First Schedule

Environmental Impact Assessment Report

Proposed Development of Resort and Associated Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Project Proponent:
Rebak Island Marina Berhad



May 2026

Prepared by
AGV Environment Sdn. Bhd.

AGV ENVIRONMENT
ENVIRONMENTAL SOLUTIONS SPECIALIST

REBAK ISLAND MARINA BERHAD(183757-T) 198901006452
Lot 6875, Jalan Kerja Ayer Lama,
68000 Ampang, Selangor Darul Ehsan.
Tel : 603 2727 7000 Fax : 603 2727 7007

Project Proponent's Environmental Pledge

I hereby declare that the entire EIA report is the product of the Qualified Person (i.e., the EIA Consultant) engaged by my company and all the facts stated in the report and the accompanying information are to the best of my knowledge and belief true and correct, and that I have not withheld or distorted any materials facts. I agree and I undertake the responsibility to implement all the pollution prevention and mitigation measures (P2M2s) described in the EIA report, in the Environmental Management Plan (EMP) and in the LD-P2M2 as proposed by the EIA Consultant. I have allocated sufficient funds for the above purpose.

Name of Project Proponent : IZMIR BIN ABDUL KARIM
730730-14-5565

NRIC Number :

Designation : Director

Signature :

Date :

Company Stamp : REBAK ISLAND MARINA BERHAD
198901006452 (183757-T)

REBAK ISLAND MARINA BERHAD(183757-T) 198901006452
Lot 6875, Jalan Kerja Ayer Lama,
68000 Ampang, Selangor Darul Ehsan.
Tel : 603 2727 7000 Fax : 603 2727 7007

Ref. No : RIMB-001/20260414

DECLARATION BY PROJECT PROPONENT / AUTHORISED PERSON

I certify that the Land Disturbing Pollution Prevention Mitigation Measures (LD-P2M2) report has been prepared with my knowledge and I shall undertake the responsibility to ensure the actions / plans and pollution prevention and mitigation measures (P2M2) stated in the LD-P2M2 report will be implemented. I have provided sufficient allocation for the implementation of the P2M2.

PROJECT TITLE:
Proposed Development of Resort and Associated Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

PROJECT ADDRESS / LOCATION:
Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Name : IZMIR BIN ABDUL KARIM
730730-14-5565
Designation : Director
Date :
Company Stamp: REBAK ISLAND MARINA BERHAD
198901006452 (183757-T)

First Schedule Environmental Impact Assessment Report for the
Proposed Development of Resort and Associated Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Qualified Person's Declaration

I declare that the entire EIA report is the product of my own work and the work of my team members (i.e., other consultants who are also Qualified Persons) who worked under my supervision and all the facts stated in the Report and the accompanying information are to the best of my knowledge and belief true and correct and that I have not withheld or distorted any material facts. I have briefed the Project Proponent on the content of the Report and highlighted to him all the pollution prevention and mitigation measures (P2M2s) described in the Environmental Management Plan (EMP), and in the LD-P2M2, and the Project Proponent has agreed to implement them (i.e., P2M2).

EIA Consultant Team Leader	:	Putri Zulaikha bin Md. Bakri
NRIC Number	:	890307-43-5074
Designation	:	EIA Team Leader
Signature	:	
Date	:	13 April 2026
Company's stamp	:	

AGV ENVIRONMENT
ENVIRONMENTAL SOLUTIONS SPECIALIST

PREAMBLE

The **First Schedule Environmental Impact Assessment (EIA)** has been prepared for the **Proposed Development of Resort and Associated Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman**, and was submitted on 15th April 2026 to the Department of Environment (DOE) Kedah.

Subsequently, an EIATRC meeting was held on 13th May 2026. As a result, this EIA report has been prepared, incorporating all received comments from DOE Kedah including the minutes of meeting during the EIATRC and various agencies. All comments and responses are provided in following attachment.

Project Title : **Proposed Development of Resort and Associated Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah**

Project Proponent : **Rebak Island Marina Berhad**

EIATRC Meeting : **13th May 2026**

Table 1: Minutes of Meeting

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
Jabatan Alam Sekitar (JAS) Negeri Kedah				
1.	Pihak penggerak projek/jururunding perlu mengemukakan laporan pengawasan kualiti air daratan (sungai dan alur air) yang dinyatakan sebagai *ephemeral/seasonal streams* yang hanya wujud semasa musim hujan lebat sahaja. Maklumat dan keputusan bacaan kualiti air tersebut boleh diperincikan dalam pengemukaan Laporan Pelan Pengurusan Alam Sekitar (*Environmental Management Plan*, EMP).	*The required monitoring of inland water quality has been included under the impact monitoring programme in the Environmental Monitoring Plan (EMP).*	*Chapter 9; Section 9.5.3; Page 9-6*	
2.	Pihak penggerak projek/jururunding juga perlu mengemukakan laporan pengawasan kualiti ekologi marin (*marine ecology*). Maklumat dan keputusan pengawasan tersebut boleh diperincikan dalam pengemukaan Laporan Pelan Pengurusan Alam Sekitar (*Environmental Management Plan*, EMP).	*The marine biology monitoring programme has been included under the impact monitoring section of the Environmental Monitoring Plan (EMP).*	*Chapter 9; Section 9.5.3; Page 9-7*	
3.	Pihak penggerak projek/jururunding juga perlu mengemukakan kaedah pengurusan sisa buangan yang terhasil daripada pelaksanaan	*The waste management approach for the Project, including wastes generated during implementation, has been incorporated under*	*Chapter 9, Section 9.5.1, Table 9.5.1, Page 9-5*	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
	projek serta konsep *Reuse, Reduce and Recycle* perlu diamalkan semasa projek berlangsung. Maklumat kaedah tersebut boleh dinyatakan dengan terperinci dalam pengemukaan Laporan Pelan Pengurusan Alam Sekitar (*Environmental Management Plan*, EMP).	*the performance monitoring component of the Environmental Management Plan (EMP).*		
4.	Pihak penggerak projek/jururunding perlu mengemukakan data mentah (raw data) bagi permodelan kualiti air yang telah dijalankan untuk kajian Laporan EIA ini untuk semakan lanjut JAS Kedah.	*The softcopy of the raw data for the water quality modelling has been submitted together with the corrected EIA report in a pendrive.*	-	
5.	Merujuk kepada kajian kualiti air untuk parameter ammoniacal nitrogen (AN) dan oil and grease (O&G), didapati untuk worst case scenario menunjukkan keputusan analisa sama seperti Standard A. a) Adakah apabila berlaku worst case scenario bagi SSTS akan dilepaskan ke laut? b) Apakah kajian water quality bagi worst case – SSTS yang dilepaskan di dalam pulau atau longkang? c) Apakah langkah awal yang dicadangkan sekiranya berlaku worst case – kegagalan fungsi SSTS?	Merujuk kepada keputusan ammoniacal nitrogen (AN) dan oil & grease (O&G) yang menunjukkan bacaan worst case scenario hampir atau sama dengan Standard A di kawasan penerima marin, perkara ini adalah disebabkan perbezaan antara kedua-dua senario menjadi sangat kecil apabila kumbahan telah memasuki perairan laut dan mengalami pencairan serta pencampuran dengan air laut. Oleh itu, di stesen penerima marin, bacaan yang dipaparkan boleh kelihatan sama atau hampir sama, walaupun input di punca pelepasan adalah berbeza. *a)* Ya, dalam kajian ini, worst case scenario dimodelkan sebagai keadaan konservatif di mana pelepasan dari SSTS masuk ke perairan penerima akhir, iaitu laut, untuk menilai kesan maksimum yang	-	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
		berpotensi berlaku. Walau bagaimanapun, ini hanya untuk tujuan penilaian impak dan bukan bermaksud pelepasan tidak patuh akan dibenarkan secara operasi. b) Kajian ini menilai kesan di perairan penerima akhir, iaitu perairan marin di sekeliling pulau. Jika terdapat longkang atau saliran dalaman, ia dianggap sebagai laluan aliran sementara sebelum pelepasan memasuki laut. Oleh itu, fokus pemodelan adalah pada zon percampuran marin berhampiran titik pelepasan dan stesen penerima marin. c) Sekiranya berlaku kegagalan fungsi SSTS, langkah awal yang dicadangkan adalah menghentikan atau mengurangkan pelepasan dari sistem yang terjejas, menahan kumbahan sementara jika kemudahan simpanan tersedia, menjalankan pembaikan segera ke atas komponen yang rosak, dan meningkatkan pemantauan sehingga sistem kembali stabil. Langkah tindak balas kecemasan ini juga akan diperincikan dalam EMP.		

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
Jabatan Pengairan dan Saliran (JPS)				
6.	Pihak pemaju/perunding hendaklah merujuk kepada garis panduan MSMA edisi terkini bagi kawalan air permukaan dan juga memastikan air buangan dari tapak pembangunan tidak menjejaskan kualiti dan kuantiti air.	*All designs for the hydrology system will follow the latest edition of the MSMA guidelines for stormwater management ensuring that runoff and wastewater from the Project do not adversely impact water quality or quantity.*	*Chapter 8; Section 8.4, Page 8-10*	
7.	Pihak pemaju/perunding hendaklah memastikan amalan pengurusan terbaik BMPs untuk kawalan hakisan dan kelodak yang dicadangkan diamalkan di tapak pembangunan.	*The Project proponent will ensure that the Best Management Plan (BMPs) for erosion and sediment control, as outlined in LDP2M2 plan, will be implemented and practiced at Project site.*	*Chapter 8, Section 8.2.1, Page 8-1*	
8.	Pihak perunding hendaklah menyediakan pelan penyelenggaraan sistem perparitan dan pemantauan kualiti air secara teratur.	*A maintenance plan for the discharge system and water quality monitoring will be prepared. Drainage system maintenance and inspections will be carried out after heavy rainfall events, while water quality monitoring will be conducted monthly during the construction period.*	*Chapter 8; Section 8.2, Page 8-1*	
Jabatan Bomba dan Penyelamat Malaysia (JBPM) Negeri Kedah				
9.	Sistem keselamatan kebakaran perlu sentiasa berada dalam keadaan baik & diselenggara mengikut jadual.	*The fire safety system must be maintained on a scheduled basis.*	*Chapter 8; Section 8.10.2, Page 8-25*	
10.	Pasukan Emergency Response Team (ERT) perlu ditubuhkan & dilatih oleh JBPM bagi tindakbalas awal kecemasan.	*An Emergency Response Team (ERT) will be established for initial emergency response.*	*Chapter 8; Section 8.10.1, Page 8-24*	
11.	Pelan Arkitek dan mekanikal dan elektrikal (M&E) perlu mematuhi UBBL 1984, Malaysia Standard & Akta 341.	*The architectural plan and electrical plan complies with the Fire Services Act 1988, the Uniform Building By-Laws 1984, and the applicable Malaysian Standards.*	*Chapter 8; Section 8.10.1, Page 8-24*	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
Indah Water Konsortium (IWK) Sdn. Bhd.				
12.	Berdasarkan polisi setiap pembangunan baru hanya satu jenis sistem rawatan kumbahan yang dibenarkan bagi bilangan PE yang melebihi 150 PE. Perlu dibina sebuah loji rawatan kumbahan (STP). Pihak perlu mengkaji dan membuat rayuan bagi menggunakan sistem SSTS sebanyak 9 buah.	*It is noted that only one type of sewage treatment system is permitted for the Project. The proposed sewerage plan has been presented to and discussed with IWK Langkawi during a pre-consultation session on 18 February 2025 prior to the preparation of this report.*	*Chapter 5; Section 5.2.2.2, Page 5-8* *Appendix 5.1*	
Lembaga Sumber Air Negeri Kedah (LSANK)				
13.	Lembaga Sumber Air Negeri Kedah (LSANK) meneliti Laporan Penilaian Impak Alam Sekitar (EIA) bagi cadangan projek ini dari aspek pengurusan, perlindungan dan kawal selia sumber air negeri, selaras dengan peruntukan di bawah Enakmen Sumber Air Negeri Kedah 2008 dan peraturan-peraturan yang dibuat di bawahnya.	*Info*	-	
14.	Pemaju hendaklah memastikan tiada gangguan kepada aliran semula jadi, kualiti air dan ekosistem pesisir. Langkah mitigasi hendaklah merangkumi pemasangan silt curtain, kawalan kerja pembinaan semasa keadaan laut sesuai serta pemantauan berkala kualiti air marin	*The Project Proponent will ensure that there is no disruption to natural flow, water quality and the coastal ecosystem. Mitigation measures will include the implementation of Best Management Practices (BMPs) as outlined in the LDP2M2 plan, control of construction activities under suitable sea conditions (e.g. during low tide for jetty structure installation) and regular monitoring of marine water quality.*	*Chapter 8* *LDP2M2: Section 8.2.1; Page 8-7* *Water quality: Section 8.4.1e; Page 8-11*	
15.	Pemaju hendaklah memastikan perlindungan kualiti air dan kawalan pencemaran supaya tiada pelepasan effluen tidak terawat dilepaskan ke	*The discharge point for each SSTS will first flow to the nearest drain which connects to the soak-away pit for infiltration. Therefore, there will*	*Chapter 5; Section 5.2.2.2; Page 5-8*	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
	perairan pantai dan menyediakan Pelan Tindak Balas Kecemasan (ERP) disediakan bagi menangani insiden tumpahan minyak atau bahan cemar semasa pembinaan dan operasi.	*be no direct discharge into the marine water. Maintenance of the SSTS will be carried out on a regular basis and properly recorded for monitoring purposes*		
16.	Sebarang kerja dalam kawasan pesisir, termasuk penambakan, pemasangan struktur kekal atau sementara serta pengorekan, hendaklah mendapatkan kelulusan bertulis daripada Kerajaan Negeri melalui LSANK selaras dengan peruntukan Enakmen Sumber Air Kedah 2008.	*The Project Proponent will ensure any works within the coastal area, will obtain prior written approval from the State Government through LSANK in accordance with the provisions of the Kedah Water Resources Enactment 2008.*	-	
17.	Pihak pemaju hendaklah menyediakan dan melaksanakan Pelan Kawalan Hakisan dan Kelodak (ESCP) yang berkesan dan dipantau secara berterusan. Sebarang pelepasan air binaan, air larian permukaan atau efluen ke badan air adalah tertakluk kepada larangan pencemaran badan air di bawah Seksyen 47 Enakmen Sumber Air Negeri Kedah 2008 serta peraturan-peraturan berkaitan.	*The Project Proponent has prepared the ESCP and will be submitted to JPS Kedah during Kebenaran Merancang (KM) stage for review and approval before commencement of any work on the Project.*	*Chapter 5; Section 5.3.2a, Page 5-20*	
18.	Sebarang pengambilan atau penggunaan air permukaan adalah tertakluk kepada lesen abstraksi air di bawah Seksyen 28, Enakmen Sumber Air Negeri Kedah 2008. Syarat-syarat lesen, termasuk had pengambilan air dan keperluan pemantauan, boleh dikenakan selaras dengan Seksyen 31 Enakmen Sumber Air Negeri Kedah 2008.	*The Project Proponent will ensure that any abstraction or use of surface water is subject to the relevant water abstraction licence under Section 28 of the Kedah Water Resources Enactment 2008, and will comply with all conditions imposed under the licence, including water abstraction limits and monitoring requirements pursuant to Section 31 of the Enactment.*	*Chapter 5; Section 5.2.2.1, Page 5-4*	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
19.	Kawalan mitigasi perlu dijalankan bagi mengurangkan kesan kualiti air sepanjang tempoh pembinaan dijalankan meliputi kerja-kerja penyediaan tapak, air larian permukaan di tapak, sisa-sisa binaan tapak dan kerja-kerja tanah. Ini bagi mengurangkan kepekatan pepejal terampai dan minyak/gris atau sebagainya.	*The mitigation measures to control potential water quality impacts during the construction period, including site clearing activities, surface runoff, construction wastes, and earthworks, have been detailed in the report to minimise suspended solids, oil and grease, and other potential pollutants.*	*Chapter 8; Section 8.4, Page 8-10*	
20.	Kawalan kepada pelepasan air sisa/kumbahan perlu dirawat bagi memastikan kualiti air yang akan dilepaskan tidak akan menjejaskan kualiti air di pesisir pantai.	*The control and treatment of wastewater/sewage discharge to ensure that the discharged water quality does not affect the coastal water quality have also been addressed in the report.*	*Chapter 8; Section 8.4.1d, Page 8-11*	
21.	Pelaksanaan projek ini mestilah menitikberatkan dan mematuhi Pelan Kawalan Hakisan dan Kelodak (ESCP) yang ditetapkan dalam MSMA. Antara langkah-langkah dicadangkan termasuk perangkap kelodak, kerja-kerja pemotongan / timbusan tanah perlu dikawal dengan sepenuhnya.	*The proposed mitigation measures, including silt traps and proper control of cut and fill activities, have been incorporated in the report.*	*Chapter 8, Section 8.2, Page 8-1*	
22.	Langkah-langkah keselamatan sepanjang aktiviti penambakan hendaklah dikawal dan dipantau dengan sepenuhnya. Pemantauan berterusan kualiti air dan biodiversiti hidupan sekitar dengan menjalankan secara berkala di sepanjang kawasan yang terlibat seterusnya memastikan kualiti air tidak selamat kepada hidupan dan ekologi akuatik.	*Continuous and regular monitoring of water quality and marine biology monitoring will be carried out to ensure that water quality remains safe and does not adversely affect aquatic life and ecological conditions.*	*Chapter 9; Section 9.5.3, Page 9-7*	
23.	Sebarang aktiviti yang melibatkan badan perairan tertakluk kepada Enakmen Sumber Air	*This statement is noted. The Project Proponent will ensure full compliance with the Kedah Water*	-	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
	Kedah 2008 dan Peraturan-peraturan dibawah Enakmen ini termasuk aktiviti yang boleh mengubah, mengalih atau menjejaskan keadaan semula jadi badan air.	*Resources Enactment 2008 and its related Regulations.*		
Jabatan Keselamatan dan Kesihatan Pekerjaan Kedah				
24.	Pihak pemaju/pemilik perlu mematuhi Akta Keselamatan dan Kesihatan Pekerjaan 1994 dari fasa perobohan, pembinaan sehingga fasa penginapan.	*The Project proponent will comply with the Occupational Safety and Health Act 1994 throughout all phases of the Project, including demolition, construction, and occupancy.*	*Chapter 9; Section 9.8, Page 9-13*	
25.	Perlu menjalankan penaksiran risiko keselamatan dan kesihatan pekerjaan kepada semua aktiviti kerja.	*A risk assessment for occupational safety and health will be conducted for all work activities.*	*Chapter 9, Section 9.8, Page 9-13*	
Lembaga Pembangunan Langkawi (LADA)				
26.	Pihak LADA telah meneliti Laporan Cadangan Pemajuan yang dikemukakan oleh pihak pemaju. Untuk makluman, Langkawi telah diiktiraf sebagai sebahagian daripada UNESCO Global Geopark melalui pengiktirafan Langkawi Geopark. Sehubungan itu, setiap cadangan pembangunan hendaklah mengambil kira aspek pemeliharaan warisan geologi, landskap semula jadi serta nilai eko pelancongan yang menjadi teras kepada pengiktirafan tersebut. Berdasarkan semakan terhadap Pelan Biosite Langkawi UNESCO Global Geopark, didapati bahawa tapak cadangan terletak dalam kawasan geotapak utama iaitu Geotapak Lapisan Merah Pulau Rebak (Rebak Red Beds).	*The statement is noted that the Project site is located within a key geosite , namely the Rebak Red Beds Geosite, and will ensure that these considerations are duly taken into account in the planning and implementation of the Project.*	*Chapter 6; Section 6.3.1, Page 6-5*	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
27.	Untuk makluman, pendekatan pembangunan geotapak yang diamalkan oleh LADA adalah minimum dan terhad kepada penyediaan infrastruktur asas bagi tujuan kemudahsampaian pelancong ke kawasan geotapak. Sehubungan itu, sebarang pembangunan yang dicadangkan berhampiran kawasan geotapak hendaklah dilaksanakan secara terkawal dan tidak menjejaskan integriti kawasan tersebut, termasuk memelihara ciri-ciri semula jadi, budaya dan sejarah sedia ada tanpa menyebabkan kerosakan atau perubahan terhadap sifat-sifat utama kawasan berkenaan. Pendekatan ini penting bagi memastikan kawasan geotapak yang menyimpan sejarah pembentukan bumi Langkawi sejak kira-kira 350 juta tahun lalu terus terpelihara serta dapat diwariskan dan dikongsi bersama pengunjung serta generasi akan datang.	*The statement is noted. The Project development adopts a low-impact, terrain-adaptive approach that minimises extensive cut and fill activities by following the site's natural contours and utilising elevated structures where appropriate, thereby preserving existing vegetation, geological features, and the surrounding environmental integrity.*	*Chapter 5; Section 5.1, Page 5-1*	
28.	Seperti yang telah dimaklumkan sebelum ini, pihak LADA bersedia untuk bekerjasama dengan pihak Rebak Resort dalam usaha membangunkan Geotapak Perlapisan Merah sebagai salah satu produk pelancongan geopark, sebagaimana kerjasama yang telah dilaksanakan bersama Resorts World Langkawi dalam membangunkan Geotapak Pentas Haksian Pulau Ular sebagai kawasan rekreasi dan interpretasi geopark untuk tetamu hotel.	*Info*	-	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
29.	Sehubungan itu, pihak LADA tiada halangan dari segi prinsip terhadap cadangan pembangunan yang dikemukakan. Walau bagaimanapun, ulasan ini adalah tertakluk kepada pandangan, ulasan dan syarat-syarat tambahan yang mungkin ditetapkan oleh jabatan serta agensi teknikal berkaitan. Pihak syarikat juga diingatkan agar sentiasa menitikberatkan aspek pembangunan lestari serta sensitiviti alam sekitar dalamm pelaksanaan pembangunan ini, selaras dengan usaha LADA untuk mengekalkan pengiktirafan Pulau Langkawi sebagai UNESCO Global Geopark. Selain itu, pihak LADA juga memohon agar diberikan ruanng untuk memantau serta memberikan khidmat nasihat berkaitan pembangunan ini dari semasa bagi memastikan kepentingan dan kelestarian Langkawi Geeopark terus terpelihara.	*The Project Proponent takes note on the emphasis on sustainable development and environmental sensitivity in line with the preservation of Langkawi UNESCO Global Geopark status, and will ensure full compliance with all applicable requirements while allowing LADA to provide ongoing monitoring and advisory input throughout the project implementation to safeguard the long-term integrity of the Langkawi Geopark.*	*Chapter 5, Section 5.1, Page 5-1*	
Syarikat Air Darul Aman (SADA)				
30.	SADA tiada ketegahan berhubung pembangunan projek ini.	*Info*	-	
31.	Patuhi langkah-langkah kawalan kualiti air bagi mengelakkan kualiti air terjejas terutama sekali pada muka sungai berhampiran semasa pembinaan.	*The required water quality monitoring has been incorporated under the compliance monitoring programme in the Environmental Management Plan (EMP).*	*Chapter 9; Section 9.5.3; Page 9-6*	
32.	Pihak pemaju perlu membina tangki simpanan air tidak kurang daripada permintaan air dua hari penggunaan seperti yang tertakluk di dalam	*The Project Proponent will ensure a water storage tank with capacity of not less than two days water demand will be constructed in*	*Chapter 5; Section 5.2.21, Page 5-4*	

No.	Perbincangan dan Isu-isu Berbangkit	Maklumbalas Penggerak Projek/Perunding	Rujukan dalam Laporan EIA	Ulasan JAS
	peraturan-peraturan industri perkhidmatan air 2014.	*accordance with the Water Services Industry Regulations 2014.*		
33.	Patuhi garis panduan dan ulasan-ulasan yang telah diberikan oleh agensi-agensi teknikal yang lain.	*This statement is noted. The Project Proponent will make sure full compliance with the guidelines and comments provided by the relevant technical agencies.*	-	

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List of Abbreviations

AMS	American Meteorological Society
AN	Total Ammoniacal Nitrogen
BOD	Biochemical Oxygen Demand
BOH	Back of House
BPK	*Blok Perancangan Kecil*
CAR	Clean Air Regulation
CePEOEIA	Certified Professional for Environmental Officer
CESSWI	Certified Erosion Sediment and Storm Water Inspecto
CFS	Central Forest Spine
CHS	Coastal Hydraulic Study
CM	Compliance Monitoring
CO	Carbon monoxide
COA	Condition of Approval
COD	Chemical Oxygen Demand
CR	Critically Endangered
CSR	Corporate Social Responsibility
DOE	Department of Environment
DOF	Department of Fisheries
DOSM	Department of Statistic Malaysia
EB	Environmental Budgeting
EF	Emission Factor
EF	Environmental Facility
EGL	Existing ground level
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EO	Environmental Officer
EP	Environmental Policy
EPA	Environmental Protection Agency
EPMC	Environmental Performance Monitoring Committee
EPMD	Environmental Performance Monitoring Document
EQA	Environmental Quality Act
ERC	Environmental Reporting and Communication
ERCMC	Environmental Regulatory Compliance Monitoring Committee
ERP	Emergency Response Plan
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
EWS	Early Warning System
FGD	Focus Group Discussion
FOS	Factor of Safety
FPL	Final platform level
FTA	Federal Transit Administration
GAR	Geotechnical Assessment Report
GLC	Ground Level Concentration
GSR	Guided Self-Regulation

GTM	Geological Terrain Mapping
HAZMAT	Hazardous Materials
HSK	*Hutan Simpan Kekal*
HWC	Human-Wildlife Conflict
IM	Impact Monitoring
IMO	International Maritime Organization
ISMP	Integrated Shoreline Management Plan
IWK	*Indah Water Konsortium*
JLM	*Jabatan Laut Malaysia*
JMG	Jabatan Mineral dan Geosains
JPS	*Jabatan Pengairan dan Saliran*
JUPEM	*Jabatan Ukur dan Pemetaan Malaysia*
KSAS	*Kawasan Sensitif Alam Sekitar*
LADA	*Lembaga Pembangunan Langkawi*
LD-P2M2	Land Disturbing Pollution Prevention & Mitigation Measures
MAAQS	Malaysian Ambient Air Quality Standards
MAIC	Maximum Average Incremental Concentration
MC	Main Contractor
MDD	Maximum Dry Density
MMD	Malaysian Meteorological Department
MMWQI	Malaysia Marine Water Quality Index
MMWQS	Malaysia Marine Water Quality Standards
MP	Malaysia Plan
MPLBP	*Majlis Perbandaran Langkawi Bandaraya Pelancongan*
MRA	Marine Risk Assessment
MS	Malaysian Standards
MSB	Main Switchboards
MSIG	Malaysia Sewerage Industry Guidelines
MSL	mean sea level
MSMA	Urban Storm Water Management
MUSLE	Modified Universal Soil Loss Equation
MY-CISEC	Malaysia Certified Inspector of Sediment and Erosion Control
NAHRIM	National Water Research Institute of Malaysia
NCES	National Coastal Erosion Study
NT	Near Threatened
NTP	National Tourism Policy
PE	Population Equivalent
PM	Particulate Matters
PM	Performance Monitoring
PMD	Performance Monitoring Document
PMR	Performance Monitoring Report
PP	Project Proponent
PPE	Personal protective equipment
PPV	Peak Particle Velocity
PULAPOL	*Pusat Latihan Polis*
PWL	Power Level

RET	Rare, Endangered and Threatened
RFZPPN	*Rancangan Fizikal Zon Persisiran Pantai Negara*
RMS	Root Mean Square
RPPV	Resultant Peak Particle Velocity
RSN	*Rancangan Struktur Negeri*
RSNK 2035	*Rancangan Struktur Negeri Kedah 2035*
RSPL	Recommended Permissible Sound Level
RTD	*Rancangan Tempatan Daerah*
RTDL 2030	*Rancangan Tempatan Daerah Langkawi 2030*
RUSLE	Revised Universal Soil Loss Equation
SADA	*Syarikat Air Darul Aman*
SAMM	*Skim Akreditasi Makmal Malaysia*
SB	Sediment basin
SC	Sub-Contractors
SEA	Socioeconomic Assessment
SI	Soil Investigation
SPAN	*Suruhanjaya Perkhidmatan Air Negara*
SPEIA	*Sistem Pemantauan EIA*
SRTM	Shuttle Radar Topography Mission
SS	Suspended solids
SSTS	Small Sewage Treatment Systems
STCW	Standards of Training, Certification and Watchkeeping
TN	Total Nitrogen
TNB	*Tenaga Nasional Berhad*
TSS	Total Suspended Solid
UNESCO	United Nations Educational, Scientific and Cultural Organization
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
VU	Vulnerable
WGR	Waste Generation Rates
WIS	Wildlife Impact Study
WPS	Wood Plastic Composite
ZIA	*Zon Industri Aquakultur*
ZOI	Zon of Impact
ZOS	Zone of Study

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Project Proponent

Rebak Island Marina Berhad
(183757 – T)

Address : Lot 6875, Jalan Kerja Ayer Lama, 68000 Ampang, Selangor Darul Ehsan
Telephone : 03 – 2727 7000
Contact Person : Mat Zam Zam Bin Mesran, *Project Consultant*
Email : zamzam@tradewindscorp.com

EIA Consultant

AGV Environment Sdn. Bhd.

Address : Level 3A, Tower B, Atwater Corporate Office, Jalan Prof Diraja Ungku Aziz 46300 Petaling Jaya, Selangor
Telephone : 03-7931 1455
Contact Person : Datin Dr Vijayalakshmi Samuel
Email : vijayalakshmi@agvenvironment.com

Legal Requirement

Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015

First Schedule –
Activity 12: Development in Coastal and Hill Area (Construction of buildings < 80 rooms)
Activity 13: Development in Slope Areas (Development or land clearing of less than 50% of an area with slopes greater than or equal to 25° but less than 35°)

Project Overview

The proposed development at Pulau Rebak Besar comprises the following components:

- Development across four beach zones (Senari Beach, Long Beach, North Bay Beach, and Red Rock Beach)
- Existing marina facilities are retained and excluded from EIA scope.
- Project includes a main hotel, villas, luxury tents, and selected F&B outlets.
- Eco-tourism components such as a conservation centre and marina facilities are incorporated.
- Development adopts a balanced approach to support sustainable tourism while preserving the island's natural character.

Statement of Need

Conformance to Government Policies and Plans

The Project is in line with the following policies and plans at national, state and local levels:

- Thirteenth Malaysia Plan, 2026 – 2030
- National Tourism Policy, 2020-2030
- Rancangan Struktur Negeri Kedah 2035
- Pelan Strategik LADA (2022 – 2026)
- Fourth National Physical Plan, 2021–2040
- Rancangan Tempatan Daerah Langkawi 2030

Environmental Benefits

- Low-density design minimizes land disturbance and preserves natural topography.
- Supports conservation features while limiting the overall development footprint on Pulau Rebak Besar

Social Benefits

- Employment opportunities during construction and operation
- Enhances local workforce skills through long-term resort operations and tourism-related activities.

Economic Benefits

- Boosts tourism revenue and investment in Langkawi.
- Supports local businesses through increased demand for goods and services.

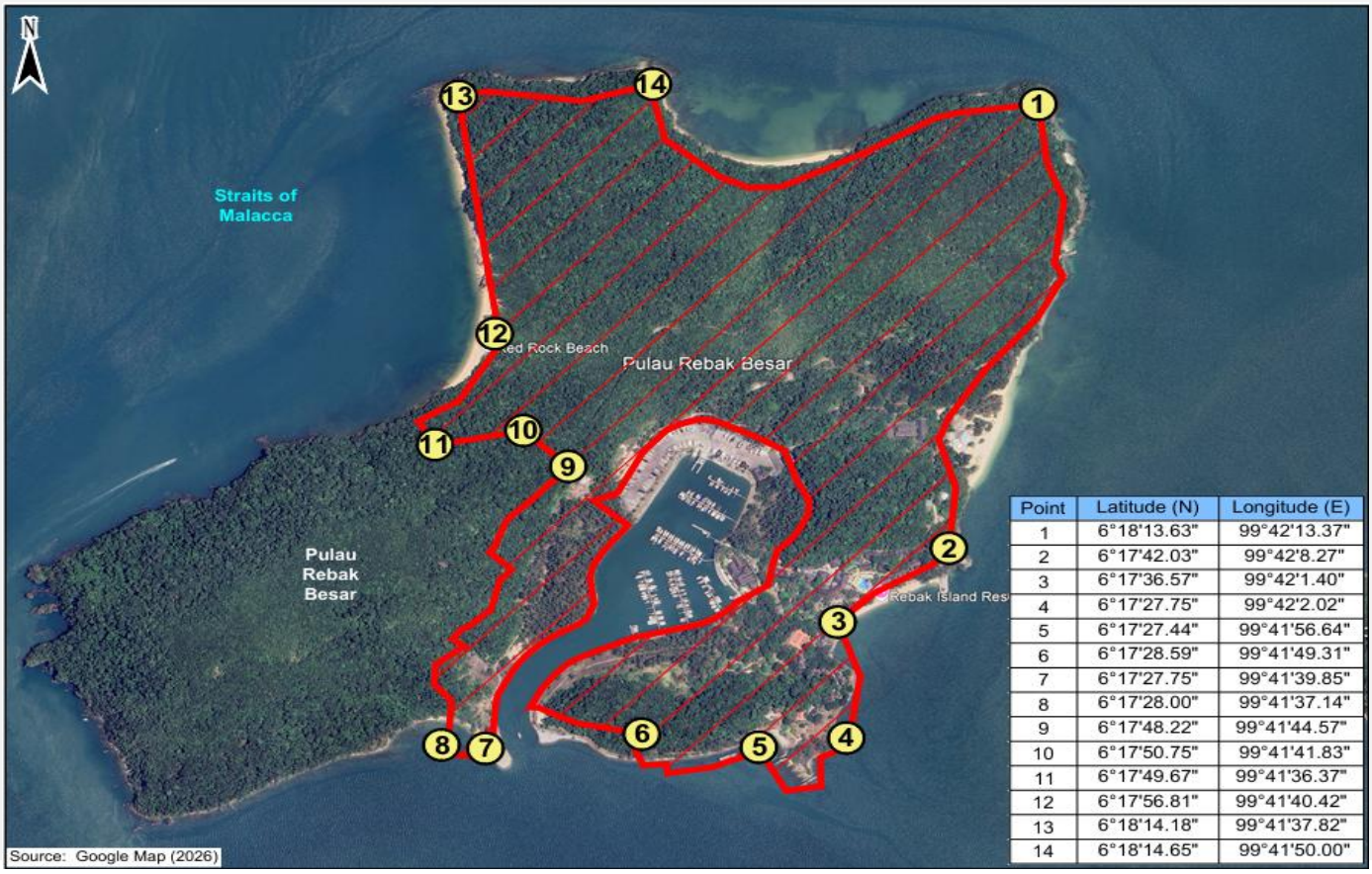
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Project Location

- Located on Pulau Rebak Besar, southwest of Pulau Langkawi
- Accessible via a short 15-minute boat ride from Cenang Terminal to Rebak Jetty





Point	Latitude (N)	Longitude (E)
1	6°18'13.63"	99°42'13.37"
2	6°17'42.03"	99°42'8.27"
3	6°17'36.57"	99°42'1.40"
4	6°17'27.75"	99°42'2.02"
5	6°17'27.44"	99°41'56.64"
6	6°17'28.59"	99°41'49.31"
7	6°17'27.75"	99°41'39.85"
8	6°17'28.00"	99°41'37.14"
9	6°17'48.22"	99°41'44.57"
10	6°17'50.75"	99°41'41.83"
11	6°17'49.67"	99°41'36.37"
12	6°17'56.81"	99°41'40.42"
13	6°18'14.18"	99°41'37.82"
14	6°18'14.65"	99°41'50.00"

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Project Concept



Key Development Components

- Transformation of Pulau Rebak Besar into an exclusive eco-retreat.
- Enhancement of four distinctive beaches:
  - Senari Beach
  - Long Beach
  - North Bay Beach
  - Red Rock Beach
- Development of 156 accommodation, comprising luxury suites and exclusive hideaway villas.
- Strategic siting of facilities to maximise views and minimise environmental disturbance.

Development Footprint

- **Total Island area:** 390 acres (157.83 ha)
- **Proposed built-up area:** 9.21 acres (3.73 ha)
- **Built-up Footprint:** ~2% of total land area
- Majority of Pulau Rebak Besar retained in its natural state.
- Low density and eco-conscious development approach
- **Common Facilities:**
  - Reception areas
  - Restaurants & event spaces
  - Bar & lounge
  - Swimming pools & recreation areas
  - Guest arrival @ Rebak Island (Jetty)
- **Operational Facilities:**
  - Staff housing
  - Offices / Administration / Back-of-house (BOH)

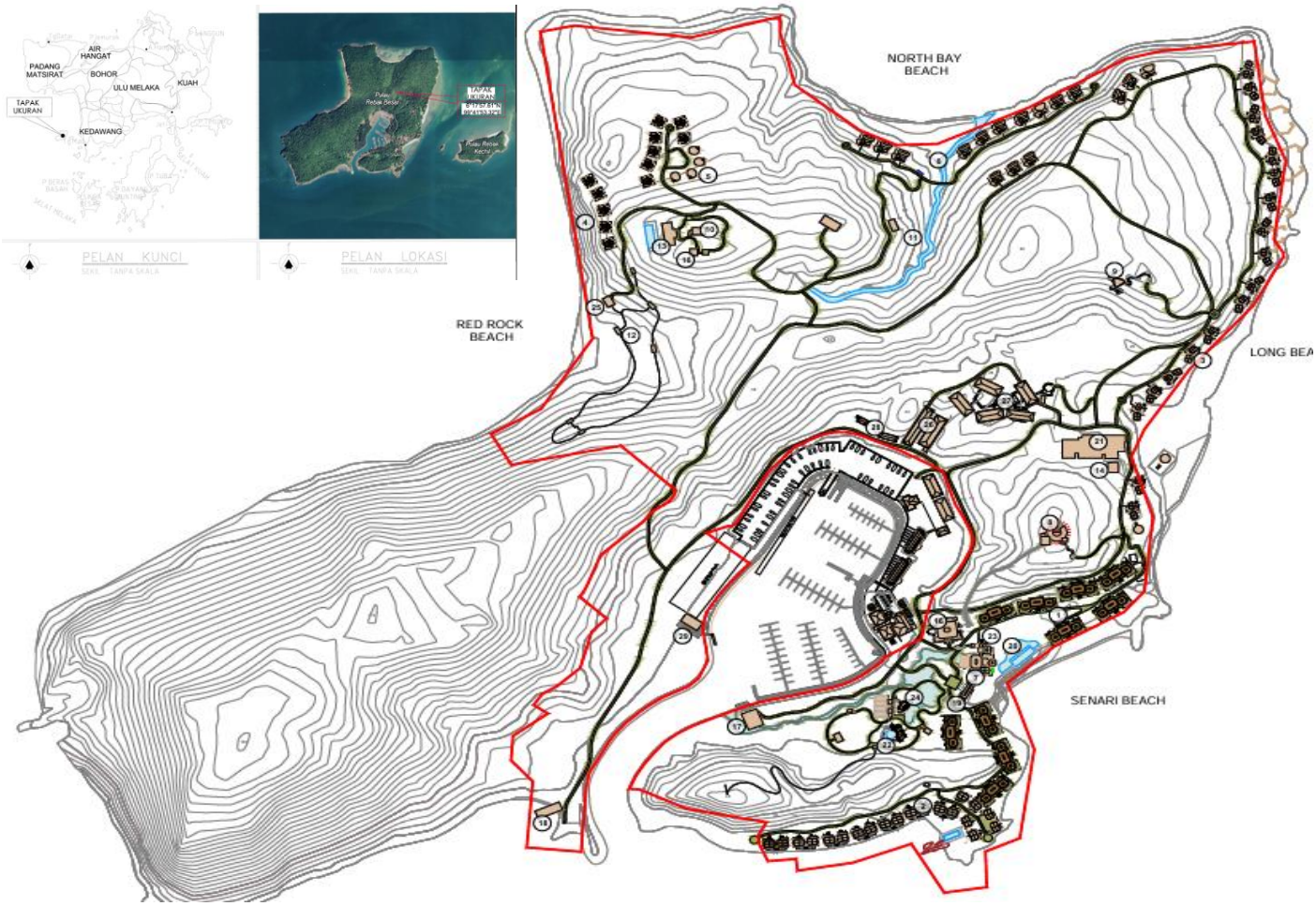
Planning and Development Principles

- **Sustainable Tourism Positioning:**
  - Capitalises on Pulau Rebak's natural sanctuary setting in Langkawi
- **Low Impact Design Approach:**
  - Terrain-adaptive planning
  - Minimised cut-and-fill works
  - Preservation of vegetation and geological features
- **Economic Sustainability:**
  - Promotion of responsible tourism practices.
  - Creation of long-term employment opportunities
  - Contribution to Langkawi's tourism industry.

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FIRST SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT
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Project Layout



Project Component

Components Category	Development Area		
	m^2	Acres (ac)	Hectares (ha)
Family Resort Centre (Senari Suites, Coastal Villas, Long Beach Villas)	16, 136	3.99	1.61
Luxury (Tented Villas, Treetop Hideaway, Serenity Pool Villas)	4, 782	1.18	0.48
Food and Beverages	3, 648	0.90	0.36
Function Facilities	1, 534	0.38	0.15
Guest Arrival @ Rebak Island (Jetty)	100	0.02	0.01
Retail Facilities	75	0.02	0.01
Recreational Facilities	6, 018	1.49	0.60
Offices / Administration / Back of House (BOH)	4, 988	1.23	0.50
Pulau Rebak Besar Area	1, 578, 274	390	157.83

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Existing Environment

Topography & Slope Classification

- Existing ground level: -0.5m to 81m asl
- Slope Gradient:
  - Class I (<15%): 55.54%
  - Class II (15°-25°): 31.21%
  - Class III (25°-35°): 10.94%
  - Class IV (>35°): 2.31%

Bathymetry

- Nearshore waters are shallow, mainly -2 to 0m MSL along the coastal fringe.
- Depths increase offshore to -4 to -2 m MSL, with broader areas of -6 to -4m MSL around the island.
- No extensive areas deeper than -8 m MSL present within the Project site.

Climate and Meteorology

- Annual Mean Temperature: 28.5°C
- Annual Relative Humidity: 78.4%
- Annual Mean Rainfall: 2583 mm
- Rainfall: Heavier during August, September, and October; while the least in February.
- In Land Wind Speed: 1.3 m/s to 2.3 m/s, with mean speed of 1.9 m/s.

Environmentally Sensitive Area

- The Project site comprises dense forest cover.
- Classified under ESA Rank 3: Forested areas, cascades and waterfalls, rivers, coastal zones, and areas containing metallic and non-metallic mineral reserves.

Soil

- Residual soils on site are white to yellowish in color.
- Textures comprises sand and clay, including mixed types such as clayey sand.
- Plasticity is generally low to intermediate.

Hydrology

- Four unnamed ephemeral streams are present within the Project site and flow primarily during rainfall events.
- Each stream forms a short, independent catchment discharging to the sea.
- Drainage is from the island interior to Red Rock Beach, North Bay Beach and Long Beach.
- Surface water is controlled by local topography and discharges directly into adjacent coastal waters.

Coastal Oceanography & Hydraulics

- Shoreline conditions: Generally stable, except along the eastern stretch.
- Approx. 0.2km of the eastern shoreline is accreting at ~4.6 m/year, while the adjacent northern shoreline is eroding at 8.6 m/year.

Geology

- Mainly Sandstone or metasandstone with subordinate siltstone, shale and minor conglomerate of Cambrian Age.

Terrestrial Ecology

- Fauna:
  Mammals: Mainly long-tailed macaque, common butterfly lizard, lesser mousedeer, *tikus belukar*, *ular laju biasa,* and monitor lizard.
  Avifauna: 13 families recorded where 7 are Totally Protected, 1 Protected under WCA 2010, and all families are Least Concerned under IUCN Red List.
- Flora: 25 common species from 19 plant families.

Marine Ecology

- Phytoplankton: 16 taxa from 2 phyla were identified
- Zooplankton: 24 taxa identified and 16 taxa were Arthropoda.
- Macrobenthos: 66 taxa from 4 phyla
- Highest density of Macrobenthos: 180 ind. m-2
- Lowest density of Macrobenthos: 10 ind.m-2
- Fish fauna: 29 species from 23 families of fishes were identified.

Socio-Economic

- Key stakeholders: Communities located within the 3-km radius

FGD summary:

- Increased job opportunities to locals
- Marine and livelihood concerns
- Community benefits and infrastructure
- PP encouraged to take CSR initiatives for the community.
- All participants expressed support for the Project, noting that they were already familiar with the existence of the resort on Pulau Rebak Besar.

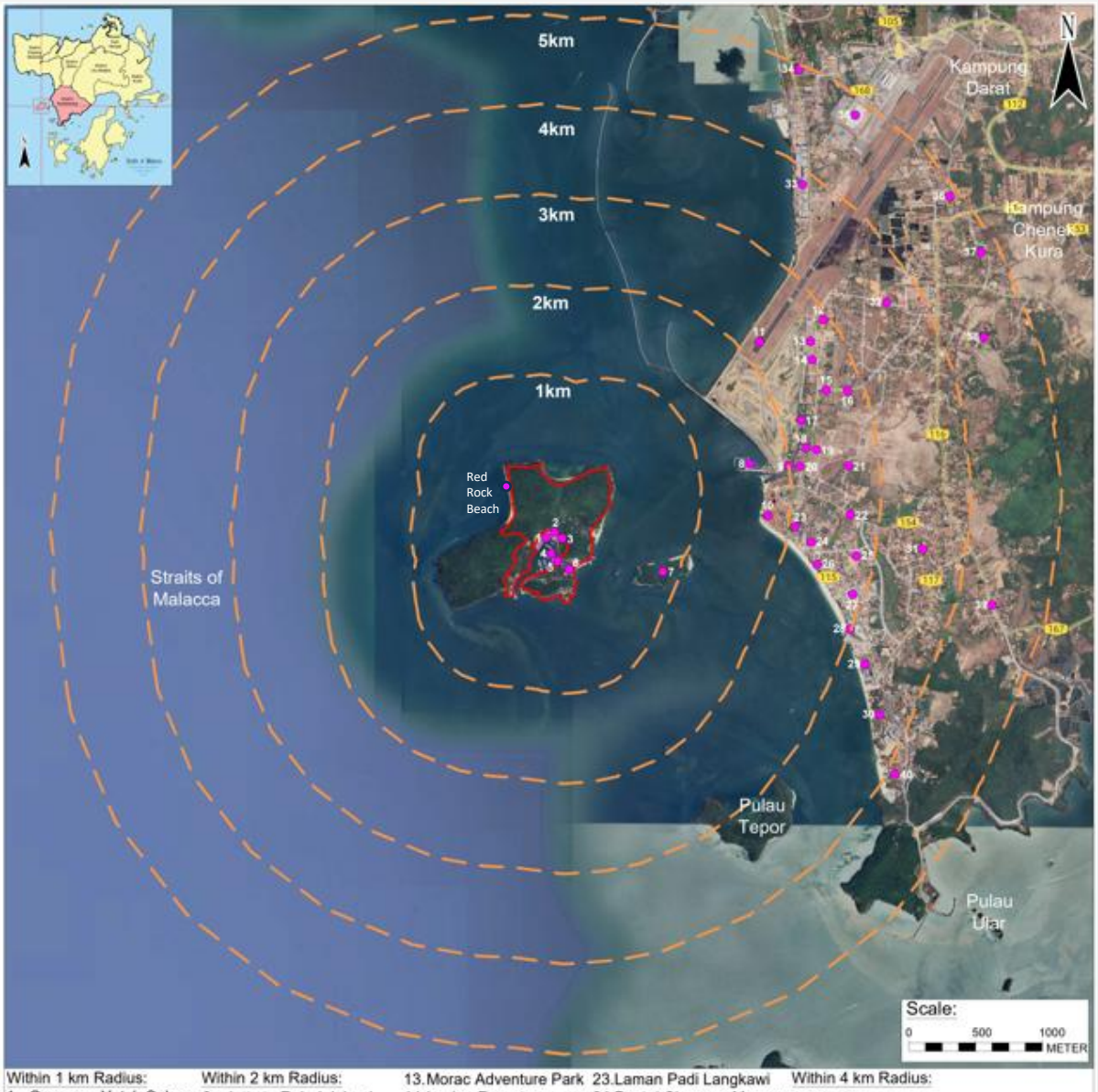
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Existing Land Use

Land Use

- Project site is currently a mix of developed and undeveloped, with undeveloped areas covered by dense secondary forests.
- Located under BP 6: BPK 6.6 b: Commercial Island. Project site is categorised as “Forest” and “Commercial”.
- Red Rock Beach, classified as a geosite, is located to the northwest of the Project site.



Within 1 km Radius:
1. Seaspray Yatch Sales and Marina Services
2. Yatch Supply (M) Sdn Bhd
3. Langkawi Boat Sales & Services Sdn Bhd
4. Jetty Rebak Island
5. Harbour Store Rebak
6. Rebak Island Resort & Marina
7. Pulau Rebak Kechil

Within 2 km Radius:
8. Jetty to Rebak Island Resort & Marina
9. Jeti Pendaratan Sg Cenang
10. Pelangi Beach Resort & Spa

Within 3 km Radius:
11. Langkawi International Airport Runway
12. Langkawi Tourism Academy@Kolej Komuniti
13. Morac Adventure Park
14. Lavigo Resort
15. Kampung Belak Mukim
16. Kampung Belak
17. Temple Tree Resort
18. The Daun Resort
19. Destini Akef Villa
20. Telaga Walk @ Chenang
21. Langkawi Green View Cottage
22. Kampung Lubok Buaya
23. Laman Padi Langkawi
24. Pantai Chenang Mosque
25. Kampung Tanjung Mali
26. Malibest Resort
27. Cenang Mall
28. Underwater World Langkawi

Within 4 km Radius:
29. Sri Kijang BNM Resort
30. The Frangipani Langkawi Resort
31. Kg Bubor
32. Kg Gelam
33. Pusat Latihan Polis (PULAPOL)

Within 5 km Radius:
34. Bella Vista Express Langkawi
35. Mahsuri International Exhibition Centre
36. Kg Chenek Kura
37. Kg Bukit Lembu
38. Kg Kendawang
39. Kg Temoyong
40. Holiday Villa Resort & Beachclub Langkawi

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Environmental Baseline Sampling

Stations	Latitude (N)	Longitude (E)
A1/N1/V1	6°17'40.77"	99°41'56.40"
A2/N2/V2	6°17'39.43"	99°42'2.30"
MQ1	6°18'13.27"	99°41'53.29"
MQ2	6°18'15.40"	99°42'21.49"
MQ3	6°17'44.86"	99°42'14.84"
MQ4	6°17'42.42"	99°42'31.87"
MQ5	6°17'22.96"	99°42'4.69"
MQ6	6°17'23.86"	99°41'37.50"
MQ7	6°17'52.98"	99°41'28.04"
MQ8	6°17'42.31"	99°41'54.27"



Ambient Air Quality

- Two (2) locations monitored (A1 and A2) against New Malaysia Ambient Air Quality Standard (MAAQS, 2020).
- PM_{10} at A1 and A2 ranged from **10–14 µg/m³**, while $PM_{2.5}$ ranged from **4–8 µg/m³**.
- CO was detected at both locations at **1.4 mg/m³**.
- SO_2, NO_2 and O_3 were below detection limits at all stations.

Noise Level

- Two (2) locations monitored (N1 and N2)
- All complied with permissible sound level, LAeq of Second Schedule – Recommended Permissible Sound Level (LAeq) By Receiving Land Use For Existing Built-Up Areas in "Guidelines for Environmental Noise Limits and Control Guideline (2019)"
- Daytime LAeq at all stations complied with **70 dBA** limit (daytime) and **65 dBA** (nighttime).
- Noise sources were unrelated to the Project and mainly due to traffic, residential and natural sounds.

Vibration Level

- Two (2) locations monitored (V1 and V2)
- All complied with Third Schedule – Recommended Vibration Limits For Human Response and Annoyance from Intermittent Vibratioms (Commercial, Business) in Guidelines For Environmental Vibration Limits And Control (2019)
- All PPV readings were below the DOE recommended limit of **1.0 mm/s** under the Ninth Schedule.

Marine Water Quality

- Eight marine stations (MQ 1 – MQ 8) were assessed against MMWQS Class 1 and evaluated using the MMWQI.
- pH (7.6 – 8.2) complied with Class 1 limits, while DO (5.1 – 5.4 mg/L) was below the threshold, likely due to natural marine conditions.
- Elevated unionized ammonia was detected at MQ1, MQ2, MQ4 and MQ6, possibly linked to runoff and localized inputs.
- Mercury exceeded Class 1 limits at most stations (except MQ1 and MQ7), while copper elevations were noted at MQ1 and MQ8.
- All stations recorded salinity of 31 ppt, meeting MMWQI requirements.
- MMWQI values ranged from 90.93 – 93.24, classifying all stations as "**Excellent**".

EXECUTIVE SUMMARY

FIRST SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT
Proposed Development of Resort and Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Impact Assessment

Soil Erosion & Sedimentation

Soil Erosion Modelling

- Assessment conducted using USLE for three (3) scenarios: Existing Condition, Worst-Case (without mitigation), and With Mitigation Measures.
- Summary:
  - Existing Condition: 53.45% falls within "Low Risk"
  - Worst-Case Condition: Almost 53% falls within "Low Risk"
  - With Mitigation Measures: 53% will be subjected to "Low Risk"

Sediment Yield

- Existing: 13.65 tonnes; Worst-Case: 89.89 tonnes; With Mitigation: 13.96 tonnes

Geological Hazard

Slope Stability Analyses

- Assessment were carried out using SLOPE/W. Morgenstern-Price method was adopted to calculate the factor of safety (FOS).
- Based on the slope stability analysis, all sections of wall have achieved the minimum required FOS of 1.30 for existing slope and the proposed RC wall, respectively.

Hydraulic Assessment

CONSTRUCTION PHASE

- The coastal area will only be affected by the installation of pile works at both jetties.
- The current speed adjacent to the shoreline and within the bay is less than 0.4 m/s; the potential for sediment dispersion and water quality impacts is predicted to be minimal

OPERATIONAL PHASE

- **Water Level:** Not anticipated to worsen existing high-water conditions or substantially change established flooding patterns.
- **Current Speed**: Does not affect regional sediment dynamics or navigation safety during periods of peak flow
- **Wave**: Minor localized changes are not anticipated to significantly alter the regional wave climate or impact coastal stability.

Water Quality

CONSTRUCTION PHASE

- Untreated sediment that contributes total suspended solids into the marine water due to the uncontrolled earthworks.

OPERATIONAL PHASE

- Malfunction of the proposed small sewage treatment system. (SSTS) need to be taken into account.
- Discharge of effluent is to be monitored and not directly flowed into the river.

Air Quality

CONSTRUCTION PHASE

- **Site preparation and earthworks** - Clearing of vegetation for earthworks, with proper disposal of cleared materials; open burning is strictly prohibited.

Air Quality Modelling

Modelling exercise for predicted Maximum Average Incremental Concentration (MAIC) of PM_{10} and $PM_{2.5}$ at two (2) ASRs for three (3) scenarios compared against MAAQS 2020 limits: -

a) Unmitigated: both PM_{10} and $PM_{2.5}$ below limits
b) Mitigated with 35% reduction: both PM_{10} and $PM_{2.5}$ below limits
c) Mitigated with 90% reduction: both PM_{10} and $PM_{2.5}$ below limits

Terrestrial Ecology

Impacts on Flora

- Minimal impacts as only minimal earthwork will be conducted to preserve the natural features of the site.

Impacts on Fauna

- Human-wildlife conflicts as primates are present along the Pulau Rebak Besar.

EXECUTIVE SUMMARY

FIRST SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT
Proposed Development of Resort and Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Impact Assessment

Noise Generation

CONSTRUCTION PHASE

- Construction-related activities: operation of machinery during land clearing, earthwork, unloading works, concrete works, etc.

Noise Level Simulation

- Noise level simulation at two (2) NSRs for unmitigated and mitigated with 1.5 m relative to the ground level, compared against Schedule of Permissible Sound Levels, Sixth Schedule – all within limits of 75 dB(A) for L_{10} and 90 dB(A) for L_{max}.
- The anticipated community response to noise due to the Project is "None".

OPERATIONAL PHASE

- Dominant sources of operational noise:
  - Guest-related activities such as outdoor recreational use, and events; and
  - Facility operations, including loading bays and maintenance activities

Vibration

CONSTRUCTION PHASE

- Vibration impact assessed using FTA 2018 and DOE Guidelines 2021.
- The typical vibration generating equipment (e.g. pile drivers, rollers) & the distance of impact is assessed.
- The identified sensitive receptors are not within the ZOI of 15 mm/s and 10 mm/s.

OPERATIONAL PHASE

- Traffic induced ground-borne vibrations only occur in very extreme circumstances.
- No ground-borne vibration impacts anticipated.

Waste Generation

CONSTRUCTION PHASE

- Category of wastes: Biomass, construction wastes, municipal waste, and scheduled wastes
- Improper waste management: blockage to drainage, odour nuisance, potential mosquito breeding ground due to undisposed containers, soil, groundwater and odour pollutions

OPERATIONAL PHASE

- Waste types: Municipal waste and waste from landscaping and maintenance housekeeping.
- Improper waste management: proliferation of pests, and soil, surface water and groundwater quality contamination.

Marine Ecology

Impacts on Fisheries and Marine Megafauna

- Aquatic life may avoid areas with high noise, pollution, or human activity.
- Construction activities may temporarily restrict access to traditional fishing grounds.
- Loss or degradation of these areas may lead to a decline in shellfish populations.

Socio-Economy

CONSTRUCTION PHASE

- **Positive impacts**: Increase in job and business opportunities for skilled and unskilled labours.
- **Negative impacts**:
  - Transportation of construction materials via Jalan Sungai Cenang and other access roads may lead to traffic congestion.
  - Disruptions due to road congestion and dust pollution might reduce customer traffic and sales for business operators.

OPERATIONAL PHASE

- **Positive impacts**: Increase in job and business opportunities as the local population base expands.
- **Negative impacts**:
  - Increase in customers and staff will lead to higher traffic volume on the access road, potentially causing congestion.

EXECUTIVE SUMMARY

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Mitigation Measures

CONSTRUCTION PHASE

- The risk of soil erosion and sedimentation will be minimal with the implementation of Best Management Practices (BMPs) as per ESCP and LD-P2M2:
  - Use of construction markers and perimeter benchmarking.
  - Planning and phasing of land clearing and earthworks.
  - Drainage and surface runoff controls.
  - Proper storage, transport and disposal of soil material.
  - Apply protective covers on exposed areas.
  - Sediment controls on access routes – temporary culverts, paving, surface spraying, wash through/ wheel washing facilities , etc.
  - Regular inspection and maintenance of sediment control structures, turfed slopes and drains.

OPERATIONAL PHASE

- Most of the Project site area will be concreted and paved with asphalt, reduce erosion.
- Exposed barren land site would have been landscaped with vegetation to avoid erosion.



Soil Erosion & Sedimentation

CONSTRUCTION PHASE

- A green slope protection system using Geocell with topsoil infill will be proposed for areas where grass establishment is not feasible.
- Mortared stone pitching is an alternative method and can be carried out at slope areas.
- For hydroseeding, appropriate species of grasses and legumes, along with mulch, fertilizer, lime, and other necessary amendments, shall be applied in suitable quantities to ensure uniform ground coverage without voids.
- Temporary slope protection, surface and subsurface drainage, and vegetation cover will be implemented for permanent cuttings.

OPERATIONAL PHASE

- Routine maintenance inspection will be conducted annually.
- Engineer inspection for maintenance will be carried out once every five years by qualified person.
- Long-term slope maintenance will be implemented in accordance with the Guidelines on Slope Maintenance in Malaysia (JKR, 2006)



Geotechnical Consideration

CONSTRUCTION PHASE

- Priority will be given to local residents for employment and business opportunities.
- Water quality monitoring will be conducted periodically to ensure that suspended solids, turbidity, and other parameters remain within permissible limits.
- Traffic flow will be monitored and managed to minimize congestion, with heavy vehicle movements restricted during peak hours.

OPERATIONAL PHASE

- Waste disposal will be carried out by licensed contractors to prevent odour issues, pests, and pollution.
- All scheduled waste will be managed in full compliance with the Environmental Quality (Scheduled Wastes) Regulations 2005.



Socio-economy

EXECUTIVE SUMMARY

FIRST SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT
Proposed Development of Resort and Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Mitigation Measures

Hydraulic Assessment

CONSTRUCTION PHASE
- Silt fences, sediment traps, and sedimentation basins will be installed, particularly near ephemeral rivers, to capture runoff before it enters marine waters.
- Fuels, lubricants, and chemicals will be stored in bunded areas away from water.
- Monitoring of Total Suspended Solids (TSS) to ensure that water clarity remains within baseline thresholds.

OPERATIONAL PHASE
- Routine inspections during peak flow seasons.

Air Quality

CONSTRUCTION PHASE
- Materials will not be loaded to a level higher than the side and tail boards, and will be dampened or covered before transport.
- Provision of wheel washing facilities and wash troughs at the site entrance/exit.
- Minimising disturbance to exposed ground surfaces.

OPERATIONAL PHASE
- Smooth traffic flow and a good level of service on existing roads minimise emissions from vehicles.

Noise

CONSTRUCTION PHASE
- Compliance with the noise control measures and limits stipulated in the *Environmental Noise Limits and Control (2021); Annex E: Guidance on Noise Control*.
- The use of acoustic enclosures or screens for noisy machinery as well as metal hoarding along the site perimeter will be implemented to reduce noise levels. Construction activities, particularly those involving noisy equipment, will be restricted to daytime hours (7.00 a.m. – 7.00 p.m.).

OPERATIONAL PHASE
- Potential sources of noise pollution are from the movement of light vehicles along completed development roads and are expected not to cause significant impacts to the community.

Vibration

CONSTRUCTION PHASE
- Compliance with the guidelines in *Environmental Vibration Limits and Control (2021); Annex E: Management and Mitigation of Vibration in the Environment*, including:
  - **Source Control**: Using vibration dampers to reduce vibration and placing, operating, or locating high-vibration sources as far as possible from sensitive areas.
  - **Administrative Control**: Limiting the operating time of vibration sources.

OPERATIONAL PHASE
- There are no potential sources of vibration impact during the operational phase and therefore no mitigation measures are required.

Water Quality

CONSTRUCTION PHASE
- Water quality monitoring will be conducted every month until post-works completion, focusing on TSS to monitor potential temporary impacts from construction activities.
- Open stockpiles of cement, sand and other construction materials will need to be covered with tarpaulin or equivalent.

OPERATIONAL PHASE
- SSTS effluent discharge will be maintained at Standard A of the Environmental Quality (Sewage) Regulations 2009
- Monthly effluent quality monitoring will be conducted.

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Mitigation Measures

CONSTRUCTION PHASE
- **Biomass Waste**: Impervious sheets will be used to cover these stockpiles.
- **Construction Waste**: Construction waste management will follow the Waste Management Hierarchy Pyramid, prioritizing waste reduction, reuse, and recycling before final disposal.
- **Domestic Waste**: Provision of a sufficient number of waste bins at the construction site.
- **Scheduled Waste**: Scheduled waste management will be carried out in accordance with the Environmental Quality (Scheduled Wastes) Regulations 2005.

OPERATIONAL PHASE
- **Domestic Waste**: All domestic waste will be segregated into recyclable and non-recyclable materials.
- **Scheduled Waste**: The storage area will be concrete-based with a containment capacity of 110% of the largest container. All scheduled waste will be handled by competent personnel.



Waste Management

CONSTRUCTION PHASE
- Rehabilitation measures will be implemented to restore affected areas after construction is completed.
- Translocated plants help restore disturbed sites and provide habitat and food for local wildlife.
- Construction activities will be scheduled during non-sensitive periods for wildlife.

OPERATIONAL PHASE
- Educational signage around the development area can be used to explain the significance of local wildlife and their role in the ecosystem.
- Human–Wildlife Conflict: Standard Operating Procedures (SOPs) will be developed in consultation with PERHILITAN to manage wildlife encounters.



Terrestrial Ecology

CONSTRUCTION PHASE
- Implementation of the ESCP, including the installation of sediment traps and temporary drainage to prevent runoff containing suspended solids from entering coastal waters.
- Designated vessel routes, berthing areas, and anchoring zones will be established to prevent damage to surrounding coral.
- Baseline and periodic marine water quality monitoring will be conducted to ensure compliance with the limits set under the Malaysian Marine Water Quality Standard (MMWQS).

OPERATIONAL PHASE
- All resort effluent and runoff will be treated to minimize nutrient loading and prevent eutrophication or algal bloom.
- Deploy trained MMOs on all active vessels and worksites to visually monitor for marine creatures.



Marine Ecology

Proposed Environmental Monitoring Program

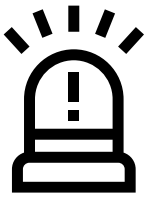


COMPLIANCE MONITORING (CM)

- Ensures compliance with EIA approval conditions and P2M2 requirements
- Sampling and analysis by SAMM-accredited laboratory

ENVIRONMENTAL COMPLIANCE AUDIT

- Environmental Audit by a registered environmental auditor
- Possess Certified Erosion, Sediment and Storm Water Inspector (CESSWI) or Malaysian Certified Inspector of Sediment and Erosion Control (MY-CISEC) Qualification.



PERFORMANCE MONITORING (PM)

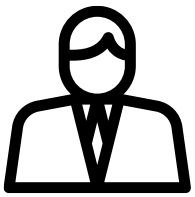
- Evaluate effectiveness of on-site pollution control measures.
- Conducted by the EO.

BASELINE MONITORING

General indication of the baseline environmental conditions at the time of reporting

ENVIRONMENTAL MONITORING PROGRAM

- Provides database of environmental impacts



IMPACT MONITORING (IM)

- Ensures effectiveness of pollution control systems and mitigation measures
- EO to carry out PM on site

SELF-REGULATORY MONITORING

- Ensures effectiveness of mitigating measures and compliance towards environmental regulations
- Carried out by EO

MONITORING	FREQUENCY
Performance Monitoring	
As per LD-P2M2	• Weekly • After heavy rainfall (>12.5 mm as measured by rain gauge)
Compliance Monitoring	
Discharge points of silt traps (SB1 – SB7)	• Monthly
Impact Monitoring	
Construction Phase	
• Marine water quality (5 stations) • Aerial Survey (by drone) – each phase and at active working areas	• Monthly

EXECUTIVE SUMMARY

FIRST SCHEDULE ENVIRONMENTAL IMPACT ASSESSMENT
Proposed Development of Resort and Eco-Tourism Facilities on Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Emergency Response Plan

EMERGENCY RESPONSE TEAM

- A team of qualified individuals with specific roles and responsibilities to carry out during an emergency.
- Responsible for executing the following procedures:



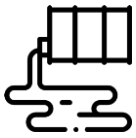
ACCIDENTS
Procedure for emergency response and reporting of major incidents.



FIRE EMERGENCY RESPONSE
Execution of evacuation procedure and fire response coordination.



ESCP FAILURE RESPONSE
Immediate reporting, rectification, and review of erosion control measures.



HAZARDOUS MATERIALS SPILLAGE RESPONSE
Evacuation, containment, and decontamination following hazardous material spills.



MEDICAL EMERGENCY RESPONSE
Immediate notification of emergency services and safe first aid by trained personnel.

Conclusion

The Project poses low environmental risk. All expected impacts can comply with stipulated limits, and can be effectively mitigated.

RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA
Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Project Proponent

Rebak Island Marina Berhad
(183757 – T)

Alamat	: Lot 6875, Jalan Kerja Ayer Lama, 68000 Ampang, Selangor Darul Ehsan
No Tel	: 03 – 2727 7000
Wakil	: Mat Zam Zam Bin Mesran, *Project Consultant*
Emel	: zamzam@tradewindscorp.com

Perunding EIA

AGV ENVIRONMENT
ENVIRONMENTAL SOLUTIONS SPECIALIST

AGV Environment Sdn. Bhd.

Alamat	: Level 3A, Tower B, Atwater Corporate Office, Jalan Prof Diraja Ungku Aziz 46300 Petaling Jaya, Selangor
No Tel	: 03-7931 1455
Wakil	: Datin Dr Vijayalakshmi Samuel
Emel	: vijayalakshmi@agvenvironment.com

Keperluan Undang - Undang

Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Kepada Alam Sekeliling) Perintah 2015

Jadual Pertama –
Aktiviti 12: Pembangunan di Kawasan Pantai dan Bukit (Pembinaan bangunan < 80 bilik)
Aktiviti 13: Pembangunan di Kawasan Cerun (Pembangunan atau penebangan tanah kurang daripada 50% kawasan dengan cerun sama ada ≥25° tetapi <35°)



Gambaran Keseluruhan Projek

Cadangan pembangunan di Pulau Rebak Besar merangkumi komponen-komponen berikut:



- Pembangunan merangkumi empat zon pantai (Pantai Senari, Long Beach, Pantai North Bay, dan Pantai Red Rock).
- Kemudahan marina sedia ada dikekalkan dan dikecualikan daripada skop EIA.
- Projek ini termasuk sebuah hotel utama, vila, khemah mewah, dan beberapa outlet makanan & minuman terpilih.
- Komponen eko-pelancongan seperti pusat pemuliharaan dan kemudahan marina turut dimasukkan.
- Pembangunan ini mengamalkan pendekatan seimbang bagi menyokong pelancongan lestari sambil mengekalkan ciri semula jadi pulau.

Pernyataan Keperluan



Keselarasan dengan Dasar dan Rancangan Kerajaan

Projek ini selaras dengan dasar dan rancangan berikut di peringkat nasional, negeri, dan tempatan:

- Rancangan Malaysia Ke-13, 2026-2030
- Rancangan Fizikal Zon Persisiran Pantai Negara
- Rancangan Struktur Negeri Kedah 2035
- Pelan Strategik LADA (2022 – 2026)
- Rancangan Fizikal Negara Ke-4, 2021-2040
- Dasar Pelancongan Negara. 2020-2035
- Rancangan Tempatan Daerah Langkawi 2030

Faedah Alam Sekitar

- Reka bentuk berketumpatan rendah meminimumkan gangguan tanah dan mengekalkan topografi semula jadi.

Faedah Sosial

- Mewujudkan peluang pekerjaan semasa fasa pembinaan dan operasi
- Meningkatkan kemahiran tenaga kerja tempatan melalui operasi resort jangka panjang dan aktiviti perlancongan.

Faedah Ekonomi

- Meningkatkan hasil pelancongan dan pelaburan di Langkawi.
- Menyokong perniagaan tempatan melalui peningkatan permintaan terhadap barangan dan perkhidmatan.

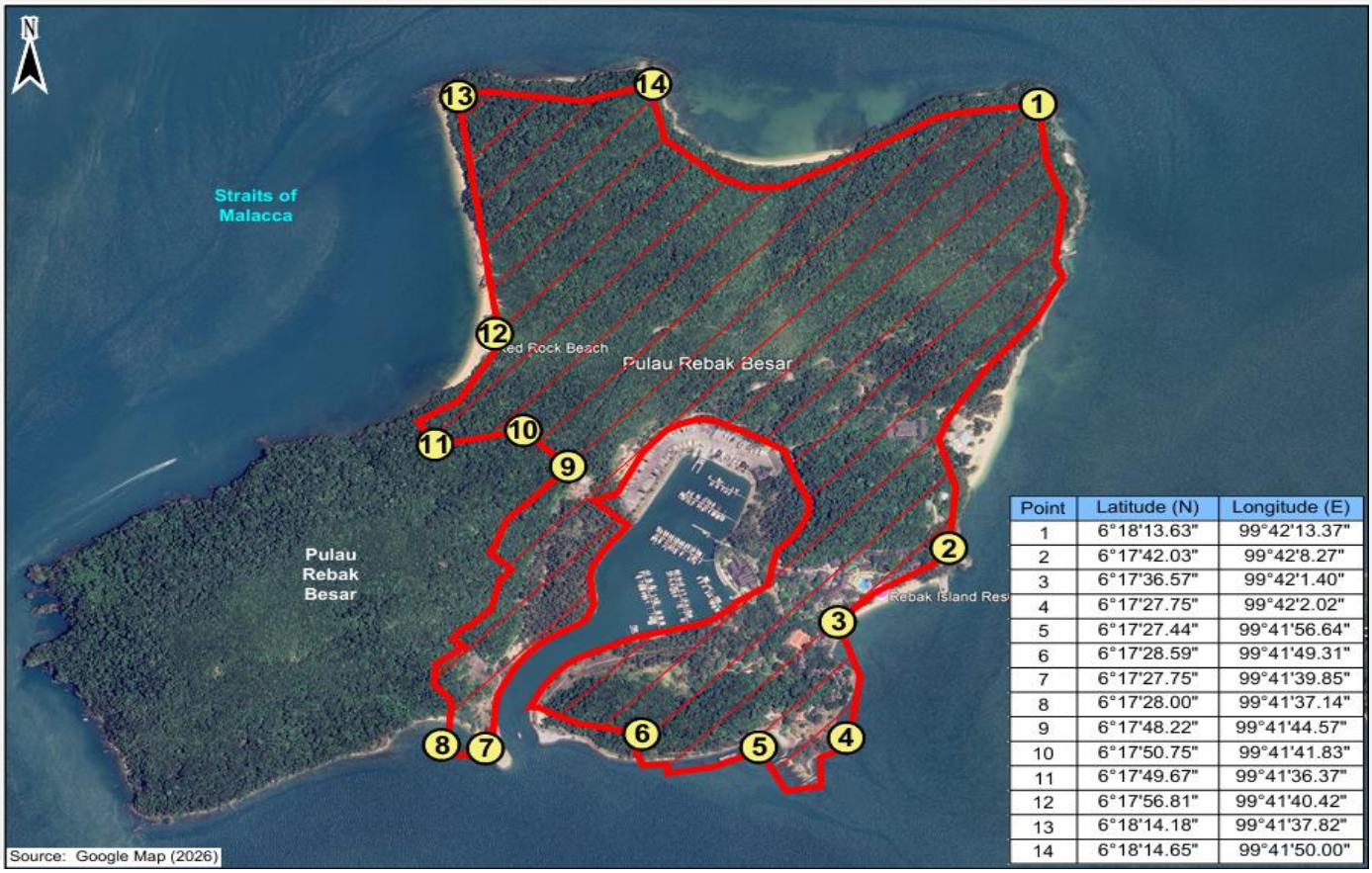
RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA
Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Lokasi Projek

- Terletak di Pulau Rebak Besar, di barat daya Pulau Langkawi.
- Boleh diakses melalui perjalanan bot singkat selama 15 minit dari Terminal Cenang ke Jeti Rebak.





Point	Latitude (N)	Longitude (E)
1	6°18'13.63"	99°42'13.37"
2	6°17'42.03"	99°42'8.27"
3	6°17'36.57"	99°42'1.40"
4	6°17'27.75"	99°42'2.02"
5	6°17'27.44"	99°41'56.64"
6	6°17'28.59"	99°41'49.31"
7	6°17'27.75"	99°41'39.85"
8	6°17'28.00"	99°41'37.14"
9	6°17'48.22"	99°41'44.57"
10	6°17'50.75"	99°41'41.83"
11	6°17'49.67"	99°41'36.37"
12	6°17'56.81"	99°41'40.42"
13	6°18'14.18"	99°41'37.82"
14	6°18'14.65"	99°41'50.00"

RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA
Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Konsep Projek



Komponen Utama Pembangunan

- Transformasi Pulau Rebak Besar menjadi sebuah eko-retret eksklusif.
- Penambahbaikan empat Pantai yang berbeza:
  - *Senari Beach*
  - *Long Beach*
  - *North Bay Beach*
  - *Red Rock Beach*

- Pembangunan 156 unit penginapan yang terdiri daripada suite mewah dan vila persembunyian eksklusif.
- Penempatan kemudahan secara strategik bagi memaksimumkan pemandangan serta meminimumkan gangguan terhadap alam sekitar.

Prinsip Perancangan dan Pembangunan

- **Kedudukan Pelancongan Lestari:**
  - Memanfaatkan persekitaran semula jadi Pulau Rebak sebagai kawasan perlindungan semula jadi di Langkawi.

- **Pendekatan Reka Bentuk Impak Rendah:**
  - Perancangan yang menyesuaikan dengan bentuk muka bumi
  - Kerja pemotongan dan tambakan diumumkan

Jejak Pembangunan

- **Jumlah keluasan Pulau:** 390 ekar (157.83 ha)
- **Kawasan dibangunkan:** 9.21 ekar (3.73 ha)
- **Jejak binaan:** ~2% daripada jumlah keluasan tanah

- Sebahagian besar Pulau Rebak Besar dikekalkan dalam keadaan semula jadi.
- Pendekatan pembangunan berketumpatan rendah dan berteraskan kesedaran alam sekitar.

- **Kemudahan Awam:**
  - Resepsi tetamu
  - Restoran dan ruang majlis
  - Bar & Lounge
  - Kolam renang & kawasan rekreasi
  - Ketibaan tetamu di Pulau Rebak (Jeti)

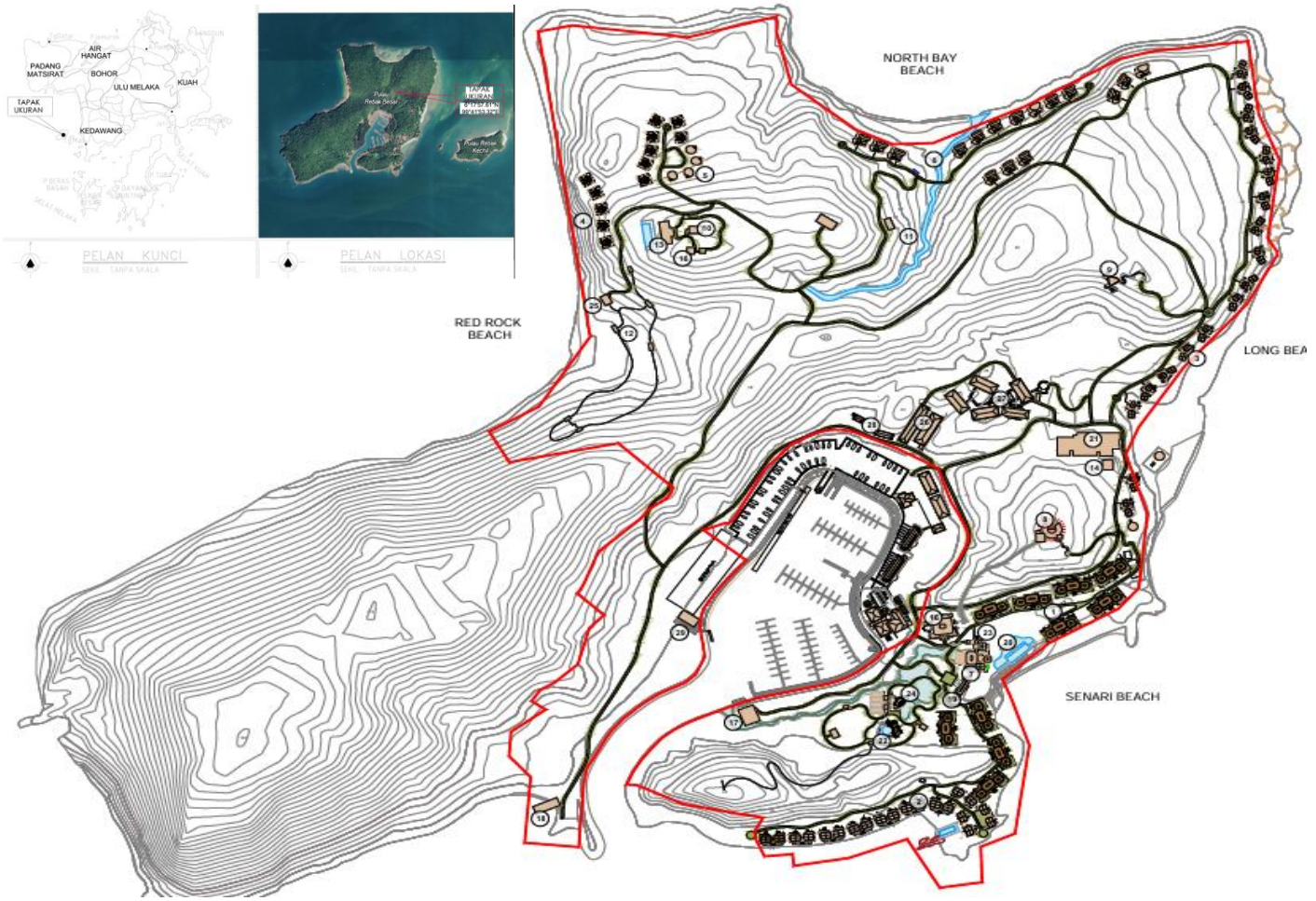
- **Kemudahan Operasi:**
  - Perumahan kakitangan
  - Pejabat / Pentadbiran / BOH

- **Kelestarian Ekonomi:**
  - Menggalakkan amalan pelancongan yang bertanggungjawab.
  - Mewujudkan peluang pekerjaan jangka panjang.
  - Menyumbang kepada industri pelancongan di Langkawi.

RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Pelan Susur Atur



Komponen Projek

Komponen Projek	Keluasan Pembangunan		
	m²	Ekar	Hektar
Pusat Resort Keluarga (Senari Suites, Vila Pantai, Vila Long Beach)	16, 136	3.99	1.61
Mewah (Vila Berkhemah, Vila Kolam Sereniti)	4, 782	1.18	0.48
Makanan dan Minuman	3, 648	0.90	0.36
Kemudahan Majlis	1, 534	0.38	0.15
Kedatangan Tetamu di Pulau Rebak Besar (Jeti)	100	0.02	0.01
Kemudahan Runcit	75	0.02	0.01
Kemudahan Sukan	6, 018	1.49	0.60
Pejabat / Pentadbiran / Kawasan BOH	4, 988	1.23	0.50
Kawasan Pulau Rebak Besar	1, 578, 274	390	157.83

RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Persekitaran Sedia Ada



Topografi & Klasifikasi Cerun

- Asal tanah sedia ada : - 0.5m to 35m asl
- Kecerunan:
  - Kelas I (<15%): 55.54%
  - Kelas II (15°-25°): 31.21%
  - Kelas III (25°-35°): 10.94%
  - Kelas IV (>35°): 2.31%



Batimetri

- Perairan berhampiran pantai adalah cetek, terutamanya antara -2 hingga 0 m MSL di sepanjang pinggir pantai.
- Kedalaman meningkat ke luar pesisir kepada -4 hingga -2 m MSL, dengan kawasan lebih luas antara -6 hingga -4 m MSL di sekitar pulau.
- Tiada kawasan luas melebihi -8 m MSL di dalam tapak Projek.



Iklim dan Meteorologi

- Suhu Purata Tahunan: 28.5°C
- Kelembapan Relatif Tahunan: 78.4%
- Purata Hujan Tahunan: 2583 mm
- Hujan: Lebih lebat pada bulan Ogos, September, dan Oktober; manakala paling rendah pada bulan Februari.
- Kelajuan angin daratan: 1.3 m/s to 2.3 m/s, dengan kelajuan angin 1.9 m/s.



Kawasan Sensitif Alam Sekitar

- Tapak Projek terdiri daripada kawasan hutan tebal. Ia diklasifikasikan di bawah.
- Kedudukan ESA 3: kawasan berhutan, air terjun dan jeram, sungai, zon pesisir, serta kawasan yang mengandungi rizab mineral logam dan bukan logam.



Tanah

- Tanah sisa di tapak berwarna putih hingga kekuningan.
- Teksturnya terdiri daripada pasir dan tanah liat, termasuk jenis campuran seperti pasir liat.
- Tahap keplastikan umumnya rendah hingga sederhana.



Hidrologi

- Terdapat empat sungai sementara tanpa nama di dalam tapak Projek yang mengalir terutamanya semasa hujan.
- Setiap sungai membentuk tadahan air pendek dan bebas yang mengalir ke laut. Saliran berlaku dari bahagian dalam pulau ke Pantai Red Rock Beach, Pantai North Bay, dan Pantai Long.
- Air permukaan dikawal oleh topografi setempat dan terus mengalir ke perairan pantai berdekatan.



Oseanografi Pantai dan Hidraulik

- Keadaan Garis Pantai: Secara amnya stabil, kecuali di sepanjang bahagian timur.
- Anggaran 0.2 km garis pantai timur mengalami pemendapan pada kadar ~4.6 m/tahun, manakala garis pantai utara bersebelahan mengalami hakisan pada kadar 8.6 m/tahun.



Geologi

- Terutamanya terdiri daripada batu pasir atau metasandstone dengan siltstone, syal, dan konglomerat kecil yang berasal dari Zaman Cambrian.



Ekologi Daratan

- **Fauna**: **Mamalia**: *Long-tailed macaque, common butterfly lizard, lesser mousedeer,* tikus belukar, ular laju biasa*, dan monitor lizard*.
  Avifauna: 13 keluarga telah direkodkan, di mana 7 keluarga adalah Sepenuhnya Dilindungi, 1 keluarga Dilindungi di bawah WCA 2010, dan semua keluarga berada dalam kategori Kurang Prihatin menurut Senarai Merah IUCN.
- **Flora**: 25 spesies biasa daripada 19 keluarga tumbuhan.



Ekologi Marin

- *Phytoplankton*: 16 *taxa* daripada 2 *phyla* direkodkan
- *Zooplankton*: 24 *taxa* dikenal pasti dan 16 *taxa* adalah *Arthropoda.*
- *Macrobenthos*: *66 taxa* daripada 4 *phyla*
- Densiti tertinggi *Macrobenthos*: 180 ind. m-2
- Densiti terendah *Macrobenthos*: 10 ind.m-2
- Fauna Ikan: 29 spesies daripada 23 keluarga ikan telah dikenal pasti.



Socio-Economi

- Pemegang kepentingan utama: Komuniti yang terletak dalam radius 3km.

Ringkasan FGD:

- Peluang pekerjaan kepada penduduk tempatan meningkat
- Kebimbangan berkaitan laut dan sumber rezeki
- Manfaat komuniti dan infrastruktur
- PP digalakkan melaksanakan inisiatif CSR untuk komuniti
- Semua peserta menyatakan sokongan terhadap Projek, dengan menyedari kewujudan resort sedia ada di Pulau Rebak Besar.

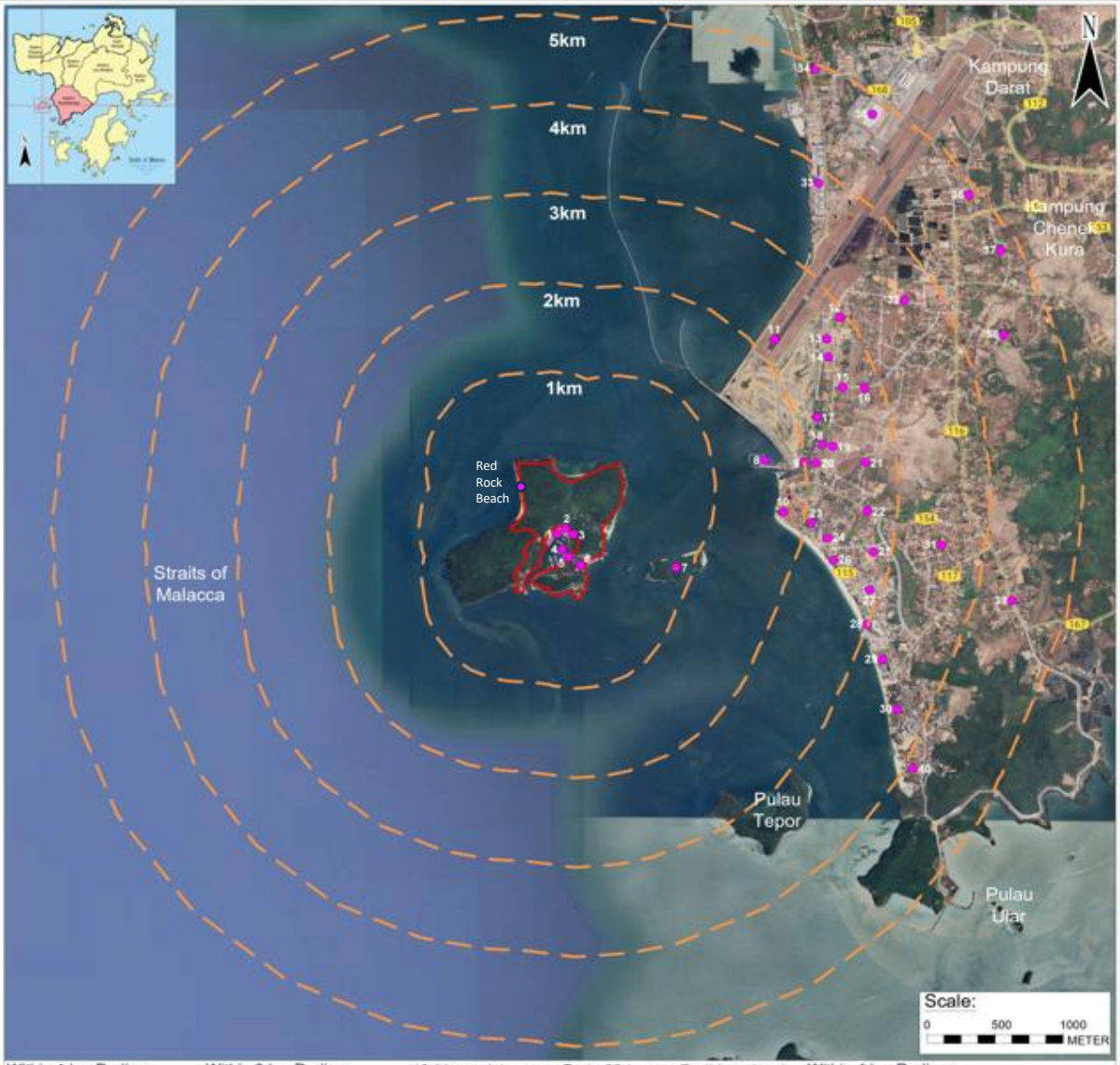
RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Guna Tanah Sedia Ada

Guna Tanah

- Tapak Projek kini merupakan gabungan kawasan yang telah dibangunkan dan belum dibangunkan, dengan kawasan belum dibangunkan diliputi oleh hutan sekunder tebal.
- Terletak di bawah BP 6: BPK 6.6 b: Pulau Komersial. Tapak Projek dikategorikan sebagai “Hutan” dan “Komersial”.
- Pantai Red Rock Beach, yang diklasifikasikan sebagai geosite, terletak di barat laut tapak Projek.



Within 1 km Radius:
1. Seaspray Yatch Sales and Marina Services
2. Yatch Supply (M) Sdn Bhd
3. Langkawi Boat Sales & Services Sdn Bhd
4. Jetty Rebak Island
5. Harbour Store Rebak
6. Rebak Island Resort & Marina
7. Pulau Rebak Kechil

Within 2 km Radius:
8. Jetty to Rebak Island Resort & Marina
9. Jeti Pendaratan Sg Cenang
10. Pelangi Beach Resort & Spa

Within 3 km Radius:
11. Langkawi International Airport Runway
12. Langkawi Tourism Academy@Kolej Komuniti
13. Morac Adventure Park
14. Lavigo Resort
15. Kampung Belak Mukim
16. Kampung Belak
17. Temple Tree Resort
18. The Daun Resort
19. Destini Akef Villa
20. Telaga Walk @ Chenang
21. Langkawi Green View Cottage
22. Kampung Lubok Buaya
23. Laman Padi Langkawi
24. Pantai Chenang Mosque
25. Kampung Tanjung Mali
26. Malibest Resort
27. Cenang Mall
28. Underwater World Langkawi

Within 4 km Radius:
29. Sri Kijang BNM Resort
30. The Frangipani Langkawi Resort
31. Kg Bubor
32. Kg Gelam
33. Pusat Latihan Polis (PULAPOL)

Within 5 km Radius:
34. Bella Vista Express Langkawi
35. Mahsuri International Exhibition Centre
36. Kg Chenek Kura
37. Kg Bukit Lembu
38. Kg Kendawang
39. Kg Temoyong
40. Holiday Villa Resort & Beachclub Langkawi

RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA
Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Persampelan Garis Dasar Alam Sekitar

Stations	Latitude (N)	Longitude (E)
A1/N1/V1	6°17'40.77"	99°41'56.40"
A2/N2/V2	6°17'39.43"	99°42'2.30"
MQ1	6°18'13.27"	99°41'53.29"
MQ2	6°18'15.40"	99°42'21.49"
MQ3	6°17'44.86"	99°42'14.84"
MQ4	6°17'42.42"	99°42'31.87"
MQ5	6°17'22.96"	99°42'4.69"
MQ6	6°17'23.86"	99°41'37.50"
MQ7	6°17'52.98"	99°41'28.04"
MQ8	6°17'42.31"	99°41'54.27"



Kualiti Udara Ambien

- Dua (2) lokasi dipantau (A1 dan A2) berdasarkan *New Malaysia Ambient Air Quality Standard* (MAAQS, 2020).
- PM_{10} di A1 dan A2 adalah antara **10–14 µg/m³**, manakala $PM_{2.5}$ adalah antara **4–8 µg/m³**.
- CO dikesan di kedua-dua lokasi pada **1.4 mg/m³**.
- SO_2, NO_2, dan O_3 berada di bawah had pengesanan di semua stesen.

Tahap Bunyi

- Dua (2) Lokasi dipantau (N1 dan N2)
- Semua mematuhi tahap bunyi yang dibenarkan, *LAeq of Second Schedule – Recommended Permissible Sound Level (LAeq) By Receiving Land Use For Existing Built-Up Areas in "Guidelines for Environmental Noise Limits and Control Guideline (2019)"*
- Tahap bunyi di semua stesen mematuhi had **70 dBA** (siang) dan **65 dBA** (malam), dengan sumber utama dari trafik, kediaman, dan bunyi semula jadi, bukan Projek.

Tahap Getaran

- Dua (2) Lokasi dipantau (N1 dan N2)
- Semua mematuhi tahap bunyi yang dibenarkan – *Recommended Vibration Limits For Human Response and Annoyance from Intermittent Vibratioms (Commercial, Business) in Guidelines For Environmental Vibration Limits And Control (2019)*
- Semua bacaan PPV berada di bawah had yang disyorkan oleh DOE iaitu 1.0 mm/s mengikut Jadual Kesembilan.

Kualiti Air Marin

- Lapan stesen marin (MQ 1 – MQ 8) dinilai mengikut MMWQS Kelas 1 dan MMWQI.
- pH (7.6–8.2) mematuhi had Kelas 1, manakala DO (5.1–5.4 mg/L) berada di bawah ambang, mungkin akibat keadaan laut semula jadi.
- Ammonia tak berion tinggi dikesan di MQ1, MQ2, MQ4, dan MQ6, kemungkinan berpunca daripada larian permukaan dan input setempat.
- Merkuri melebihi had Kelas 1 di kebanyakan stesen (kecuali MQ1 dan MQ7), manakala peningkatan kuprum dicatat di MQ1 dan MQ8.
- Semua stesen mencatat saliniti 31 ppt, memenuhi keperluan MMWQI.
- Nilai MMWQI antara 90.93–93.24, mengklasifikasikan semua stesen sebagai "**Cemerlang**".

RINGKASAN EKSEKUTIF

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Penilaian Impak

Hakisan Tanah & Pemendapan



Pemodelan Hakisan Tanah

- Penilaian dijalankan menggunakan USLE untuk tiga (3) senario: Keadaan Sedia Ada, Keadaan Terburuk (Tanpa Mitigasi) dan Dengan Langkah Mitigasi
- Ringkasan:
  - Keadaan Sedia Ada: 53.45 % berada dalam kategori "Risiko Rendah“
  - Keadaan Terburuk: Hampir 53 % berada dalam kategori "Risiko Rendah“
  - Dengan Langkah Mitigasi: 53 % akan berada dalam kategori "Risiko Rendah“

Sediment Yield

- Sedia Ada: 13.65 tan; Keadaan Terburuk: 89.89 tan; Dengan Mitigasi: 13.96 tan

Bahaya Geologi



Analisis Kestabilan Cerun

- Penilaian dijalankan menggunakan SLOPE/W. Kaedah Morgenstern-Price digunakan untuk mengira *factor of safety* (FOS)
- Berdasarkan analisis, semua bahagian dinding telah mencapai FOS minimum yang diperlukan iaitu 1.30 bagi cerun sedia ada dan dinding RC yang dicadangkan.

Analisis Hydraulik



FASA PEMBINAAN

- Kawasan pesisir pantai dijangka akan terjejas akibat kerja-kerja pemasangan cerucuk di kedua-dua jeti.
- Kelajuan arus berhampiran garis pantai dan di dalam teluk adalah kurang daripada 0.4 m/s; oleh itu, potensi penyebaran sedimen serta impak terhadap kualiti air dijangka adalah minimum.

FASA OPERASI

- **Paras Air:** Tidak dijangka memburukkan keadaan paras air tinggi sedia ada atau mengubah secara ketara corak banjir yang telah dikenal pasti.
- **Kelajuan Arus:** Tidak menjejaskan dinamik sedimen serantau atau keselamatan navigasi semasa tempoh aliran puncak.
- **Ombak:** Perubahan kecil yang bersifat setempat tidak dijangka akan mengubah secara signifikan iklim ombak serantau atau menjejaskan kestabilan pesisir pantai.

Kualiti Air Marin



FASA PEMBINAAN

- Sedimen tidak dirawat yang terhasil daripada kerja-kerja tanah yang tidak terkawal berpotensi meningkatkan kepekatan Jumlah Pepejal Terampai (TSS) dalam perairan marin.

- **FASA OPERASI**
- Kegagalan fungsi Sistem Rawatan Kumbahan Kecil (Small Sewage Treatment System, SSTS) yang dicadangkan perlu diambil kira.
- Pelepasan efluen hendaklah dipantau dan tidak dibenarkan mengalir terus ke dalam sungai tanpa rawatan atau kawalan yang sewajarnya.

Kualiti Udara



FASA PEMBINAAN

- **Penyediaan tapak dan kerja-kerja tanah** – Pemotongan tumbuh-tumbuhan bagi tujuan kerja tanah hendaklah dilaksanakan dengan pelupusan bahan buangan yang sewajarnya; pembakaran terbuka adalah dilarang sama sekali.

Permodelan Kualiti Udara

Permodelan untuk *Maximum Average Incremental Concentration* (MAIC) ramalan bagi PM10 dan PM2.5 di dua (2) ASR untuk tiga (3) senario dibandingkan dengan had MAAQS 2020:

a) Tanpa mitigasi: kedua-dua PM_{10} dan $PM_{2.5}$ di bawah had
b) Dengan mitigasi pengurangan 35%: kedua-dua PM_{10} dan $PM_{2.5}$ di bawah had
c) Dengan mitigasi pengurangan 90%: kedua-dua PM_{10} dan $PM_{2.5}$ di bawah had

Ekologi Terestrial



Impak Terhadap Flora

- Impak minimum kerana hanya kerja tanah yang minimum akan dijalankan bagi memelihara ciri semula jadi tapak

Impak Terhadap Fauna

- Konflik manusia-hidupan liar kerana primat hadir di sepanjang Pulau Rebak Besar.

RINGKASAN EKSEKUTIF

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Penilaian Impak

Bunyi Bising

FASA PEMBINAAN

- **Aktiviti berkaitan pembinaan**: pengoperasian jentera semasa kerja-kerja pembersihan tapak, kerja tanah, kerja pemunggahan, kerja konkrit dan lain-lain aktiviti berkaitan.

Simulasi Tahap Bunyi

- Simulasi di due (2) NSR untuk senario tanpa mitigasi dan dengan mitigasi *hoarding* 1.8 m, dibandingkan dengan Jadual Tahap Bunyi Yang Dibenarkan, Jadual Keenam — semua dalam had 75 dB(A) untuk L10 dan 90 dB(A) untuk Lmax
- Jangkaan tindak balas komuniti terhadap bunyi akibat Projek adalah "Tiada"

FASA OPERASI

- Sumber bunyi operasi yang dominan:
  - **Aktiviti berkaitan tetamu**, seperti penggunaan rekreasi luar dan penganjuran acara; dan
  - **Operasi kemudahan**, termasuk kawasan pemunggahan dan aktiviti penyelenggaraan.

Getaran

FASA PEMBINAAN

- Impak getaran dinilai menggunakan FTA 2018 dan Garis Panduan JAS 2021
- Peralatan penghasil getaran biasa (contoh: *pile drivers, rollers*) dan jarak impak dinilai
- Penerima sensitif yang dikenal pasti tidak berada dalam ZOI 15 mm/s dan 10 mm/s

FASA OPERASI

- Getaran bawah tanah akibat trafik hanya berlaku dalam keadaan yang sangat ekstrem
- Tiada impak getaran bawah tanah dijangkakan

Penjanaan Sisa

FASA PEMBINAAN

- Kategori sisa: *Biomass*, sisa pembinaan, sisa perbandaran dan sisa terjadual
- Pengurusan sisa yang tidak wajar: sekatan kepada saliran, gangguan bau, potensi tempat pembiakan nyamuk akibat bekas yang tidak dilupuskan, pencemaran tanah, air bawah tanah dan bau

FASA OPERASI

- Jenis sisa: Sisa perbandaran dan sisa daripada penyelenggaraan landskap dan *housekeeping*
- Pengurusan sisa yang tidak wajar: pembiakan makhluk perosak, dan pencemaran kualiti tanah, air permukaan dan air bawah tanah

Ekologi Marin

Impak atas Perikanan dan Megafauna Marin

- **Hidupan akuatik** akan mengelak kawasan yang mengalami bunyi bising tinggi, pencemaran, atau aktiviti manusia.
- **Aktiviti pembinaan** mungkin mengehadkan sementara akses ke kawasan menangkap ikan tradisional.
- **Kehilangan atau pengurangan kualiti kawasan ini** boleh mengakibatkan penurunan populasi kerang dan moluska lain.

Socio-Economi

FASA PEMBINAAN

- **Impak Positif**: Peningkatan peluang pekerjaan dan perniagaan untuk tenaga kerja mahir dan tidak mahir.
- **Impak Negatif:**
  - Trafik pembinaan dijangka menyebabkan kesesakan sementara di sepanjang Jalan Sungai Cenang, berpotensi mengganggu aliran trafik, meningkatkan masa perjalanan dan meningkatkan risiko kemalangan.
  - Gangguan akibat kesesakan lalu lintas dan pencemaran habuk mungkin mengurangkan jumlah pengunjung serta jualan bagi pengusaha perniagaan.

FASA OPERASI

- **Impak Positif**: Peningkatan peluang pekerjaan dan perniagaan apabila populasi penduduk tempatan berkembang
- **Impak Negatif:**
  - Peningkatan bilangan pelanggan dan kakitangan akan mengakibatkan kenaikan volum trafik di jalan akses, yang berpotensi menyebabkan kesesakan lalu lintas.

RINGKASAN EKSEKUTIF

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Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Mitigation Measures

FASA PEMBINAAN

- Risiko hakisan tanah dan pemendapan akan diminimumkan dengan pelaksanaan *Best Management Practices* (BMPs) seperti yang ditetapkan dalam ESCP dan LD-P2M2:
  - Penggunaan penanda pembinaan dan *perimeter benchmarking*.
  - Perancangan dan fasa pembersihan tapak dan kerja tanah.
  - Kawalan saliran dan air larian permukaan.
  - Penyimpanan, pengangkutan dan pelupusan bahan tanah yang betul.
  - Pemasangan penutup pelindung di kawasan terdedah.
  - Kawalan sedimen di laluan akses —semburan permukaan, kemudahan *wash through/wheel washing*, dan lain-lain.
  - Pemeriksaan dan penyelenggaraan berkala struktur kawalan sedimen, cerun berumput dan longkang.

FASA OPERASI

- **Kebanyakan kawasan tapak Projek** akan disimen dan diturap dengan asfalt, bagi mengurangkan hakisan.
- Kawasan tanah terdedah yang tidak bertanah akan ditanam tumbuhan untuk mencegah hakisan.



Hakisan Tanah & Pemendapan

FASA PEMBINAAN

- Sistem perlindungan cerun hijau menggunakan Geocell dengan pengisian tanah atas akan dicadangkan bagi kawasan di mana penanaman rumput tidak dapat dilaksanakan.
- **Pemasangan batu mortir** merupakan kaedah alternatif yang boleh dilaksanakan di kawasan cerun.
- Bagi **hydroseeding**, spesies rumput dan kekacang yang sesuai, bersama dengan mulsa, baja, kapur, dan bahan tambahan lain yang diperlukan, hendaklah digunakan dalam kuantiti yang sesuai untuk memastikan liputan tanah yang sekata tanpa jurang.
- **Perlindungan cerun sementara**, sistem saliran permukaan dan bawah tanah, serta penanaman vegetasi akan dilaksanakan bagi cerun kekal.

FASA OPERASI

- *Routine Maintenance Inspection* akan dijalankan setiap tahun oleh pihak bertanggungjawab.
- *Engineer Inspection for Maintenance* akan dijalankan sekali setiap lima (5) tahun oleh jurutera geoteknikal/sivil bertauliah.
- Penyelenggaraan cerun jangka panjang akan dilaksanakan selaras dengan Garis Panduan Penyelenggaraan Cerun di Malaysia (JKR, 2006).



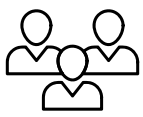
Geoteknikal

FASA PEMBINAAN

- Keutamaan akan diberikan kepada penduduk tempatan bagi peluang pekerjaan dan perniagaan.
- Pemantauan kualiti air akan dijalankan secara berkala bagi memastikan pepejal terampai, kekeruhan dan parameter lain kekal dalam had yang dibenarkan.
- Aliran trafik akan dipantau dan diurus bagi meminimumkan kesesakan, dengan pergerakan kenderaan berat dihadkan semasa waktu puncak.

FASA OPERASI

- Pelupusan akan dijalankan oleh kontraktor berlesen bagi mencegah isu bau, perosak dan pencemaran.
- Semua sisa terjadual akan diuruskan dengan mematuhi sepenuhnya Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005.



Socio-economi

RINGKASAN EKSEKUTIF

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Mitigation Measures

FASA PEMBINAAN
- Pagar lumpur (silt fences), perangkap sedimen, dan takungan sedimen akan dipasang, terutamanya berhampiran sungai sementara, bagi menangkap aliran larian sebelum ia memasuki perairan marin.
- Bahan api, pelincir, dan bahan kimia akan disimpan di kawasan berbunding (bunded) yang terletak jauh daripada sumber air.
- Pemantauan Jumlah Pepejal Terampai (TSS) akan dijalankan bagi memastikan kejelasan air kekal dalam had asas yang ditetapkan.

FASA OPERASI
- Pemeriksaan rutin akan dijalankan semasa musim aliran puncak.



Analisis Hidraulik

FASA PEMBINAAN
- Bahan binaan tidak akan dimuat sehingga melebihi paras papan sisi dan belakang, serta akan dibasahkan atau ditutup sebelum pengangkutan.
- Penyediaan kemudahan basuh roda dan saluran pencucian di pintu masuk/keluar tapak.
- Mengurangkan gangguan terhadap permukaan tanah yang terdedah.

FASA OPERASI
- Aliran trafik yang lancar dan tahap perkhidmatan yang baik di jalan sedia ada meminimumkan pelepasan daripada kenderaan.



Kualiti Udara

FASA PEMBINAAN
- Mematuhi langkah kawalan dan had bunyi yang ditetapkan dalam *Environmental Noise Limits and Control (2021); Annex E: Guidance on Noise Control*.
- Penggunaan penutup akustik atau skrin untuk jentera bising serta *metal hoarding* di sepanjang perimeter tapak akan dilaksanakan bagi mengurangkan bunyi bising.
- Aktiviti pembinaan, terutamanya yang melibatkan peralatan bising akan dihadkan kepada waktu siang (7 pagi – 7 malam).

FASA OPERASI
- Potensi sumber pencemaran bunyi bising adalah daripada pergerakan kenderaan ringan dalam jalan-jalan pembangunan yang siap dan dijangka tidak menimbulkan impak signifikan kepada komuniti.



Bunyi Bising

FASA PEMBINAAN
- Mematuhi garis panduan dalam *Environmental Vibration Limits and Control (2021); Annex E: Management and Mitigation of Vibration in The Environment*, termasuk:
  - **Kawalan di Punca**: Menggunakan *vibration dampers* untuk meredakan getaran serta Meletakkan, mengendalikan atau menempatkan sumber getaran tinggi sejauh mungkin daripada kawasan sensitif.
  - **Kawalan Pentadbiran**: Mengehadkan masa operasi sumber getaran.

FASA OPERASI
- Tiada sumber potensi impak getaran semasa fasa operasi dan oleh itu tiada langkah mitigasi diperlukan.



Getaran

FASA PEMBINAAN
- Pemantauan kualiti air akan dijalankan setiap bulan sehingga selepas siap kerja, dengan tumpuan kepada Jumlah Pepejal Terampai (TSS) bagi memantau potensi impak sementara daripada aktiviti pembinaan.
- Timber/timbunan bahan binaan terbuka seperti simen, pasir, dan bahan binaan lain hendaklah ditutup menggunakan kanvas kalis air (tarpaulin) atau kaedah setara.

FASA OPERASI
- Pelepasan efluen SSTS akan dikekalkan pada Standard A, Peraturan-Peraturan Kualiti Alam Sekeliling (Kumbahan) 2009.
- Pemantauan kualiti efluen akan dijalankan secara bulanan.



Kualiti Air

RINGKASAN EKSEKUTIF

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Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Mitigation Measures

FASA PEMBINAAN
- Sisa *Biomass*: Lembaran kalis air akan digunakan untuk menutup timbunan bahan kerja tanah.
- Sisa Pembinaan: Pengurusan sisa pembinaan akan mengikut Hierarki Pengurusan Sisa Piramid, dengan mengutamakan pengurangan sisa, penggunaan semula dan kitar semula sebelum pelupusan akhir.
- Sisa Domestik: Menyediakan bilangan tong sampah yang mencukupi di pembinaan.
- Sisa Terjadual: Pengurusan sisa terjadual akan dijalankan mengikut Peraturan-Peraturan Kualiti Alam Sekeliling (Buangan Terjadual) 2005.

FASA OPERASI
- Sisa Domestik: Semua sisa domestik akan diasingkan kepada bahan boleh kitar semula dan tidak boleh kitar semula.
- Sisa Terjadual: Kawasan penyimpanan akan berasaskan konkrit dengan kapasiti penampungan 110% daripada bekas terbesar. Semua sisa terjadual akan dikendalikan oleh orang yang kompeten.



Pengurusan Sisa

FASA PEMBINAAN
- Langkah pemulihan akan dilaksanakan untuk memulihkan kawasan yang terjejas selepas pembinaan selesai.
- Tumbuhan yang dipindahkan (translocated plants) membantu memulihkan tapak yang terganggu serta menyediakan habitat dan sumber makanan bagi hidupan liar tempatan.
- Aktiviti pembinaan akan dijadualkan semasa tempoh tidak sensitif untuk hidupan liar.

FASA OPERASI
- Papantanda pendidikan di sekitar kawasan pembangunan boleh digunakan untuk menerangkan kepentingan hidupan liar tempatan serta peranan mereka dalam ekosistem.
- Konflik Manusia-Hidupan Liar: Prosedur Operasi Standard (SOP) akan dibangunkan dengan perundingan bersama PERHILITAN untuk mengendalikan hidupan liar yang ditemui.



Ekologi Terestrial

FASA PEMBINAAN
- Pelaksanaan ESCP termasuk pemasangan perangkap sedimen dan saliran sementara bagi mencegah air larian yang mengandungi pepejal terampai memasuki perairan pantai.
- Laluan vesel, kawasan berlabuh dan sauh yang ditetapkan akan diwujudkan bagi mencegah kerosakan kepada karang sekeliling.
- Pemantauan kualiti air marin *baseline* dan berkala akan dijalankan bagi memastikan pematuhan dengan had standard *Malaysian Marine Water Quality Standard* (MMWQS).

FASA OPERASI
- Semua efluen dan air larian resort akan dirawat bagi meminimumkan beban nutrien dan mencegah eutrofikasi atau *algal bloom*.
- Menempatkan Pengamat Hidupan Marin Bertauliah (*Marine Mammal Observers, MMO*) di semua kapal dan tapak kerja aktif untuk memantau hidupan marin secara visual.



Ekologi Marin

RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA
Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Program Pemantauan Alam Sekitar

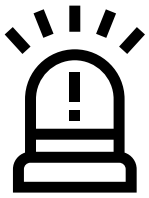


PEMANTAUAN PEMATUHAN (CM)

- Memastikan pematuhan terhadap syarat kelulusan EIA dan keperluan P2M2.
- Persampelan dan analisis oleh makmal bertauliah SAMM.

AUDIT PEMATUHAN ALAM SEKITAR

- Audit Alam Sekitar akan dijalankan oleh juruaudit alam sekitar berdaftar.
- Juruaudit hendaklah memiliki kelayakan *Certified Erosion, Sediment and Storm Water Inspector* (CESSWI) atau *Malaysian Certified Inspector of Sediment and Erosion Control* (MY-CISEC).



PEMANTAUAN PRESTASI (PM)

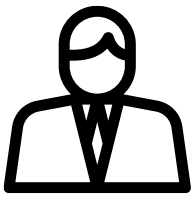
- Menilai keberkesanan langkah kawalan pencemaran di tapak.
- Dijalankan oleh Pegawai Alam Sekitar (EO).

PEMANTAUAN GARIS DASAR

- Petunjuk umum keadaan alam sekitar garis dasar pada masa pelaporan.

PROGRAM PEMANTAUAN ALAM SEKITAR

- Menyediakan pangkalan data impak alam sekitar.



PEMANTAUAN IMPAK (IM)

- Memastikan keberkesanan sistem kawalan pencemaran dan langkah mitigasi.
- EO akan menjalankan Pemantauan Prestasi (PM) di tapak.

Pemantauan Kawal Selia Kendiri

- Memastikan keberkesanan langkah mitigasi dan pematuhan terhadap peraturan alam sekitar.
- Dijalankan oleh EO.

PEMANTAUAN	KEKERAPAN
Pemantauan Prestasi	
Mengikut LD-P2M2	• Mingguan • Selepas hujan lebat (>12.5 mm seperti yang diukur oleh tolok hujan)
Pemantauan Pematuhan	
Outlet Pelepasan Perangkap Kelodak	• Bulanan
Pemantauan Impak	
Fasa Pembinaan	
• Kualiti air (5 stesen)	• Bulanan
• Tinjauan udara (menggunakan dron)	• Bulanan sekali (untuk dimasukkan ke dalam Borang EIA 1-18 bagi penghantaran kepada JAS)

RINGKASAN EKSEKUTIF

PENILAIAN KESAN KEPADA ALAM SEKILILING JADUAL PERTAMA Cadangan Pembangunan Resort dan Eko-Pelancongan di Pulau Rebak Besar, Mukim Kedawang, Langkawi, Kedah Darul Aman

Pelan Tindak Balas Kecemasan

PASUKAN TINDAK BALAS KECEMASAN

- Satu pasukan yang terdiri daripada individu berkelayakan dengan peranan dan tanggungjawab khusus untuk dilaksanakan semasa kecemasan.
- Bertanggungjawab untuk melaksanakan prosedur-prosedur berikut:



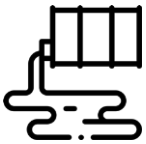
KEMALANGAN
Prosedur tindak balas kecemasan dan pelaporan insiden besar.



KECEMASAN KEBAKARAN
Pelaksanaan prosedur pemindahan dan penyelarasan tindak balas kebakaran.



KEGAGALAN ESCP
Pelaporan segera, pembetulan dan semakan langkah kawalan hakisan.



TUMPAHAN BAHAN BERBAHAYA
Pemindahan dan langkah mitigasi berikutan tumpahan bahan berbahaya.



KECEMASAN PERUBATAN
Pemberitahuan segera kepada perkhidmatan kecemasan dan pertolongan cemas yang selamat oleh personel terlatih.

Kesimpulan

Projek ini dikategorikan sebagai berisiko rendah terhadap alam sekitar. Semua impak berpotensi dapat dikurangkan dengan berkesan serta mematuhi had yang ditetapkan.