memandangkan tapak Projek akan diturap atau dikonkritkan; serta ditanam semula atau dilandskapkan.

Anggaran Kehilangan Tanih (*Soil Loss*) dan Hasil Sedimen di tapak Projek:

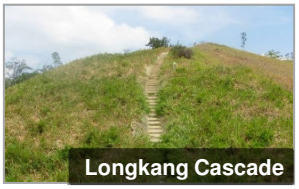
Scenario		Purata *Soil Loss* (tan/ha/tahun)	Kelas Risiko Hakisan Tanah	Hasil Sediment (tan/ rebut)
Fasa Pra-Pembinaan		14.26	Sederhana	30.565
Fasa Pembinaan	Tanpa Langkah Mitigasi	3,461.02	Sangat tinggi	15.678.229
	Dengan Langkah Mitigasi	556.99	Sangat tinggi	2,511.758
Fasa Operasi		17.41	Sederhana	6.149

Langkah Mitigasi

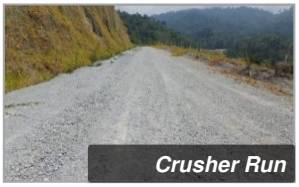
Fasa Pembinaan:

- Pelaksanaan LD-P2M2 dan BMP untuk:

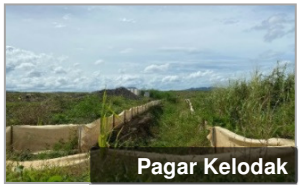
(i) Pengurusan Air Larian



(ii) Kawalan Hakisan



(iii) Kawalan Sedimen



(iv) Penstabilian Kekal Cerun

Hampran rapat/ grid

Hydroseeding

Kawalan Air Larian

Sumber Photo Archives, ASPEC, 2025.

* Untuk ilustrasi sahaja.

Fasa Operasi:

- Tiada tambahan P2M2 diperlukan kerana kebanyakan kawasan akan ditanam rumput, diturap atau dilandskap.
- Pelaksanaan dan penyelenggaran tanaman rumput dan langkah penstabilan cerun yang betul.

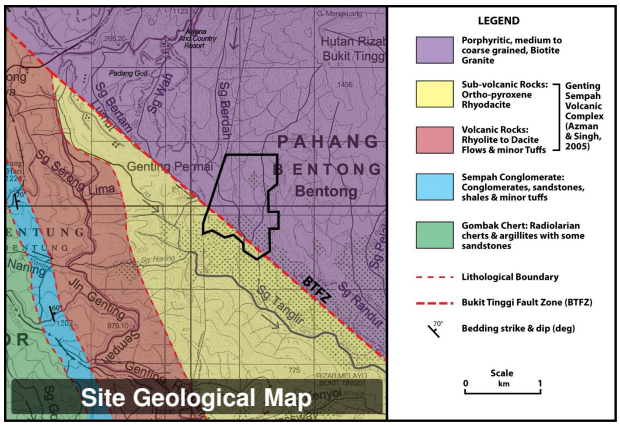
PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

GEOMORFOLOGI, TANIH DAN GEOLOGI

Persekitaran Sedia Ada

Geologi Serantau:

- Tapak Projek terletak di dalam kawasan yang mempunyai **undifferentiated acidic igneous rock**, dengan empat unit litologi:
  i. Porphyritic biotite granite;
  ii. Genting Sempah Volcanic Complex;
  iii. Sempah Conglomerate; and
  iv. Gombak Chert.



Lubang Bor:

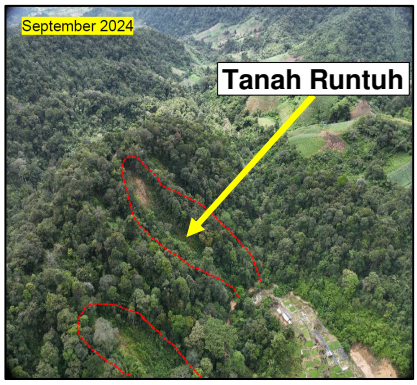
- 40 lubang bor (BH01 – BH40)

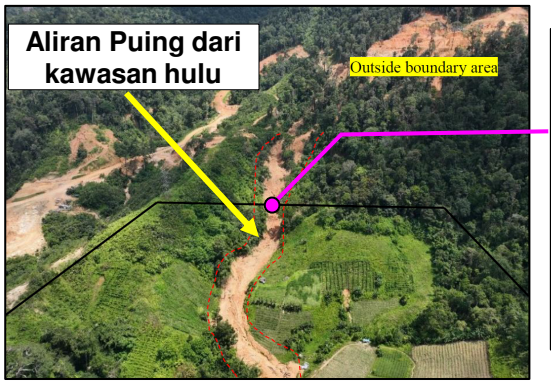
Tanih:

- ***Steepland***, dicirikan oleh tanah cetek dengan profil juvana dan cerun melebihi 20°.

Bahaya Geologi

- Bahaya Seismik: Projek akan mengalami PGA sebanyak 9% g.
- Terdapat beberapa tanah runtuh yang diperhatikan dalam tapak Projek.
- Kesan aliran puing diperhatikan. Ia berasal dari kawasan hulu dan di luar sempadan tapak Projek.





Potensi Impak

Fasa Pembinaan:

- Hakisan tanih dan larian permukaan yang deras dari kawasan pembersihan tanah dan potongan tumbuh-tumbuhan.
- Aliran air permukaan mungkin terhalang akibat timbunan tanah dan pembinaan benteng yang tidak betul.
- Issue kestabilan dan hakisan cerun yang dipotong.
- Aliran puing disebabkan aktiviti pembersihan tanah di kawasan hulu dan di luar sempadan tapak Projek.

Fasa Operasi:

- Potensi dalam mengurangkan kadar penyusupan air permukaan selepas melaksanakan litupan tumbuhan yang kekal.
- Hakisan tanah dijangka minimum.

Langkah Mitigasi

Fasa Pembinaan:

- Mengurangkan kerja-kerja pembersihan litupan tumbuhan.
- Melaksanakan *hydroseeding*, hamparan bertompok atau hamparan rapat sebaik sahaja kerja penyediaan platform disiapkan.
- Memastikan kestabilan di kawasan pemotongan cerun dengan menggunakan kaedah perlindungan cerun.
- Menyediakan longkang pemintas di bahagian puncak potongan cerun serta longkang di sepanjang berm.

Fasa Operasi:

- Penyelenggaraan system aliran permukaan dan bawah permukaan secara berkala.
- Tinjauan "*walk-over*" yang berkala dan sistematik di sepanjang berm.
- Pemantauan berterusan bagi Kawasan hulu dan di luar sempadan tapak Projek.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

HIDROLOGI DAN SALIRAN

Persekitaran Sedia Ada

Huan, Air Larian Permukaan dan Imbangan Air:

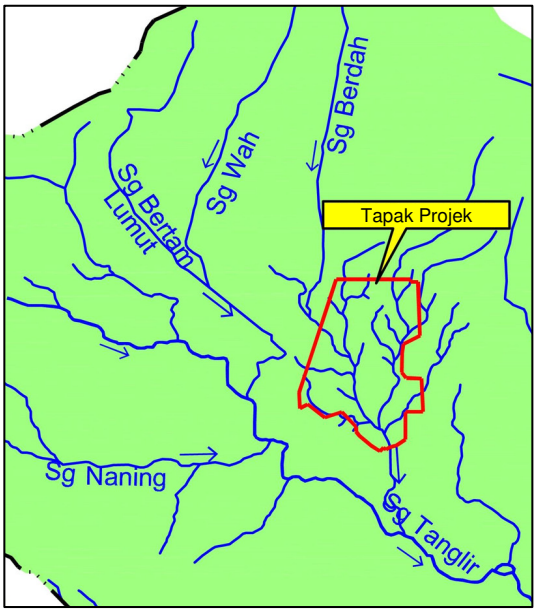
- Purata hujan tahunan: 2,250 – 2,500 mm
- Potensi evapotranspirasi tahuan: 1,500 mm
- Potensi air larian permukaan: 750 – 1,000 mm

Hidrogeologi:

- Kawasan berpotensi akuifer rendah, dengan sumber air bawah tanah yang rendah.
- Tiada telaga yang aktif yang ditemui di sekitar tapak Projek.

Lembangan Sungai:

- Tapak Projek terletak di bahagian hulu lembangan Sg Tangir.
- Aliran penerima: Sg Berdah dan anak sungainya yang mengalir melalui tapak Projek



Takat Pengambilan Air (WIP)/ Loji Rawatan Air (WTP):

- Tiada WIP dan WTP yang terletak di dalam lingkungan ZOS 5-km. Terdapat dua (2) WIP dan tiga (3) WTP di luar ZOS.
- WIP bagi Loji Rawatan Air Batu 4 terletak >15 km di hilir Sg Benus; ia mungkin akan terjejas jika terdapat pencemaran air dari tapak Projek.

Penggunaan Air Sungai di Hilir

- Pengguna penting: Pusat Pengembangan Akuakultur (PPA) Bukit Tinggi – terjejas olah air berkelodak dari Sg Tanglir dan menyebabkan kehilangan ikan ternakan.

Potensi Impak

Fasa Pembinaan:

- Peningkatan air larian permukaan di hulu akan menjejaskan rejim aliran sungai dalam tapak Projek serta kawasan hilir, terutamanya semasa hujan lebat.
- Halangan aliran sungai dan pengurangan kapasiti tampungan.
- Aliran puing berpotensi merosakkan infrastruktur, menjejaskan ekonomi setempat serta mengganggu penduduk berhampiran.
- Sg Berdah akan dijajarkan semula dengan sebahagiannya akan ditambak dan diluruskan.

Fasa Operasi:

- Peningaktan air larian permukaan dijangka akan berlaku disebabkan oleh pertambahan permukaan tidak telap.
- Tangki tadahan bawah tanah dan kolam tadahan akan disediakan dan direka bentuk mengikut ARI 10 tahun dan ARI 100 tahun, masing-masing.

Langkah Mitigasi

Fasa Pembinaan:

- Menyediakan saliran yang mencukui untuk mengalirkan air larian permukaan dengan berkesan dan mengurangkan risiko genangan air setempat.
- Menyediakan parit tanah, kolam mendapan sedimen dan pagar kelodak mengikut keperluan MSMA-2, untuk meminimumkan air larian bersedimen.
- Melaksanakan hamparan rumput (turfing) bagi mengurangkan kadar hakisan dan menggalakkan penyusupan air ke dalam tanah.
- Melaksanakan penyelenggaran dan pemeriksaan berkala terhadap sistem saliran dan kolam mendapan sedimen.

Fasa Operasi :

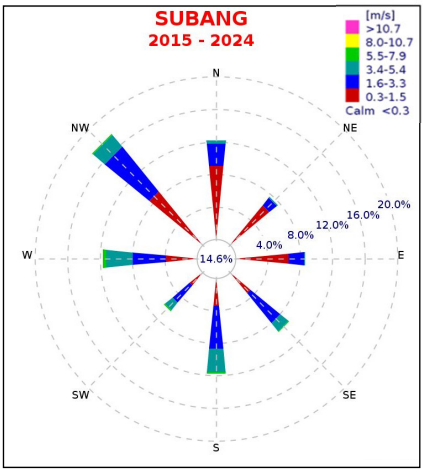
- Mereka bentuk dan menyediakan sistem saliran kekal untuk menyalurkan air larian permukaan ke tangki tadahan bawah tanah atau kolam tadahan.
- Melaksanakan pengorekan sedimen, pemeriksaan dan penyelenggaran berkala terhadap tangk dan kolam tadahan.
- Melaksanakan penyeleggaran berterusan dan penambahbaikan untuk mengawal hakisan tanah dan pemendapan dalam sungai.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

IKLIM

Persekitaran Sedia Ada

- **Hujan:** Tertinggi: 3,564.8 mm (2021); terendah: 2,632.8 mm (2017).
- **Hari hujan:** Tertinggi : 227 days (2023); terendah: 188 days (2021).
- **Suhu:** Purata tahunan 24-hr : berubah sebanyak 0.8 °C dari 27.7°C (2018) hingga 28.5ºC (2016 dan 2024); Purata bulanan 24-hr: berubah sebanyak 1.3°C dari 27.4ºC (November dan Disember) hingga 28.7ºC (Mei).
- **Kelembapan Relatif:** Purata bulanan maksimum: 90.7% (Disember) hingga 85.3% (Februari); Purata bulanan minimum: 60.6% (Februari) hingga 72.9% (November).
- **Angin Permukaan:** Kebanyakannya dari arah barat laut (17.6%), utara (12.3%) dan Selatan (11.8%), dengan Kelajuan angin sehingga 7.9 m/s.



PENJANAAN SISA

Potensi Impak

- Jenis sisa:

Pembinaan	Operasi
➢ Biomas (5,743.28 tan). ➢ Tanah berlebihan/tidak sesuai dan sisa buangan (tanah berlebihan sebanyak 99,000 m^3). ➢ Sisa binaan. ➢ Buangan terjadual. ➢ Sisa pepejal perbandaran. ➢ Kumbahan.	➢ Sisa pepejal perbandaran. ➢ Buangan terjadual. ➢ Kumbahan.

- Pengurusan sisa yang tidak betuk akan menyebabkan pencemaran air, pencemaran udara, bau dan risiko terhadap kesihatan

Langkah Mitigasi

Fasa Pembinaan:

- **Biomas:** Dilupuskan di tapak pelupusan sampah dilesenkan oleh pihak berkuasa tempatan.
- **Tanah Berlebihan:** Timbun sementara di tapak dan gunakan semula sebagai bahan tambakan.
- **Sisa binaan:** Kitar semula sebanyak mungkin; lupuskan sisa di tapak pelupusan.
- **Buangan terjadual:** Urus dengan betul oleh pekerja yang kompeten mengikut peraturan yang berkenaan.
- **Sisa pepejal perbandaran:** Sediakan tong sampan yang mencukupi di tapak; kumpulkan di dalam tong RORO yang lebih besar untuk dilupuskan di tapak pelupusan.
- **Kumbahan:** Sediakan tandas sementara/mobil yang mematuhi spesifikasi KKM atau SPAN.
- Pembakaran terbuka dan pelupusan sebarang sisa ke dalam saluran air adalah dilarang sama sekali.
- Kekalkan *houskeeping* secara berkala.

Fasa Operasi:

- Penguruan sisa pepejal dan buangan terjadual yang betul untuk pelupusan akhir.
- Paip pembentungan dan STP hendaklah diselenggara untuk mencegah kebocoran dan kegagalan sistem.

Dilarang Pembakaran Terbuka

Stor Buangan Terjadual yang betul

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

KUALITI AIR SUNGAI

Persekitaran Sedia Ada

Persampelan Garis Dasar (30 Okt – 2 Nov 2024):

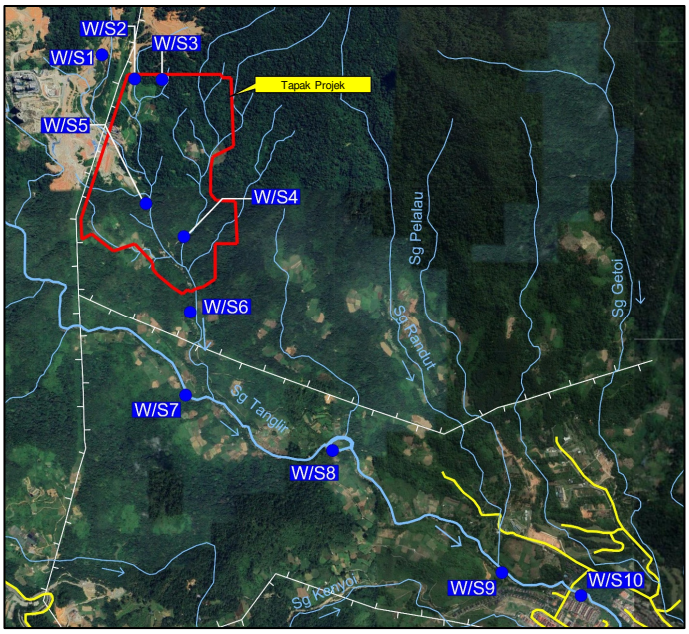
- 10 titik persampelan air (W1 – W10) di Sg Berdah dan anak sungainya, serta Sg Tanglir.

Kualiti Air Sungai Sedia Ada:

- **W1, W3, W4, W7, W8 & W10:** 'Bersih' bawah status Kelas II.
- **W5 & W9:** 'Sederhana Tercemar' bawah status Kelas II status.
- **W2 & W6:** 'Sederhana Tercemar' bawah status Kelas III status.

Sumber Pencemaran:

- Punca pencemaran berpotensi berpunca daripada aliran puing yang berasal dari kawasan hulu dan di luar sempadan tapak projek, serta pelepasan dari pembangunan di sekelilingnya.



Potensi Impak

Fasa Pembinaan:

- Potensi pencemaran akibat air larian yang keruh, tumpahan/ kebocoran minyak dan pembuangan sisa yang tidak terkawal.
- Simulasi QUAL2k menunjukkan bahawa kualiti air sungai akan merosit secara signifikan disebabkan oleh tahap TSS yang tinggi, sekiranya tiada langkang mitigasi yang dilaksanakan.
- Dengan langkah mitigasi, tahap TSS di sungai dijangka akan dikurang ke tahap Kelas II.

Fasa Operasi:

- Punca pencemaran utama ialah efluen kumbahan daripada STP.
- Hasil pemodelan menunjukkan bahawan tahap TSS dan AN di sungai akan melebihi had Kelas III atau IV walaupun kualiti efluen STP telah mematuhi peraturan dan piawaian reka bentuk.

Langkah Mitigasi

Fasa Pembinaan :

- Kawalan hakisan dan sedimen yang mencukupi.
- Pengurusan bahan binaan dan stokpil yang baik.
- Pengurusan bahan api dan kimia yang baik.
- Pengurusan sisa (sisa binaan, sisa domestik dan buang terjadual) yang baik.

Fasa Operasi :

- Pembinaan STP berpusat perlu mematuhi kriteria ketat reka bentuk STP.
- Pemeriksaan dan penyelenggaraan berkala diperlukan untuk memastikan kefungsian STP.
- Pengurusan sisa yang baik.

Impak Residu:

- Kelodak dan sedimen residu dari kerja pembinaan.
- Impak ketara semasa kegagalan STP.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

KUALITI UDARA

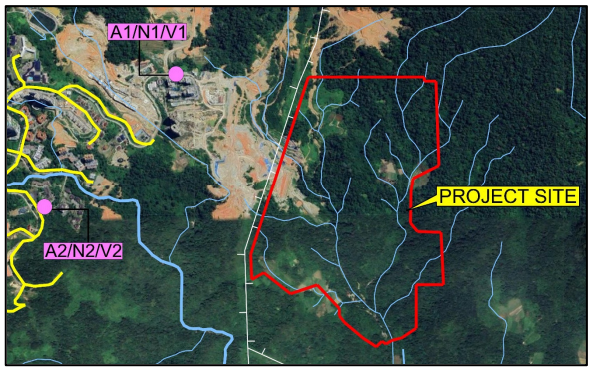
Persekitaran Sedia Ada

Pemantauan Garis Dasar (23 – 24 Sep 2024):

- Dua (2) lokai pemantauan.

Kualiti Udara Ambien Garis Dasar:

- Gasar dasar bagi semua parameter kualiti udara $PM_{2.5}$, PM_{10}, NO_2, SO_2, CO dan O_3 adalah mematuhi Standard 2020 di bawah Standard Kualiti Udara Ambient Malaysia (MAAQS).



Potensi Impak

Fasa Pembinaan:

- Potensi impak: Habuk Dijana daripada aktiviti pembinaan dan kenderaan, pelepasan kenderaan dan jentera, bau busuk.

Penilaian Pencemaran Udara (Penyebaran Habuk)

- **Kaedah:** Model ISCSTS Gaussian USEPA bagi mensimulasikan penyebaran habuk daripada aktiviti pembinaan umum di bawah senario terburuk (*worst-case scenario*).
- **Hasil Kajian:**
  - (i) Tiada ketidakpatuhan kepekatan PM_{10} yang dijangka berlaku di luar tapak Projek.
  - (ii) Tahap kepekatan habuk (PM_{10}) di reseptor sensitif berdekatan kekal rendah dan mematuhi Standard 2020 di bawah MAAQS.

Penilaian Pencemaran Udara (Aktiviti Letupan)

- **Kaedah:** USEPA AERMOD bagi mensimulasikan habuk figitif dari aktiviti letupan.
- **Hasil Kajian:**
  - (i) Purata Kepekatan Tambahan Maksimum (MAIC) dan Kepekatan Paras Tanah (GLC) 24-jam bagi PM_{10} di respetor sensitif (ASR) adalah di bawah Standad at the identified Air Sensitive Receptors (ASRs) were mematuhi Standard 2020 di bawah MAAQS.
  - (ii) Permodelan meramalkan tiada mpak kualiti udara yang ketara sekiranya BMP dilaksanakan, semasa operasi letupan normal.

Fasa Operasi:

- Pelepasan daripada kenderaan akibat peningkatan trafik.
- Bau busuk daripada pengurusan sisa pepejal yang lemah dan kegagalan STP.

Langkah Mitigasi

Fasa Pembinaan :

- Kawalan habuk yang mencukupi melalui penyingkiran habuk melalui *water bowsing*, pencuci tayar, mengenakan had laju di tapak pembinaan, dan mematuhi garis panduan yang berkenaan.
- Selenggara kenderaan, peralatan dan jentera di tapak secara berkala.
- Sediakan PP kepada pekerja yang bekerja di kawasan berdebu.
- Laksanakan pengurusan sisa yang betul untuk mencegah bau.
- Kekalkan tumbuh-tumbuhan di luar kawasan kerja sebagi pelindung angin untuk mengurangkan habuk.
- Hentikan aktivtiti letupan semasa tempoh kelajuan angin tinggi.
- Dilarang pembakaran terbuka.
- Pemantauan kualiti udara secara berkala.
- Tangani aduan awam dengan segara.

Penampan Vegetatif

Water Bowsing

Fasa Operasi:

- Tanam pokok dan landskap untuk mewujudkan penapis semula jadi bagi bahuk dan gas pelepasan kenderaan.
- Pengurusan sisa yang betul.
- Penyelenggaraan dan pemantauan STP secara berkala.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

BAU

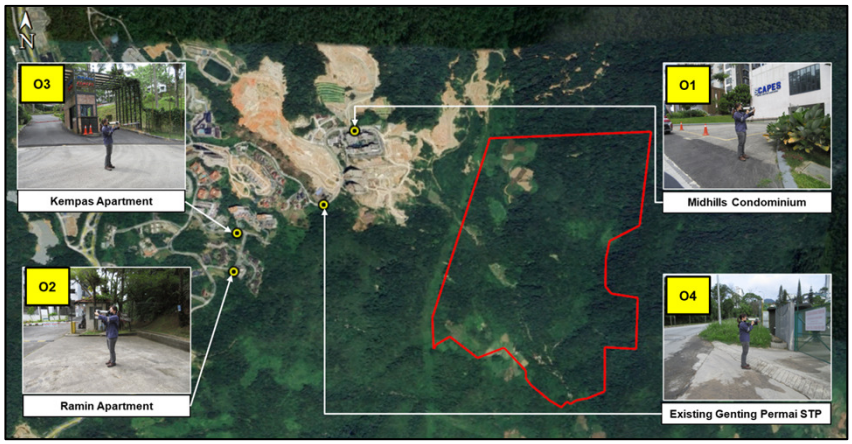
Persekitaran Sedia Ada

Pemantauan Garis Dasar (27 – 28 Mei 2025):

- Empat (4) lokasi pemantauan.

Bau Sedia Ada:

- Kepekatan bau yang dirasakan di reseptor yang terdekat adalah dalam julat 0 D/T [Neutral] hingga 7 D/T [Tidak menyenangkan].
- Bauyang tidak menyenangkan adalah disebabkan pelepasan daripada kenderaan dan habuk.



Potensi Impak

Fasa Pembinaan:

- Bau dari pembakaran sisa.
- Bau busuk keadaan tapak yang tidak bersih (cthnya, tandas yang tidak bersih, pengurusan sisa yang tidak betul, dll).

Fasa Operasi :

- Bau akibat gas yang dihasilkan dari proses STP.

Penilaian Bau

- **Kaedah:** USEPA AERMOD bagi mensimulasikan pelepasan bau busuk dairpada sistem STP yang terbuka:
  - Senario 1: Operasi secara normal tanpa sisyem penyingkiran bau.
  - Senario 2: Operasi secara normal dengan sisyem penyingkiran bau..
- **Hasil Kajian:**
  (i) Senario 1: Ramalan MAIC 1-jam bagi bau di reseptor sensitif adalah < 1 ou/m^3, di mana ia tidak melebihi had 7 ou/m^3 yang dirujuk dan diterima pakai dalam *Draft Odour Regulation 201x's*.
  (ii) Senario 2: Hasil yang sama – tidak melebihi had bau sebanyak 7 ou/m^3.

Langkah Mitigasi

Fasa Pembinaan :

- Pengumpulan dan pelupusan sisa domestic secara berkala dari tapak pembinaan.
- Amalkan *housekeeping* secara berkala dan larang pembakaran terbuka.
- Penyelenggaraan dan nyah enapcemar bagi tangki septic atau tandas mobil

Fasa Operasi:

- Patuhi keperluan kawalan bau seperti yang tertakluk dalam *Malaysian Sewerage Industry Guidelines: Volume IV: Sewage Treatment Plants (Third Edition)* (SPAN, 2009).
- Jika perlu, pastikan cerobong bagi sistem penyingkiran bau direka bentuk seperti yang tertakluk dalam MSIG dan garis panduan JAS.
- Landskapkan zon penampan STP, untuk menyediakan penapisan bau semula jadi.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

BUNYI DAN GETARAN

Persekitaran Sedia Ada

Pemantauan Garis Dasar(23 – 24 Sep 2024):

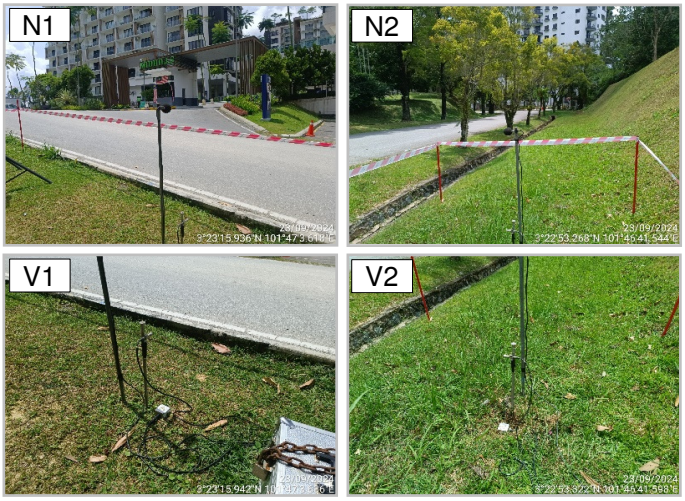
- Dua (2) Lokasi pemantauan.

Tahap Bunyi Sedia Ada:

- Waktu siang: Tahap bunyi di N1 adalah mematuhi had yang dibenarkan oleh JAS iaitu 60 dB(A); tahap bunyi di N2 didapati melebih had tersebut.
- Waktu malam: Tahap bunyi di N1 dan N2 adalah kurang daripada had yang dibenarkan oleh JAS iaitu 55 dB(A).

Tahap Getaran Sedia Ada :

- Tahap getaran di V1 dan V2, semasa waktu siang dan malam, adalah mematuhi had yang disyorkan oleh JAS.



* Lokasi yang sama dengan Lokasi pemantauan garis dasar kualiti udara.

Potensi Impak

Fasa Pembinaan:

- Tahap bunyi ambien meningkat akibat pengerakan kenderaan, jentera pembinaan.
- Impak bunyi terhadap pekerja pembinaan akibat pendedahan kepada bunyi yang kuat.
- Potensi getaran tanah yang dihasilkan daripada aktiviti penanaman cerucuk dan letupan.

Fasa Operasi:

- Impak bunyi minimum dijangkakan daripada pergerakan kenderaan dan bunyi berasaskan komuniti.
- Tiada impak getaran yang dijangkakan.

Penilaian Bunyi daripada Pembinaan

- **Kaedah:** Tahap bunyi dikira berdasarkan jarang yang berbesa untuk scenario terburuk di mana semua jentera beroperasi serentak.
- **Hasil Kajian:**
  (i) Bagi senario terburuk, kawasan dalam lingkungan ZOS 1-km akan mengalami tahap bunyi yang akan melebihi had yang dibenarkan oleh JAS, iaitu 60 dB(A).

Penilaian Bunyi Semasa Aktiviti Letupan

- **Kaedah:** Meramalkan tahap bunyi daripada penggalian dan letupan batu dengan menggunakan CadnaA, bagi:
  - Senario 1: Operasi Normal – pengendalian jentara dan peralatan di kawasan letupan.
  - Senario 2: Letupan dengan maksima 120 dBL.
  - Senario 3: Letupan normal.
- **Hasil Kajian:**
  (i) Senario 1: Tahap bunyi kumulatif dijangka antara 57.3 hingga 63.4 dB(A). Tindak balas komuniti terhadap tahap bunyi ini adalah “Tiada” di semua kawasan reseptor sensitif.
  (ii) Senario 2: Tahap bunyi kumulatif dijangka antara 57.3 hingga 63.4 dB(A). Tindak balas komuniti terhadap tahap bunyi ini adalah tidak signifikan di semua kawasan reseptor sensitif.
  (iii) Senario 3: Tahap bunyi kumulatif dijangka antara 56.9 hingga 62.8 dB(A). Tindak balas komuniti terhadap tahap bunyi ini adalah tidak signifikan di semua kawasan reseptor sensitif.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

BUNYI DAN GETARAN [samb…]

Potensi Impak

Penilaian Getaran daripada Letupan

- **Kaedah:** Assessed based on the quantity of explosives (as per blast design).
- **Hasil Kajian:**
  (i) Zon pengaruh bagi 5 mm/s ppv (had JMG) yang dikenalpasti adalah sejauh 31.2 m dan 36.5 dari kawasan letupan.
  (ii) Tiada reseptor sensitif yang terletak di dalam zon pengaruh tersebut.

Langkah Mitigasi

Kawalan Bunyi Semasa Pembinaan:

- Rujuk kepada *Annex E: Guidance of Noise Control* of *Guidelines for Environmental Noise Limits and Control, Third Edition*, sebagai garis panduan.
- Hadkan tempoh aktiviti pembinaan pada waktu siang sahaja.
- Bina penghadang di sekitar tapak Projek.
- Selenggara semua peralatan dan mesin berkala.
- Sediakan peredam bunyi jika berkenaan.
- Pekerja hendaklah bekerja secara syif dan menggunakan PPE yang betul.
- Kenakan had laju.

Kawalan Getaran Tanah Semasa Pembinaan:

- Rujuk kepada *Annex E: Management and Mitigation of Vibration* of *Guidelines for Environmental Vibration Limits and Control, Third Edition*, sebagai garis panduan.
- Kaedah *Hand dug caisson* dan mikro-pilling dipilih untuk meminimumkan impak getaran.
- Mengendalikan peralatan bergetaran tinggi secara berfasa dan elakkan penggunaan secara serentak.
- Merancang logistik dengan betul untuk mengurangkan getaran yang disebabkan oleh trafik.

Pengurusan Am Semasa Fasa Pembinaan:

- Menangani aduan awam dengan segera.
- Menjalankan pemantauan bunyi dan getaran secara berkala.

Kawalan Bunyi dan Getaran Letupan:

- Aktiviti peletupan hendaklah mematuhi:
  - *Mineral Development (Blasting) Regulations 2013*.
  - *Explosives Act 1957*.
  - *Explosive Rules 1923*.
  - *Garis Panduan Kerja Peletupan Pembangunan JMG.GP.11*
- Laporan Operasi Peletupan hendaklah disediakan oleh jurutera peletupan berlesen dan diluluskan oleh JMG.
- Melaksanakan langkah keselamatan untuk melindungi pekerja dan orang awam.
- Menjalankan pemantauan bunyi, getaran dan tekanan udara di kawasan reseptor sensitif untuk memastikan pematuhan dengan had yang dibenarkan.

Membina Penghadang Perimeter Komposit

Pemantauan Bunyi

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

GUNATANAH

Persekitaran Sedia Ada

- Tapak Projek terletak di dalam **BP1: Bentong** dan di bawah **BPK1.6B: Genting Highlands**. Tapak ini kini diliputi oleh campuran hutan sekunder, hutan penjanaan semula serta beberapa plot kebun pertanian.
- **Gunatanah dalam Lingkungan ZOS 5-km:**

Quadran Barat Laut: Kawasan berpenduduk yang terdiri daripada petempatan, komersial, institusi dan hutan simpan (HSK Batang Kali dan HSK Bukit Tinggi)

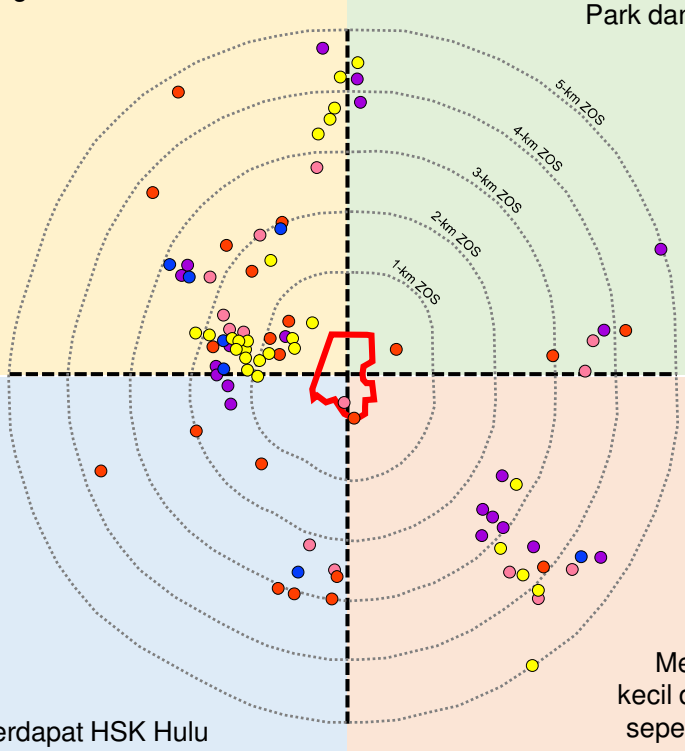
- **19** Petempatan
- **6** Pelancongan
- **6** Institusi
- **5** Komersial
- **9** Mercu Tanda

Petempatan terdekat:

- Midhills@Genting, ~594.35 m barat laut

Quadran Timur Laut: Terdapat HSK Bukit Tinggi dan dua tempat pelancongan yang terkenal di Daerah Bentong, iaitu Genting Highlands Them Park dan Berjaya Hill Bukit Tinggi.

- **1** Petempatan
- **4** Pelancongan
- **2** Institusi
- **5** Komersial
- **3** Mercu Tanda



- **1** Petempatan
- **3** Pelancongan
- **3** Institusi
- **1** Komersial
- **7** Mercu Tanda

Quadran Barat Daya: Terdapat HSK Hulu Gombak, kebun pertanian kecil, infrastruktur utama (Lebuhraya Karah, RnR Genting Sempah), dan tapak rekreasi (Taman Puncak Rimba yang terdiri daripada villa/banglo untuk disewa).

- **5** Petempatan
- **7** Pelancongan
- **3** Institusi
- **1** Komersial
- **2** Mercu Tanda

Quadran Tenggara: Mempunyai kebun pertanian kecil dan kawasan petempatan, seperti Kg Bukit Tinggi, Taman Bukit Tinggi, dll., yang terletak bersebelahan dengan Lebuhraya Karak. Terdiri daripada hab komersial, tempat pelancongan, kemudahan rekreasi dan pusat pembangunan akuakultur (dimiliki oleh Jabatan Perikanan).

- **Kawasan Sensitif Alam Sekitar (KSAS)**
  - **KSAS Risiko Bencana (Tanah Tinggi):** 300 – 1,200 m
  - **KSAS Warisan:** HSK Bukit Tinggi yang terletak bersebelahan dengan tapak Projek.

Potensi Impak

Fasa Pembinaan:

- Perubahan kekal kepada gunatanah di tapak Projek.
- Risiko pencerobohan haram ke kawasan lapang dan hutan di pinggiran tapak dijangka meningkat.

Fasa Operasi:

- Kepadatan populasi yang tinggi akan ditempatkan dalam ZOS.
- Tiada impak ketara dijangka akan berlaku.

Langkah Mitigasi

- Semua langkah dan cadangan mitigasi adalah relevan dan terpakai keapda impak secara tidak langsung terhadap gunatanah.
- Anjakan minimum sebanyak 20 m disyorkan untuk diwujudkan di sempadan Projek, dan 60 m di sempadan yang bersebelahan dengan hutan simpan.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

SUMBER BIOLOGI

Persekitaran Sedia Ada

Methodologi Kajian:

- *Fixed quadrat plot* dan *rapid botanical survey* (RBS).
- Visual Encounter Survey (VES) – pemerhatian hidupan liar secara langsung.
- Perangkap kamera (15 lokasi).
- Pengukuran tapak kaki.
- Kajian literatur.

Kajian Flora:

- **Kepelbagaian spesies**: 89 spesies direkodkan.
- *Malaysia Plant Red List*: 1 spesies dikategorikan sebagai "Hampir Terancam (NT)", 12 spesies yang "Tidak Terancam (LC)", dan spesies lain adalah "Tidak Dinilai (NE)" atau tiada data.

Kajian Fauna:

Mamalia:

- **Kepelbagaian spesies** : 16 spesies daripada 10 famili.
- ***IUCN Redlist*:** 3 spesies yang "Terancam (EN)", 1 spesies yang "Hampur Terancam (NT)" (*Presbytis siamensis*).
- **WCA 2010:** 5 spesies yang "Dilindungi Sepenuhnya (TP)", 4 spesies "Dilindungi (P)".

Burung:

- **Kepelbagaian spesies** : 36 spesies daripada 22 famili.
- ***IUCN Redlist***: 1 spesies yang "Terjejas (VU)" (*Acridotheres javanicus*), 4 spesies yang "Hampir Terancam (NT)".
- **WCA 2010**: 23 spesies yang "Dilindungi Sepenuhnya (TP) " dan 4 spesies yang "Dilindungi (P)".

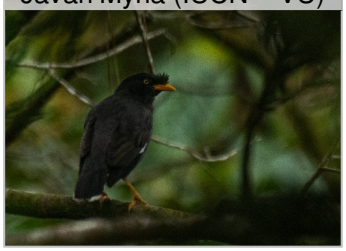
Herpetofauna:

- **Kepelbagaian spesies :** 7 spesies daripada 5 famili.
- **WCA 2010**: 4 spesies yang "Dilindungi (P)".

Leopard Cat (WCA – TP)

Long-tailed Macaque (WCA – P)

Javan Myna (IUCN – VU)



Giant River Toad (WCA – P)

Potensi Impak

Fasa Pembinaan:

- Kehilangan tumbuh-tumbuhan.
- Kemerosotan kualiti tanah.
- Gangguan habitat untuk fauna.
- Peningkatan suhu permukaan tanah.
- Pemburuan haram.
- Konflik manusia-hidupan liar.

Fasa Operasi:

- Menghalang pertumbuhan sebarang tumbuh-tumbuhan.
- Kehilangan habitat yang menyebabkan migrasi haiwan.
- Pemburuan haram.
- Konflik manusia-hidupan liar.

Langkah Mitigasi

Fasa Pembinaan :

- Merancangkan sekurang-kurangnya 60 m zon penampan dari sempadan hutan simpan.
- Pembalakan hendaklah dijalankan dengan kebenaran Jabatan Perhutanan Negeri Pahang.
- Menanam semula kawasan yang telah ditebang dan disiapkan.
- Memerangkap dan memindahkan hidupan liar dari tapak Projek.
- Mengehadkan aktiviti di luar kawasan pembinaan.

Fasa Operasi :

- Menanam pokok natifyang mempunyai cengkaman yang lebih tinggi untuk memperkayakan litupan tumbuhan.
- Menggalakkan penanaman pokok spesies tempatan.
- Menghubungi PERHILITAN, BOMBA atau JPAM jika hidupan liar ditemui.
- Melaksanakan program rondaan hidupan liar setempat.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

SOSIO-ECONOMI

Persekitaran Sedia Ada

Kajian Sosial

- **Rangka pensampelan:** 995 responden.

Saiz Sampel:

Perumahan: 374

Pelancong: 384

Komersial/Peniaga: 237

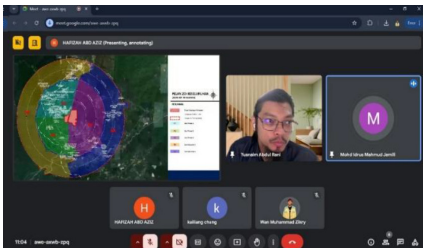
- **Persepsi:** 90.2% bersetuju dengan Projek; manakal 6.1% tidak bersetuju dengan Projek.

Perbincangan Kumpulan Tersasar (FGD):

- FGD diadakan bersama::
  - Agensi Kerajaan pada 24 Jan 2025.
  - Wakil komuniti tempatan pada 22 Feb 2025.

Ringkasan Isu yang Dibangkitkan:

- Risiko tanah runtuh dan banjir.
- Peningkatan pekerja asing.
- Kesesakan lalu lintas dan jalan raya.



Potensi Impak

Fasa Pembinaan:

- Impak positif:
  - Kesejahteraan ekonomi dan material.
  - Peningkatan peluang pekerjaan dan perniadan tempatan.
- Risiko penyakit berjangkit akibat kemasukan pekerja asing.
- Pencemaran alam sekitar dan masalah kesihatan.
- Peningkatan pergerakan lalu lintas dan gangguan disebabkan oleh kenderaan berat.
- Isu kerosakan dan keselamatan jalan raya.
- Isu sosial akibat kemasukan pekerja asing.

Fasa Operasi:

- Meningkatkan kualiti hidup penduduk.
- Meningkatkan aktiviti ekonomi, menaik lebih ramai penduduk dan memenuhi permintaan pasaran yang semakin meningkat.
- Menambahbaikkan jalan raya, pengangkutan awam, telekomunikasi dan utility.
- Meningkatkan kesesakan lalu lintas.
- Pertumbuhan pelancong.
- Peluang perniagaan dan pekerjaan sampingan.

Langkah Mitigasi

Fasa Pembinaan :

- Melaksanakan langkah mitigasi pencemaran alam sekitar contohnya air, habut, bunyi bising, dll.
- Melaksanakan pelan pengurusan lalu lintas.
- Menyediakan tanda amaran yang diperlukan.
- Mengutamakan pekerja tempatan.
- Mengekalkan kebersihan tapak dan kerap melaksanakan *housekeeping*.
- Melaksanakan pelan kesihatan dan keselamatan serta mematuhi keperluan JKPP.

Fasa Operasi :

- Menambahbaik kemudahan pengangkutan.
- Menubuhkan pasukan pengurusan risiko dan saluran komunikasi untuk menangani aduan.
- Menanam tumbuh-tumbuhan yang sesuai untuk menstabilkan tanah dan menguruangkan risiko tanah runtuh.
- Memantau tanah secara berkala.
- Kuota sewa untuk pengsapuri servis yang diperuntukkan kepada warga asing.
- Menjalankan penilaian pasaran secara berkala untuk memantau trend harga hartanah.

PESEKITARAN SEDIA ADA, PENILAIAN IMPAK & LANGKAH MITIGASI

TRAFIK

Persekitaran Sedia Ada

Ketersambungan:
- Jalan utama ke tapak: Lebuhraya Karak, Jalan Genting Highlands dan Jalan Genting Permai.

Komposisi Trafik:
- Waktu puncak pagi: 7:00 am – 9:00 am.
- Waktu puncak petang: 5:00 pm – 7:00 pm.
- Penggunan jalan raya utama semasa waktu puncak: kereta dan motosikal.

Tahap Perkhidmatan (LOS):
- Semua jalan sedia ada: Berada antara **LOS A dan LOS C** pada hari bekerja; antara **LOS A dan LOS B** pada hujung minggu.
- Simpang sedia ada: Semua persimpangan beroperasi pada **LOS A** semasa waktu puncak pagi dan petang pada hari bekerja dan hujung minggu, kecuali *Junction 2* yang beroperasi pada LOS B semasa waktu puncak petang pada hujung minggu.

Potensi Impak

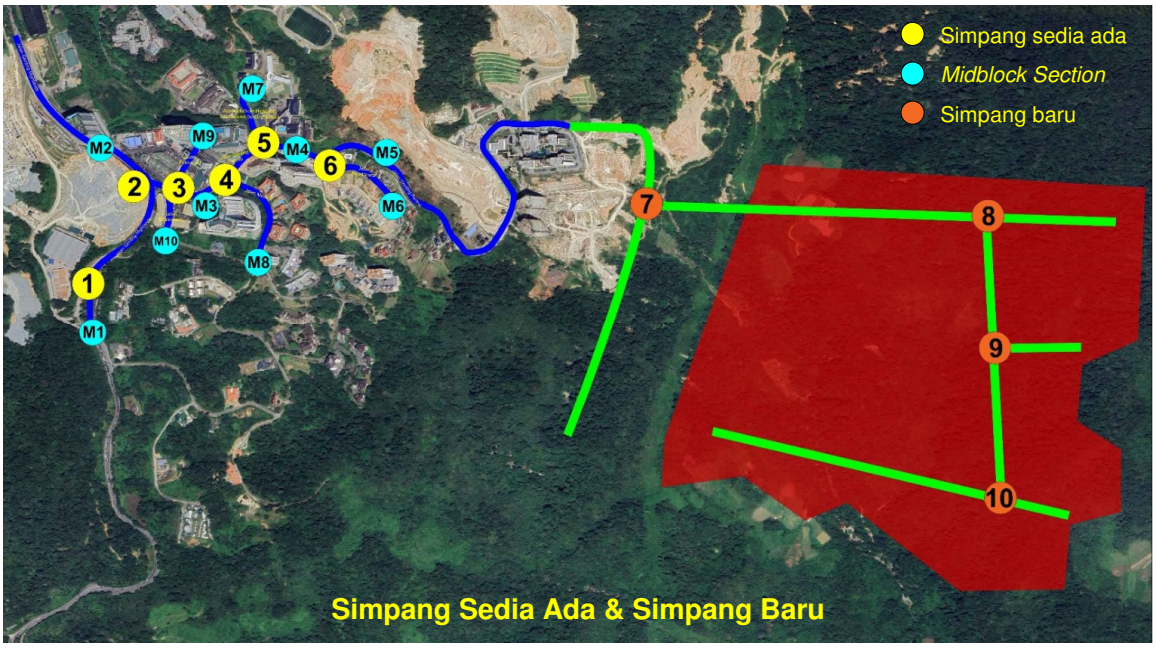
Fasa Pembinaan:
- Peningkatan trafik kenderaan berat.
- Tumpahan bahan atas jalan.
- Potensi kerosakan di jalan awal sedia ada, cthnya, lubang jalan.

Fasa Operasi:
- Waktu puncak pagi: Projek dijangka akan menjana **338 PCU**.
- Waktu puncak pentang: Projek dijangka akan menjana **384 PCU**.
- Keadaan jalan raya yang dijangkakan: **LOS B hingga LOS D** semasa waktu puncak pada **2037**.
- Keadaan simpang yang dijangkakan : **LOS A hingga LOS F** semasa waktu puncak pada **2037**.

Langkah Mitigasi

Fasa Pembinaan :
- Melaksanakan pelan pengurusan logistik yang betul.
- Membersihkan tayar di pintu keluar/masuk tapak.
- Mengenakan had laju.
- Menyediakan papan tanda amaran dan lampu yang mencukupi.

Fasa Operasi :
- Empat (4) simpang berlampu isyarat dan satu (1) bulanan dicadangkan untuk menyuraikan trafik dalam Pembangunan.
- Cadangkan untuk menaiktaraf empat (4) simpang, J3 hingga J6 yang sedia ada.
- Cadangkan untuk menaiktaraf Jalan Genting Permai yang jalan tunggal dua lorong ke jalan berkembar empat lorong.



Simpang Sedia Ada & Simpang Baru

PELAN PEMANTAUAN DAN PENGAWASAN ALAM SEKITAR
- Fasa Pembinaan -

Pemantauan Pematuhan (CM) dan Pemantauan Prestasi(PM)

Komponen Alam Sekeliling	Keperluan Pematuhan	Cadangan Lokasi Pemantauan	Kekerapan Pemantauan
Pemantauan Pematuhan (CM)			
Kualiti Pelepasan dari Kolam Mendapan Sedimen	• Syarat kelulusan (sekiranya ada).	• Pelepasan kolam mendapan yang dicadangkan.	• Selepas setiap hujan ≥ 12.5 mm, oleh EO. • Bulanan oleh EnvMC.
Pengurusan Sisa Pepejal (iaitu, biomas, sisa pembinaan, sisa domestik)	• Akta Kualiti Alam Sekeliling 1974. • Undang-Undang Kecil Pemungutan Pembuangan dan Pelupusan Sampah Sarap (Majlis Perbandaran Bentong). • Akta Kerajaan Tempatan 1976, Seksyen 69 – 71. • Syarat kelulusan (sekiranya ada).	• Dalam tapak Projek	• Harian oleh EO. • Bulanan oleh EnvMC.
Pengurusan Buangan Terjadual	• Akta Kualiti Alam Sekeliling 1974. • Peraturan-peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005. • *Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia* (DOE, 2014). • Syarat kelulusan (sekiranya ada).	• Storage areas for scheduled wastes. • Workshop. • Active work areas.	• Harian oleh EO. • Bulanan oleh EnvMC.
Pelepasan kumbahan (Nota: Jika P.E. kumulatif ≤ 150).	• Standard daripada Suruhanjaya Perkhidmatan Air Negara (SPAN): • BOD_5 ≤ 50 mg/L. • Pepejal terampai ≤ 100 mg/L. • Syarat kelulusan (sekiranya ada).	• Pelepasan efluen bagi tangki septik.	• Bulanan oleh EnvMC.
Pelepasan kumbahan (Nota: Jika P.E. kumulatif > 150).	• Standard A, Jadual Kedua, Peraturan-peraturan Kualiti Alam Sekeliling (Kumbahan) 2009. • Syarat kelulusan (sekiranya ada).	• Pelepasan efluen kumlatif bagi tangki septik.	• Bulanan oleh EnvMC.
Instrumentasi Geoteknikal	• Perbandingan dengan andaian reka bentuk dan keperluan kejuruteraan seperti yang dinyatakan oleh Perunding Kejuruteraan atau keperluan daripada agensi yang berkaitan.	• Seperti yang dicadangan oleh Perunding Kejuruteraan.	• Sepanjang fasa pembinaan, mengikut selang masa yang ditetapkan oleh Perunding Kejuruteraan atau agensi berkaitan.
Pemantauan Prestasi (PM)			
Kefungsian BMP kawalan hakisan dan sedimen	• Susunatur dan laporan ESCP yang diluluskan oleh JPS Negeri Pahang. • LD-P2M2. • Syarat kelulusan (sekiranya ada).	• Semua BMPS seperti yang dicandangan dalam LD-P2M2 dan ESCP yang diluluskan oleh JPS.	• Mingguan dan selepas setiap kali hujan lebat oleh EO.

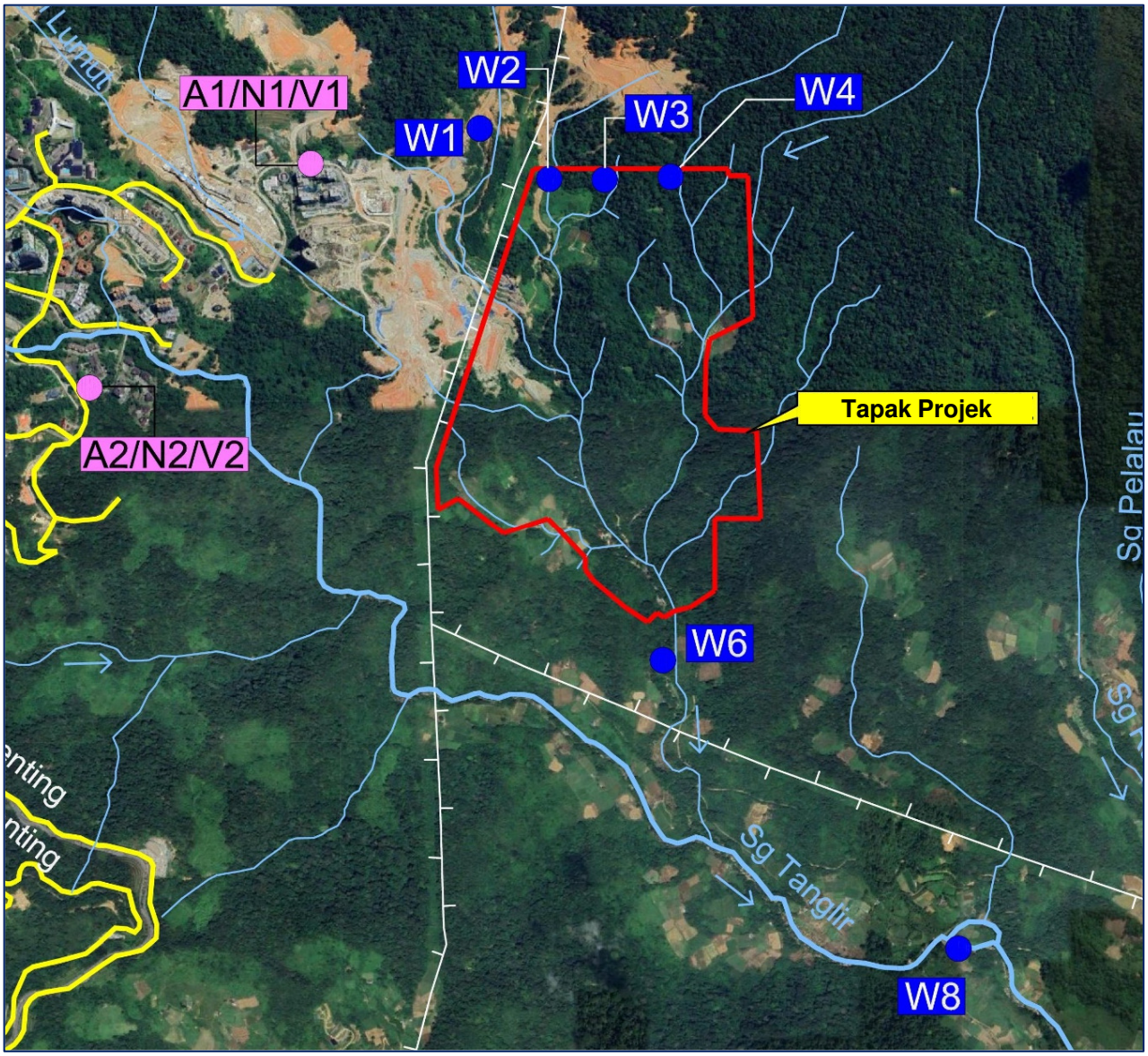
PELAN PEMANTAUAN DAN PENGAWASAN ALAM SEKITAR
- Fasa Pembinaan -

Pemantauan Impak (IM)

Komponen Alam Sekeliling	Keperluan Pematuhan	Cadangan Lokasi Pemantauan	Kekerapan Pemantauan
Pemantauan Impak (IM)			
Kualiti Air Sungai	• Kekalkan kualiti air garis data (*baseline*) (**Bab 6.7:** River Water Quality). • *Class IIA*, Standard Kualiti Air Kebangsaan (NWQS). • Syarat kelulusan (sekiranya ada).	• W1: N3.388756°, E101.789056° • W2: N3.387373°, E101.790945° • W3: N3.387340°, E101.792524° • W4: N3.387421°, E101.794358°* • W6: N3.373920°, E101.794175° • W8: N3.365907°, E101.802398° Nota: * W4 perlu dialihkan ke hulu anak sungai sebelum memasuki kawasan kerja.	• Bulanan oleh EnvMC.
Kualiti Udara Ambien	• Standard 2020, Standard Kualiti Udara Ambient Malaysia (MAAQS) (DOE Notice 1/2015, 2015). • Syarat kelulusan (sekiranya ada).	• A1: N3.387767°, E101.784364° • A2: N3.381497°, E101.778235°	• Bulanan oleh EnvMC.
Bunyi	• Rujuk *Second*, *Third* dan *Sixth Schedule*, *Guidelines for Environmental Noise Limits and Control, Third Edition, 2019* (DOE, Reprint 2021). • Syarat kelulusan (sekiranya ada).	• N1: N3.387767°, E101.784364° • N2: N3.381497°, E101.778235°	• Bulanan oleh EnvMC.
Getaran daripada pembinaan	• Rujuk *First*, *Third*, *Fourth*, *Sixth* dan *Nineth Schedule* of *Guidelines for Environmental Vibration Limits and Control Third Edition* (DOE, 2021). • Syarat kelulusan (sekiranya ada).	• V1: N3.387767°, E101.784364° • V2: N3.381497°, E101.778235°	• Bulanan oleh EnvMC.
Getasan daripada letupan	• Rujuk *First*, *Seventh*, *Eighth* dan *Nineth Schedule* of *Guidelines for Environmental Vibration Limits and Control, Third Edition* (DOE, 2021). • Syarat kelulusan (sekiranya ada).	• Sempadan Projek • V1: N3.387767°, E101.784364° • V2: N3.381497°, E101.778235°	• Semasa operasi letupan oleh EnvMC.

PELAN PEMANTAUAN DAN PENGAWASAN ALAM SEKITAR
- Fasa Pembinaan -

Cadangan Titik Pemantauan



Titik	Koordinat	
	Latitud (U)	Longitud (T)
Titik Pemantauan Kualiti Air Sungai		
W1	3.388756°	101.789056°
W2	3.387373°	101.790945°
W3	3.387340°	101.792524°
W4	3.387421°	101.794358°*
W6	3.373920°	101.794175°
W8	3.365907°	101.802398°
Titik Pemantauan Kualiti Udara, Bunyi dan Getaran		
A1/N1/V1	3.387767°	101.784364°
A2/N2/V2	3.381497°	101.778235°

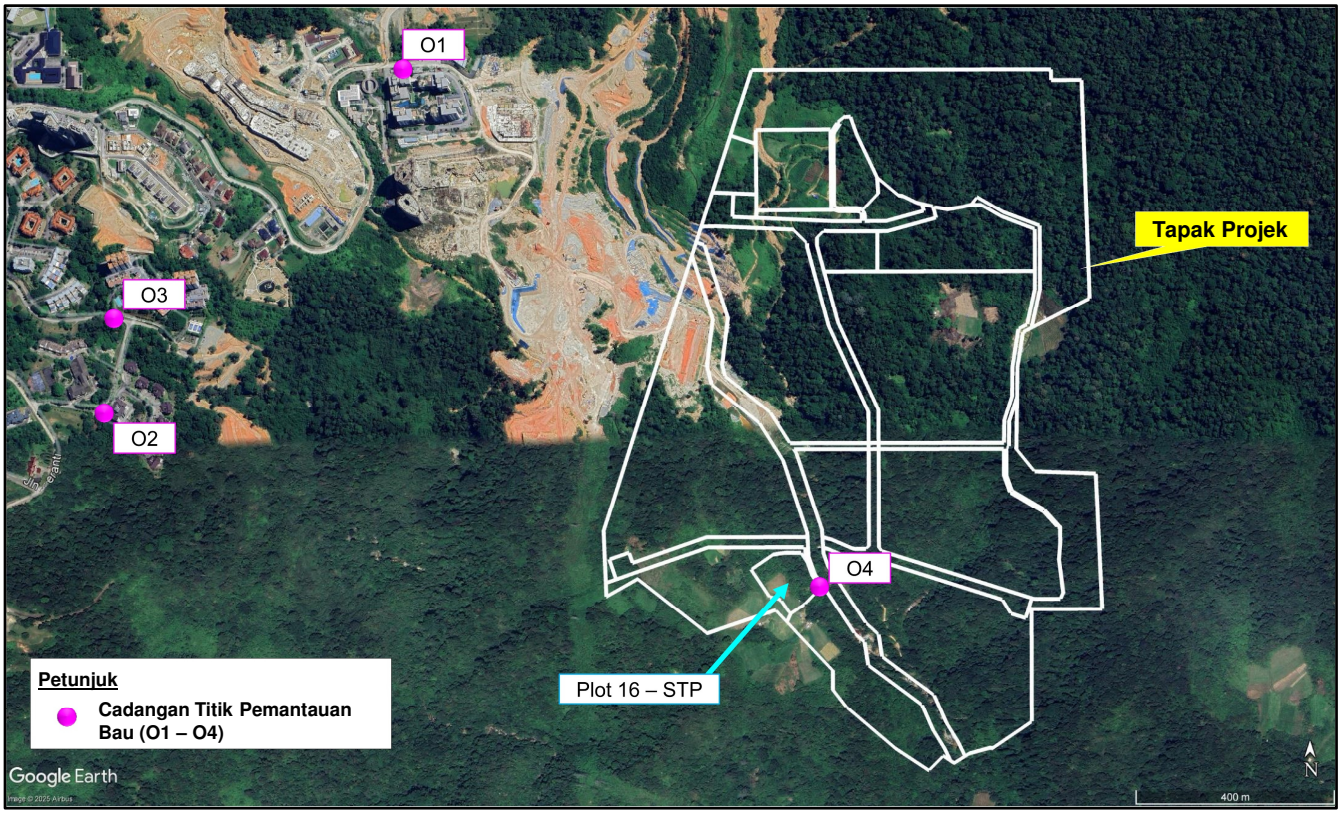
PETUNJUK

- Project Site (Area = 98.31 ha/ 242.92 ek)
- Expressway
- Road
- River
- Flow Direction
- State Boundary
- District Boundary
- Mukim Boundary
- Transmission Line
- Genting Sempah Tunnel
- Water Quality Monitoring Points (W1 – W4, W6 & W8)
- Air Quality, Noise Level & Vibration Monitoring Points (A1/N1/V1 & A2/N2/V2)

PELAN PEMANTAUAN DAN PENGAWASAN ALAM SEKITAR
- Fasa Operasi -

Pemantauan Prestasi (PM) dan Pemantauan Impak (IM)

Komponen Alam Sekeliling	Keperluan Pematuhan	Cadangan Lokasi Pemantauan	Kekerapan Pemantauan
Pemantauan Prestasi (PM)			
Pelepasan Effluent dari Loji Rawatan Kumbahan (STP)	• Standard A, Peraturan-peraturan Kualiti Alam Sekeliling (Kumbahan) 2009. • Syarat kelulusan (sekiranya ada).	• At STP outlet discharge point.	• Mingguan oleh orang yang berwibawa, cth Profesional Alam Sekitar Bertauliah dalam Pengoperasian Loji Kumbahan (CePSTOP).
Kefungsian STP	• Bandingkan dengan data prestasi yang direka oleh perunding kejuruteraan bagi setiap operasi unit.	• Setiap operasi unit.	• Seperti pemantauan prestasi yang dicadangkan oleh perunding kejuruteraan.
Pemantauan Impak (IM)			
Bau	• Tiada garis panduan atau piawaian untuk pengukuran/ kepekatan bau. • Piawaian berdasarkan Charles McGinley, P.E., Enforceable Permit Odour Limits (2000) diterimapakai sebagai panduan.	• O1: N3.387658°, E101.784264° • O2: N3.381440°, E101.778889° • O3: N3.383147°, E101.779019° • Di pintu masuk STP (O4): N3.378325°, E101.791791°	• Setiap suku tahun oleh EnvMC.



DAPATAN KAJIAN

Kesan kepada Alam Sekeliling

Fasa Pembinaan	• Hakisan tanih dan mendapan sedimen • Pencemaran air sungai • Pencemaran udara • Pencemaran bunyi dan getaran • Aliran sungai terjejas dan banjir setempat • Impak ekologi • Perubahan gunatanah dan isu sosio-ekonomi • Kesan kepada aliran trafik • Isu pengurusan sisa
Fasa Operasi	• Peningkatan air larian permukaan • Pencemaran air sungai • Kesan keapda aliran traffic • Kesan positif kepada ekonomi tempatan. • Isu pengurusan sisa

Langkah Pencegahan dan Kawalan Pencemaran (P2M2)

- Langkah-langkah kawalan, teknologi dan amalan pengurusan terbaik telah disediakan untuk mengurangkan Kesan buruk:

BMPs & P2M2 berkaitan alam sekitar

Menjalankan pemantauan alam sektiar

Pengurusan sisa yang berkesan

Menyediakan PPE yang mencukupi kepada pekerja

Menyedia dan melaksanakan Pelan Pengurusan Lalu Lintas

Menyediakan rangkaian saliran berdasarkan Laporan Pengurusan Air Ribut

Menyediakan kawalan hakisan (pagar kelodak, kolam mendapan sediment, dll)

Platform komunikasi terbuka dan ketelusan

Executive Summary

FIRST SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT FOR *CADANGAN PEMBANGUNAN BERCAMPUR (PLOT KOMERSIAL DAN PERUMAHAN) SECARA BERSTRATA DI ATAS PT24507 (H.S.D: 19365), GENTING PERMAI, MUKIM BENTONG, DAERAH BENTONG, PAHANG DARUL MAKMUR UNTUK TETUAN CASA INSPIRASI SDN BHD – YANG MELIBATKAN PEMBANGUNAN DI KAWASAN CERUN*

Project Proponent:

LBS

Casa Inspirasi Sdn Bhd (646082-U)
A Member of LBS Bina Group Berhad

Environmental Consultant:

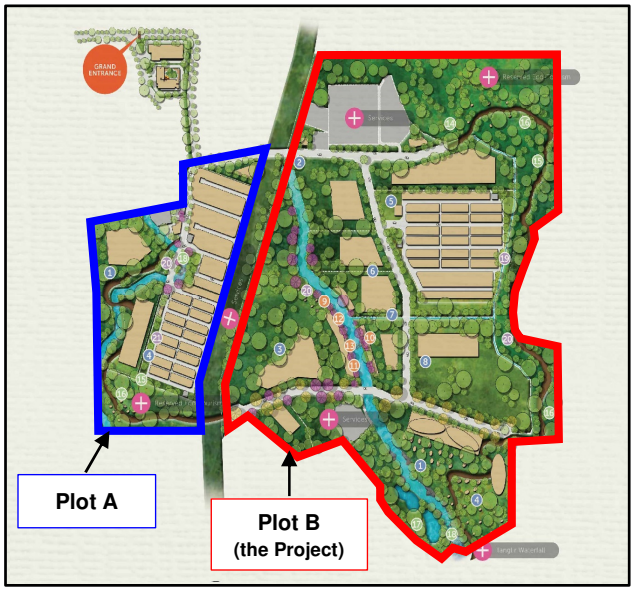
ASPEC

Asia Pacific Environmental Consultants Sdn Bhd
(199101012315)

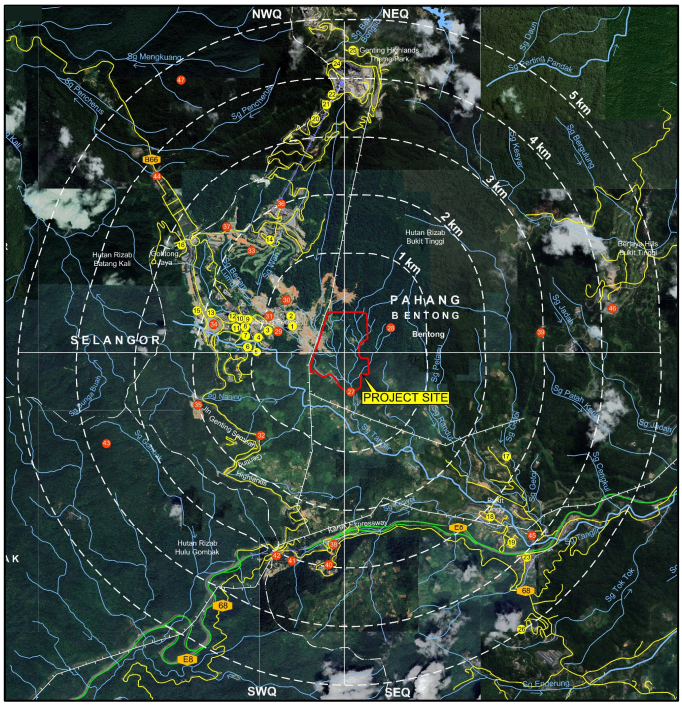
EXECUTIVE SUMMARY

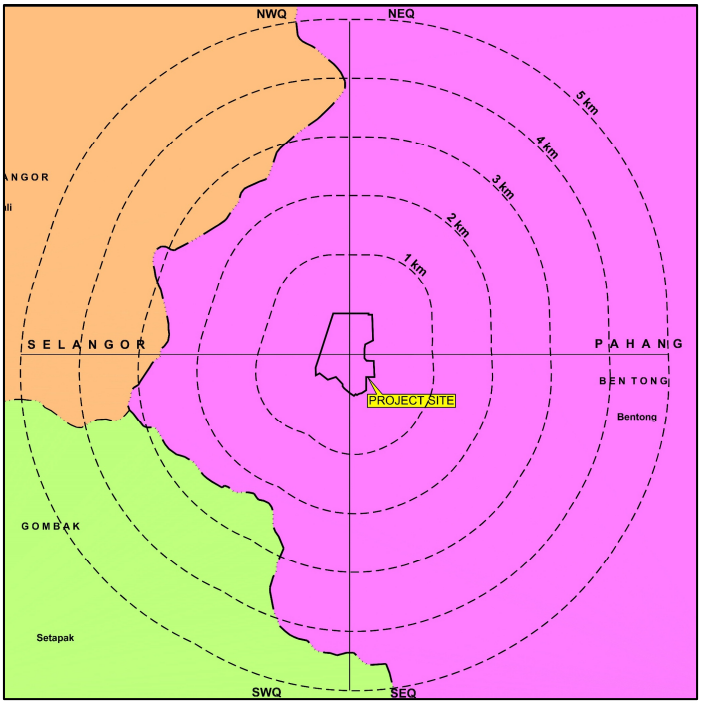
PROJECT BRIEF

- The Project is located in the midhills of the Genting Highlands region in Pahang. It covers a total area of 98.31 ha (242.92 ac), excluding 2.22-ha (5.49-ac) land that will be surrendered to Tenaga Nasional Berhad (TNB) for rentice reserve.
- It is part of the Rimbawan@Genting Highlands Masterplan, consisting of hosuingand commercial lots, supported by infrastructure and utilities.
- Current landuse: secondary forest, regenerating forest and agricultural holdings.



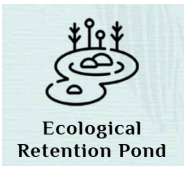
Rimbawan@Genting Highlands Masterplan





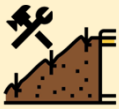
Project Concept

- The Project is planned for mixed development comprising terrace houses, semi-detached houses, bungalow houses and commercial plots supported by facilities, infrastructure and utilities.
- The Project aligns with the Rimbawan@Genting Highlands Masterplan, emphasizing eco-conscious living and sustainable township development.
- The Project consists of four distinct zones, each designed for sustainable, community-oriented living:
  - (i) Eco-community
  - (ii) Eco-commercial
  - (iii) Eco-discovery
  - (iv) Eco-play



Statutory Requirement

- The EIA is mandatory under the **First Schedule of the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015, under Section 34A Environmental Quality Act 127 (1974)** for the following prescribed activities:

Prescribed Activity	Details
 **Activity 13: Development in Slope Area** Development or land clearing less than 50% of an area within slope greater than or equal to 25º but less than 35º.	• A total of **42.71%** of the Project area comprises **Class III and IV slopes** of above 25º.
 **Activity 18: New Township** Construction of new township consisting of 2,000 housing accommodation units or more or covering an area of 100 hectares or more.	• The Project is expected to provide a total of **12,336** of housing or service apartment units.
 **Activity 14: Waste Treatment and Disposal** (c) Sewage: (i) Construction of sewage treatment plant with 20,000 population equivalent or more.	• A sewage treatment plant (STP), with capacity of **73,000 P.E.,** will be constructed for the Project to cater for the sewage generated from the development.

Statement of Needs

Supporting National and State Policies and Development Plans

Aligned with the national and state development plans, such as NPP4, RSN Pahang 2050, RTD Bentong Pahang 2035 (Penggantian).

Increase Housing Stock to Meet Future Demand

The Project is expected to expand housing supply to meet future demand, stimulate economic growth, attract investors, and enhance quality of life.

Provision of Tourism Accommodation and Facilities

The Project enhances tourism infrastructure to support regional growth, boost the local economy, create jobs and increase tax revenue.

Promote Development and Economic Growth

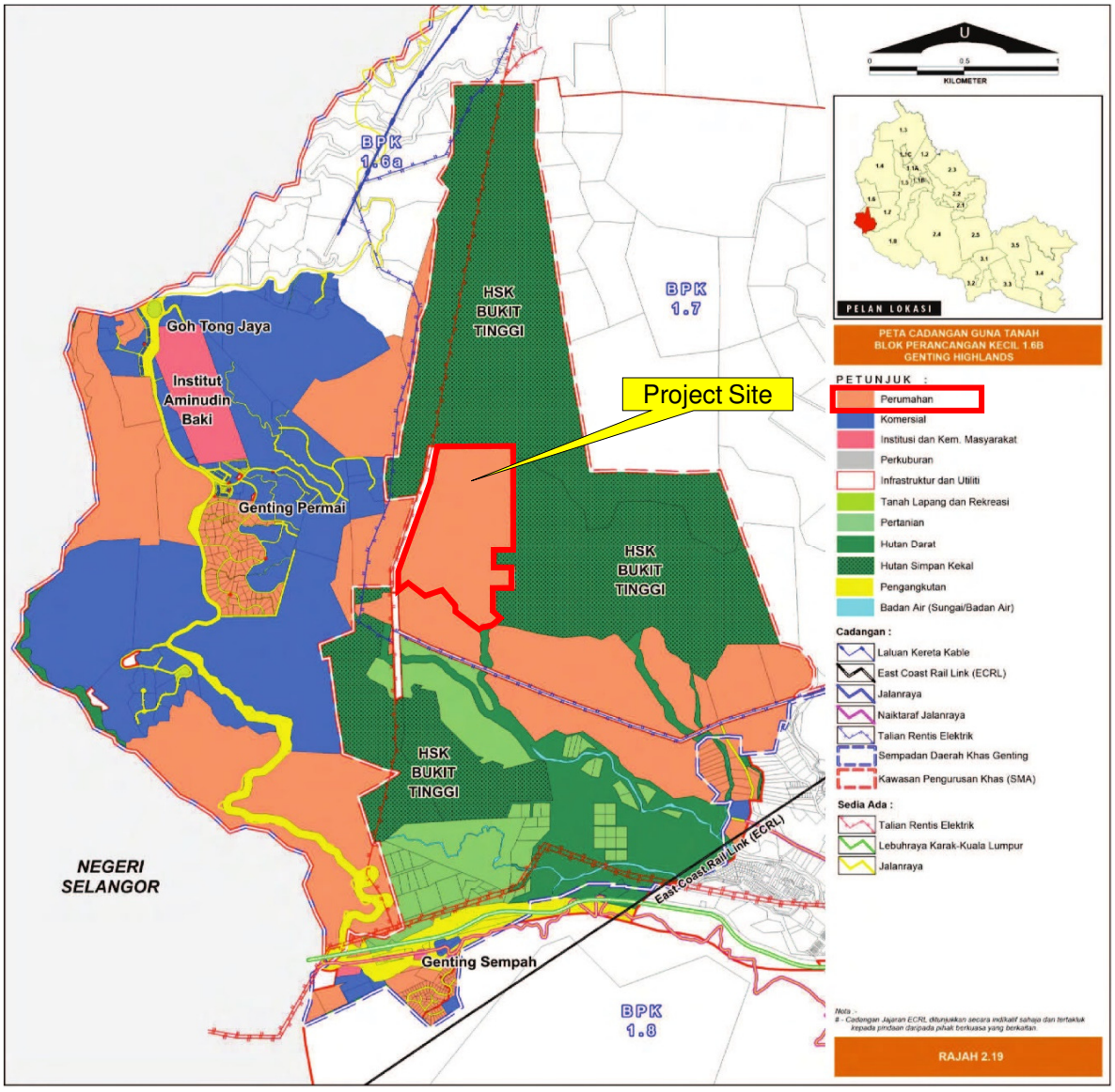
The Project promotes development by boosting the local economy, attracting investments, expanding tourism infrastructure, and supporting regional growth through improved connectivity.

Policy Conformance

Landuse Zoning & Allowable Activities

- From a landuse standpoint, the Project aligns with the Residential (Perumahan) zoning stipulated in both the *RTD Bentong, Pahang 2035 (Penggantian)* and *RKK Genting Highlands, Bentong, Pahang*.
- This zoning permits mixed residential and commercial development, supported by the infrastructure, utilities and public amenities.
- The proposed development also complies with the maximum plot ratio and building height controls set out in the RKK, demonstrating adherence to the statutory development intensity requirements.

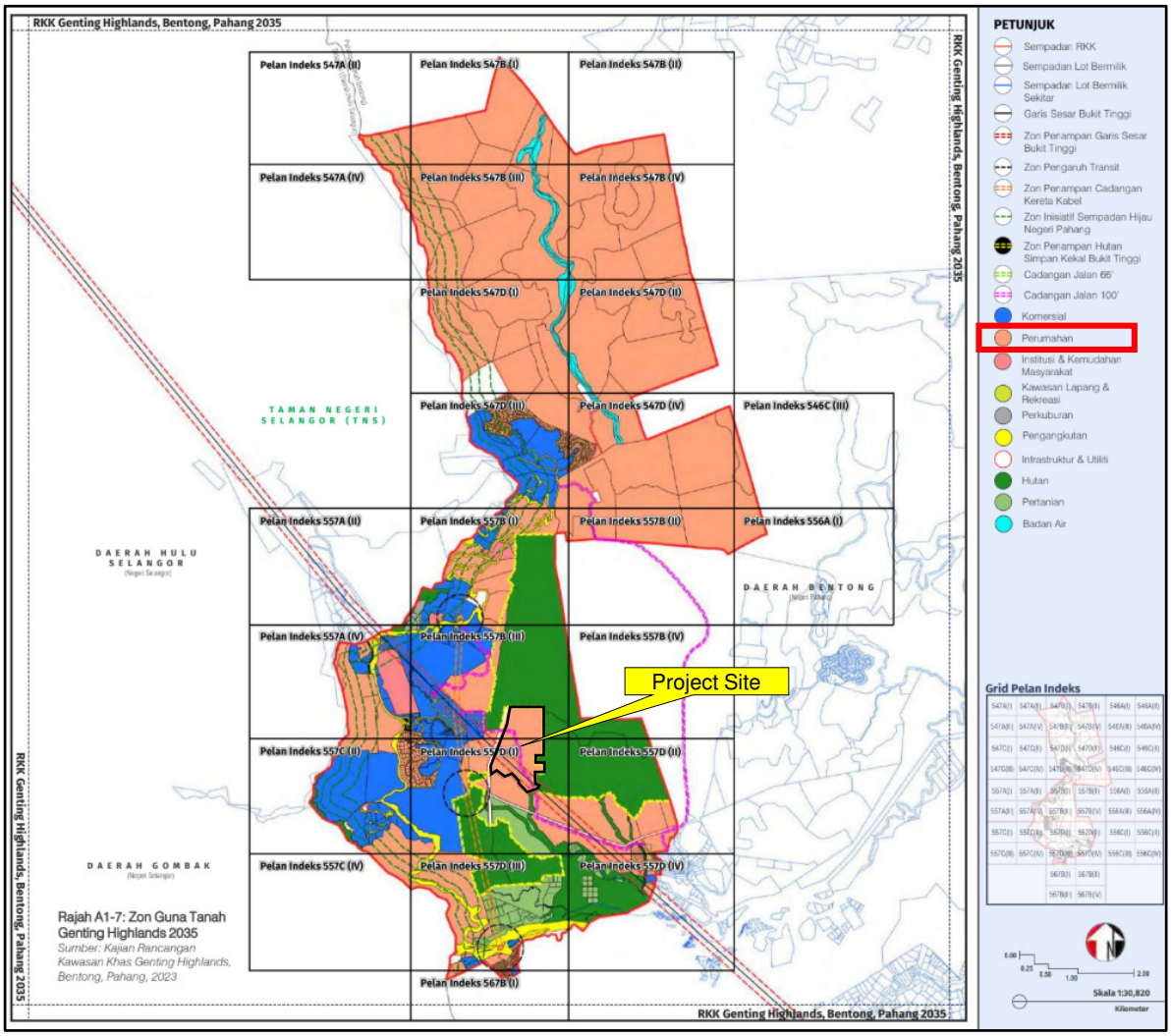
Source: Rancangan Tempatan Daerah Bentong, Pahang 2035 (Penggantian), gazetted on 2 November 2023 (Gazettement No.:2116)



Blok Perancangan Kecil (BPK)	Landuse Zoning	Allowable Activities
BPK1.6B: Genting Highlands	Zoned for "*Perumahan*"	A1: Perumahan Strata A2: Perumahan Bukan Strata B: Perniagaan dan Perkhidmatan D: Institusi dan Kemudahan Masyarakat E: Pengangkutan F: Infrastruktur dan Utiliti G: Tanah Lapang dan Rekresi

Policy Conformance

Source: Rancangan Kawasan Khas (RKK) Genting Highlands, Bentong, Pahang, gazetted on 26 June 2025 (Gazettement No.:1212)



Parcel	Landuse Zoning	Allowable Activities
Parcel 3: Genting Permai	Zoned for "*Perumahan*"	A = Commercial; B = Residential; C = Institution and Public Amenities; D = Open Space and Recreational; E = Transportation; F = Infrastructure and Utilities; H = Agriculture

Kelas Kegunaan Tanah

Guna Tanah	Kelas Kegunaan Tanah	
	Dibenarkan (Guna Tanah Utama)	Dibenarkan Dengan Syarat (Guna Tanah Sokongan)
Komersial	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19	F1, F2, F3, F4, D1, D2
Perumahan	B1, B2, B3, B4	A1-2, A2, A3, A4, A5, A6, A7, C2, C3, C4, C5-2, C5-3, C5-4, C5-5, C7, D1, E1-4, E2-5, E2-7, F1-6, F1-7, F2-4, F3-1, F3-3, F4-4, H1-3, H2-1
Hutan	G1	F1, F2, F3, F4, I1, I2
Kawasan Lapang & Rekreasi	D1-1, D1-2, D1-3, D1-4	F1-6, F1-7, F2-4, F3-1, F3-3, F4-4, H1-4
Institusi & Kemudahan Masyarakat	C1, C2, C3, C4, C5, C6, C7	A1-2, A2, A3, A4, A5, A6, A7, D1, E1-4, E2-5, E2-7, F1-6, F1-7, F2-4, F3-1, F3-3, F4-4, H1-3, H2-1
Pengangkutan	E1, E2	F1, F2, F3, F4
Infrastruktur & Utiliti	F1, F2, F3, F4	E1-4

Policy Conformance

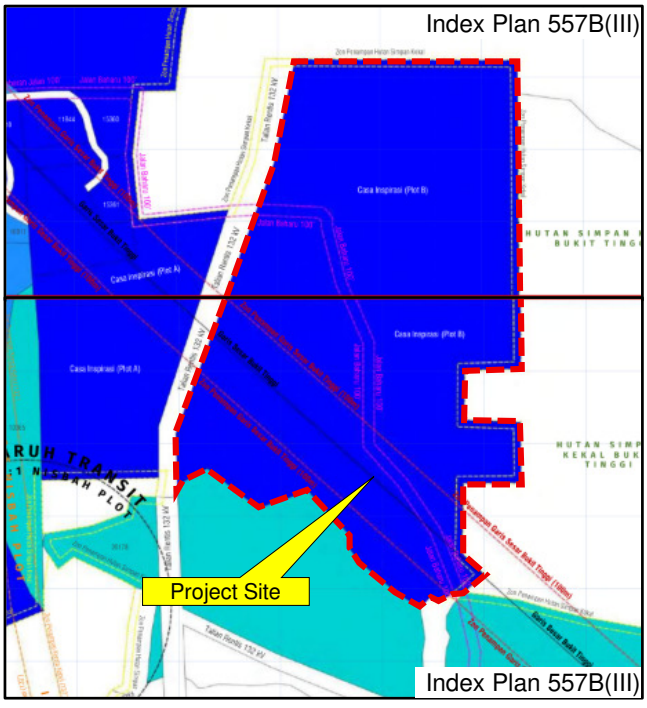
Policy Requirements related to Development in Slope Areas

- Policy and requirements related to development in slope areas had been reviewed, which are:

1. ***Garis Panduan Perancangan Pembangunan di Kawasan Bukit dan Tanah Tinggi* (PLANMalaysia, 2009)**
2. ***Kaedah-Kaedah Kawalan Perancangan (Pemajuan Tanah Bukit, Tanah Tinggi dan Lereng Bukit) (Pahang) 2019 (Gazetted on 31 July 2019)***
3. ***Rancangan Tempatan Daerah Bentong, Pahang 2035 (Penggantian) (Gazetted on 2 November 2023, Gazettement No.:2116)***
4. ***Rancangan Kawasan Khas Genting Highlands, Bentong, Pahang* (Gazetted on 26 June 2025)**

- General slope-elevation guidelines do not typically permit residential and or commercial development on Class I – IV slopes within the elevation range of 563 – 933 m above mean sea level. Nevertheless, the RKK provided specific controls that take precedence within the SMA.
- MPB has also indicated that development on Class IV slopes may proceed subject to compliance with RKK's guidelines and development intensity control.

Development Intensity in RKK



Kawalan & Insentif Khas Pembangunan

Intensiti Pembangunan & Zon Khas	Kawalan & Insentif Khas Pembangunan	
	Kawalan Ketinggian Bangunan	Insentif Nisbah Plot
1:4 Nisbah Plot	Maksimum **20 Tingkat**	-
1:6 Nisbah Plot	Maksimum **30 Tingkat**	-
1:8 Nisbah Plot	Maksimum **40 Tingkat**	-
Zon Pengaruh Transit	-	Bonus Tambahan 1:1 Nisbah Plot
Zon Penampan Kereta Kabel	-	Bonus Tambahan 1:0.5 Nisbah Plot

Nota: Maksimum ketinggian bangunan yang dibenarkan dikira bermula aras jalan *(road level)* termasuk aras podium tempat letak kenderaan. Aras separa bawah tanah yang mempunyai unit jualan (kediaman / ruang niaga) hanya dibenarkan maksimum 3 tingkat sahaja dan maksimum 7 tingkat tempat letak kenderaan dari aras jalan ke bawah

مجليس قربانديرن بنتوڠ
Majlis Perbandaran Bentong
Jalan Ketari, 28700 Bentong, Pahang Darul Makmur

#MajuTerusPahang ***#Pahang1st***

Ruj. Tuan : Yuniqsb/754/MPB/Genting/ RimbawanPlotB/PT24507_(YDP01)
Ruj. Kami : MPBTG/PP/GH/5/6/2023 (22)

Tarikh : 4 Ogos 2025

Yuniq Planning Consultant Sdn. Bhd.
S-3-12, Emporis Kota Damansara
Persiaran Surian, 47810 Petaling Jaya
SELANGOR DARUL EHSAN

Tuan

PERMOHONAN KEBENARAN MERANCANG (PELAN ZONING) BAGI CADANGAN PEMBANGUNAN BERCAMPUR (PLOT KOMERSIAL, PERUMAHAN, EKO-PELANCONGAN, KEMUDAHAN DAN UTILITI) SECARA BERSTRATA DAN BAGI TUJUAN PENYERAHAN BALIK DAN PEMBERIMILIKAN SEMULA DI BAWAH SEKSYEN 204D KTN DI ATAS PT 24507 (HSD 19365) GENTING PERMAI, MUKIM BENTONG, DAERAH BENTONG, PAHANG DARUL MAKMUR UNTUK TETUAN CASA INSPIRASI SDN. BHD.

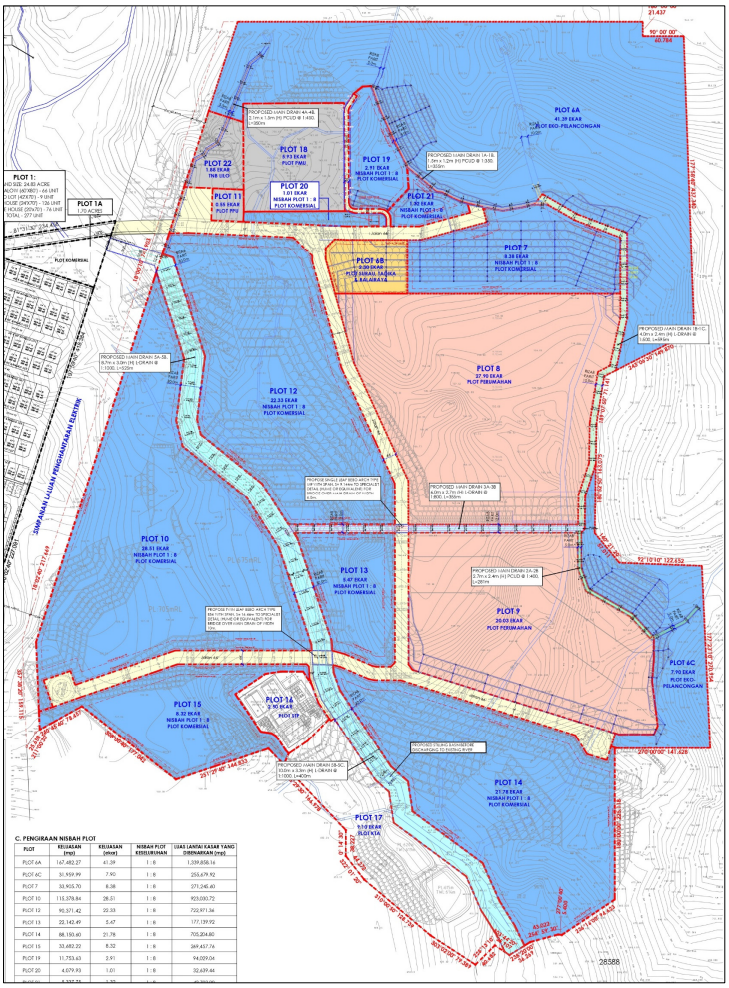
Dengan hormatnya surat tuan seperti rujkan dan perkara di atas bertarikh 24 Julai 2025 adalah berkaitan.

2. Adalah dimaklumkan bahawa berdasarkan Rancangan Kawasan Khas (RKK) Genting Highlands, kawasan ini adalah tertakluk di bawah kawasan pengurusan khas (Special Mangement Area) yang membenarkan pembangunan dalam Kelas IV tertakluk kepada garis panduan dan kawalan intensiti pembangunan yang ditetapkan dalam dokumen RKK selaras dengan Jadual B1-14.

Sekian, terima kasih.

MAJOR PROJECT COMPONENT

Main Development Area = 98.31 ha (242.92 ac)



Plot	Development Component	Area		
		ac	ha	%*
Commercial				
7	Commercial plot	8.38	3.39	3.37
10	Commercial plot	28.51	11.54	11.48
12	Commercial plot	22.33	9.04	8.99
13	Commercial plot	5.47	2.21	2.20
14	Commercial plot	21.78	8.81	8.77
15	Commercial plot	8.32	3.37	3.35
19	Commercial plot	2.91	11.18	1.17
20	Commercial plot	1.01	0.41	0.41
21	Commercial plot	1.32	0.53	0.53
	Sub-total	**100.03**	**40.48**	**40.27**
Residential				
8	Residential plot	27.90	11.29	11.23
9	Residential plot	20.03	8.11	8.06
	Sub-total	**47.93**	**19.40**	**19.29**
Eco-tourism				
6A	Eco-tourism plot	41.39	16.75	16.66
6C	Eco-tourism plot	7.90	3.20	3.18
	Sub-total	**49.29**	**19.95**	**19.84**
To be Surrendered to Government (Amenities)				
6B	Surau, kindergarten and public hall	2.30	0.93	0.93
	Sub-total	**2.30**	**0.93**	**0.93**
To be Surrendered to Government (Infrastructure and Utilities)				
-	Private infrastructure (66' road)	11.59	4.69	4.67
16	Sewage treatment plant (STP)	2.50	1.01	1.01
17	Retention Pond	9.11	3.69	3.66
-	River/ drainage reserve	11.81	10.15	4.75
11	Main distribution sub-station (PPU)	0.55	0.22	0.22
18	Transmission main intake (PMU)	5.93	2.40	2.39
22	TNB LILO	1.88	0.76	0.76
	Sub-total	**43.37**	**17.55**	**17.46**
	Total	**242.92**	**98.31**	**97.79**

Project Area	• Main Development Area = 98.31 ha (242.92 ac). • Additional earthwork area (cut and fill) beyond main development area = 1.689 ha (4.174 ac)
Commercial	• Nine (9) plots, covering 40.48 ha (100.03 ac), for serviced apartment and to provide basic public services.
Residential	• Two (2) plots, covering 19.40 ha (47.93 ac), for various types of landed house.
Amenities	• 0.93-ha (2.30-ac) lots for *surau*, kindergarten and public hall.
Eco-tourism	• Two (2) plots, covering 19.95 ha (49.29 ac).

Facilities, Infrastructure and Utilities,

Electricity Demand
Total of 48,787 kW; supplied by TNB. One PMU and one PPU to be constructed within Project site.

Water Demand
~19.24 million L/day; direct tapping from a new water treatment plant (by Seri Aliran Sdn Bhd), located NW of the site.

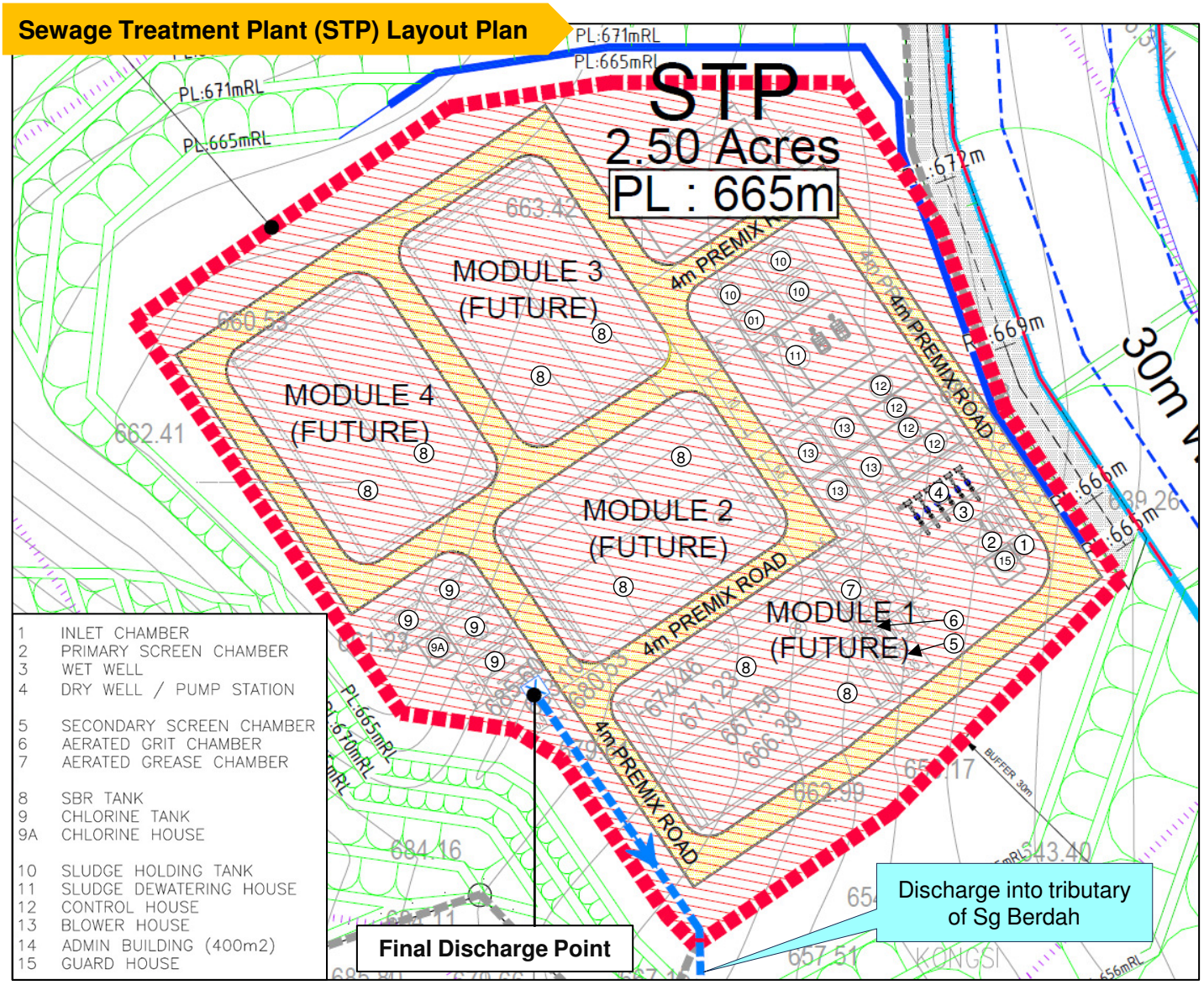
Sewage
59,736 PE; one (1) STP with capacity of 73,000 P.E. shall be constructed at the south of the Project site.

Drainage
Existing stream/river to be realigned/ straightened, forming part of the stormwater drainage system. OSD ponds and tanks will be used for site runoff management

Road Network
Covers 4.67% of the Project site (4.96 ha) comprising of a two-lane dual carriageway internal road connecting from adjacent Plot A of Rimbawan@Genting Highland to facilitate traffic movement.

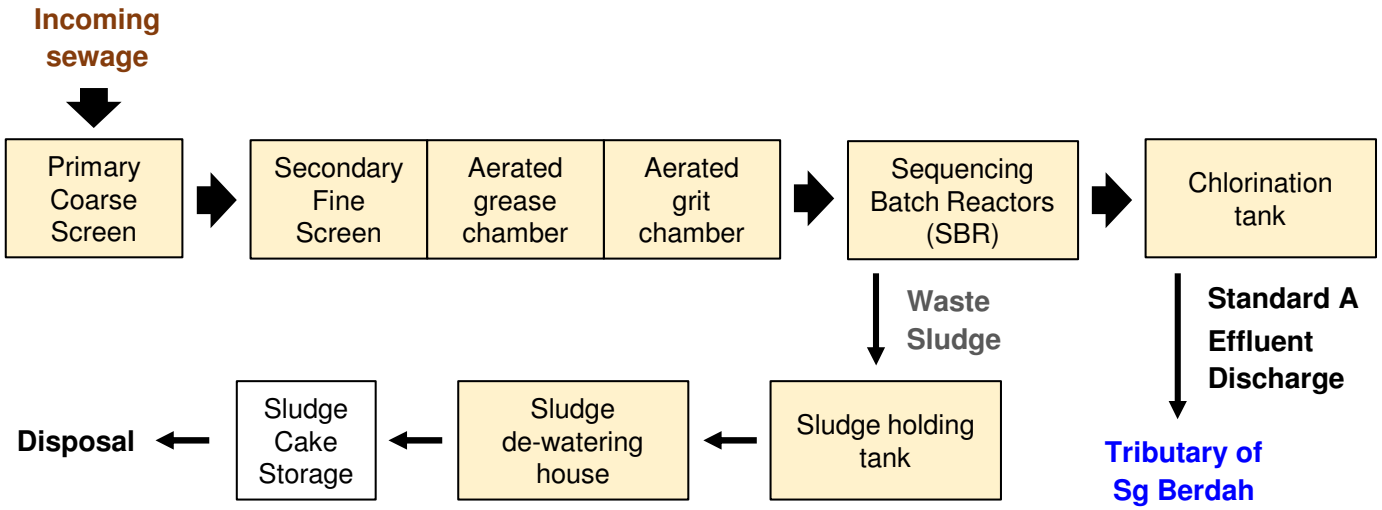
MAJOR PROJECT DEVELOPMENT

Sewage Treatment Plant (STP) Layout Plan



STP capacity: 73,000 P.E., cater for sewage from the Project and neighbouring Plot A.

STP Flow Chart:



PROJECT ACTIVITIES

Pre-Construction Phase

- Project planning.
- Preliminary surveys.
- Conceptual design and engineering design.
- Data gathering and field works surveys.

Construction Phase

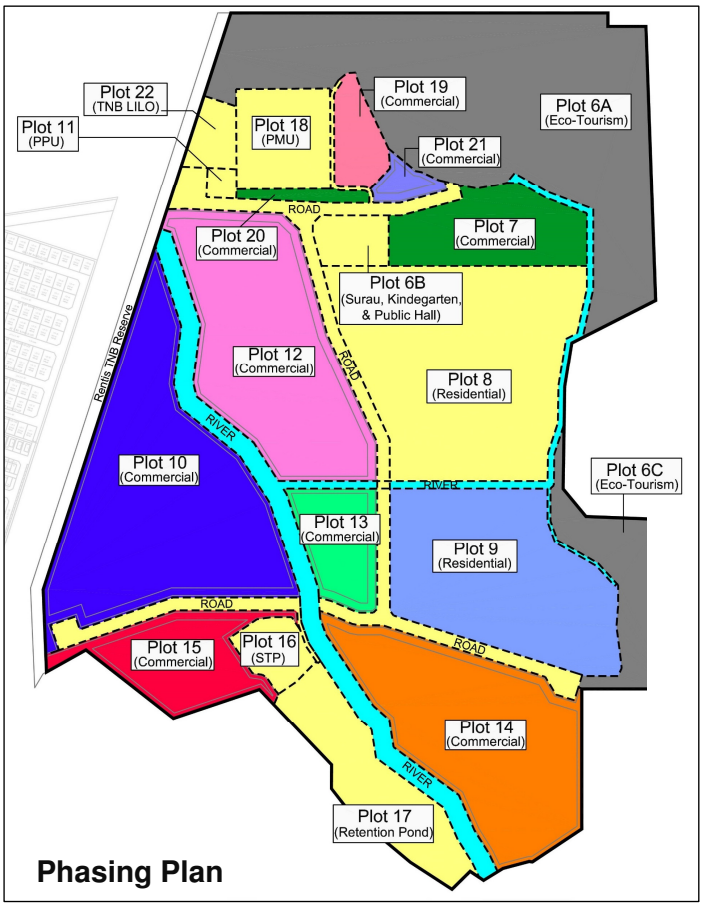
- Site preparation & workforce deployment
- Land clearing.
- Earthwork and rock excavation
- Platforming, construction of infrastructure and utilities.
- Landscaping works.

Operational Phase

- Operation and maintenance of infrastructure, utilities and facilities.

PROJECT IMPLEMENTATION SCHEDULE

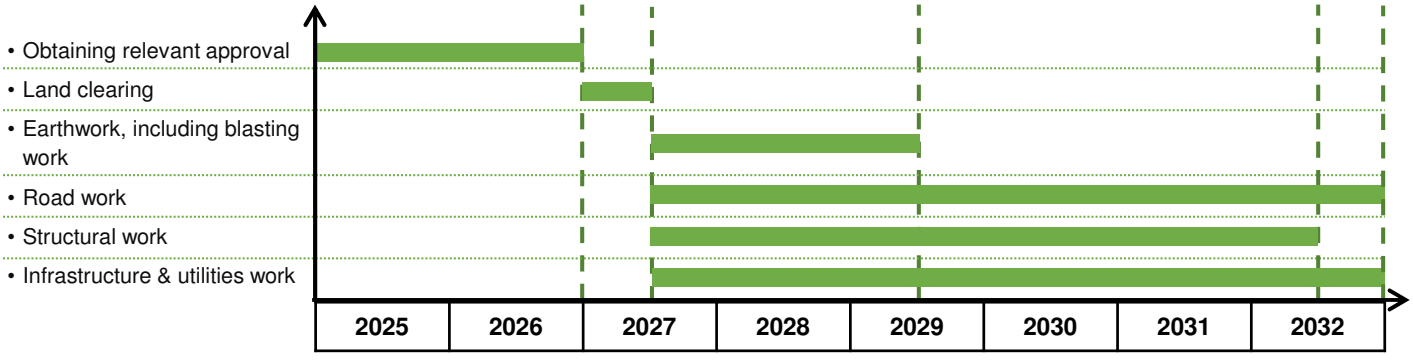
- **The Project will be developed in 10 phases over 24 years (2027 – 2050).**



Phasing Plan

Phase	Component	Target Completion (Year)
1	Road	2030
	Plot 11 – Transmission main intake (PPU)	2030
	Plot 16 – Sewage treatment plant (STP)	2030
	Plot 17 – Retention pond	2030
	Plot 18 – Main distribution sub-station (PMU)	2030
	Plot 22 – TNB LILO	2030
	Plot 8 – Residential Plot	2032
	Plot 6B – Surau, kindergarten and public hall	2034
2	Plot 9 – Residential Plot	2032
3	Plot 7 – Commercial plot	2036
	Plot 20 – Commercial plot	2036
4	Plot 12 – Commercial plot	2040
5	Plot 13 – Commercial plot	2042
6	Plot 10 – Commercial plot	2044
7	Plot 19 – Commercial plot	2044
8	Plot 21 – Commercial plot	2045
9	Plot 14 – Commercial plot	2048
10	Plot 15 – Commercial plot	2050

Phase 1 Development Timeline



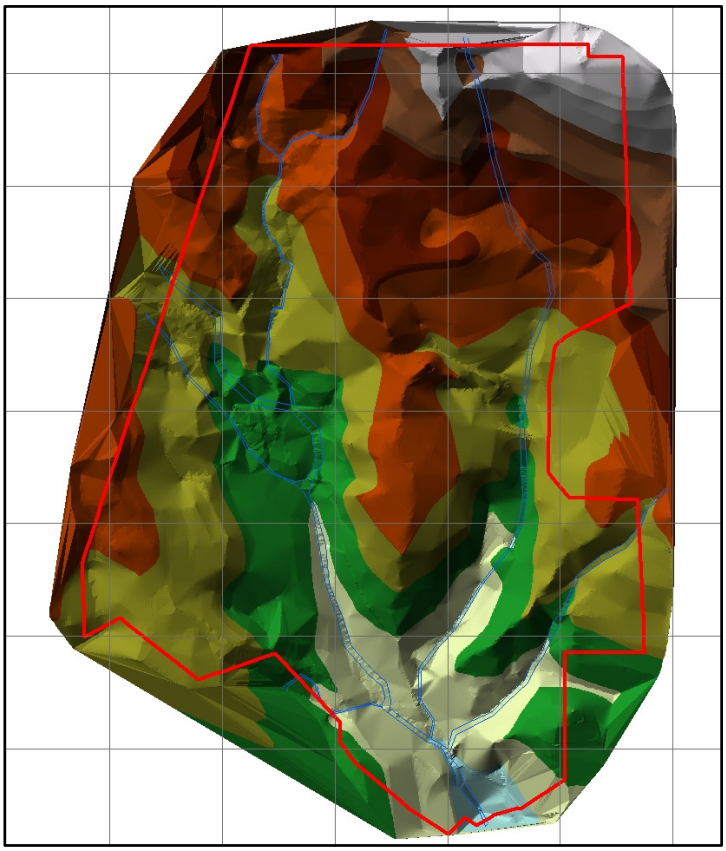
EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

TOPOGRAPHY & SLOPE

Existing Environment

Topography

- Characterised by hilly terrain, with elevation ranging from 563 – 949 m above mean sea level (MSL).
- Highest elevation located at north-eastern of site.

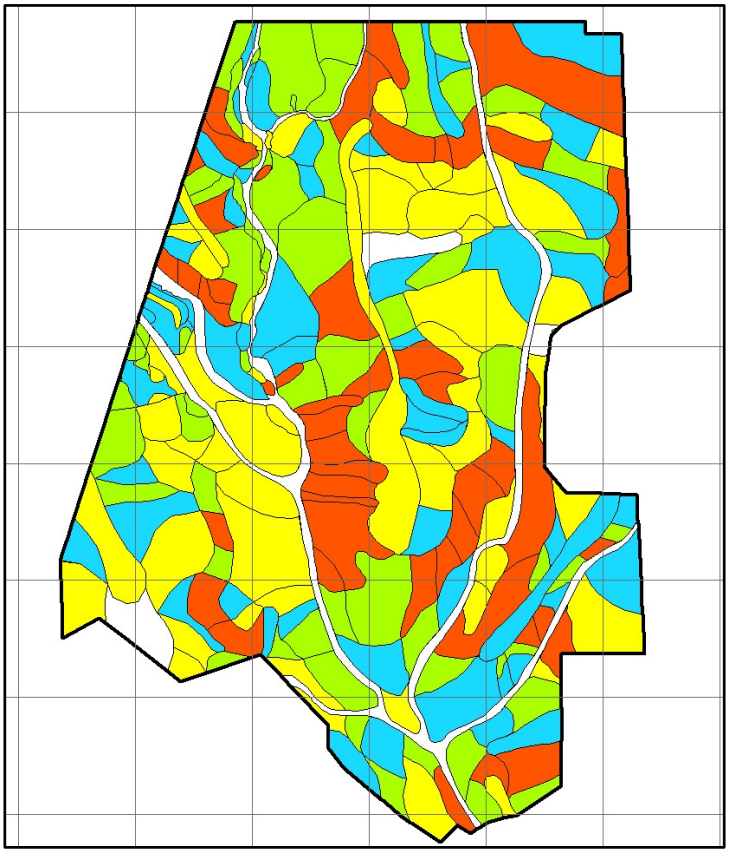


Slope

- Class I & II slopes = 58.65%.
- Class III & IV slopes = 41.75%.

Classification	Slope (°)	Area (%)
Class I	0 – <5	8.26
	≥ 5 – <15	28.49
Class II	≥ 15 – <25	21.50
Class III	≥ 25 – <35	21.16
Class IV	≥ 35	20.59

Source: Geo Solution Resources, 2025.



EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

EROSION AND SEDIMENT YIELD

Potential Impacts

Construction Phase

- Soil erosion is expected during land clearing and earthwork activities.
- Sedimentation at the nearby waterways is expected.

Operational Phase

- Lower soil erosion and sediment yield expected, as the Project site will be paved or concretised; revegetated or landscaped.

Estimated Soil Loss and Sediment Yield at Project Site:

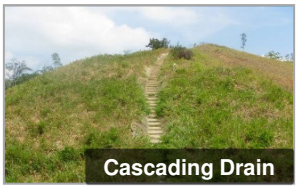
Scenario		Average Soil Loss (t/ha/yr)	Soil Erosion Risk Class	Sediment Yield (tonne/storm)
Pre-construction Phase		14.26	Moderate	30.565
Construction Phase	Without Mitigation Measures	3,461.02	Very high	15.678.229
	With Mitigation Measures	556.99	Very high	2,511.758
Operational Phase		17.41	Moderate	6.149

Mitigation Measures

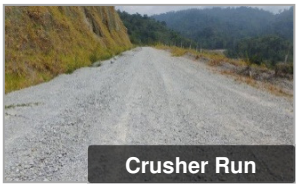
Construction Phase:

- Implementation of LD-P2M2 and BMPs for:

(i) Runoff Management



(ii) Erosion Control



(iii) Sediment Control

(iv) Permanent Slope Stabilisation

Close/ grid turfing

Hydroseeding

Runoff Control

Source: Photo Archives, ASPEC, 2025.
* For illustration only.

Operational Phase:

- No additional P2M2 needed as most areas would be turfed, paved or landscaped.
- Proper implementation and maintenance of turfing and slope stabilisation measures.

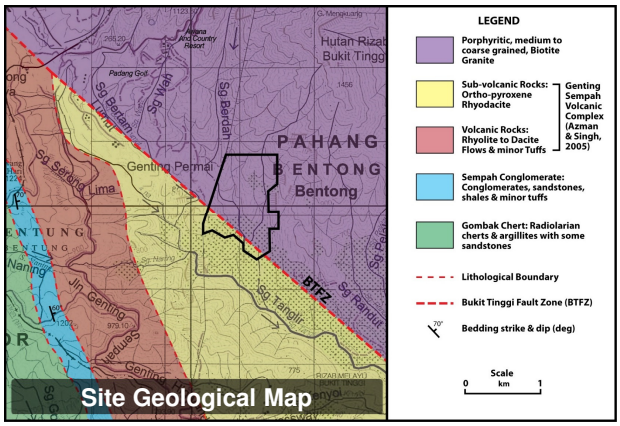
EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

GEOMORPHOLOGY, SOILS AND GEOLOGY

Existing Environment

Regional Geology:

- The Project site is located within **undifferentiated acidic igneous rock**, with four lithologic units present:
  i. Porphyritic biotite granite;
  ii. Genting Sempah Volcanic Complex;
  iii. Sempah Conglomerate; and
  iv. Gombak Chert.



Boreholes:

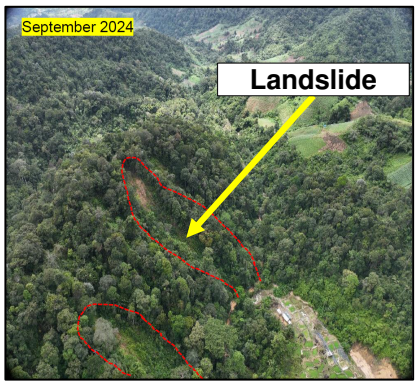
- 40 boreholes (BH01 – BH40)

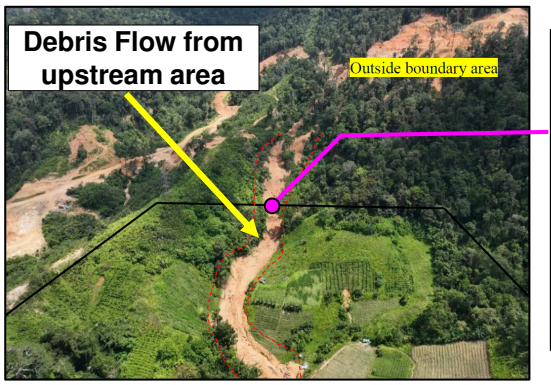
Soils:

- **Steepland**, characterised by shallow soils with juvenile profiles and slopes exceeding 20°.

Geological Hazards

- Seismic Hazard: Project will experience a PGA of 9% g.
- Number of relict landslides observed on-site.
- Evidence of debris flow was observed, originating upstream and outside the Project site.





Potential Impacts

Construction Phase:

- Soil erosion and heavy surface run-off from clearing and removal of surface vegetation.
- Flow of surface water may be impeded due to improper placement of fill materials and construction of embankments.
- Stability and erosion of cut slopes.
- Debris flow due to land clearing activities upstream.

Operational Phase:

- Potential reduction in infiltration of surface water after establishment of a permanent vegetative cover.
- Soil erosion is expected to be minimal.

Mitigation Measures

Construction Phase:

- Minimise removal of vegetation cover.
- Implement hydro-seeding, spot-turfing or close turfing as soon as working platforms are completed.
- Ensure stability at slope cuts with slope protection.
- Install interceptor drains at the crests of cuts and drains along the berms.

Operational Phase:

- Regular maintenance of surface and subsurface drainage systems.
- Regular and systematic “walk-over” surveys along the berms.
- Continuous monitoring of upstream areas and beyond the boundary of Project site.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

HYDROLOGY AND DRAINAGE

Existing Environment

Rainfall, Surface Runoff and Water-balance:

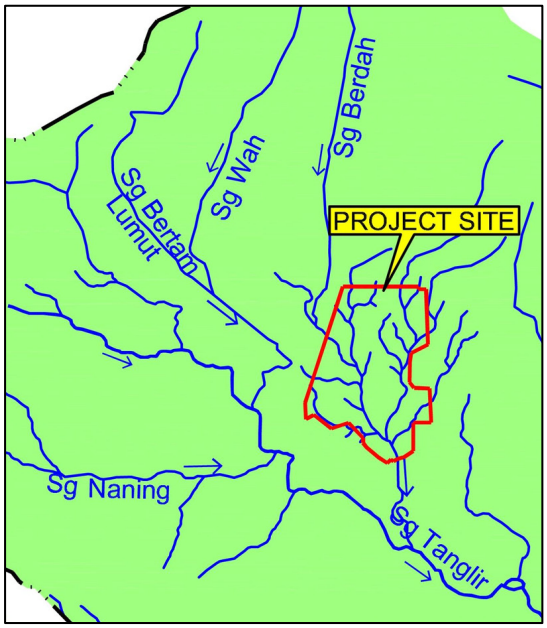
- Average annual rainfall: 2,250 – 2,500 mm
- Annual potential evapotranspiration: 1,500 mm
- Potential runoff: 750 – 1,000 mm

Hydrogeology:

- Low aquifer potential region, with very little available groundwater source.
- No active groundwater well found within the vicinity of the Project site.

River Basin:

- Located within the upper part of the Sg Tanglir basin.
- Receiving waterways: Sg Berdah and its tributaries that flowing through Project site.



Water Intake Point (WIP)/ Water Treatment Plant (WTP):

- None WIP and WTP within 5-km ZOS. Two (2) WIPs and three (3) WTPs found beyond ZOS.
- WIP for Loji Rawatan Air Batu 4 is located >15 km downstream at Sg Benus; may be affected if any water pollution from the Project site.

Downstream River Water Usage

- Significant user: *Pusat Pengembangan Akuakultur* (PPA) Bukit Tinggi – affected by silted water from Sg Tanglir, leading to loss of cultured fish.

Potential Impacts

Construction Phase:

- Any increase in surface runoff upstream will affect the flow conditions of the river within Project site and downstream areas, especially during heavy rain.
- River/Stream blockage and reduction of river carrying capacity.
- Debris flow may decimate infrastructure, disrupt local economies and displace residents.
- Sg Berdah will be realigned, with parts of it being filled and straightened.

Operational Phase:

- Increase in peak discharge is expected due to the increase of impermeable surface.
- Below ground on-site detention tank and retention pond with 10-year and 100-year ARI respectively will be provided.

Mitigation Measures

Construction Phase:

- Prepare adequate drainage to convey flows effectively and reduce localised ponding.
- Installation of earth drains, sediment basins and silt fences in accordance with MSMA-2 requirements to minimise sediment runoff.
- Turfing to reduce erosion and promote infiltration.
- Regular maintenance and inspection of drainage systems and sediment basins.

Operational Phase:

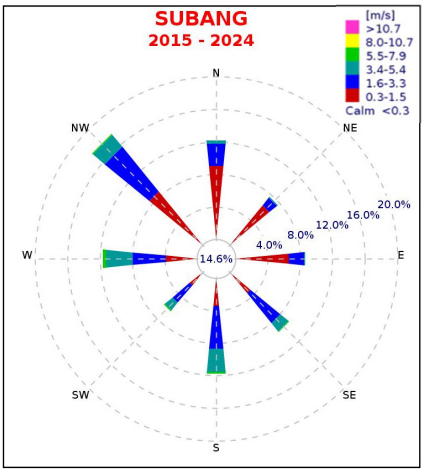
- Design permanent drainage system to channel the runoff to OSD tank system or retention pond.
- Frequent desilting, regular inspection and maintenance of OSD tank and retention pond.
- Continual maintenance and improvement to control soil erosion and sedimentation of the rivers.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

CLIMATE

Existing Environment

- **Rainfall:** Highest: 3,564.8 mm (2021); Lowest: 2,632.8 mm (2017).
- **Raindays:** Highest: 227 days (2023); Lowest: 188 days (2021).
- **Temperature:** Mean annual 24-hr: Fluctuated by 0.8 °C from 27.7°C (2018) to 28.5ºC (2016 and 2024); Mean monthly 24-hr: Fluctuated by 1.3°C from 27.4ºC (November and December) to 28.7ºC (May).
- **Relative Humidity:** Mean monthly max: 90.7% (December) to 85.3% (February); Mean monthly min: 60.6% (February) to 72.9% (November).
- **Surface Wind:** Mostly from the northwest (17.6%), north (12.3%) and south (11.8%), with wind speed up to 7.9 m/s.



WASTE GENERATION

Potential Impacts

- Types of wastes:

Construction	Operation
➢ Biomass (5,743.28 tonnes). ➢ Excess/ Unsuitable earths and spoils (99,000 m^3 excess earth). ➢ C&D wastes. ➢ Scheduled wastes. ➢ Municipal solid wastes. ➢ Sewage.	➢ Municipal solid wastes. ➢ Scheduled wastes. ➢ Sewage.

- Improper waste management will lead to water pollution, air pollution, odour and health risk.

Mitigation Measures

Construction Phase

- **Biomass:** Dispose off residue at local authority-licensed landfill.
- **Excess Earth Materials:** Stockpile temporarily on-site and reused as fill materials.
- **C&D Wastes:** Recycle as much as possible; dispose off residual waste at landfill.
- **Scheduled Wastes:** Manage properly by competent personnel in accordance with regulations.
- **Municipal Solid Wastes:** Provide sufficient bin on-site; centralised in larger RORO bin for dispose off to landfill.
- **Sewage:** Provide temporary/ mobile toilets, complying with the MOH or SPAN specifications.
- Open burning and the disposal of any wastes into waterways are strictly prohibited.
- Maintain regular housekeeping.

Operational Phase

- Proper management of solid wastes and scheduled wastes for final disposal.
- The sewerage piping and STP shall be maintained to prevent leakages and functional failure.

Open burning is prohibited

Proper scheduled waste storage area

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

RIVER WATER QUALITY

Existing Environment

Baseline Sampling (30 Oct – 2 Nov 2024):

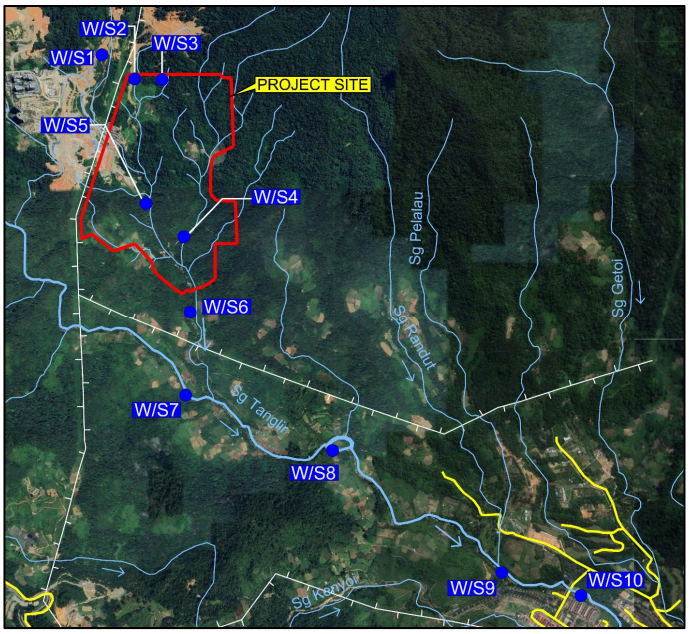
- 10 water sampling points (W1 – W10) at identified locations at Sg Berdah, its tributaries and Sg Tanglir.

Baseline River Water Quality:

- **W1, W3, W4, W7, W8 & W10:** 'Clean' under Class II status.
- **W5 & W9:** 'Slightly Polluted' under Class II status.
- **W2 & W6:** 'Slightly Polluted' under Class III status.

Pollution Sources:

- Possible sources were from the debris flow originated upstream of the Project site and discharge from the surrounding development.



Potential Impacts

Construction Phase:

- Potential pollution due to turbid runoff, oil spill/ leaks and indiscriminate waste disposal.
- The QUAL2K simulation shows that, without mitigation measures, the river water quality will adversely deteriorate due to high TSS level.
- With mitigation measures, the TSS level in the receiving rivers is expected to be diluted to Class II level.

Operational Phase:

- Main pollution sources is sewage effluent from STP.
- Modelling results show that TSS and AN levels of the receiving rivers will exceed Class III or IV limits even if the STP effluent quality complied with regulations and design standard.

Mitigation Measures

Construction Phase:

- Adequate erosion and sediment control.
- Proper Construction materials and stockpile management.
- Proper Fuel and chemical management.
- Proper Waste management (C&D waste, domestic and scheduled waste).

Operational Phase:

- The construction of centralised STP must follow the stringent criteria of the STP design.
- Regular inspection and maintenance is required to ensure its functionality.
- Proper waste management.

Residual Impact:

- Residual silt and sediments from construction.
- Adverse impacts during STP failure.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

AIR QUALITY

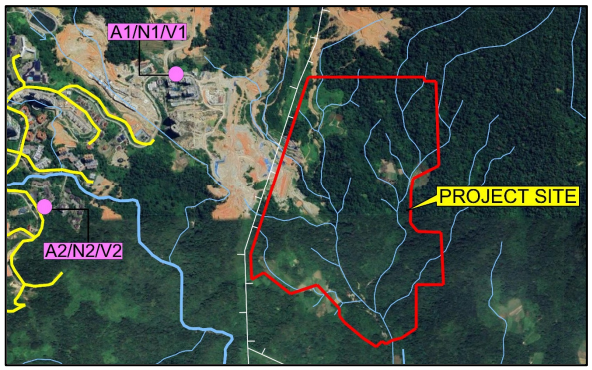
Existing Environment

Baseline Monitoring (23 – 24 Sep 2024):

- Two (2) sampling locations.

Baseline Ambient Air Quality:

- All baseline air quality parameters $PM_{2.5}$, PM_{10}, NO_2, SO_2, CO and O_3 complied with the Standard 2020 of the Malaysian Ambient Air Quality Standards (MAAQS).



Potential Impacts

Construction Phase:

- Potential impacts: Dust generation from construction activities and moving vehicles, vehicular and machinery emission, malodour.

Air Pollution Assessment (Dust Dispersion)

- **Method:** USEPA ISCSTS Gaussian Model simulated dust dispersion from general construction activities under worst-case scenario.
- **Findings:**
  - (i) No PM_{10} exceedance are expected beyond Project site.
  - (ii) Dust level (PM_{10}) at the nearby sensitive receptor remain low and within the Standard 2020 of MAAQS.

Air Pollution Assessment (Blasting Activity)

- **Method:** USEPA AERMOD simulated fugitive dust from blasting activities.
- **Findings:**
  - (i) The 24-hr Maximum Average Incremental Concentration (MAIC) and Ground Level Concentration (GLC) of PM_{10}, at the identified Air Sensitive Receptors (ASRs) were below the Standard 2020 of MAAQS.
  - (ii) Predicted that no significant air quality impact with BMPs in place, during normal blasting operation.

Operational Phase:

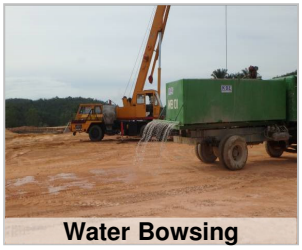
- Vehicular emission from the increase in traffic.
- Stench from improper solid waste management and STP failure.

Mitigation Measures

Construction Phase:

- Adequate dust control through water bowsing, wash trough for wheels, impose speed limit within the construction site, adherence to applicable guidelines.
- Maintain on-site vehicles, equipment and machinery regularly.
- Provide PPE to the workers working in dusty area.
- Implement proper waste management to prevent odour.
- Maintain vegetation at non-working area as windbreakers to help alleviate dust generation.
- Cease blasting activities during high wind speed periods.
- Prohibit open burning.
- Regular air quality monitoring.
- Address public complaints promptly.


Vegetative Buffer


Water Bowsing

Operational Phase:

- Tree planting and landscaped to create natural filter for dust and gas emitted from vehicles.
- Proper waste management.
- Regular STP maintenance and monitoring.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

ODOUR

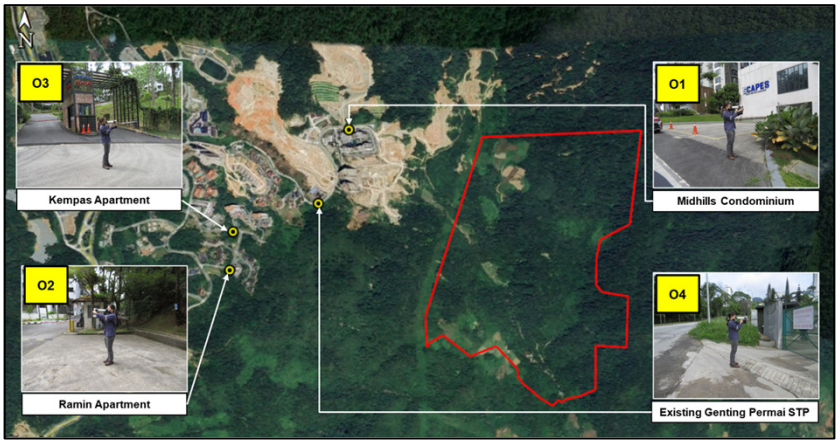
Existing Environment

Baseline Monitoring (27 – 28 May 2025):

- Four (4) monitoring locations.

Baseline Odour:

- Odour concentration perceived at nearest receptors was within range of 0 D/T [Neutral] to 7 D/T [Objectionable].
- The perceived unpleasant smells detected were vehicle combustion and dust.



Potential Impacts

Construction Phase:

- Odour from indiscriminate burning of waste.
- Stench due to unsanitary conditions (e.g., unclean toilets, improper solid waste management, etc.).

Operational Phase:

- Odour due to the gases generated from STP process.

Odour Assessment

- **Method:** USEPA AERMOD simulated fugitive odour emission from open system STP for:
  - Scenario 1: Normal operation without odour removal system.
  - Scenario 2: Normal operation with odour removal system.
- **Findings:**
  (i) Scenario 1: Predicted 1-hr MAIC of residual odour at the identified sensitive receptor < 1 ou/m^3, which is within the *Draft Odour Regulation 201x's* referenced and adopted odour limit of 7 ou/m^3.
  (ii) Scenario 2: Similar result – within the adopted odour of 7 ou/m^3.

Mitigation Measures

Construction Phase:

- Regular domestic waste collection and disposal from construction site.
- Practice regular housekeeping and prohibit open burning.
- Proper maintenance and de-sludging of any septic tanks or mobile toilets.

Operational Phase:

- Comply with odour control requirements as per the *Malaysian Sewerage Industry Guidelines: Volume IV: Sewage Treatment Plants (Third Edition)* (SPAN, 2009).
- Where require, ensure any stack/ chimney of the odour removal system are designed as per MSIG and DOE guidelines.
- Landscape and beautify the buffer zone of STP, to provide natural odour screening.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

NOISE AND VIBRATION

Existing Environment

Baseline Monitoring (23 – 24 Sep 2024):

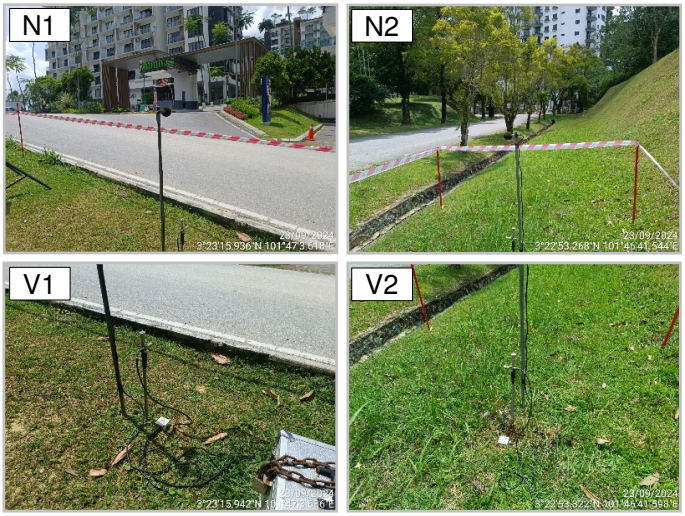
- Two (2) monitoring locations.

Baseline Noise Level:

- Daytime: Noise level at N1 below the DOE permissible limits of 60 dB(A); Noise level at N2 was found exceeded the limits.
- Night time: Noise levels at N1 and N2 slightly below the DOE permissible limits of 55 dB(A).

Baseline Ground Vibration:

- Ground vibration level, during daytime and night time at V1 and V2 are within the DOE recommended limits.



* Similar locations as air quality baseline monitoring points.

Potential Impacts

Construction Phase:

- Increase ambient noise from vehicle movement, construction machinery.
- Noise impacts towards construction workers due to exposure to loud noise.
- Potential ground vibration generated from piling and blasting activities.

Operational Phase:

- Minimal noise impacts from vehicles movement and community-based noises are expected.
- No vibration impacts are expected.

Assessment of Noise from Construction

- **Method:** Computed noise level at different distance, under worst-case scenario where all machinery operate simultaneously.
- **Findings:**
  (i) Under worst-case scenario, the area within 1-km ZOS will experience noise levels which would exceed the DOE permissible limits of 60 dB(A) during day time.

Assessment of Noise during Blasting Activities

- **Method:** Predicted the noise levels from rock excavation and blasting using CadnaA, for:
  - Scenario 1: Normal Operation – operating of machinery and equipment at blasting area.
  - Scenario 2: Maximum Blasting of 120 dBL.
  - Scenario 3: Normal Blasting.
- **Findings:**
  (i) Scenario 1: Predicted cumulative noise levels ranging from 57.3 to 63.4 dB(A). The anticipated community response to noise was "None" at all identified sensitive receptors.
  (ii) Scenario 2: Predicted cumulative noise levels ranging from 57.3 to 63.4 dB(A). The anticipated community response to noise was insignificant at all identified sensitive receptors.
  (iii) Scenario 3: Predicted cumulative noise levels ranging from 56.9 to 62.8 dB(A). The anticipated community response to noise was insignificant at all identified sensitive receptors.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

NOISE AND VIBRATION [cont']

Potential Impacts

Assessment of Vibration from Blasting

- **Method:** Assessed based on the quantity of explosives (as per blast design).
- **Findings:**
  (i) The identified Zone of Influence of 5 mm/s ppv (JMG limits) are 31.2 m and 36.5 m from the blasting area.
  (ii) None identified sensitive receptors are within the Zone of Influence.

Mitigation Measures

Noise Control during Construction Phase:

- Refer *Annex E: Guidance of Noise Control* of *Guidelines for Environmental Noise Limits and Control, Third Edition*, as guidance.
- Restrict the construction activities period during daytime only.
- Erect hoardings and barriers around the Project site.
- Maintain all equipment and machineries regularly.
- Provision of silencers if applicable.
- Workers to work in shifts and use proper PPE.
- Impose speed limits.

Ground Vibration Control during Construction Phase:

- Refer *Annex E: Management and Mitigation of Vibration* of *Guidelines for Environmental Vibration Limits and Control, Third Edition*, as guidance.
- Hand dug caisson and micro-pilling are selected to minimise vibration impacts.
- Operate high-vibration equipment in phases, avoiding simultaneous used.
- Plan logistic properly to reduce traffic-induced vibration.

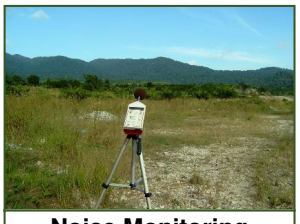
General Management During Construction:

- Address public complaint promptly.
- Conduct regular ambient noise and vibration monitoring.

Control of Blasting Noise and Vibration:

- Blasting activity shall comply with:
  - Mineral Development (Blasting) Regulations 2013.
  - Explosives Act 1957.
  - Explosive Rules 1923.
  - *Garis Panduan Kerja Peletupan Pembangunan JMG.GP.11*
- Blasting Operation Report to be prepared by licensed blasting engineer and to be approved by JMG.
- Implement safety measures to protect workers and the public.
- Monitor noise, vibration and air overpressure at sensitive receptors to ensure compliance with permissible limits.

Erection of Composite Perimeter Hoarding



Noise Monitoring

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

LANDUSE

Existing Environment

- Project site is located within **BP1: Bentong** and under **BPK1.6B: Genting Highlands** and currently under a mixture of secondary forest, regenerating forest and small patches of agricultural holdings.
- **Landuse within 5km ZOS:**

NWQ: Populated area comprising settlements, commercial, institutions and forest reserves (Batang Kali FR and Bukit Tinggi FR).

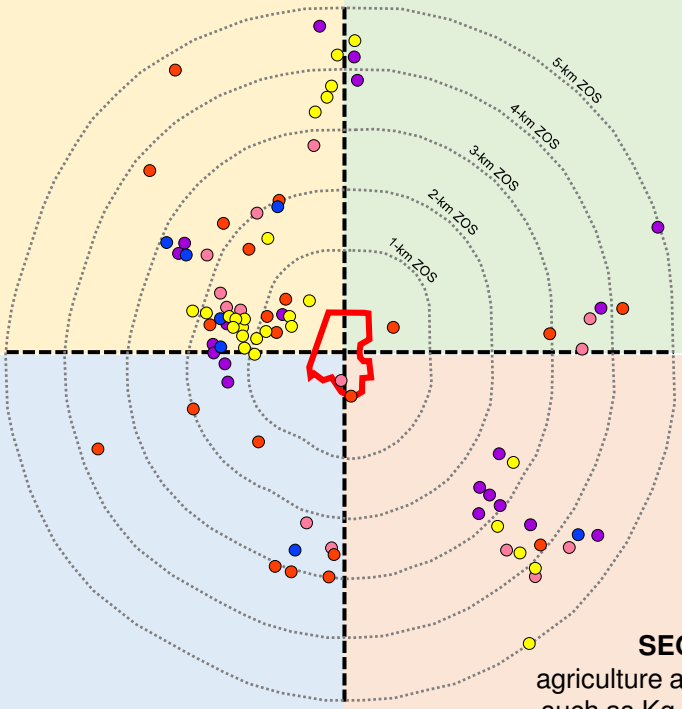
- **19** Settlements
- **6** Tourism
- **6** Institution
- **5** Commercial
- **9** Landmark

Nearest Settlement:

- Midhills@Genting, ~594.35 m northwest

NEQ: Occupied by the Bukit Tinggi FR with two of the most prominent tourism spots in Bentong District: Genting Highlands Theme Park and Berjaya Hills Bukit Tinggi.

- **1** Settlements
- **4** Tourism
- **2** Institution
- **5** Commercial
- **3** Landmark



- **1** Settlements
- **3** Tourism
- **3** Institution
- **1** Commercial
- **7** Landmark

SWQ: Forest reserve areas (Hulu Gombak Forest Reserve), smallholdings agriculture, key infrastructure (Karak Expressway, Genting Sempah RnR), and recreational sites (Taman Puncak Rimba with villas/bungalows for rent).

- **5** Settlements
- **7** Tourism
- **3** Institution
- **1** Commercial
- **2** Landmark

SEQ: Features smallholdings agriculture alongside residential areas such as Kg Bukit Tinggi, Taman Bukit Tinggi, etc., located along the Karak Expressway. Consists of commercial hubs, tourist spots, recreation facilities and aquaculture development center by the Department of Fishery.

- **Environmentally Sensitive Areas (ESAs)**
  - **Disaster Risk ESA (Highland):** 300 – 1,200 m
  - **Heritage ESA:** Bukit Tinggi FR, adjacent to the Project site.

Potential Impacts

Construction Phase:

- Permanent change to the landuse at the Project site.
- Risk of illegal encroachment to the vacant and forest fringe is expected to be increased.

Operational Phase:

- Large population will be introduced into the ZOS.
- No significant impact is expected.

Mitigation Measures

- All mitigation measures and recommendations are collectively relevant and apply to the indirect impacts on landuse.
- A minimal 20 m setback is recommended to be established at the Project boundary, and 60 for the boundary adjacent to the forest reserve.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

BIOLOGICAL RESOURCES

Existing Environment

Survey Methodology

- Fixed quadrat plot and rapid botanical survey (RBS).
- Visual Encounter Survey (VES) – direct wildlife observation.
- Wildlife camera trapping (15 locations).
- Footprint measurement.
- Literature review.

Flora Assessment:

- **Species diversity**: 89 species recorded.
- Malaysia Plant Red List: 1 species is under Near Threatened, 12 Least Concern species, the rest were Not Evaluated or no data.

Fauna Assessment:

Mammals:

- **Species diversity**: 16 species from 10 families.
- **IUCN Redlist:** 3 "Endangered" species, 1 "Near Threatened" species (*Presbytis siamensis*).
- **WCA 2010:** 5 "Totally Protected" species, 4 "Protected" species.

Avian

- **Species diversity**: 36 species from 22 families.
- **IUCN Redlist**: 1 "Vulnerable" species (*Acridotheres javanicus*), 4 Near Threatened" species.
- **WCA 2010**: 23 "Totally Protected" species and 4 "Protected" species.

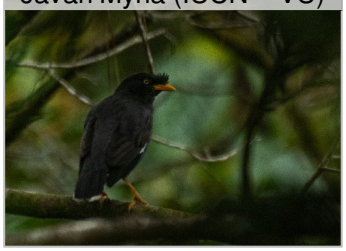
Herpetofauna

- **Species diversity:** 7 species from 5 families.
- **WCA 2010**: 4 "Protected" species.

Leopard Cat (WCA – TP)

Long-tailed Macaque (WCA – P)

Javan Myna (IUCN – VU)



Giant River Toad (WCA – P)

Potential Impacts

Construction Phase:

- Loss of vegetation.
- Reduction in soil quality.
- Habitat disruption for fauna.
- Increase in land surface temperature.
- Illegal poaching.
- Human-wildlife conflict.

Operational Phase:

- Inhibit growth of any vegetation.
- Habitat loss which will lead to migration of animals.
- Illegal poaching.
- Human-wildlife conflict.

Mitigation Measures

Construction Phase:

- Establish at least 60 m buffer zones from the boundary of the forest reserves.
- Logging should be conducted with the permission of Pahang Forestry Department.
- Re-vegetate cleared and completed areas.
- Trap and translocate wildlife from the Project site.
- Restrict activities beyond construction areas.

Operational Phase:

- Plant native trees with higher grips to enrich vegetation cover.
- Promote local species in tree planting.
- Contact PERHILITAN, BOMBA or JPAM if any wildlife are found.
- Local wildlife patrolling programmes.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

SOCIO-ECONOMIC

Existing Environment

Social Survey

- **Sampling frame:** 995 respondents.

Sample Size:

Residential: 374

Tourist: 384

Commercial/ Business Operators: 237

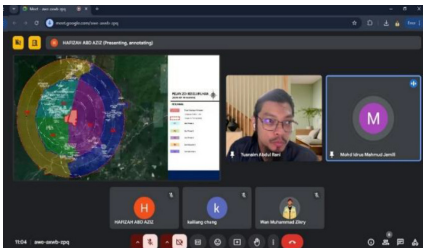
- **Perception:** 90.2% agreed the Project; while 6.1% disagreed the Project.

Focus Group Discussions (FGDs):

- FGDs were held with:
  - Government Agencies on 24 Jan 2025.
  - Local Communities' Representatives on 22 Feb 2025.

Summarised Issues Raised:

- Landslides and flood risk.
- Increase in foreign workers.
- Traffic and road congestion.



Potential Impacts

Construction Phase:

- Positive impacts:
  - Economic and material well-being.
  - Boost local employment and business opportunities.
- Risk of infectious diseases due to influx of foreign workers.
- Environmental pollution and health concerns.
- Increase in traffic movement and nuisances caused by heavy vehicles.
- Road damage and road safety issues.
- Social issues due to workers influx.

Operational Phase:

- Enhance residents' quality of life.
- Increase economic activity, attract more residents and meet growing market demands.
- Improve roads, public transport, telecommunications and utilities.
- Increase traffic congestion.
- Tourism growth.
- Spin-off business and employment opportunities.

Mitigation Measures

Construction Phase:

- Implement environmental pollution mitigations e.g. water, dust, noise, etc.
- Implement traffic management plan.
- Provide necessary warning signs.
- Prioritise local workers.
- Maintain cleanliness of site and frequent housekeeping.
- Implement health and safety plan and compliance with DOSH.

Operational Phase:

- Improve transportation facilities.
- Establish risk management team & communication channel to address complaints.
- Appropriate vegetation to be planted to stabilise soil and reduce landslide risks.
- Regular soil monitoring.
- Rental quota for serviced apartments allocated to foreigners.
- Regular market assessments to monitor property price trends.

EXISTING ENVIRONMENT, IMPACT ASSESSMENT & MITIGATION MEASURES

TRAFFIC

Existing Environment

Connectivity:
- Main road to the Project site: KL-Karak Expressway, Jalan Genting Highlands and Jalan Genting Permai.

Traffic Composition:
- Morning peak hour: 7:00 am – 9:00 am.
- Evening peak hour: 5:00 pm – 7:00 pm.
- Main road users during peak hours: Cars and motorcycles.

Level of Service (LOS):
- All existing roads: Ranging between **LOS A and LOS C** during weekday, Ranging between **LOS A and LOS B** during weekend.
- Existing junction: All junction operating at excellent levels of service at **LOS A** during both morning and evening peak hours for both weekday and weekend except at Junction 2 (LOS B) during evening peak hours during weekend.

Potential Impacts

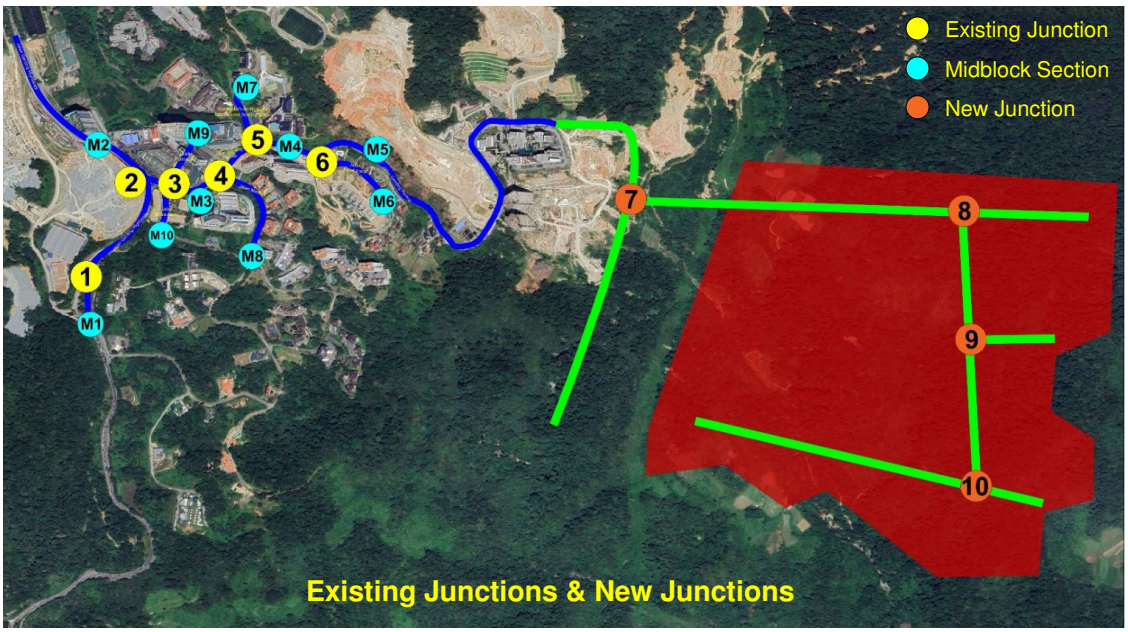
Construction Phase:
- Increase in heavy vehicle traffic.
- Materials spillage.
- Potential road damage, e.g., potholes, on existing public roads.
- Travel delays.
- Increase in vehicular emission.

Operational Phase:
- Morning Peak Hour: Project is expected to generate **338 PCU**.
- Evening Peak Hour: Project is expected to generate **384 PCU**.
- Expected road conditions: **LOS B to LOS D** during peak hours in Year **2037**.
- Expected junction conditions: **LOS A to LOS F** during peak hours in Year **2037**.

Mitigation Measures

Construction Phase:
- Proper logistic management plan.
- Wheel cleaning/ tyre washing at exit/entrance.
- Impose speed limits.
- Provision of adequate warning signage and lightings
  near the Project site entrance.

Operational Phase:
- Proposed four (4) signalised junction and one (1) roundabout for internal development traffic dispersal.
- Proposed upgrading of four (4) junctions, J3 to J6.
- Proposed road upgrading for Jalan Genting Permai from 2-lane single carriageway to 4-lane dual carriageway.



Existing Junctions & New Junctions

ENVIRONMENTAL MONITROING AND SURVEILLANCE PLAN
- Construction Phase -

Compliance Monitoring (CM) and Performance Monitoring (PM)

Environmental Component	Compliance Requirements	Proposed Monitoring Locations	Monitoring Frequency
Compliance Monitoring (CM)			
Discharge Quality from Sediment Basin	COAs (if any).	• Outlet of proposed sediment basins.	• After every rain event ≥ 12.5 mm, by EO. • Monthly by EnvMC.
Solid Waste Management (i.e. Biomass, Construction Wastes and Domestic Wastes)	• Environmental Quality Act 1974. • Undang-Undang Kecil Pemungutan Pembuangan dan Pelupusan Sampah Sarap (Majlis Perbandaran Bentong). • Local Government Act 1976, Sections 69 – 71. • COAs (if any).	• Within the Project site.	• Daily by EO. • Monthly by EnvMC.
Scheduled Waste Management	• Environmental Quality Act 1974. • Environmental Quality (Scheduled Wastes) Regulations 2005. • Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia (DOE, 2014). • COAs (if any).	• Storage areas for scheduled wastes. • Workshop. • Active work areas.	• Daily by EO. • Monthly by EnvMC.
Sewage Effluent (Note: If the cumulative P.E. ≤ 150).	• Standard by Suruhanjaya Perkhidmatan Air Negara (SPAN): • BOD_5 ≤ 50 mg/L. • Suspended solid ≤ 100 mg/L. • COAs (if any).	• Septic tank's effluent discharge point.	• Monthly by EnvMC.
Sewage Effluent (Note: If the cumulative P.E. > 150).	• Standard A, Second Schedule, Environmental Quality (Sewage) Regulations (2009). • COAs (if any).	• Cumulative septic tank's effluent discharge point.	• Monthly by EnvMC.
Geotechnical Instrumentation	Verify against the design assumptions and engineering requirement as specified by the Engineering Consultants or relevant agencies.	• As per Figure 9.6.3.	• As per the intervals specified by Engineering Consultants or relevant agencies.
Performance Monitoring			
Functionality of the BMPs for Erosion and Sediment Control	• ESCP layout and report approved DID Negeri Pahang. • LD-P2M2. • COAs (if any)	• All BMPs proposed in the LD-P2M2 and ESCP approved by DID.	• Weekly and after every heavy rain event ≥ 12.5 mm by EO. • Monthly by EnvMC.

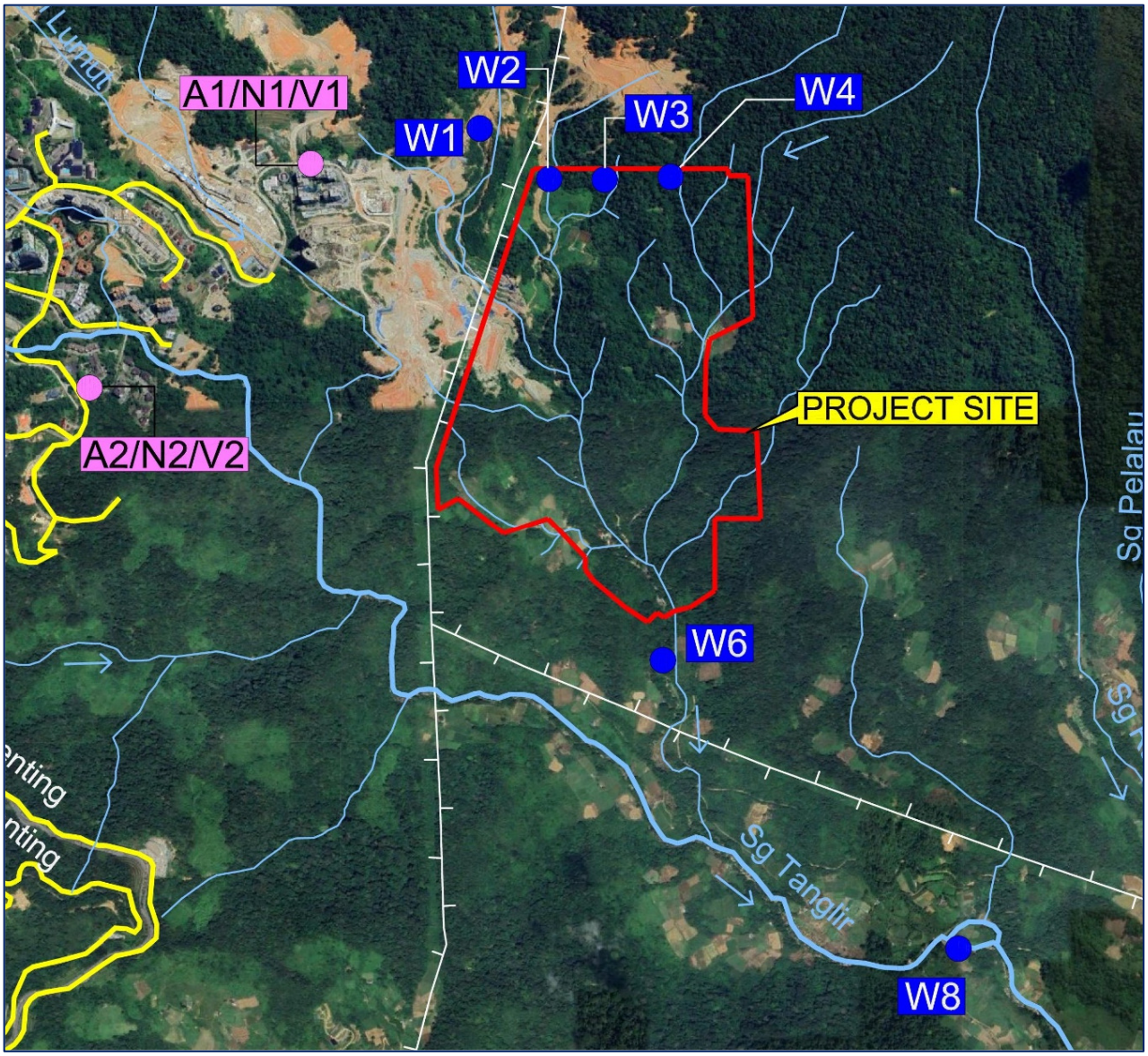
ENVIRONMENTAL MONITROING AND SURVEILLANCE PLAN
- Construction Phase -

Impact Monitoring (IM)

Environmental Component	Compliance Requirements	Proposed Monitoring Locations	Monitoring Frequency
Impact Monitoring (IM)			
River Water Quality	• Maintain baseline water quality (**Section 6.7:** River Water Quality). • Class IIA, National Water Quality Standard (NWQS). • COAs (if any).	• W1: N3.388756°, E101.789056° • W2: N3.387373°, E101.790945° • W3: N3.387340°, E101.792524° • W4: N3.387421°, E101.794358°* • W6: N3.373920°, E101.794175° • W8: N3.365907°, E101.802398° Note: * W4 to be switched to upstream of the tributary before entering the working area.	• Monthly by EnvMC.
Ambient Air Quality	• Standard 2020, Malaysian Ambient Air Quality Standards (MAAQS) (DOE Notice 1/2015, 2015). • COAs (if any).	• A1: N3.387767°, E101.784364° • A2: N3.381497°, E101.778235°	• Monthly by EnvMC.
Noise	• Refer to Second, Third and Sixth Schedule, Guidelines for Environmental Noise Limits and Control, Third Edition, 2019 (DOE, Reprint 2021). • COAs (if any).	• N1: N3.387767°, E101.784364° • N2: N3.381497°, E101.778235°	• Monthly by EnvMC.
Ground Vibration from construction	• Refer to First, Third, Fourth, Sixth and Nineth Schedule of Guidelines for Environmental Vibration Limits and Control, Third Edition (DOE, 2021). • COAs (if any).	• V1: N3.387767°, E101.784364° • V2: N3.381497°, E101.778235°	• Monthly by EnvMC.
Vibration from Blasting	• Refer to First, Seventh, Eighth and Nineth Schedule of Guidelines for Environmental Vibration Limits and Control, Third Edition (DOE, 2021). • COAs (if any).	• Project Boundary • V1: N3.387767°, E101.784364° • V2: N3.381497°, E101.778235°	• During blasting operation by EnvMC.

ENVIRONMENTAL MONITROING AND SURVEILLANCE PLAN
- Construction Phase -

Proposed Monitoring Points



Point	Coordinates	
	Latitude (N)	Longitude (E)
River Water Quality Monitoring Points		
W1	3.388756°	101.789056°
W2	3.387373°	101.790945°
W3	3.387340°	101.792524°
W4	3.387421°	101.794358°*
W6	3.373920°	101.794175°
W8	3.365907°	101.802398°
Air Quality, Noise and Vibration Monitoring Points		
A1/N1/V1	3.387767°	101.784364°
A2/N2/V2	3.381497°	101.778235°

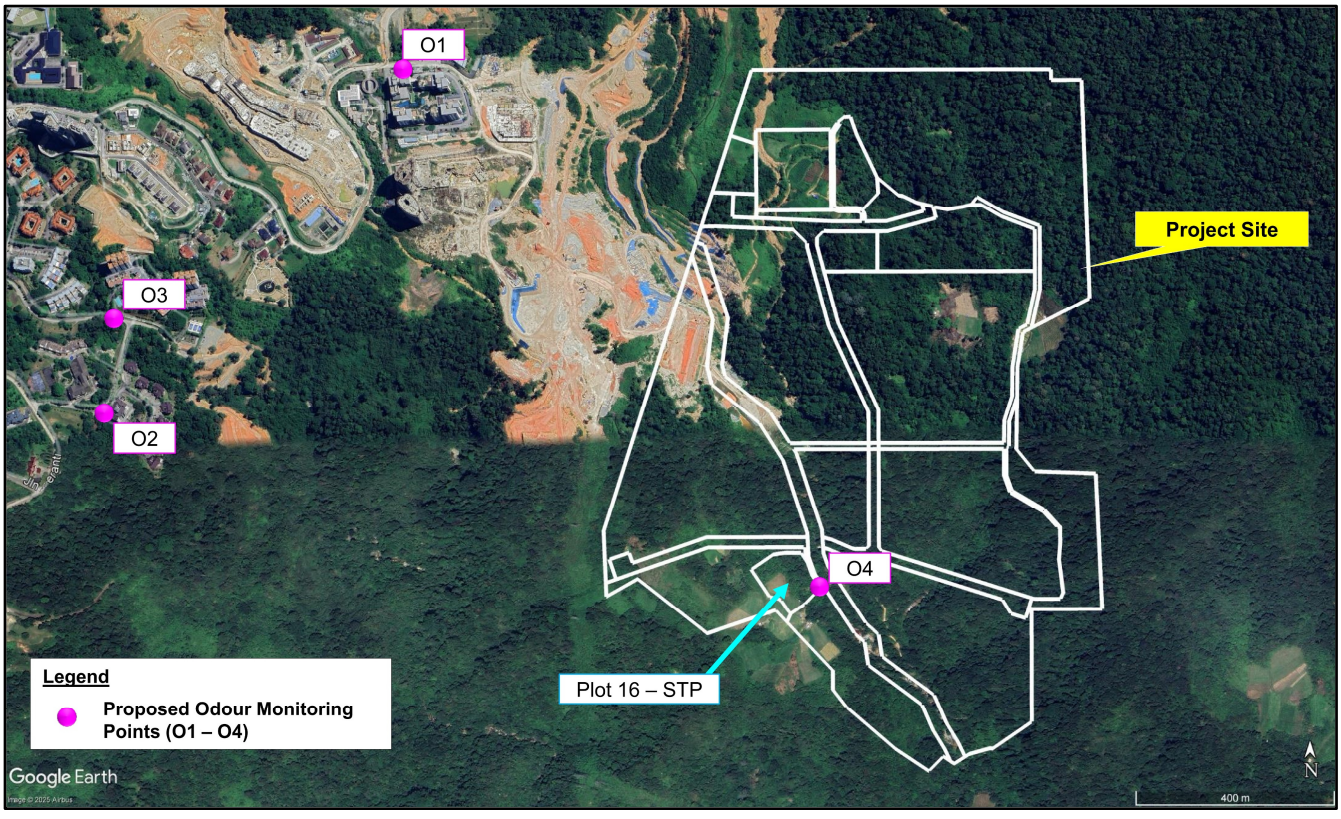
LEGEND:

- Project Site (Area = 98.31 ha/ 242.93 ac)
- Expressway
- Road
- River
- Flow Direction
- State Boundary
- District Boundary
- Mukim Boundary
- Transmission Line
- Genting Sempah Tunnel
- Water Quality Baseline Sampling Points (W1 - W4, W6 & W8)
- Air Quality, Noise Level & Vibration Baseline Sampling Points (A1/N1/V1 - A2/N2/V2)

ENVIRONMENTAL MONITROING AND SURVEILLANCE PLAN
- Operational Phase -

Performance Monitoring (PM) and Impact Monitoring (IM)

Environmental Component	Compliance Requirements	Proposed Monitoring Locations	Monitoring Frequency
Performance Monitoring			
Effluent discharge from Sewage Treatment Plant (STP)	• Standard A, Second Schedule, Environmental Quality (Sewage) Regulations (2009). • COAs (if any).	• At STP final discharge point.	• Weekly by competent person, e.g. Certified Environmental Professional in Sewage Treatment Plant Operation (CePSTOP).
Functionality of the STP	Compare with performance data for each unit operation designed by Engineering Consultant.	Each unit operation.	• As per the performance monitoring proposed by Engineering Consultant.
Impact Monitoring			
Odour	• No guidelines or standards for odour measurement/ concentration. • Standards based on Charles McGinley, P.E., Enforceable Permit Odour Limits (2000) is adopted as guidance.	• O1: N3.387658°, E101.784264° • O2: N3.381440°, E101.778889° • O3: N3.383147°, E101.779019° • At the STP entrance (O4): • N3.378325°, E101.791791°	• Quarterly by EnvMC.



STUDY FINDINGS

Environmental Impacts

Construction Phase	• Soil erosion and sedimentation • River water quality pollution • Air pollution • Noise and vibration pollution • River flow affected and localised flooding • Ecological impacts • Change of landuse and socio-economic issues • Impacts on traffic flow • Waste management issues
Operational Phase	• Increased surface runoff • Water quality pollution • Impacts on traffic flow • Positive impacts on local economy • Waste management issues

Pollution Prevention Mitigation Measures (P2M2s)

- Mitigation measures, best technological and management practices were provided to mitigate the adverse impacts.

Environmental-related BMPs & P2M2

Conduct environmental monitoring

Proper waste management

Provide adequate PPE to workers

Develop and Implement Traffic Management Plan

Install drainage network as per Stormwater Management Report

Install erosion control (silt fence, sediment basin, etc.)

Open communication platform and Transparency