

FIRST SCHEDULE

REVISED ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**PROJECT PROPONENT
SLOP ENGINEERING SDN. BHD.**

**PROJECT TITLE
PROPOSED STORAGE OF SCHEDULED WASTE AT LOT C.L 015674110 AND
C.L 015674101, JALAN 1D KKIP SELATAN, DISTRICT OF KOTA KINABALU,
SABAH.**



AUGUST 2026

EXECUTIVE SUMMARY

Environmental Impact Assessment (EIA) Schedule 1 for the Proposed Storage of Scheduled Waste at Lot C.L 015674110 and C.L 015674101, Jalan 1D KKIP Selatan, District of Kota Kinabalu, Sabah.

LEGAL ASPECT

First Schedule

14. Waste Treatment and Disposal:

- (a) Scheduled Waste:
- (iii) Construction of storage facility (off-site)

PROJECT PROPONENT



Slop Engineering Sdn. Bhd.



Plat 1 Lot 11946, Kampung Rancha-Rancha,
P.O. Box 82198, 87031,
Federal Territory of Labuan.

Contact Person: Mr. Gabriel Tan
Designation: General Manager
H/P: 016 – 828 6989
Email: gabriel@slopingeering.com /
slopingeering@gmail.com

ENVIRONMENTAL CONSULTANT



North Borneo Environmental Services Sdn Bhd



40, Lorong Ikan Yu, Off Jalan Mat Salleh,
Tanjung Aru, 88100 Kota Kinabalu, Sabah.

Contact Person: Mr. Eng Weng Hong
Designation: Managing Director
Tel: 088 – 240 853
Email: nobes2012@gmail.com

STATEMENT OF NEED

Growing Demand for Waste Management Services

- Rising requests from existing and potential clients for more frequent collection and handling of various scheduled waste codes.

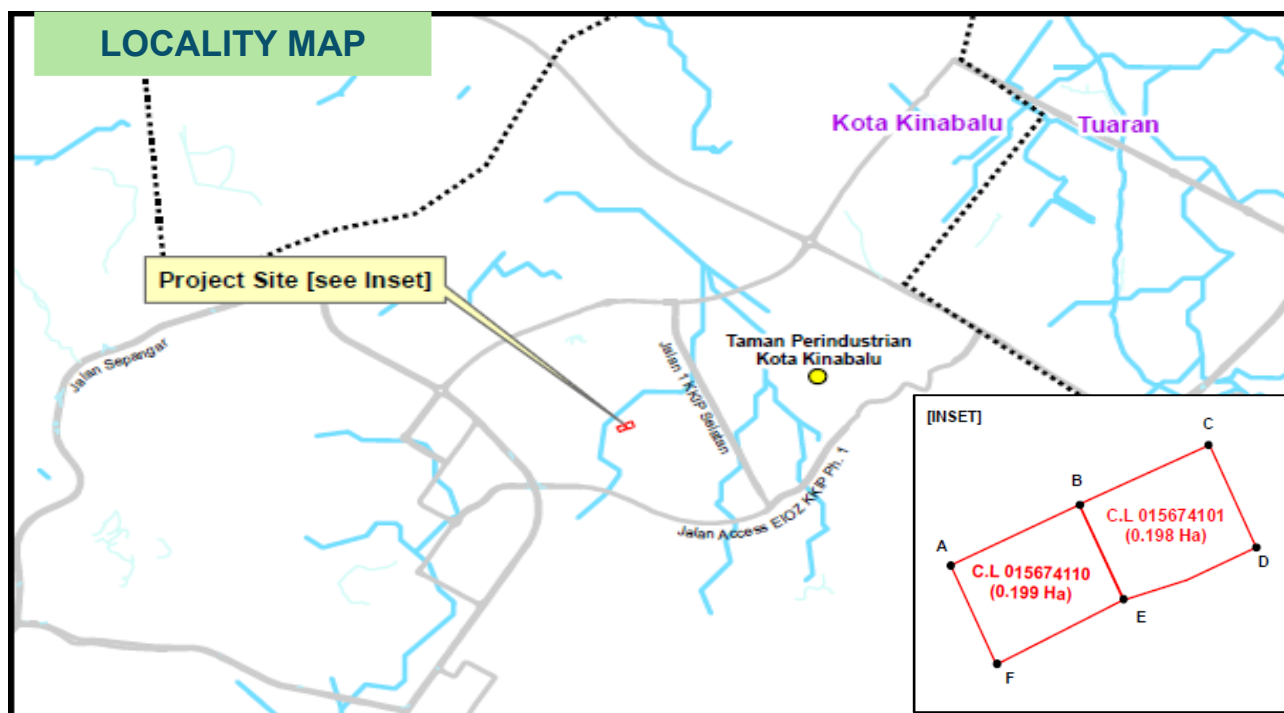
Need for a Strategic Off-Site Facility (KKIP)

- Establishment of an off-site storage facility in Kota Kinabalu Industrial Park (KKIP) to enhance operational efficiency and accessibility.

Environmental Protection

- Reduces risk of contamination to sensitive ecosystems (forests, rivers, coastal areas).
- Promotes safer and more controlled handling of scheduled wastes.

DESCRIPTION OF PROJECT LOCATION



Land Title	Area	Boundary	GPS Coordinates (WGS84)	
			Latitude (N)	Longitude (E)
C.L 015674110	0.199 Ha	A	06° 05' 18.215"	116° 09' 49.035"
		B	06° 05' 18.905"	116° 09' 50.521"
		E	06° 05' 17.827"	116° 09' 51.027"
		F	06° 05' 17.084"	116° 09' 49.567"
C.L 015674101	0.198 Ha	B	06° 05' 18.905"	116° 09' 50.521"
		C	06° 05' 19.596"	116° 09' 52.007"
		D	06° 05' 18.419"	116° 09' 52.552"
		E	06° 05' 17.827"	116° 09' 51.027"



Main junction leading to the project site



An Aerial View of the Project Site (See Red Circle)

LAND STATUS

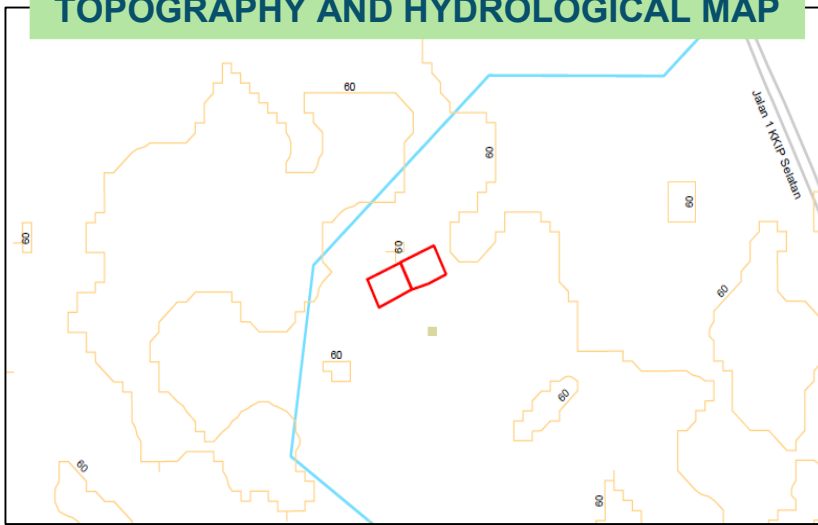
- The project is located within the KKIP Industrial Zone.
- It is situated on Lots C.L 015674110 and C.L 015674101.
- The area is designated as a general industrial zone.

PROJECT LOCATION AND CONCEPT

- Project Location: Situated within Kota Kinabalu Industrial Park (KKIP)
- Accessibility: Accessible via main road, Jalan 1 KKIP Selatan
- Site Composition: Comprises two (2) separate land lots: C.L 015674110 (0.199 Ha) and C.L 015674101 (0.198 Ha)
- Project Type: Off-site scheduled waste storage facility
- Waste Handling Flow: Scheduled waste will be temporarily stored before transportation to Sepanggar Port.
- Distance to Final Destination: Approximately 5.28 km from project site

DESCRIPTION OF PROJECT SITE

TOPOGRAPHY AND HYDROLOGICAL MAP



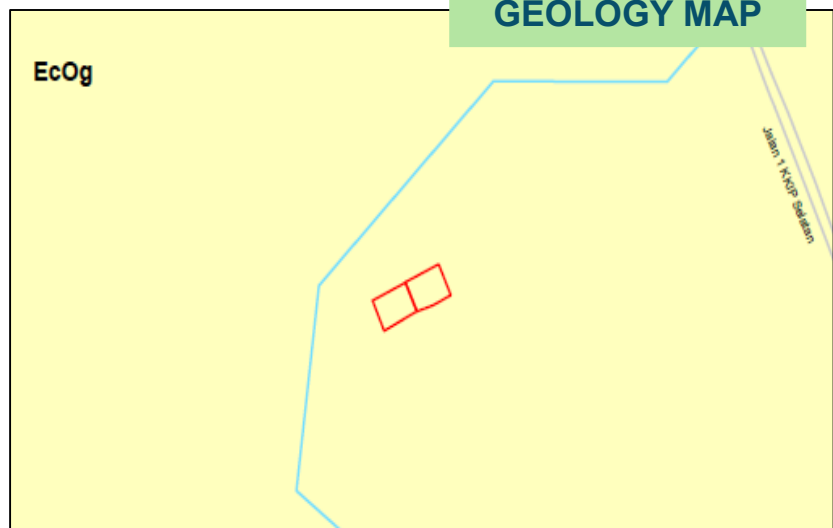
Terrain

- The surrounding landscape features gently rolling terrain, mostly flat.
- Elevation is approximately +60 metres above mean sea level (AMSL).

GEOLOGICAL CONDITION

The geological features surrounding the project site consist of the Crocker formation. The lithology includes flysch-type sandstone, shale, siltstone with rare tuff, limestone breccia and agglomerate

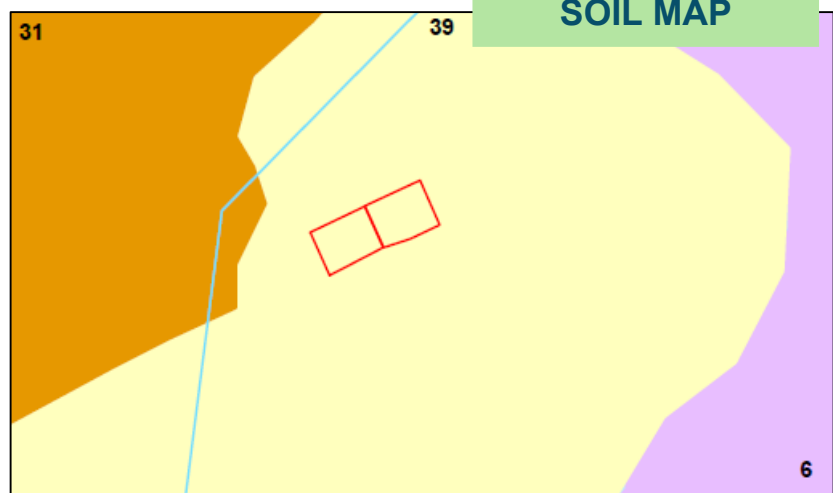
GEOLOGY MAP



SOIL CONDITION

The soil feature in the project site is made up of the Lokan association.

SOIL MAP



DESCRIPTION OF EXISTING ENVIRONMENT AND LAND USE

LAND USE MAP



SOCIO-ECONOMIC COMPONENT

SOCIO-ECONOMIC SURVEY

- 37 households from Taman Sepanggar and Taman Malawa Jaya.

PERCEPTION ON THE PROJECT

- The social survey revealed positive feedback regarding the project.
- Since the project only involves construction of an SW storage facility, there were no negative feedback or communities expressing disagreement with the project.

BIOLOGICAL ENVIRONMENT

FAUNA

- Invertebrates observed at the project site include butterflies, mosquitoes, bees and various other insects.
- Vertebrate fauna observed in the vicinity include dogs and birds.
- No protected fauna was identified.

FLORA

- The project area is covered with secondary vegetation and shrubbery.
- Observed flora includes palm trees, mango trees, and *Macaranga tanarius* plants.



CULTURAL & HUMAN ENVIRONMENT

- No existing archaeological or cultural heritage site within the area.

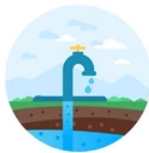
ENVIRONMENTAL BASELINE SAMPLING

SURFACE WATER QUALITY



- Four (4) sampling points were established:
 - W1: upstream storm drain
 - W2–W4: downstream storm drains (three locations)
- No sampling was conducted at W1 due to stagnant and shallow water conditions
- Most water quality parameters complied with Class IIB limits under the National Water Quality Standards for Malaysia (NWQSM)
- Five (5) parameters exceeded limits at certain stations:
 - Total Suspended Solids (TSS)
 - Biochemical Oxygen Demand (BOD₅)
 - Chemical Oxygen Demand (COD)
 - Total Coliform Count (TCC)
 - Faecal Coliform Count (FCC)

GROUNDWATER QUALITY



- Groundwater sampling was conducted within the project site
- Most parameters comply with the National Groundwater Quality Standard for Raw Drinking Water Quality.
- Three (3) parameters exceeded the standard limits:
 - Iron (Fe)
 - Manganese (Mn)
 - Zinc (Zn)

AIR QUALITY



- Baseline ambient air sampling was conducted at four (4) locations:
 - A1: Project Site
 - A2: Kg. Malawa
 - A3: Surau Al Hidayah SJ Melawa
 - A4: Sabah Skills and Technology Centre
- Most air quality parameters complied with the limit set by the Malaysian Ambient Air Quality Standards (MAAQS) 2020
- PM₁₀ exceeded the specified limit at A1 (Project Site)
- Likely cause: emissions from heavy vehicles operating in the industrial area during daytime.

NOISE QUALITY



- Baseline ambient noise sampling was conducted at four (4) locations:
 - N1: Project Site
 - N2: Kg. Malawa
 - N3: Surau Al Hidayah SJ Melawa
 - N4: Sabah Skills and Technology Centre
- Equivalent Continuous Sound Pressure Level (L_{Aeq}) was measured for both daytime and night-time
- Noise levels at all locations (N1–N4) were within the specified limits
- Compliance achieved with Schedule 2 for Industrial Zones under the Guidelines for Environmental Noise Limit and Control (Third Edition, 2019)

PROCESS DESCRIPTION

PROJECT CONCEPT

- The project involves minor modifications to an existing building.
- Purpose: To establish an off-site scheduled waste storage facility.
- Aims to ensure the facility is:
 - Environmentally safe
 - Economically viable
 - Efficient and cost-effective
 - Easy to maintain
- Goal: To support proper and sustainable management of increasing scheduled waste volumes.

PROJECT COMPONENT

The project proponent will gather scheduled wastes from various workshops across Sabah.

List of SW are as follows:

No	SW Code	Description	Quantity (MT)
SW 1 Metal and Metal-Bearing Wastes			
1	SW101	Waste containing arsenic or its compound	2
2	SW102	Waste of lead acid batteries in whole or crushed form	40
3	SW103	Waste of batteries containing cadmium and nickel or mercury or lithium	10
4	SW104	Dust, slag, dross or ash containing arsenic, mercury, lead, cadmium, chromium, nickel, copper, vanadium, beryllium, antimony, tellurium, thallium or selenium excluding slag from iron and steel factory	60
5	SW107	Slags from copper processing for further processing or refining containing arsenic, lead or cadmium	2
6	SW109	Waste containing mercury or its compound	10
7	SW110	Waste from electrical and electronic assemblies containing components such as accumulators, mercury-switches, glass from cathode-ray tubes and other activated glass polychlorinated biphenyl-capacitors, or contaminated with cadmium, mercury, lead, nickel, chromium, copper, lithium, silver, manganese or polychlorinated biphenyl	20

PROCESS DESCRIPTION

PROJECT COMPONENT

No	SW Code	Description	Quantity (MT)
SW 2 Wastes Containing Principally Inorganic Constituents which May Contain Metals and Organic Materials			
8	SW201	Asbestos wastes in sludges, dust or fibre forms	20
9	SW202	Waste catalysts	100
10	SW203	Immobilized scheduled wastes including chemically fixed, encapsulated, solidified or stabilized sludges	10
11	SW204	Sludges containing one or several metals including chromium, copper, nickel, zinc, lead, cadmium, aluminium, tin, vanadium and beryllium	20
12	SW205	Waste gypsum arising from chemical industry or power plant	5
13	SW206	Spent inorganic acids	20
14	SW207	Sludges containing fluoride	20
SW 3 Wastes Containing Principally Organic Constituents which may Contain Metals and Inorganic Materials			
15	SW301	Spent organic acids with pH less or equal to 2 which are corrosive or hazardous	10
16	SW302	Flux waste containing mixture of organic acids, solvents or compounds of ammonium chloride	10
17	SW303	Adhesive or glue waste containing organic solvents excluding solid polymeric materials	10
18	SW304	Press cake from pretreatment of glycerol soap lye	10
19	SW305	Spent lubricating oil	100
20	SW306	Spent hydraulic oil	40
21	SW307	Spent mineral oil-water emulsion	100
22	SW308	Oil tanker sludges	20
23	SW309	Oil-water mixture such as ballast water	60
24	SW310	Sludge from mineral oil storage tank	20
25	SW311	Waste oil or oily sludge	100
26	SW312	Oily residue from automotive workshop, service station oil or grease interceptor	10
27	SW313	Oil contaminated earth from re-refining of used lubricating oil	10
28	SW314	Oil or sludge from oil refinery plant maintenance operation	20
29	SW315	Tar or tarry residues from oil refinery or petrochemical plant	20
30	SW316	Acid sludge	10
31	SW319	Waste of phenols or phenol compounds including chlorophenol in the form of liquids or sludges	10
32	SW320	Waste containing formaldehyde	5

PROJECT COMPONENT

33	SW321	Rubber or latex wastes or sludge containing organic solvents or heavy metals	5
34	SW322	Waste of non-halogenated organic solvents	60
35	SW323	Waste of halogenated organic solvents	60
36	SW325	Uncured resin waste containing organic solvents or heavy metals including epoxy resin and phenolic resin	10
37	SW326	Waste of organic phosphorus compound	10
38	SW327	Waste of thermal fluids (heat transfer) such as ethylene glycol	20
SW 4 Wastes which may Contain Either Inorganic or Organic Constituents			
39	SW401	Spent alkalis containing heavy metals	10
40	SW402	Spent alkalis with pH more or equal to 11.5 which are corrosive or hazardous	10
41	SW403	Discarded drugs containing psychotropic substances or containing substances that are toxic, harmful, carcinogenic, mutagenic or teratogenic	10
42	SW406	Clinker, slag and ashes from scheduled wastes incinerator	10
43	SW408	Contaminated soil, debris or matter resulting from cleaning-up of a spill of chemical, mineral oil or scheduled wastes	40
44	SW409	Disposed containers, bags or equipment contaminated with chemicals, pesticides, mineral oil or scheduled wastes	30
45	SW410	Rags, plastics, papers or filters contaminated with scheduled wastes	30
46	SW411	Spent activated carbon excluding carbon from the treatment of potable water and processes of the food industry and vitamin production	10
47	SW413	Spent salt containing cyanide	10
48	SW414	Spent aqueous alkaline solution containing cyanide	10
49	SW416	Sludges of inks, paints, pigments, lacquer, dye or varnish	20
50	SW417	Waste of inks, paints, pigments, lacquer, dye or varnish	20
51	SW418	Discarded or off-specification inks, paints, pigments, lacquer, dye or varnish products containing organic solvent	20
52	SW421	A mixture of scheduled wastes	40
53	SW422	A mixture of scheduled and non-scheduled wastes	40
54	SW423	Spent processing solution, discarded photographic chemicals or discarded photographic wastes	5
55	SW425	Wastes from the production, formulation, trade or use of pesticides, herbicides or biocides	10
56	SW426	Off-specification products from the production, formulation, trade or use of pesticides, herbicides or biocides	2

PROJECT COMPONENT

57	SW427	Mineral sludges including calcium hydroxide sludges, phosphating sludges, calcium sulphite sludges and carbonates sludges	100
58	SW428	Wastes from wood preserving operation using inorganic salts containing copper, chromium or arsenic of fluoride compounds or using compound containing chlorinated phenol or creosote	20
59	SW429	Chemicals that are discarded or off-specification	60
60	SW430	Obsolete laboratory chemicals	10
SW 5 Other Wastes			
61	SW501	Any residues from treatment or recovery of scheduled wastes	2
Total			1,588

PROJECT ACTIVITIES

(1) SITE INVESTIGATION

- Detailed engineering design
- EIA study
- Material procurement
- Installation planning
- Liaison with local authorities, statutory bodies and utility providers

(2) SITE PREPARATION

- Mobilization of equipment and materials
- Establishment of utilities

(3) CONSTRUCTION AND INSTALLATION

- Construction of bund wall
- Construction of sumps
- Waste Management

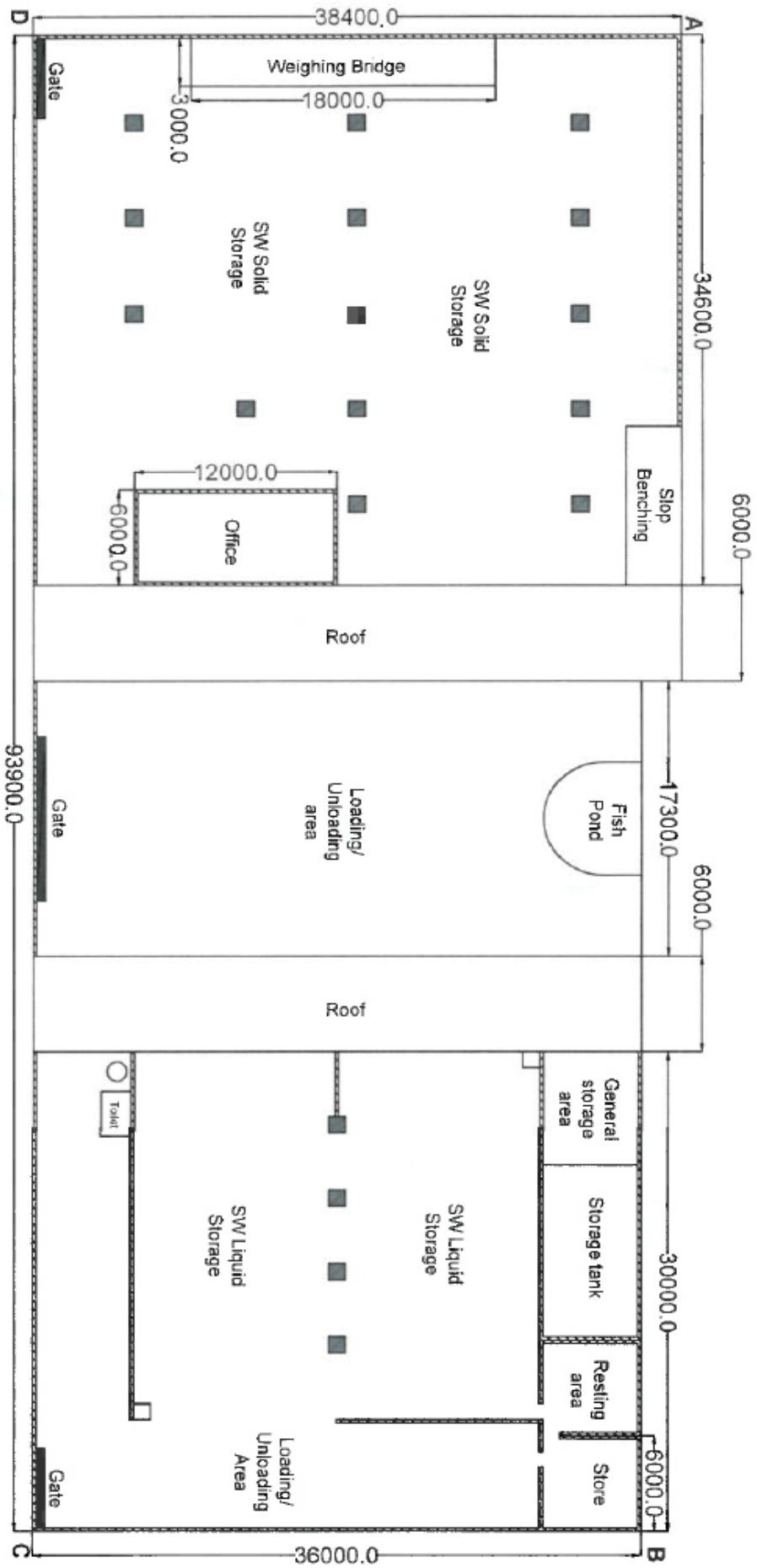
(4) OPERATIONAL AND MAINTENANCE

- Full production
- Continual environmental monitoring as per DOE's requirement
- Restoration of defective works under defects liability period (DLP)
- Service and maintenance of facilities

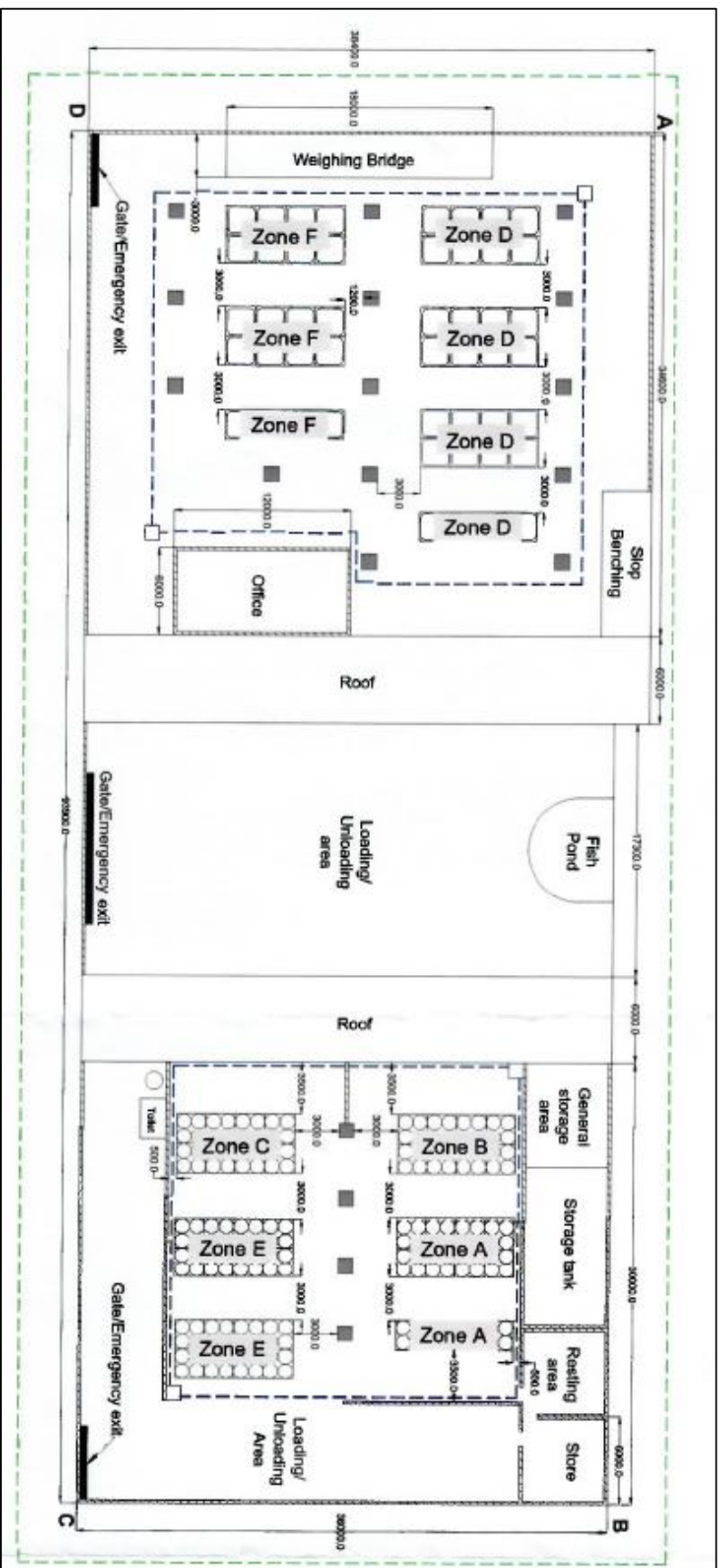
(5) POTENTIAL ABANDONMENT

- Removal of existing facilities and structures
- Site restoration for other future development
- Liaison with local authorities

LAYOUT PLAN



FACTORY LAYOUT PLAN



NAVIGATIONAL ROUTE LOCATION MAP



IMPACT ASSESSMENT AND MITIGATION MEASURES

Aspect	Significant Potential Impacts	Magnitude of Significant Potential Impacts	P2M2	Reference Page
Soil Erosion and Slope Impact 	<u>Construction and Operational Stage</u> Soil Erosion Impact - The project involves an existing building with only minor site clearing and upgrading - Overall potential for soil erosion is very low - No major earthworks, excavation, or land grading required - Only small areas may be temporarily exposed during minor construction or repair works - Existing impervious surfaces (e.g., concrete floors, building footprint) help reduce surface runoff and soil displacement Slope Impact - A slope is present beside the project area, with existing soil nailing for stabilization - Overall potential for slope impact is minimal - No slope modification required due to minor building upgrades and site clearing - Existing soil nailing and reinforcement provide adequate slope stability - Risk of slope failure is low	Low	<u>Construction and Operational Stage</u> Minimize soil disturbance - Limit site clearing to essential construction areas - Avoid unnecessary excavation or grading near the building and slope Temporary soil protection - Cover exposed soil with tarpaulins, geotextiles, or gravel - Apply mulching or temporary vegetation if exposure exceeds a few days Control stormwater runoff - Prevent water accumulation at the base of the slope to reduce erosion risk Maintain slope stability - Avoid placing heavy equipment or materials near the slope - Do not disturb existing soil nailing or reinforcement structures - Conduct regular monitoring of the slope condition	Potential Impact Page 7 – 13 Mitigation Measures Page 8 - 6

IMPACT ASSESSMENT AND MITIGATION MEASURES

	Construction activities should avoid using heavy equipment near the slope to prevent vibration and additional loading stress.			
Air Pollution 	<u>Construction Stage</u> Air pollutants may be generated from: - Concrete hacking - Wind-blown sand and aggregates Impacts are temporary and limited to the construction phase. Emissions from construction equipment may include: - Suspended particulates - Sulfur dioxide (SO₂) - Nitrogen oxides (NO_x) - Carbon monoxide (CO) - Carbon dioxide (CO₂) - Volatile organic compounds (VOCs) Minimal impact expected due to limited use of construction equipment in specific areas. <u>Operational Stage</u> - Transport of Scheduled Waste may affect air quality near the project site. - Exhaust emissions from transport vehicles will release gaseous pollutants. - Odours may arise if spills or leaks occur from storage tanks during transport.	Medium	<u>Construction Stage</u> - Regularly dampen construction areas to suppress dust. - Provide wheel-wash stations (wash bay) to prevent dust tracking offsite. - Ensure all construction equipment undergoes regular maintenance to reduce exhaust emissions. - Prioritize the use of equipment compliant with emission standards. <u>Operational Stage</u> - Open burning of waste, especially cleared vegetation, is strictly prohibited under the Environmental Quality (Prescribed Activities) (Open Burning) Order 2000. - Cleared vegetation should be reused or sent to the DBKK landfill for disposal. - Workers should be reminded early to avoid open burning. - Visible warning signboards should be installed to reinforce the no-burning rule.	Potential Impact <u>Construction Stage</u> Page 7 – 14 <u>Operational Stage</u> Page 7 – 18 Mitigation Measures <u>Construction Stage</u> Page 8 – 7 <u>Operational Stage</u> Page 8 – 14

IMPACT ASSESSMENT AND MITIGATION MEASURES

			- Clearly defined operators' responsibility for waste handling and transfer. - Good housekeeping practices and regular inspection for any leakage. - Provide good ventilation system at the storage and recovery area for volatile wastes and cleaning agent. - Vehicles, machineries and equipment used must be well maintained at all times by performing regular servicing to minimize unnecessary exhaust or pollutant emissions. - Adhere to the Environmental Quality (Clean Air) Regulations, 2014 - Respiratory protection equipment must be provided	
Noise Pollution 	<u>Construction Stage</u> - Noise sources are expected mainly to be from increased traffic, loading and unloading of engineering equipment and materials, and during the construction of the storage area. <u>Operational Stage</u> - Main noise sources: - Activities from nearby premises - Vehicles on Jalan 1D KKIP Selatan - Nearest noise-sensitive receivers: - Workers at UWM Toyota Motors Yard	Medium	<u>Construction Stage</u> - Project activities within the project site should adhere to the stipulated limit stated in the Schedule 2 for Industrial Zones – Guidelines for Environmental Noise Limit and Control (Third Edition, 2019). The stipulated limit of 75 dB(A) [daytime] and 75 dB(A) [night-time] should be observed. - Provide noise mufflers, enclosures, barriers, and lagging on industrial equipment/machinery to ensure	Potential Impact <u>Construction Stage</u> Page 7 – 14 <u>Operational Stage</u> Page 7 – 18 Mitigation Measures <u>Construction Stage</u> Page 8 – 7 <u>Operational Stage</u> Page 8 – 15

IMPACT ASSESSMENT AND MITIGATION MEASURES

	- Workers at Daya Asal Engineering Sdn Bhd - These receivers operate in buildings used for business, storage, and transport during the day. - Additional noise from trucks transporting scheduled waste in and out. - Noise level at the site boundary must not exceed 75 dB(A) during the day.		that noise level is maintained below 70 dB(A) along the project boundary. - Construction activities shall be carried out from 8:00 AM to 5:00 PM. - Proper maintenance of machinery and heavy equipment should be carried out by the contractors / project management to prevent noise generation higher than the manufacturers' specifications.	
			<u>Operational Stage</u> - The project management should provide workers with personal noise protection devices. - Off-site vehicle drivers should adhere to appropriate transportation practices. - Ensure that noisy equipment, such as forklifts, undergo regular checks to verify their good working condition.	
Water Pollution 	<u>Construction Stage</u> - Potential surface water contamination sources: - Oil & Grease spillage - Indiscriminate dumping of domestic waste - Sewage generation during the construction stage will mainly be from the workforce. However, it is estimated that only a small workforce consisting of less than fifty construction workers will	High	<u>Construction Stage</u> - Divert runoff away from construction areas using silt traps connected to a system of perimeter and feeder drains. Runoff should flow into sedimentation ponds before being discharged. - Clean perimeter drains regularly: once a month during	Potential Impact Construction Stage Page 7 – 16 Operational Stage Page 7 – 18 Mitigation Measures Construction Stage Page 8 – 6 Operational Stage Page 8 – 13

IMPACT ASSESSMENT AND MITIGATION MEASURES

	be employed during the construction stage. Operational Stage - Leakage / spillage of volatile scheduled wastes. - Improper disposal of waste to watercourses.		dry weather and once a week during rainy periods. - Design or maintain drains according to the local topography, which is mostly flat in this area. - Maintain vehicles and machinery at least 50 metres away from water bodies. - Refuel only in a bunded, sheltered area, and take care to avoid spills or leaks. - Never dispose of scheduled waste on the ground, in drains, or into water bodies. - Provide regular staff training on safe equipment handling, spill prevention, emergency response, and proper cleanup of hazardous materials. Operational Stage - Yearly water quality monitoring at the discharge of wastewater treatment facility to ensure compliance to Standard B of the Environmental Quality (Industrial Effluents) Regulation 2009. - Enclosed drainage should be provided along the material loading bay to contain any spillage.	
--	---	--	---	--

IMPACT ASSESSMENT AND MITIGATION MEASURES

Hazard / Risk Assessment	<u>Construction Stage</u>	<u>Construction Stage</u> Low	<u>Operational Stage</u> Identification of potential hazards and risk assessment is essential, especially during the operational phase:	Potential Impact Construction Stage Page 7 – 17 Operational Stage Page 7 – 21
	- No hazardous chemicals will be used during the construction stage - No environmental impacts related to hazardous substances are anticipated at this stage	<u>Operational Stage</u> High	Chemical hazards - Ensure Material Safety Data Sheets (MSDS) are available - Clearly identify hazards such as toxicity and flammability Physical hazards - Manage risks associated with equipment, storage tanks, and confined spaces Ergonomic risks - Design proper lifting and handling procedures - Prevent musculoskeletal injuries among workers	Mitigation Measures Construction Stage Page 8 – 17 Operational Stage Page 8 – 20
	<u>Operational Stage</u> From the QRA study: Waste Oil Pool Fire - Loss of containment (leak) of waste oil may occur - Presence of an ignition source can trigger a fire Verdict: Potential fire risk Waste Solvent Pool Fire - Loss of containment (leak) of waste solvent may occur - Presence of an ignition source can trigger a fire Verdict: Potential fire risk		Solid Waste and Solid Trade Waste - Hazardous waste/material including oily wastes shall be handled and disposed of in accordance to Jabatan Alam Sekitar requirements. - Collect used oil and oily wastes (scheduled wastes) from machinery and transportation vehicles, and store and label in proper containers for future disposal. - Collect garbage regularly and place at suitable locations within	Potential Impact <u>Construction Stage and Operational Stage</u> Page 7 – 18 Mitigation Measures <u>Construction Stage</u> Page 8 – 8 <u>Operational Stage</u> Page 8 – 13 Page 8 – 15
Waste Generation 	<u>Construction and Operational Stage</u> Solid Waste - Process waste: used pallets, bags, containers, drums, etc. - Non-process waste: domestic and office waste like paper and plastics. - The impact of solid waste disposal is expected to be minimal as proper collection and disposal will be carried out within the project site. Scheduled Waste - Spillage from Loading / Unloading of SW - Leaks from Containers or Drums Sewage	Medium	Solid Waste and Solid Trade Waste - Hazardous waste/material including oily wastes shall be handled and disposed of in accordance to Jabatan Alam Sekitar requirements. - Collect used oil and oily wastes (scheduled wastes) from machinery and transportation vehicles, and store and label in proper containers for future disposal. - Collect garbage regularly and place at suitable locations within	Mitigation Measures <u>Construction Stage</u> Page 8 – 8 <u>Operational Stage</u> Page 8 – 13 Page 8 – 15

IMPACT ASSESSMENT AND MITIGATION MEASURES

	Sewage is generated mainly from the site office. Insufficient treatment of sanitary wastes would result in the discharge of effluent high in organic and nutrient levels, which could lead to eutrophication and spread of pathogens.		the project site away from river/stream or sea. Scheduled Waste Scheduled waste must be managed in compliance to the Environmental Quality (Scheduled Waste) Regulations 2005. All scheduled waste must be removed from open top container and stored in a proper SW container with proper labels for disposal which is done by a licensed contractor. Sewage • Sewage shall be handled and disposed of in accordance to SPAN (Suruhanjaya Perkhidmatan Air Negara) requirements. • The septic tanks shall be designed in accordance with Kementerian Kesihatan specifications with discharges meeting the Standard B limit of the Environmental Quality (Sewage & Industrial Effluents) Regulation, 1979.	Potential Impact Construction Stage Page 7 – 17 Operational Stage Page 7 – 19 Mitigation Measures Construction Stage Page 8 – 10
Occupational Safety and Health 	Construction and Operational Stage • Workers working on site has a high risk of job-related injuries and accidents. • Causes may include: ◦ Ignorance or neglect of safety by workers or employers. • Common construction site accidents: ◦ Falls from heights ◦ Heat stress and dehydration	High	Construction and Operational Stage • The project proponent should establish a written policy describing the organization's commitment to safety and health and pledging to establish and maintain a safety and health program for all the workers.	

IMPACT ASSESSMENT AND MITIGATION MEASURES

	○ Being hit by falling objects ● Possible effects of accidents: ○ Death ○ Permanent or temporary disability ○ Minor injuries ○ Psychological impacts		● The project proponent should establish a simple process for workers to report injuries, illnesses, close calls/near misses, hazards, and other safety and health concerns, and respond to reports promptly. ● The licensed safety personnel should provide detailed information to workers / contractors to understand safety and health hazards and control measures on the job site. Such information includes safety data sheets (SDS), Injury and illness data, chemical and equipment manufacturer safety recommendations, job site equipment and vehicle inspection reports, etc. ● Project proponent should provide proper personal protective equipment (PPE) such as hard hats, goggles, well-insulated safety boots, safety jackets, work gloves, and safety belts to prevent falls or hit by falling objects. ● The project proponent should conduct frequent and regular inspections of the job sites, materials, and equipment. ● Use interim controls while developing and implementation of longer-term solutions.	Operational Stage Page 8 – 16
--	---	--	---	----------------------------------

IMPACT ASSESSMENT AND MITIGATION MEASURES

Socio-Economic Impact 	<u>Construction and Operational Stage</u> • Employment and business opportunity. • Community and state benefits such as services, support, and training.	Medium	<u>Construction and Operational Stage</u> • Priority of employment should be given to the locals. • Employment of foreign workers (if any) through proper channels. • All workers must go through medical check-up before being employed with special emphasis on communicable or infectious diseases.	<u>Potential Impact Construction Stage</u> Page 7 – 17 <u>Operational Stage</u> Page 7 – 21 Mitigation Measures Construction Stage Page 8 – 12 Operational Stage Page 8 – 18
Traffic and Transportation Impact 	<u>Construction Stage</u> Transport of construction equipment and scheduled waste may slightly increase traffic on: • Jalan 1 KKIP Selatan • Junction to the project site Potential risks include accidental spillage or slippage of materials, posing danger to other road users. <u>Operational Stage</u> Transport of scheduled waste during the operational phase may slightly increase traffic on: • Jalan 1 KKIP Selatan • Junction to the project site Accidental spillage or slippage of materials could pose safety risks to road users.	Medium	<u>Construction and Operational Stage</u> • Designate specific routes for construction vehicles to avoid residential areas, schools, or high-traffic zones. • Install clear warning signs, speed limits, and directional boards. • Limit construction vehicle movements during off-peak hours to minimize congestion. • Ensure that roads used by construction vehicles are well-maintained and free of debris. • Implement flagging operations where necessary to manage traffic near the site. • Ensure all vehicles meet safety standards, including properly secured waste loads.	<u>Potential Impact Construction Stage</u> Page 7 – 17 <u>Operational Stage</u> Page 7 – 21 Mitigation Measures Construction Stage Page 8 – 11 <u>Operational Stage</u> Page 8 – 13 Page 8 - 18

IMPACT ASSESSMENT AND MITIGATION MEASURES

			Train drivers on local traffic laws, defensive driving, and site-specific hazards.	
Potential Abandonment 	<u>Construction and Operational Stage</u> - Pose safety hazard to the environment surrounding the project site. - Health and safety hazard risks to workers when dismantling large and heavy equipment. - Incompatible future land use. - Socio-economic impacts due to retrenchment or re-deployment of labour force.	Low	<u>Construction and Operational Stage</u> - Formwork shall be demolished, and waste shall be disposed. - All completed structures and shelters shall be demolished. - Fire prevention measures must be implemented. - All machinery and vehicles should be removed. - Inspections by the local authorities.	Potential Impact <u>Construction and Operational Stage</u> Page 7 – 52 Mitigation Measures <u>Construction and Operational Stage</u> Page 8 – 21

PROPOSED ENVIRONMENTAL MONITORING MAP



ENVIRONMENTAL MONITORING PROGRAM (CONSTRUCTION STAGE)

Parameters	Proposed Monitoring Locations	Proposed Frequency	Standard / Guidelines
Water Quality (Surface Water)			
- Temperature - pH - COD - BOD₅ - TSS - O&G - NH₃-N - DO - TCC - FCC	W1 - Storm drain located upstream of the project site W2 - Storm drain located downstream of the project site W3 - Upstream of the public drain W4 - Downstream of the public drain <u>GPS coordinates:</u> W1 - 06° 05' 18.599" N 116° 09' 48.924" E W2 - 06° 05' 19.586" N 116° 09' 51.792" E W3 - 06° 05' 20.093" N 116° 09' 52.670" E W4 - 06° 05' 23.229" N 116° 10' 0.0006" E	Quarterly or as per DOE's requirement	Class IIB of the NWQSM
Water Quality (Groundwater)			
- Arsenic - Cadmium - Copper - Iron - Lead - Manganese - Mercury - Selenium - Zinc	GW1 – Within the project site <u>GPS coordinates:</u> GW1 - 06° 05' 18.024" N 116° 09' 50.780" E	Quarterly or as per DOE's requirement	National Groundwater Quality Standard for Raw Drinking Water Quality
Noise Quality			
Monitoring Programme Laeq (day time and night time)	N1 - Project Site N2 - Kg. Malawa	Quarterly or as per DOE's	Schedule 2: Designated Industrial Zone of

	N3 - Surau Al Hidayah SJ Melawa N4 - Sabah Skills and Technology Centre <u>GPS coordinates:</u> N1 - 06° 05' 19.182" N 116° 09' 50.374" E N2 - 06° 05' 36.200" N 116° 09' 30.024" E N3 - 06° 05' 17.005" N 116° 09' 29.543" E N4 - 06° 05' 8.649" N 116° 09' 42.928" E	requirement	Planning Guidelines for Environmental Noise Limit and Control in the Environment [70 dB(A) during day time; 65 dB(A) during night time]
Air Quality			
• Particulate Matter (PM₁₀) • Carbon Monoxide (CO) • Ozone (O₃) • Volatile Organic Compound (VOC)	A1 - Project Site A2 - Kg. Malawa A3 - Surau Al Hidayah SJ Melawa A4 - Sabah Skills and Technology Centre <u>GPS coordinates:</u> A1 - 06° 05' 19.182" N 116° 09' 50.374" E A2 - 06° 05' 36.200" N 116° 09' 30.024" E A3 - 06° 05' 17.005" N 116° 09' 29.543" E A4 - 06° 05' 8.649" N 116° 09' 42.928" E	Quarterly or as per DOE's requirement	Malaysia Ambient Air Quality Standards (MAAQS) 2020

ENVIRONMENTAL MONITORING PROGRAM

(OPERATION STAGE)

Parameters	Proposed Monitoring Locations	Proposed Frequency	Standard / Guidelines
Water Quality (Surface Water)			
- Temperature - pH - COD - BOD₅ - TSS - O&G - NH₃-N - DO - TCC - FCC	W1 - Storm drain located upstream of the project site W2 - Storm drain located downstream of the project site W3 - Upstream of the public drain W4 - Downstream of the public drain <u>GPS coordinates:</u> W1 - 06° 05' 18.599" N 116° 09' 48.924" E W2 - 06° 05' 19.586" N 116° 09' 51.792" E W3 - 06° 05' 20.093" N 116° 09' 52.670" E W4 - 06° 05' 23.229" N 116° 10' 0.0006" E	Yearly or as per DOE's requirement	Class II-B of the NWQSM
Water Quality (Groundwater)			
- Arsenic - Cadmium - Copper - Iron - Lead - Manganese - Mercury - Selenium - Zinc	GW1 – Within the project site <u>GPS coordinates:</u> GW1 - 06° 05' 18.024" N 116° 09' 50.780" E	Quarterly or as per DOE's requirement	National Groundwater Quality Standard for Raw Drinking Water Quality
Noise Quality			

Monitoring Programme Laed (day time and night time)	N1 - Project Site N2 - Kg. Malawa N3 - Surau Al Hidayah SJ Melawa N4 - Sabah Skills and Technology Centre	Yearly or as per DOE's requirement	Schedule 2: Designated Industrial Zone of Planning Guidelines for Environmental Noise Limit and Control in the Environment [70 dB(A) during day time; 65 dB(A) during night time]
	<u>GPS coordinates:</u> N1 - 06° 05' 19.182" N 116° 09' 50.374" E N2 - 06° 05' 36.200" N 116° 09' 30.024" E N3 - 06° 05' 17.005" N 116° 09' 29.543" E N4 - 06° 05' 8.649" N 116° 09' 42.928" E		
Air Quality			
- Particulate Matter (PM₁₀) - Carbon Monoxide (CO) - Ozone (O₃) - Volatile Organic Compound (VOC)	A1 - Project Site A2 - Kg. Malawa A3 - Surau Al Hidayah SJ Melawa A4 - Sabah Skills and Technology Centre <u>GPS coordinates:</u> A1 - 06° 05' 19.182" N 116° 09' 50.374" E A2 - 06° 05' 36.200" N 116° 09' 30.024" E A3 - 06° 05' 17.005" N 116° 09' 29.543" E A4 - 06° 05' 8.649" N 116° 09' 42.928" E	Yearly or as per DOE's requirement	Malaysia Ambient Air Quality Standards (MAAQs) 2020

RINGKASAN EKSEKUTIF

Penilaian Impak Alam Sekitar (EIA) Jadual 1 untuk Cadangan Penyimpanan Sisa Terjadual di Lot CL 015674110 dan CL 015674101, Jalan 1D KKIP Selatan, Daerah Kota Kinabalu, Sabah.

ASPEK

Jadual Pertama

14. Rawatan dan Pelupusan Sisa:

(a) Sisa Terjadual:

(iii) Pembinaan kemudahan penyimpanan (luar tapak)

PEMAJU PROJEK



Slop Engineering Sdn. Bhd.



Plat 1 Lot 11946, Kampung Rancha-Rancha,
Peti Surat 82198, 87031,
Wilayah Persekutuan Labuan.

Hubungi: Encik Gabriel Tan
Jawatan: Pengurus Besar
No. Telefon: 016 – 828 6989
Emel: gabriel@slopingeering.com /
slopingeering@gmail.com

PERUNDING ALAM SEKITAR



North Borneo Environmental Services Sdn. Bhd.



40, Lorong Ikan Yu, Off Jalan Mat Salleh,
Tanjung Aru, 88100 Kota Kinabalu, Sabah.

Hubungi: Encik Eng Weng Hong
Jawatan: Pengarah Urusan
No. Telefon: 088 – 240 853
Emel: nobes2012@gmail.com

PERNYATAAN KEPERLUAN

Permintaan yang Semakin Meningkat untuk Perkhidmatan Pengurusan Sisa

- Permintaan yang semakin meningkat daripada pelanggan sedia ada dan bakal pelanggan untuk pengumpulan dan pengendalian pelbagai kod buangan terjadual yang lebih kerap.

Keperluan untuk Kemudahan Luar Tapak Strategik (KKIP)

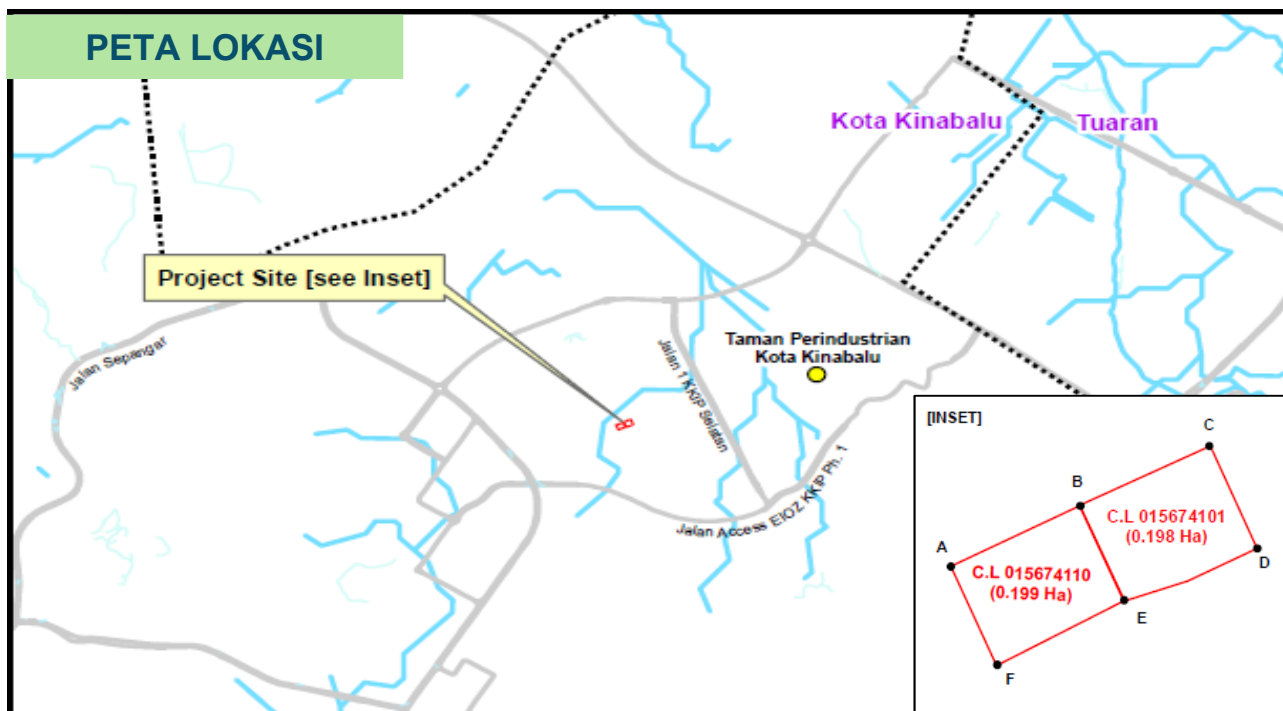
- Penubuhan kemudahan penyimpanan luar tapak di Taman Perindustrian Kota Kinabalu (KKIP) untuk meningkatkan kecekapan dan aksesibiliti operasi.

Perlindungan Alam Sekitar

- Mengurangkan risiko pencemaran kepada ekosistem sensitif (hutan, sungai, kawasan pantai).
- Menggalakkan pengendalian sisa terjadual yang lebih selamat dan terkawal.

HURAIAN LOKASI PROJEK

PETA LOKASI



Hak Milik Tanah	Kawasan	Sempadan Lokasi	Koordinat GPS (WGS84)	
			Latitud (U)	Longitud (T)
CL 015674110	0.199 Hektar	A	06° 05' 18.215"	116° 09' 49.035"
		B	06° 05' 18.905"	116° 09' 50.521"
		E	06° 05' 17.827"	116° 09' 51.027"
		F	06° 05' 17.084"	116° 09' 49.567"
CL 015674101	0.198 Hektar	B	06° 05' 18.905"	116° 09' 50.521"
		C	06° 05' 19.596"	116° 09' 52.007"
		D	06° 05' 18.419"	116° 09' 52.552"
		E	06° 05' 17.827"	116° 09' 51.027"



Persimpangan utama menuju ke tapak projek



Pandangan Udara Tapak Projek (Lihat Bulatan Merah)

STATUS TANAH

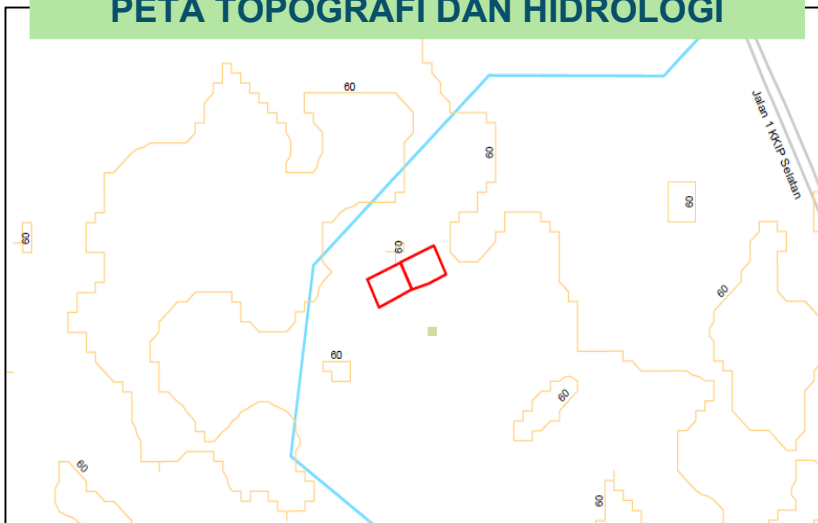
- Projek ini terletak di dalam Zon Perindustrian KKIP.
- Projek ini juga terletak di dalam Lot CL 015674110 dan CL 015674101.
- Kawasan ini ditetapkan sebagai zon perindustrian am.

LOKASI DAN KONSEP PROJEK

- Lokasi Projek: Terletak di dalam Kota Kinabalu Industrial Park (KKIP)
- Aksesibiliti: Boleh diakses melalui jalan utama, Jalan 1 KKIP Selatan
- Komposisi Tapak: Merangkumi dua (2) lot tanah berasingan: C.L 015674110 (0.199 Ha) dan C.L 015674101 (0.198 Ha)
- Jenis Projek: Kemudahan penyimpanan sisa terjadual luar tapak
- Aliran Pengurusan Sisa: Sisa terjadual akan disimpan sementara sebelum dihantar ke Pelabuhan Sepanggar
- Jarak ke Destinasi Pelabuhan Sepanggar: Lebih kurang 5.28 km dari tapak projek

PENERANGAN TENTANG TAPAK

PETA TOPOGRAFI DAN HIDROLOGI



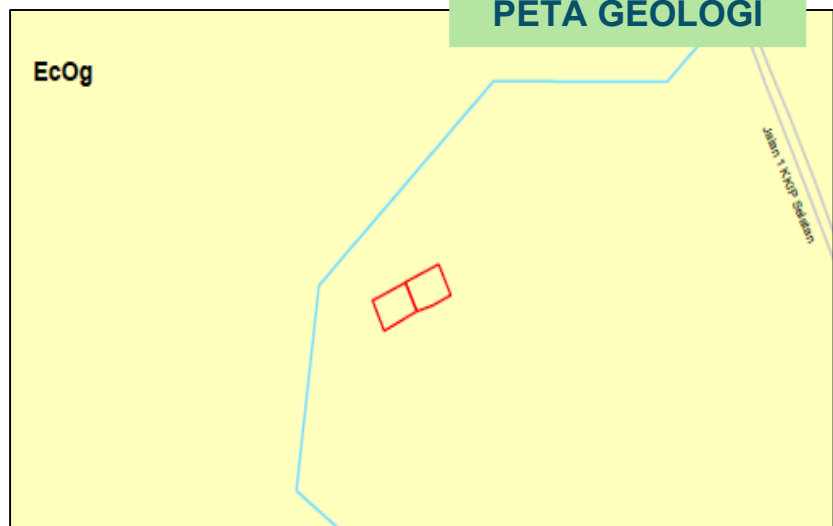
Rupa Bumi

- Lanskap sekitarnya menampilkan rupa bumi yang sedikit beralun, kebanyakannya rata.
- Ketinggian adalah lebih kurang +60 meter di atas paras purata laut (AMSL).

KEADAAN GEOLOGI

Ciri-ciri geologi yang mengelilingi tapak projek terdiri daripada pembentukan Crocker. litologi termasuk batu pasir jenis flysch, syal dan batu lodak dengan kehadiran jarang tuff, breksia batu kapur dan algomerat.

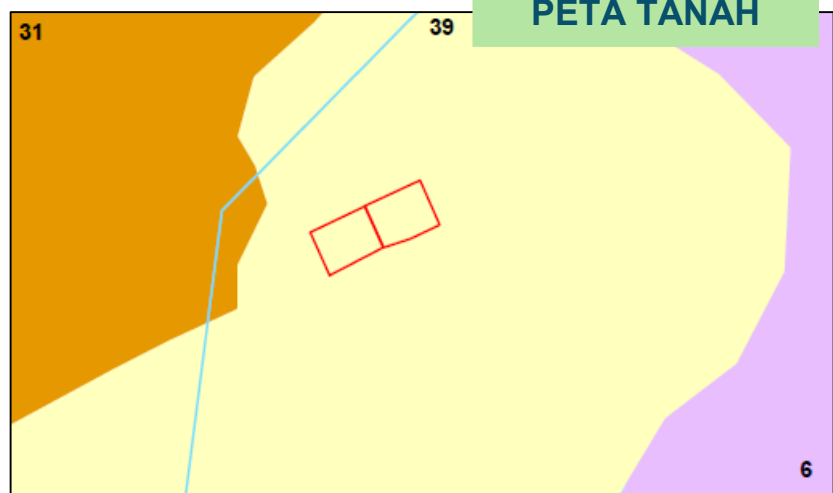
PETA GEOLOGI



KEADAAN TANAH

Ciri tanah di tapak projek terdiri daripada persatuan Lokan.

PETA TANAH



PENERANGAN TENTANG ALAM SEKITAR DAN PENGGUNAAN TANAH

PETA GUNA TANAH



KOMPONEN SOSIO-EKONOMI

KAJIAN SOSIO-EKONOMI

- 37 isi rumah dari Taman Sepanggar dan Taman Malawa Jaya.

PERSEPSI TERHADAP PROJEK

- Tinjauan sosial mendedahkan maklum balas positif mengenai projek tersebut.
- Memandangkan projek ini hanya melibatkan pembinaan kemudahan penyimpanan SW, tiada maklum balas negatif atau komuniti yang menyatakan ketidaksetujuan terhadap projek ini.

PERSEKITARAN BIOLOGI

FAUNA

- Invertebrata yang diperhatikan di tapak projek termasuk rama-rama, nyamuk, lebah dan pelbagai serangga lain.
- Fauna vertebrata yang diperhatikan di sekitarnya termasuk anjing dan burung.
- Tiada fauna yang dilindungi dikenal pasti.

FLORA

- Kawasan projek ditutup dengan tumbuh-tumbuhan sekunder dan pokok renek.
- Flora yang diperhatikan termasuk pokok palma, pokok mangga dan tumbuhan *Macaranga tanarius*.

PERSEKITARAN BUDAYA & MANUSIA

- Tiada tapak warisan arkeologi atau budaya sedia ada dalam kawasan tersebut.



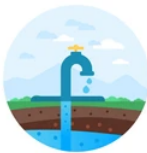
PERSAMPELAN BASELINE ALAM SEKITAR

KUALITI AIR PERMUKAAN



- Empat (4) lokasi persampelan telah ditetapkan:
 - W1: saliran air hujan (hulu)
 - W2–W4: saliran air hujan (hilir) (tiga lokasi)
- Tiada persampelan dijalankan di W1 disebabkan oleh keadaan air yang bertakung dan cetek.
- Kebanyakan parameter kualiti air mematuhi had Kelas IIB di bawah Piawaian Kualiti Air Kebangsaan untuk Malaysia (NWQSM)
- Lima (5) parameter melebihi had di stesen-stesen tertentu:
 - Jumlah Pepejal Terampai (TSS)
 - Keperluan Oksigen Biokimia (BOD₅)
 - Permintaan Oksigen Kimia (COD)
 - Jumlah Kiraan Koliform (TCC)
 - Kiraan Koliform Najis (FCC)

KUALITI AIR TANAH



- Persampelan untuk kualiti air tanah telah dijalankan di tapak projek
- Kebanyakan parameter mematuhi Piawaian Kualiti Air Tanah Kebangsaan untuk Kualiti Air Minum Mentah.
- Tiga (3) parameter melebihi had piawai:
 - Besi (Fe)
 - Mangan (Mn)
 - Zink (Zn)

KUALITI UDARA



- Pensampelan udara ambien telah dijalankan di empat (4) lokasi:
 - A1: Tapak Projek
 - A2: Kg. Malawa
 - A3: Surau Al Hidayah SJ Melawa
 - A4: Pusat Kemahiran dan Teknologi Sabah
- Majoriti parameter bagi titik persampelan udara mematuhi had yang ditetapkan di bawah Piawaian Kualiti Udara Ambien Malaysia (MAAQS) 2020.
- PM₁₀ melebihi had yang ditetapkan di A1 (Tapak Projek)
- Punca yang mungkin: pelepasan daripada kenderaan berat yang beroperasi di kawasan perindustrian pada waktu siang.

KUALITI BUNYI



- Pensampelan kualiti bunyi telah dijalankan di empat (4) lokasi:
 - N1: Tapak Projek
 - N2: Kg. Malawa
 - N3: Surau Al Hidayah SJ Melawa
 - N4: Pusat Kemahiran dan Teknologi Sabah
- Tahap Tekanan Bunyi Berterusan Setara (L_{Aeq}) diukur untuk waktu siang dan malam
- Tahap hingar di semua lokasi (N1–N4) berada dalam had yang ditetapkan
- Pemuatan yang dicapai dengan Jadual 2 untuk Zon Perindustrian di bawah Garis Panduan Had dan Kawalan Bunyi Alam Sekitar (Edisi Ketiga, 2019)

HURAIAN PROSES

KONSEP PROJEK

- Projek ini melibatkan pengubahsuaian kecil pada bangunan sedia ada.
- Tujuan: Untuk mewujudkan kemudahan penyimpanan sisa terjadual di luar tapak.
- Bertujuan untuk memastikan kemudahan tersebut:
 - Selamat dari segi alam sekitar
 - Berdaya maju dari segi ekonomi
 - Cekap dan kos efektif
 - Mudah diselenggara
- Matlamat: Untuk menyokong pengurusan sisa terjadual yang semakin meningkat dengan betul dan mampan.

KOMPONEN PROJEK

Pemaju projek akan mengumpul sisa buangan terjadual dari pelbagai bengkel di seluruh Sabah.

Senarai SW adalah seperti berikut:

No	Kod SW	Penerangan	Kuantiti (MT)
SW 1 Logam dan Sisa Membawa Logam			
1	SW101	Sisa yang mengandungi arsenik atau sebatiananya	2
2	SW102	Pembaziran bateri asid plumbum dalam bentuk keseluruhan atau hancur	40
3	SW103	Sisa bateri yang mengandungi kadmium dan nikel atau merkuri atau litium	10
4	SW104	Habuk, sanga, kotoran atau abu yang mengandungi arsenik, merkuri, plumbum, kadmium, kromium, nikel, kuprum, vanadium, berilium, antimoni, telurium, talium atau selenium tidak termasuk sanga dari kilang besi dan keluli	60
5	SW107	Sanga daripada pemprosesan tembaga untuk pemprosesan atau penapisan selanjutnya yang mengandungi arsenik, plumbum atau kadmium	2
6	SW109	Sisa yang mengandungi merkuri atau sebatiananya	10
7	SW110	Sisa daripada pemasangan elektrik dan elektronik yang mengandungi komponen seperti akumulator, suis merkuri, kaca daripada tiub sinar katod dan kapasitor bifenil poliklorin kaca teraktif yang lain, atau tercemar dengan kadmium, merkuri, plumbum, nikel, kromium, kuprum, litium, perak, mangan atau bifenil poliklorin	20

HURAIAN PROSES

KOMPONEN PROJEK

No	Kod SW	Penerangan	Kuantiti (MT)
SW 2 Sisa Yang Mengandungi Terutamanya Unsur Bukan Organik Yang Mungkin Mengandungi Logam dan Bahan Organik			
8	SW201	Sisa asbestos dalam bentuk enap cemar, habuk atau gentian	20
9	SW202	Pemangkin sisa	100
10	SW203	Buangan terjadual yang tidak bergerak termasuk enap cemar yang difiksasi, dikapsulkan, dipejalkan atau distabilkan secara kimia	10
11	SW204	Enapcemar yang mengandungi satu atau beberapa logam termasuk kromium, kuprum, nikel, zink, plumbum, kadmium, aluminium, timah, vanadium dan berilium	20
12	SW205	Sisa gipsium yang berasal dari industri kimia atau loji kuasa	5
13	SW206	Asid tak organik terpakai	20
14	SW207	Enap cemar yang mengandungi fluorida	20
SW 3 Sisa Yang Mengandungi Terutamanya Unsur Organik Yang Mungkin Mengandungi Logam dan Bahan Bukan Organik			
15	SW301	Asid organik terpakai dengan pH kurang atau sama dengan 2 yang menghakis atau berbahaya	10
16	SW302	Sisa fluks yang mengandungi campuran asid organik, pelarut atau sebatian ammonium klorida	10
17	SW303	Sisa pelekat atau gam yang mengandungi pelarut organik tidak termasuk bahan polimer pepejal	10
18	SW304	Kek tekan daripada prarawatan gliserol sabun alkali	10
19	SW305	Minyak pelincir terpakai	100
20	SW306	Minyak hidraulik terpakai	40
21	SW307	Emulsi minyak-air mineral terpakai	100
22	SW308	Enap cemar kapal tangki minyak	20
23	SW309	Campuran minyak-air seperti air balast	60
24	SW310	Enap cemar dari tangki simpanan minyak mineral	20
25	SW311	Minyak sisa atau enap cemar berminyak	100
26	SW312	Sisa berminyak daripada bengkel automotif, minyak stesen servis atau pemintas gris	10
27	SW313	Tanah yang tercemar minyak daripada penapisan semula minyak pelincir terpakai	10
28	SW314	Minyak atau enap cemar daripada operasi penyelenggaraan loji penapisan minyak	20
29	SW315	Sisa tar atau tar daripada kilang penapisan minyak atau loji petrokimia	20
30	SW316	Enap cemar asid	10

KOMPONEN PROJEK

31	SW319	Sisa fenol atau sebatian fenol termasuk klorofenol dalam bentuk cecair atau enap cemar	10
32	SW320	Sisa yang mengandungi formaldehid	5
33	SW321	Sisa getah atau lateks atau enap cemar yang mengandungi pelarut organik atau logam berat	5
34	SW322	Sisa pelarut organik bukan terhalogen	60
35	SW323	Sisa pelarut organik terhalogen	60
36	SW325	Sisa resin yang tidak diawet yang mengandungi pelarut organik atau logam berat termasuk resin epoksi dan resin fenolik	10
37	SW326	Sisa sebatian fosforus organik	10
38	SW327	Sisa bendalir terma (pemindahan haba) seperti etilena glikol	20
SW 4 Sisa yang Mungkin Mengandungi Sama Ada Bahan Bukan Organik atau Organik			
39	SW401	Alkali terpakai yang mengandungi logam berat	10
40	SW402	Alkali terpakai dengan pH lebih atau sama dengan 11.5 yang menghakis atau berbahaya	10
41	SW403	Dadah yang dibuang yang mengandungi bahan psikotropik atau mengandungi bahan yang toksik, berbahaya, karsinogenik, mutagenik atau teratogenik	10
42	SW406	Klinker, sanga dan abu daripada insinerator buangan terjadual	10
43	SW408	Tanah, serpihan atau bahan tercemar akibat pembersihan tumpahan bahan kimia, minyak mineral atau sisa terjadual	40
44	SW409	Bekas, beg atau peralatan yang dilupuskan yang tercemar dengan bahan kimia, racun perosak, minyak mineral atau sisa buangan terjadual	30
45	SW410	Kain buruk, plastik, kertas atau penapis yang tercemar dengan buangan terjadual	30
46	SW411	Karbon teraktif terpakai yang tidak termasuk karbon daripada rawatan air minuman dan proses industri makanan dan pengeluaran vitamin	10
47	SW413	Garam terpakai yang mengandungi sianida	10
48	SW414	Larutan alkali akueus terpakai yang mengandungi sianida	10
49	SW416	Enap cemar dakwat, cat, pigmen, lakuer, pewarna atau varnis	20
50	SW417	Sisa dakwat, cat, pigmen, lakuer, pewarna atau varnis	20
51	SW418	Dakwat, cat, pigmen, lakuer, pewarna atau produk varnis yang dibuang atau di luar spesifikasi yang mengandungi pelarut organik	20
52	SW421	Campuran sisa terjadual	40
53	SW422	Campuran sisa terjadual dan tidak terjadual	40
54	SW423	Larutan pemprosesan terpakai, bahan kimia fotografi yang dibuang atau sisa fotografi yang dibuang	5

KOMPONEN PROJEK

55	SW425	Sisa daripada pengeluaran, formulasi, perdagangan atau penggunaan racun perosak, racun herba atau biosid	10
56	SW426	Produk luar spesifikasi daripada pengeluaran, formulasi, perdagangan atau penggunaan racun perosak, racun herba atau biosid	2
57	SW427	Enapcemar mineral termasuk enapcemar kalsium hidroksida, enapcemar fosfat, enapcemar kalsium sulfit dan enapcemar karbonat	100
58	SW428	Sisa daripada operasi pengawetan kayu menggunakan garam tak organik yang mengandungi kuprum, kromium atau arsenik daripada sebatian fluorida atau menggunakan sebatian yang mengandungi fenol atau kreosot berklorin	20
59	SW429	Bahan kimia yang dibuang atau di luar spesifikasi	60
60	SW430	Bahan kimia makmal usang	10
SW 5 Sisa Lain			
61	SW501	Sebarang sisa daripada rawatan atau pemulihan buangan terjadual	2
Jumlah			1,588

AKTIVITI-AKTIVITI PROJEK

(1) PENYASATAN TAPAK

- Reka bentuk kejuruteraan terperinci
- Kajian EIA
- Perolehan bahan
- Perancangan pemasangan
- Hubungan dengan pihak berkuasa tempatan, badan berkanun dan pembekal utiliti

(2) PENYEDIAAN TAPAK

- Mobilisasi peralatan dan bahan
- Penubuhan utiliti

(3) PEMBINAAN DAN PEMASANGAN

- Pembinaan dinding *bund*
- Pembinaan kolam takungan
- Pengurusan Sisa

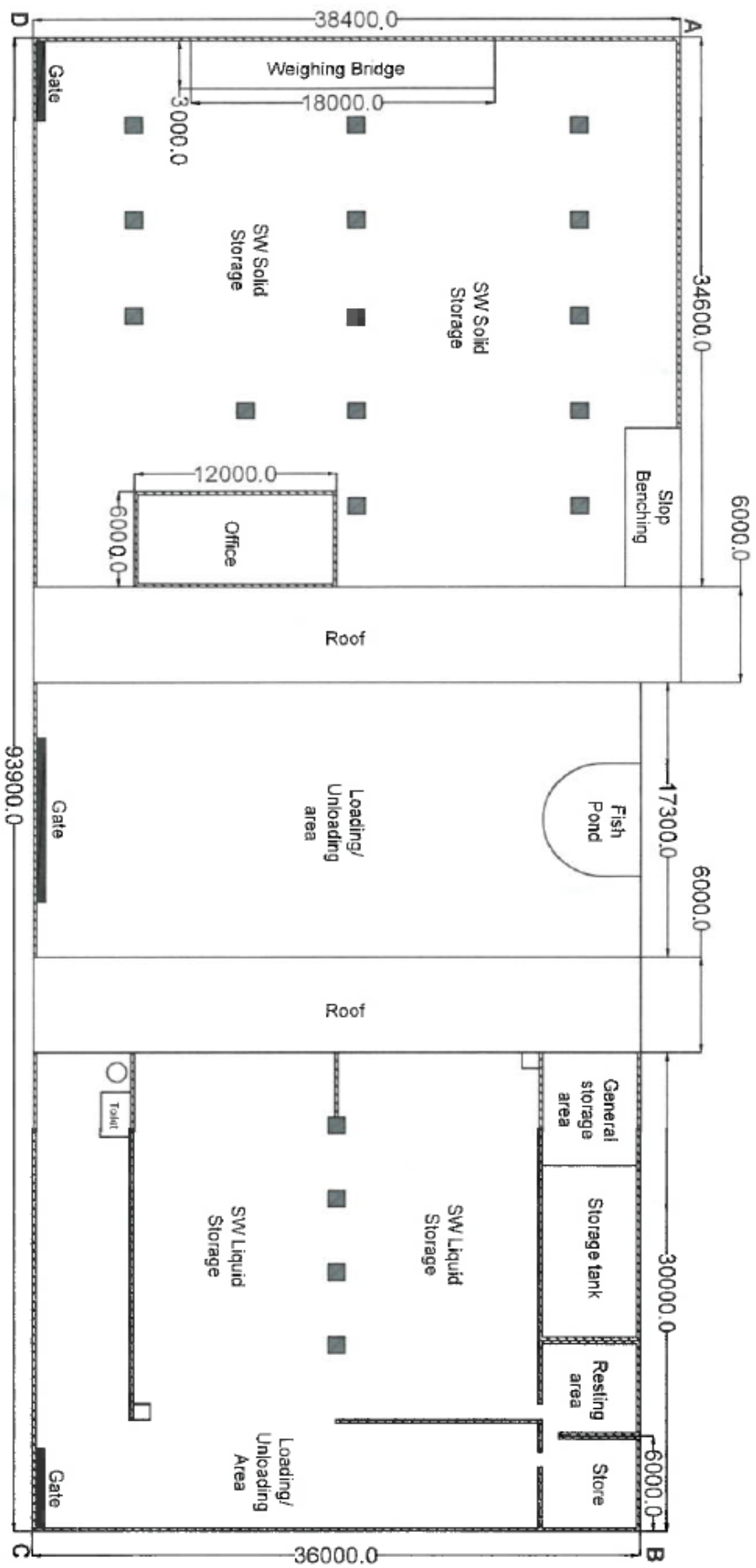
(4) OPERASI DAN PENYELENGGARAAN

- Pengeluaran penuh
- Pemantauan alam sekitar yang berterusan mengikut keperluan JAS
- Pemulihan kerja yang rosak di bawah tempoh tanggungan kecacatan (DLP)
- Perkhidmatan dan penyelenggaraan kemudahan

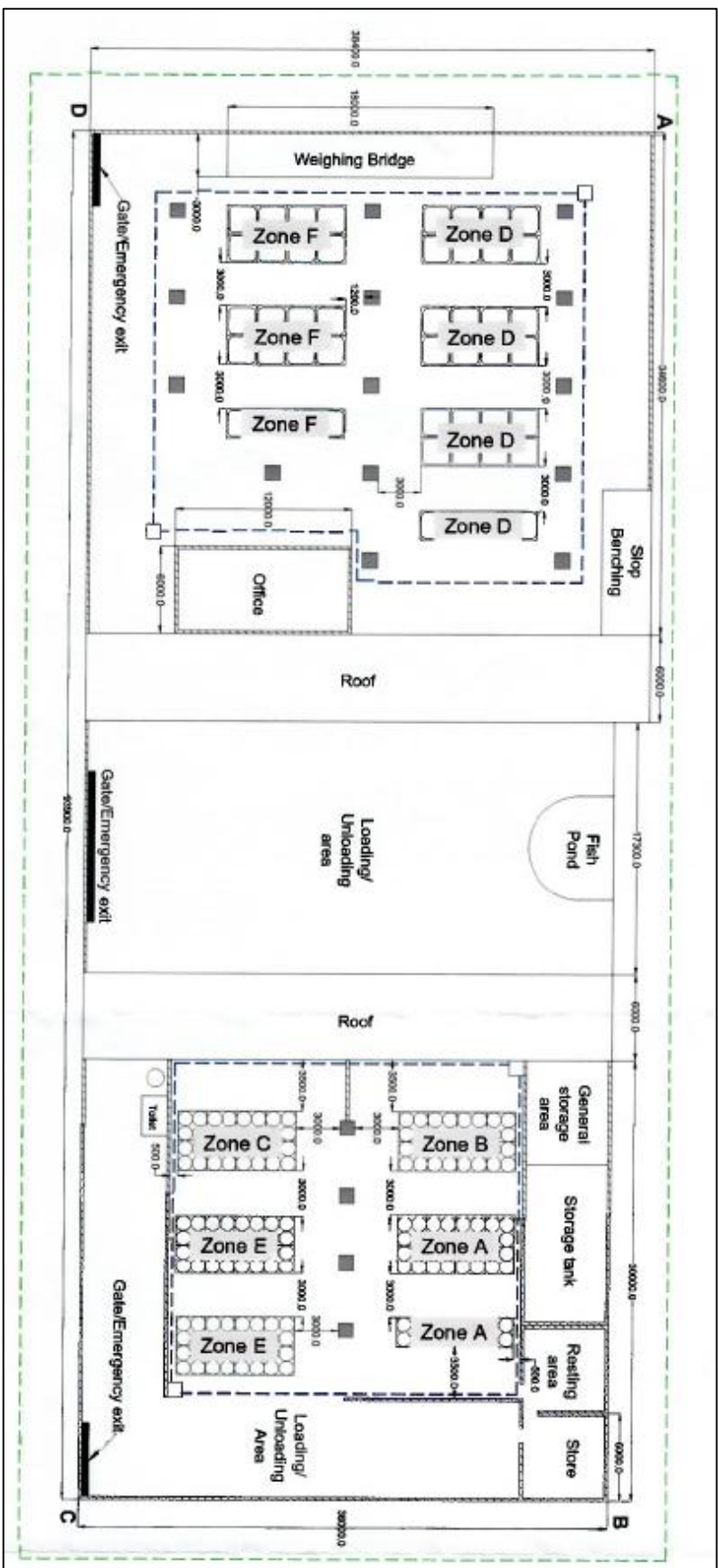
(5) POTENSI PENGABAIAN

- Penyingkiran kemudahan dan struktur sedia ada
- Pemulihan tapak untuk pembangunan masa hadapan yang lain
- Perhubungan dengan pihak berkuasa tempatan

PELAN SUSUN ATUR



PELAN SUSUN ATUR KILANG PROJEK



PETA LOKASI LALUAN NAVIGASI



PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

Aspek	Potensi Impak yang Ketara	Magnitud Potensi Impak yang Ketara	P2M2	Halaman Rujukan
Hakisan Tanah dan Kesan Cerun 	<u>Peringkat Pembinaan dan Operasi</u> Kesan Hakisan Tanah - Projek ini melibatkan bangunan sedia ada dengan hanya sedikit pembersihan dan penaiktarafan tapak - Potensi keseluruhan hakisan tanah adalah sangat rendah - Tiada kerja tanah, penggalian atau penggedan tanah yang besar diperlukan - Hanya kawasan kecil sahaja yang mungkin terdedah buat sementara waktu semasa kerja-kerja pembinaan atau pembaikan kecil - Pemukaan kedap air sedia ada (contohnya, lantai konkrit, tapak bangunan) membantu mengurangkan larian permukaan dan anjakan tanah Impak Cerun - Terdapat cerun di sebelah kawasan projek, dengan tanah sedia ada dipaku untuk penstabilan. - Potensi keseluruhan untuk impak cerun adalah minimum - Tiada perubahan cerun diperlukan kerana peningkatan kecil bangunan dan pembersihan tapak	Rendah	<u>Peringkat Pembinaan dan Operasi</u> Kurangkan gangguan tanah - Hadkan pembersihan tapak kepada kawasan pembinaan yang penting - Elakkan penggalian atau penggedan yang tidak perlu berhampiran bangunan dan cerun Perindungan tanah sementara - Tutup tanah yang terdedah dengan terpal, geotekstil atau batu kerikil - Gunakan sungkupan atau tumbuh-tumbuhan sementara jika pendedahan melebihi beberapa hari Kawal larian air hujan - Cegah pengumpulan air di dasar cerun untuk mengurangkan risiko hakisan Kekalkan kestabilan cerun - Elakkan meletakkan peralatan atau bahan berat berhampiran cerun - Jangan gangu struktur paku tanah atau tetulang sedia ada - Menjalankan pemantauan berkala terhadap keadaan cerun	Potensi Impak Muka Surat 7 – 13 Langkah-langkah Mitigasi Muka Surat 8 - 6

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

	• Pemakuan dan pengukuhan tanah sedia ada memberikan kestabilan cerun yang mencukupi • Risiko kegagalan cerun adalah rendah • Aktiviti pembinaan harus mengelakkan penggunaan peralatan berat berhampiran cerun bagi mengelakkan getaran dan tekanan beban tambahan.			
Pencemaran Udara 	<u>Peringkat Pembinaan</u> Bahan pencemar udara boleh dihasilkan daripada: • Pemecahan konkrit • Pasir dan agregat yang ditiup angin Impak adalah sementara dan terhad kepada fasa pembinaan. Pelepasan daripada peralatan pembinaan mungkin termasuk: • Zarah terampai • Sulfur dioksida (SO_2) • Nitrogen oksida (NO_x) • Karbon monoksida (CO) • Karbon dioksida (CO_2) • Sebatian organik meruap (VOC) Impak minimum adalah dijangka berikutan penggunaan peralatan pembinaan yang terhad di kawasan tertentu. <u>Peringkat Operasi</u> • Pengangkutan Sisa Berjadual berpotensi menjejaskan kualiti udara berhampiran tapak projek. • Pelepasan ekzos daripada kenderaan pengangkutan akan membebaskan bahan pencemar gas.	Sederhana	<u>Peringkat Pembinaan</u> • Lembapkan kawasan pembinaan secara berkala untuk menyekat habuk. • Sediakan stesen cuci roda (ruang cuci) untuk mengelakkan habuk menjeraki di luar tapak. • Pastikan semua peralatan pembinaan menjalani penyelenggaraan berkala untuk mengurangkan pelepasan ekzos. • Utamakan penggunaan peralatan yang mematuhi piawaian pelepasan. <u>Peringkat Operasi</u> • Pembakaran sisa secara terbuka, terutamanya tumbuh-tumbuhan yang telah dibersihkan, adalah dilarang sama sekali di bawah Perintah Kualiti Alam Sekitar (Aktiviti yang Ditetapkan) (Pembakaran Terbuka) 2000. • Tumbuhan yang telah dibersihkan hendaklah	Potensi Impak <u>Peringkat Pembinaan</u> Muka Surat 7 – 14 <u>Peringkat Operasi</u> Muka Surat 7 – 18 Langkah-langkah Mitigasi <u>Peringkat Pembinaan</u> Muka Surat 8 – 7 <u>Peringkat Operasi</u> Muka Surat 8 – 14

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

	Bau mungkin timbul jika tumpahan atau kebocoran berlaku dari tangki simpanan semasa pengangkutan.		digunakan semula atau dihantar ke tapak pelupusan sampah DBKK untuk dilupuskan. - Pekerja perlu diingatkan lebih awal bagi mengelakkan pembakaran terbuka. - Papan tanda amaran yang boleh dilihat perlu dipasang untuk mengukuhkan peraturan larangan pembakaran. - Tanggungjawab pengendali yang ditakrifkan dengan jelas untuk pengendalian dan pemindahan sisa. - Amalan pengemasan yang baik dan pemeriksaan berkala untuk sebarang kebocoran. - Sediakan sistem pengudaraan yang baik di kawasan penyimpanan dan pemulihan untuk sisa meruap dan agen pembersih. - Kenderaan, mesin dan peralatan yang digunakan mesti diselenggara dengan baik sepanjang masa dengan melakukan servis berkala untuk meminimumkan pelepasan ekzos atau bahan pencemar yang tidak perlu. - Patuhi Peraturan Kualiti Alam Sekitar (Udara Bersih), 2014 - Peralatan perlindungan pernafasan mesti disediakan
--	---	--	---

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

 Pencemaran Bunyi	<u>Peringkat Pembinaan</u> - Sumber hingar dijangka terutamanya berpunca daripada peningkatkan trafik, pemuatan dan pemunggaran peralatan dan bahan kejuruteraan, dan semasa pembinaan kawasan penyimpanan. <u>Peringkat Operasi</u> - Sumber bunyi utama: - Aktiviti dari premis berdekatan - Kenderaan di Jalan 1D KKP Selatan - Penerima sensitif hingar terdekat: - Pekerja di UWM Toyota Motors Yard - Pekerja di Daya Asal Engineering Sdn Bhd - Penerima ini beroperasi di bangunan yang digunakan untuk perniagaan, penyimpanan dan pengangkutan pada siang hari. - Bunyi bising tambahan daripada lori yang mengangkut masuk dan keluar sisa terjadual. - Tahap hingar di sempadan tapak tidak boleh melebihi 75 dB(A) pada siang hari.	Sederhana	<u>Peringkat Pembinaan</u> - Aktiviti projek di tapak projek hendaklah mematuhi had yang ditetapkan dalam Jadual 2 untuk Zon Perindustrian – Garis Panduan untuk Had dan Kawalan Bunyi Alam Sekitar (Edisi Ketiga, 2019). Had yang ditetapkan iaitu 75 dB(A) [siang hari] dan 75 dB(A) [malam hari] hendaklah dipatuhi. - Sediakan peredam bunyi, kandang, penghadang dan penahan bunyi pada peralatan/jentera industri bagi memastikan tahap bunyi dikekalkan di bawah 75 dB(A) di sepanjang sempadan projek. - Aktiviti pembinaan akan dijalankan dari jam 8:00 pagi hingga 5:00 petang. - Penyelenggaraan jentera dan peralatan berat yang betul perlu dijalankan oleh kontraktor/pengurusan projek bagi mengelakkan penajanaan bunyi bising yang melebihi spesifikasi pengeluar. <u>Peringkat Operasi</u> - Pihak pengurusan projek harus menyediakan alat perlindungan hingar peribadi untuk pekerja. - Pemandu kenderaan di luar lokasi hendaklah mematuhi	Potensi Impak <u>Peringkat Pembinaan</u> Muka Surat 7 – 14 <u>Peringkat Operasi</u> Muka Surat 7 – 18 Langkah-langkah Mitigasi <u>Peringkat Pembinaan</u> Muka Surat 8 – 7 <u>Peringkat Operasi</u> Muka Surat 8 – 15
---	---	---	---	--

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

			- amalan pengangkutan yang sesuai. - Pastikan peralatan yang bising, seperti forklift, menjalani pemeriksaan berkala untuk mengesahkan keadaannya yang baik.	
Pencemaran Air 	<u>Peringkat Pembinaan</u> - Sumber pencemaran air permukaan yang berpotensi: - Tumpahan Minyak & Gris - Pembuangan sisa domestik secara sembarangan - Penjanaan kumbahan semasa peringkat pembinaan kebanyakannya akan datang daripada tenaga kerja. Walau bagaimanapun, dianggarkan hanya tenaga kerja kecil yang terdiri daripada kurang daripada lima puluh pekerja pembinaan akanakan diambil bekerja semasa peringkat pembinaan. <u>Peringkat Operasi</u> - Kebocoran/tumpahan buangan terjadual yang meruap. - Pembuangan sisa yang tidak betul ke saluran air.	Tinggi	<u>Peringkat Pembinaan</u> - Lencongkan larian air dari kawasan pembinaan menggunakan perangkap kelodak yang disambungkan ke sistem perimeter dan saluran pengumpulan. Larian air hendaklah mengalir ke dalam kolam pemendapan sebelum dilepaskan. - Bersihkan longkang perimeter dengan kerap: sebulan sekali semasa cuaca kering dan seminggu sekali semasa musim hujan. - Reka bentuk atau selenggara longkang mengikut topografi tempatan, yang kebanyakannya rata di kawasan ini. - Pastikan kenderaan dan jentera berada sekurang-kurangnya 50 meter dari badan air. - Isi semula minyak hanya di kawasan yang berpagar dan terlindung, dan berhati-hati untuk mengelakkan tumpahan atau kebocoran. - Jangan sekali-kali melupuskan sisa terjadual di atas tanah, di	Potensi Impak Peringkat Pembinaan Muka Surat 7 – 16 Peringkat Operasi Muka Surat 7 – 18 Langkah-langkah Mitigasi Peringkat Pembinaan Muka Surat 8 – 6 Peringkat Operasi Muka Surat 8 – 13

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

			- dalam longkang atau ke dalam badan air. - Memberi latihan kakitangan secara berkala tentang pengendalian peralatan yang selamat, tindakan pencegahan tumpahan, tindak balas kecemasan dan membersihkan bahan berbahaya yang betul.	
Penilaian Bahaya / Risiko	<u>Peringkat Pembinaan</u> - Tiada bahan kimia berbahaya akan digunakan semasa peringkat pembinaan - Tiada impak alam sekitar yang berkaitan dengan bahan berbahaya dijangkakan pada peringkat ini	<u>Peringkat Pembinaan</u> Rendah <u>Peringkat Operasi</u> Tinggi	<u>Peringkat Operasi</u> Pengenalpastian potensi bahaya dan penilaian risiko adalah penting, terutamanya semasa fasa operasi: Bahaya kimia - Pastikan Helian Data Keselamatan Bahan (MSDS) tersedia - Kenal pasti bahaya seperti ketoksikan dan mudah terbakar dengan jelas. - Bahaya fizikal	Potensi Impak <u>Peringkat Pembinaan</u> Muka Surat 7 – 17 <u>Peringkat Operasi</u> Muka Surat 7 – 21 Langkah-langkah Mitigasi <u>Peringkat Pembinaan</u> Muka Surat 8 – 17 <u>Peringkat Operasi</u> Muka Surat 8 – 20



PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

	○ Kehilangan (kebocoran) minyak sisa berkemungkinan berlaku ○ Kehadiran sumber pencucuhan boleh mencetuskan kebakaran ○ Keputusan: Risiko kebakaran yang berpotensi • Kebakaran Kolam Pelarut Sisa ○ Kehilangan pembendungan (kebocoran) pelarut sisa mungkin berlaku ○ Kehadiran sumber pencucuhan boleh mencetuskan kebakaran ○ Keputusan: Risiko kebakaran yang berpotensi		• Urus risiko yang berkaitan dengan peralatan, tangki simpanan dan ruang terkurung Risiko ergonomik • Reka bentuk prosedur pengangkatan dan pengendalian yang betul • Mencegah kecederaan muskuloskeletal dalam kalangan pekerja	
Penilaian Sisa 	<u>Peringkat Pembinaan dan Operasi Sisa Pepejal</u> • Sisa proses: palet, beg, bekas, dram, dll. terpakai. • Sisa bukan proses: sisa domestik dan pejabat seperti kertas dan plastik. • Kesan pelupusan sisa pepejal dijangka minimum kerana pengumpulan dan pelupusan yang betul akan dijalankan di tapak projek. Sisa Terjadual • Tumpahan daripada Pemuatan / Pemunggaran SW • Kebocoran dari Bekas atau Tong Kumbahan Kumbahan dihasilkan terutamanya dari pejabat tapak. Rawatan sisa sanitari yang tidak mencukupi akan mengakibatkan pelepasan effluen yang tinggi kandungan organik dan nutrien, yang boleh menyebabkan eutrofikasi dan penyebaran patogen.	Sederhana	Sisa Pepejal dan Sisa Perdagangan Pepejal • Sisa/bahan berbahaya termasuk sisa berminyak hendaklah dikendalikan dan dilupuskan mengikut keperluan Jabatan Alam Sekitar. • Kumpulkan sisa minyak terpakai dan minyak (sisa terjadual) daripada jentera dan kenderaan pengangkutan, dan simpan serta labelkan dalam bekas yang betul untuk pelupusan pada masa hadapan. • Kumpul sampah secara berkala dan letakkan di lokasi yang sesuai di tapak projek, jauh dari sungai/anak sungai atau laut. Sisa Terjadual Sisa terjadual mesti diuruskan mengikut Peraturan Kualiti Alam Sekitar (Sisa Terjadual) 2005.	Potensi Impak Peringkat Pembinaan dan Peringkat Operasi Muka Surat 7 – 18 Langkah-langkah Mitigasi Peringkat Pembinaan Muka Surat 8 – 8 Peringkat Operasi Muka Surat 8 – 13 Muka Surat 8 – 15

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

			Semua sisa terjadual mesti dikeluarkan dari bekas atas terbuka dan disimpan dalam bekas SW yang betul dengan label yang betul untuk pelupusan yang dilakukan oleh kontraktor berlesen. Kumbahan - Kumbahan hendaklah dikendalikan dan dilupuskan mengikut keperluan SPAN (Suruhanjaya Perkhidmatan Air Negara). - Tangki septik hendaklah direka bentuk mengikut spesifikasi Kementerian Kesihatan dengan pelepasan yang memenuhi had Piawalan B Peraturan Kualiti Alam Sekitar (Kumbahan & Efluen Perindustrian), 1979.	
Keselamatan dan Kesihatan Pekerjaan 	<u>Peringkat Pembinaan dan Operasi</u> - Pekerja di tapak projek mempunyai risiko tinggi terhadap kecederaan dan kemalangan berkaitan pekerjaan. - Punca-punca mungkin termasuk: - Kejailan atau pengabaian keselamatan oleh pekerja atau majikan. - Kemalangan tapak pembinaan yang biasa berlaku: - Jatuh dari tempat tinggi - Tekanan haba dan dehidrasi - Dilanggar objek jatuh - Kesan-kesan kemalangan yang berkemungkinan berlaku: - Kematian	Tinggi	<u>Peringkat Pembinaan dan Operasi</u> - Pemaju projek harus menetapkan dasar bertulis yang menerangkan komitmen organisasi terhadap keselamatan dan kesihatan serta berikrar untuk mewujudkan dan mengekalkan program keselamatan dan kesihatan untuk semua pekerja. - Pemaju projek harus mewujudkan proses mudah untuk pekerja melaporkan kecederaan, kemungkinan berlaku/hampir berlaku, bahaya dan	Potensi Impak <u>Peringkat Pembinaan</u> Muka Surat 7 – 17 <u>Peringkat Operasi</u> Muka Surat 7 – 19 Langkah-langkah Mitigasi Peringkat Pembinaan Muka Surat 8 – 10 Peringkat Operasi Muka Surat 8 – 16

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

	○ Kecacatan kekal atau sementara ○ Kecelakaan ringan ○ Impak psikologi		keimbangan keselamatan dan kesihatan yang lain, serta bertindak balas terhadap laporan dengan segera. • Kakitangan keselamatan berlesen harus memberikan maklumat terperinci kepada pekerja/kontraktor untuk memahami bahaya keselamatan dan kesihatan serta langkah-langkah kawalan di tapak kerja. Maklumat tersebut termasuk helaan data keselamatan (SDS), data kecederaan dan penyakit, cadangan keselamatan pengeluar bahan kimia dan peralatan, laporan pemeriksaan peralatan dan kenderaan tapak kerja, dsb. • Pemaju projek harus menyediakan peralatan pelindung diri (PPE) yang betul seperti topi keras, goggles, but keselamatan berpenambat baik, jaket keselamatan, sarung tangan kerja dan tali pinggang keselamatan untuk mengelakkan terjatuh atau dilanggar objek jatuh. • Pemaju projek hendaklah menjalankan pemeriksaan yang kerap dan berkala terhadap tapak kerja, bahan dan peralatan. • Gunakan kawalan interim semasa membangun dan	
--	--	--	--	--

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

Impak Sosio-Ekonomi 	<u>Peringkat Pembinaan dan Operasi</u> • Pekerjaan dan peluang perniagaan. • Faedah komuniti dan negeri seperti perkhidmatan, sokongan dan latihan.	Sederhana	melaksanakan penyelesaian jangka panjang. <u>Peringkat Pembinaan dan Operasi</u> • Keutamaan pekerjaan harus diberikan kepada penduduk tempatan. • Pengambilan pekerja asing (jika ada) melalui saluran yang betul. • Semua pekerja mesti menjalani pemeriksaan kesihatan sebelum diambil bekerja dengan penekanan khusus terhadap penyakit berjangkit atau penyakit berjangkit.	Potensi Impak <u>Peringkat Pembinaan</u> Muka Surat 7 – 17 <u>Peringkat Operasi</u> Muka Surat 7 – 21 Langkah-langkah Mitigasi Peringkat Pembinaan Muka Surat 8 – 12 Peringkat Operasi Muka Surat 8 – 18
Kesan Trafik dan Pengangkutan 	<u>Peringkat Pembinaan</u> Pengangkutan peralatan pembinaan dan sisa terjadual mungkin sedikit meningkatkan trafik di: • Jalan 1 KKIP Selatan • Persimpangan ke tapak projek Risiko yang berpotensi termasuk tumpahan atau gelinciran bahan secara tidak sengaja, yang menimbulkan bahaya kepada pengguna jalan raya yang lain. <u>Peringkat Operasi</u> Pengangkutan sisa terjadual semasa fasa operasi mungkin sedikit meningkatkan trafik di: • Jalan 1 KKIP Selatan • Persimpangan ke tapak projek Tumpahan atau gelinciran bahan secara tidak sengaja boleh menimbulkan risiko keselamatan kepada pengguna jalan raya.	Sederhana	<u>Peringkat Pembinaan dan Operasi</u> • Tetapkan laluan khusus untuk kenderaan pembinaan bagi mengelakkan kawasan perumahan, sekolah atau zon trafik tinggi. • Pasang papan tanda amaran, had laju dan papan penunjuk arah yang jelas. • Hadkan pergerakan kenderaan pembinaan semasa waktu luar puncak untuk mengurangkan kesesakan. • Pastikan jalan raya yang digunakan oleh kenderaan pembinaan diselenggara dengan baik dan bebas daripada serpihan.	Potensi Impak <u>Peringkat Pembinaan</u> Muka Surat 7 – 17 <u>Peringkat Operasi</u> Muka Surat 7 – 21 Langkah-langkah Mitigasi <u>Peringkat Pembinaan</u> Muka Surat 8 – 11 <u>Peringkat Operasi</u> Muka Surat 8 – 13 Muka Surat 8 - 18

PENILAIAN IMPAK DAN LANGKAH-LANGKAH MITIGASI

			- Laksanakan operasi penandaan jika perlu untuk menguruskkan trafik berhampiran tapak. - Pastikan semua kenderaan memenuhi piawaian keselamatan, termasuk muatan sisa yang dipasang dengan betul. - Latih pemandu tentang undang-undang lalu lintas tempatan, pemanduan defensif dan bahaya khusus tapak.	
Potensi Pengabaian 	<u>Peringkat Pembinaan dan Operasi</u> - Menimbulkan bahaya keselamatan kepada persekitaran di sekitar tapak projek. - Risiko bahaya kesihatan dan keselamatan kepada pekerja semasa membongkar peralatan besar dan berat. - Penggunaan tanah masa hadapan yang tidak serasi. - Impak sosio-ekonomi akibat pemberhentian kerja atau penempatan semula tenaga buruh.	Rendah	<u>Peringkat Pembinaan dan Operasi</u> - Acuan hendaklah dirobuhkan, dan sisa hendaklah dilupuskan. - Semua struktur dan tempat perlindungan yang telah siap hendaklah dirobuhkan. - Langkah-langkah pencegahan kebakaran mesti dilaksanakan. - Semua jentera dan kenderaan hendaklah dikeluarkan. - Pemeriksaan oleh pihak berkuasa.	Potensi Impak <u>Peringkat Pembinaan dan Operasi</u> Muka Surat 7 – 52 Langkah-langkah Mitigasi <u>Peringkat Pembinaan dan Operasi</u> Muka Surat 8 – 21

CADANGAN PETA PEMANTAUAN ALAM SEKITAR



PROGRAM PEMANTAUAN ALAM SEKITAR (PERINGKAT PEMBINAAN)

Parameter	Cadangan Lokasi Pemantauan	Cadangan Kekerapan	Piawaian / Garis Panduan
Kualiti Air (Air Permukaan)			
- Suhu - pH - COD - BOD₅ - TSS - O&G - NH₃-N - Oksigen Terlarut - TCC - FCC	W1 - saliran air hujan di hulu tapak projek W2 - saliran air hujan (1) W3 - saliran air hujan (2) W4 - saliran air hujan (3) <u>Koordinat GPS:</u> W1 - 06° 05' 18.599" N 116° 09' 48.924" E W2 - 06° 05' 19.586" N 116° 09' 51.792" E W3 - 06° 05' 20.093" N 116° 09' 52.670" E W4 - 06° 05' 23.229" N 116° 10' 0.0006" E	Suku tahun atau mengikut DOE keperluan	Kelas IIB NWQSM
Kualiti Air (Air Tanah)			
- Arsenik - Kadmium - Tembaga - Besi - Plumbum - Mangan - Mercuri - Selenium - Zink	GW1 – Dalam tapak projek <u>Koordinat GPS:</u> GW1 - 06° 05' 18.024" N 116° 09' 50.780" E	Suku tahun atau mengikut DOE keperluan	Piawaian Kualiti Air Tanah Kebangsaan untuk Kualiti Air Minuman Mentah
Kualiti Bunyi			
<u>Program Pemantauan</u>	N1 - Tapak Projek N2 - Kg. Malawa N3 - Surau Al Hidayah SJ Melawa	Suku tahun atau mengikut DOE keperluan	Jadual 2: Garis Panduan Perancangan Zon Perindustrian yang

Laeq (waktu siang dan waktu malam)

	N4 - Pusat Kemahiran dan Teknologi Sabah		Ditetapkan untuk Had dan Kawalan Bunyi Alam Sekitar dalam Alam Sekitar [70 dB(A) pada waktu siang; 65 dB(A) pada waktu malam]
	<u>Koordinat GPS:</u> N1 - 06° 05' 19.182" N 116° 09' 50.374" E N2 - 06° 05' 36.200" N 116° 09' 30.024" E N3 - 06° 05' 17.005" N 116° 09' 29.543" E N4 - 06° 05' 8.649"N 116° 09' 42.928" E		
Kualiti Udara			
- Bahan Zarah (PM₁₀) - Karbon Monoksida (CO) - Ozon (O₃) - Sebatian Organik Meruap (VOC)	A1 - Tapak Projek A2 - Kg. Malawa A3 - Surau Al Hidayah SJ Melawa A4 - Pusat Kemahiran dan Teknologi Sabah <u>Koordinat GPS:</u> A1 - 06° 05' 19.182" N 116° 09' 50.374" E A2 - 06° 05' 36.200" N 116° 09' 30.024" E A3 - 06° 05' 17.005" N 116° 09' 29.543" E A4 - 06° 05' 8.649"N 116° 09' 42.928" E	Suku tahun atau mengikut DOE keperluan	Piawaian Kualiti Udara Ambien Malaysia (MAAQS) 2020

PROGRAM PEMANTAUAN ALAM SEKITAR (PERINGKAT OPERASI)

Parameter	Cadangan Lokasi Pemantauan	Cadangan Kekerapan	Piawaian / Garis Panduan
Kualiti Air (Air Permukaan)			
- Suhu - pH - COD - BOD₅ - TSS - O&G - NH₃-N - Oksigen Terlarut - TCC - FCC	W1 - saliran air hujan di hulu tapak projek W2 - saliran air hujan (1) W3 - saliran air hujan (2) W4 - saliran air hujan (3) <u>Koordinat GPS:</u> W1 - 06° 05' 18.599" N 116° 09' 48.924" E W2 - 06° 05' 19.586" N 116° 09' 51.792" E W3 - 06° 05' 20.093" N 116° 09' 52.670" E W4 - 06° 05' 23.229" N 116° 10' 0.0006" E	Tahunan atau mengikut keperluan DOE	Kelas IIB NWQSM
Kualiti Air (Air Tanah)			
- Arsenik - Kadmium - Tembaga - Besi - Plumbum - Mangan - Merkuri - Selenium - Zink	GW1 – Dalam tapak projek <u>Koordinat GPS:</u> GW1 - 06° 05' 18.024" N 116° 09' 50.780" E	Suku tahun atau mengikut keperluan DOE	Piawaian Kualiti Air Tanah Kebangsaan untuk Kualiti Air Minuman Mentah
Kualiti Bunyi			

<u>Program Pemantauan</u> L _{Aeq} (waktu siang dan waktu malam)	N1 - Tapak Projek N2 - Kg. Malawa N3 - Surau Al Hidayah SJ Melawa N4 - Pusat Kemahiran dan Teknologi Sabah <u>Koordinat GPS:</u> N1 - 06° 05' 19.182" N 116° 09' 50.374" E N2 - 06° 05' 36.200" N 116° 09' 30.024" E N3 - 06° 05' 17.005" N 116° 09' 29.543" E N4 - 06° 05' 8.649" N 116° 09' 42.928" E	Tahunan atau mengikut keperluan DOE	Jadual 2: Garis Panduan Perancangan Zon Perindustrian yang Ditetapkan untuk Had dan Kawalan Bunyi Alam Sekitar dalam Alam Sekitar [70 dB(A) pada waktu siang; 65 dB(A) pada waktu malam]
Kualiti Udara			
- Bahan Zarah (PM₁₀) - Karbon Monoksida (CO) - Ozon (O₃) - Sebatian Organik Meruap (VOC)	A1 - Tapak Projek A2 - Kg. Malawa A3 - Surau Al Hidayah SJ Melawa A4 - Pusat Kemahiran dan Teknologi Sabah <u>Koordinat GPS:</u> A1 - 06° 05' 19.182" N 116° 09' 50.374" E A2 - 06° 05' 36.200" N 116° 09' 30.024" E A3 - 06° 05' 17.005" N 116° 09' 29.543" E A4 - 06° 05' 8.649" N 116° 09' 42.928" E	Tahunan atau mengikut keperluan DOE	Piawaian Kualiti Udara Ambien Malaysia (MAAQS) 2020