

# EXECUTIVE SUMMARY

## MEMBINA JALAN BAHARU DARI KAMPUNG GAGU - ULU BERANANG, NEGERI SEMBILAN

### PROJECT OWNER



MINISTRY OF RURAL AND REGIONAL DEVELOPMENT

### PROJECT DEVELOPER



JABATAN KERJA RAYA (JKR)

### ENVIRONMENTAL CONSULTANT



Wiranda(M)<sup>®</sup>  
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SDN BHD

### INTRODUCTION

- Total length of the road is approximately 15,334 m (15.334km).
- The new road alignment will start from existing Jalan Kampung Chenerak (N149), then passing through Kampung Gagu before traverse along Gapau Permanent Forest Reserve and Lenggeng Permanent Forest Reserve and ends at the Y-Junction in Kampung Ulu Beranang.

### STATEMENT OF NEED

- This new road will be the new alternative road for people in Jelebu to travel to Lenggeng or vice versa.
- This new road can also be the shortest road for Jelebu people to travel to Selangor and Kuala Lumpur.
- The project is in line with JALB in Kementerian Pembangunan Luar Bandar (KPLB) which aims to speed up and increase the construction of roads to provide highly needed communication systems in rural areas.
- To provide a rural area with complete and sufficient infrastructure to support economic development as in Rural Development Policy DPLB.
- Part of Negeri Sembilan Outer Ring Road which has been gazetted in RSN Negeri Sembilan 2045.

### LEGISLATIVE REQUIREMENT

First Schedule

Second Schedule

Activity 5 (a)

Activity 20(c)

Activity 5 (b)

Activity 13 (b)

### PROJECT LOCATION

- Located in Mukim Ulu Triang, District of Jelebu and Mukim Lenggeng, District of Seremban, Negeri Sembilan.
- Nearest town is Kuala Klawang (5 km from starting point) and Pekan Ulu Beranang (0.7 km from ending point).



### Legend

- ALIGNMENT
- Chainage Point
- Empangan
- Paved Road



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### PROJECT CONCEPT AND PROJECT COMPONENT

The proposed project will involve the construction of two (2) lanes single carriageway with two different types as follow:

- R2 Rolling Type JKR standard with a design speed of 50kph from CH0.00 until CH3,400 and CH11,700 until End of the CH.
- R2 Mountainous Type JKR standard with a design speed of 60kph from CH3,400 until CH11,700.

The proposed works involve the following; -

- New road with two (2) lanes single carriageway (T1-1) comply with JKR R2 road standard with total length of 15.33km.
- To construct three (3) new bridges as follows:

Bridge No. 1: Crossing Sg. Triang at CH. 352.30

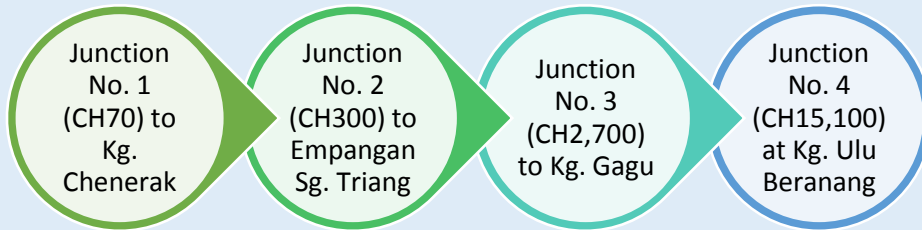


Bridge No. 2: An eco viaduct for wildlife crossing at CH. 7700.00



Bridge No. 3: Crossing Sg. Kenol at CH. 11667.800

- Proposed and upgrade four (4) junctions: -



### PROJECT ACTIVITIES

#### Pre - Construction

- Data collection, Preparation of construction drawing, EIA approval, Land acquisition, Logging permit

#### Construction

##### Site Preparation

- Site clearing, grubbing, stripping

##### Logging

- Felling of trees and vegetative clearing within the RoW

##### Earthwork

- Removing unsuitable materials (USM)
- Stockpiling

##### Geotechnical Work

- Cut and fill
- Blasting

##### Road Construction

- Construction of road (paving, rolling) and permanent drainage system.
- Bridge construction (piling, installing pile cap, etc.)
- Transportation of construction materials to the project site

##### Road Furniture

- Road marking, rumble strip, traffic barrier, signboards

#### Operation

- Site maintenance (road and drainage)
- Traffic management (if necessary).

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### EXISTING ENVIRONMENT

#### TOPOGRAPHY

- Generally rolling and mountainous Elevation: 40 m to 542 m above mean sea level
- Slope:

0° - <15°	54.10 %
15° - <25°	31.83 %
25° - <35°	12.90 %
>30°	1.17 %

#### HYDROLOGY

The north side of the project site:

- Sungai Gagu and Sungai Legap ->Sungai Triang -> Sungai Pahang.

The south west of the project site:

- Sungai Panggal, Sungai Gebal, Sungai Kenol and Sungai Chenar -> Sungai Beranang -> Sungai Semenyih -> Sungai Langat.

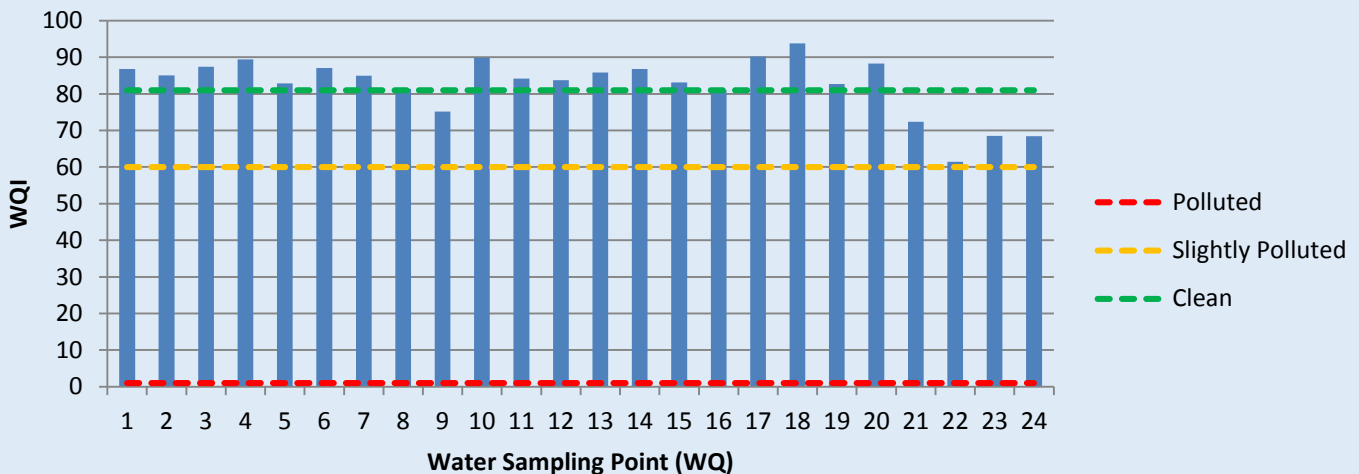
#### WATER QUALITY

- 24 sampling points were selected
- Class I: WQ8
- Class II: WQ1,WQ2,WQ3,WQ4,WQ5,WQ6,WQ7, WQ10,WQ11,WQ12,WQ13,WQ14,WQ15,WQ16,WQ17,WQ18,WQ19,WQ20
- Class III: WQ9,WQ21,WQ22,WQ23,WQ24

#### NOISE LEVEL

- 5 sampling stations
- Point N4 and N5 for both day and night did not complied with the recommended limits due to vehicular movements.

#### WATER QUALITY INDEX



#### AMBIENT AIR QUALITY

- 6 sampling stations .
- All sampling points complied with the limits prescribed in the New Malaysia Ambient Air Quality Standard 2020.

#### VIBRATION

- 5 sampling stations .
- All sampling points complied with the recommended limits except V1 and V5 (daytime) and V1 and V3 (night).

#### LAND USE

- Project alignment traverse across settlement area (Kg. Gagu), Gapau FR, Lenggang FR and agricultural areas.
- Nearby identified landuse are Sg. Triang Dam, PMU Lenggang and other settlement areas (KOA, etc.).

#### PUBLIC HEALTH

- Concerning disease within study area: food poisoning, hepatitis A, hepatitis B, dengue fever, gonorrhoea, syphilis, HIV, hepatitis C, leptospirosis, COVID-19.

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### EXISTING ENVIRONMENT

#### GEOLOGY

- Data collected from 21 geological stations and 12 boreholes.
- The proposed road alignment is located mainly in granite (100%).
- Three types of geologic materials that were discovered:
  - Granite residual of soil
  - Fine to medium grained granite
  - Medium to coarse grained granite
- One major fault intercept the project alignment called Seremban Fault line, trending NW-SE.
- No existence of economic minerals at the proposed project site.
- Geological Terrain study :

Suitability for Development	Class	Site Area (%)
Green	I	54.10
Yellow	II	31.83
Blue	III	12.90
Red	IV	1.17

#### TERRESTRIAL ECOLOGY (FLORA)

- 212 species within 58 families of plants were recorded.
- Euphorbiaceae was the most species family for the whole survey (21 species) followed by Phyllanthaceae, Rubiaceae and Fabaceae (11-12 species respectively).

#### TRAFFIC

- Traffic count was conducted at 8 different locations nearby project site.
- Car and motorcycles constitute the main proportion of the total traffic stream.
- State Route N32 (Jalan Kuala Klawang-Titi) / State Route N132 Priority Junction (J1) already operating at level of service "E" during morning peak hour period.



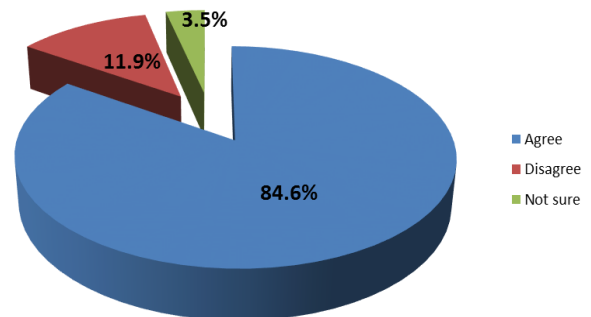
#### METEOROLOGY

- Meteorological station = KLIA Sepang (2011-2021).
- February shows the lowest average monthly rainfall (98.55 mm).
- November shows the highest monthly average rainfall (295.5 mm).

#### SOCIO – ECONOMY

- Total of respondents = 371
- Nearest settlement area: Kg. Gagu and Kg. Sungai Legum
- Kg. Orang Asli : KOA Jeram Kedah (100m) and KOA Lumut (3km)

Level of Acceptability of the Project



#### TERRESTRIAL ECOLOGY (FAUNA)

- 23 species of mammals belonging to 12 families were recorded.
- Wild Boar, Pig-tailed Macaque, Dusky Leaf Monkey and Long-tailed Macaque were recorded as abundant.
- Leopard Cat (*Panthera pardus* and *Prionailurus bengalensis* – Family: Felidae) were categorized as Endangered (EN).
- 74 species of birds belonging to 37 families were recorded.
- The most commonly recorded species: Zebra Dove, Spotted Dove, Yellow-vented Bulbul and Javan Myna.
- 45 species of herptiles from 15 families were existed (amphibians = 17 species, reptiles = 28 species).
- Reticulated Python and Cobras, Water Monitor Lizard, Common Sunskink, Oriental Garden Lizard.

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## MEMBINA JALAN BAHARU DARI KAMPUNG GAGU - ULU BERANANG, NEGERI SEMBILAN

### POTENTIAL IMPACT & MITIGATION MEASURES

POTENTIAL IMPACTS	MITIGATION MEASURES
<p><b>Air Quality</b></p> <ul style="list-style-type: none"><li>Air-borne pollution from earthwork activity and use of heavy duty construction equipment and machineries.</li><li>Dust generation from heavy vehicles in and out from the site.</li></ul> <p><u>Operational stage</u></p> <ul style="list-style-type: none"><li>Air pollutants generated by motor vehicles (insignificant).</li></ul>	<ul style="list-style-type: none"><li>Install hoardings (if necessary) around the construction areas.</li><li>The wheels and tyres of vehicles must be washed free from silt and mud before leaving the site (wash trough/ water jet).</li><li>Vehicle speeds should be limited within the project site.</li><li>Respiratory protection equipment (RPE) must be provided to the worker.</li></ul>
<p><b>Noise Level &amp; Vibration</b></p> <ul style="list-style-type: none"><li>Noise and vibration generated during construction work (blasting, piling, materials transportation, earthwork).</li><li>Nuisance to nearby community.</li></ul> <p><u>Operational stage</u></p> <ul style="list-style-type: none"><li>Noise and vibration from moving vehicles and maintenance work (insignificant).</li></ul>	<ul style="list-style-type: none"><li>Servicing and maintaining vehicles &amp; machineries.</li><li>Installing silencers or using quitter machinery.</li><li>Minimizing working times during public holidays.</li></ul>
<p><b>Water Quality</b></p> <ul style="list-style-type: none"><li>Decrease water quality level.</li><li>Loose sediment being carried off site via surface runoff (sedimentation).</li><li>Sewage and accident spillage from skid tank and machineries.</li></ul> <p><u>Operational stage</u></p> <ul style="list-style-type: none"><li>Suspended sediment causing silting of the water way.</li><li>Accidental spill of oils &amp; chemical from vehicles.</li><li>Litter is unsightly and pollutes the waterways.</li></ul>	<ul style="list-style-type: none"><li>Installation of BMPs such as silt trap, silt fence crusher run, temporary earthdrain, etc.</li><li>Provide temporary and portable toilet.</li><li>Provide containment bund for skid tank.</li><li>Regular maintenance for machineries.</li></ul>
<p><b>Soil Erosion and Sedimentation</b></p> <ul style="list-style-type: none"><li>Soil erosion and sedimentation will occur during site clearing and earthwork activities.</li><li>Reduce river depth/drain capacity.</li></ul>	<ul style="list-style-type: none"><li>Scheduling of the development.</li><li>Installation of BMPs such as silt trap, silt fence, crusher run, temporary earthdrain, etc.</li><li>Retain buffer zone.</li></ul>
<p><b>Geology</b></p> <ul style="list-style-type: none"><li>Permanent change of surface morphology and physical landforms.</li><li>Removal of lateral support or loading resulting in major land slippage.</li><li>The fault zones may increase the probability of slope failures and groundwater seepage.</li><li>Geohazards (landslides and debris flow) during construction and operational stage.</li></ul>	<ul style="list-style-type: none"><li>Only areas required for the creation of new road shall be cut and cleared.</li><li>Cutting shall be minimised and the height of cut and fill shall be limited to slopes of 6 m before benching.</li><li>Treatment using anti seismic measures such as engineering grille, pile and retaining wall shall be undertaken.</li><li>Rock fissure grouting shall be carried out to prevent the infiltration of groundwater from base of excavations.</li></ul>

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### POTENTIAL IMPACT & MITIGATION MEASURES

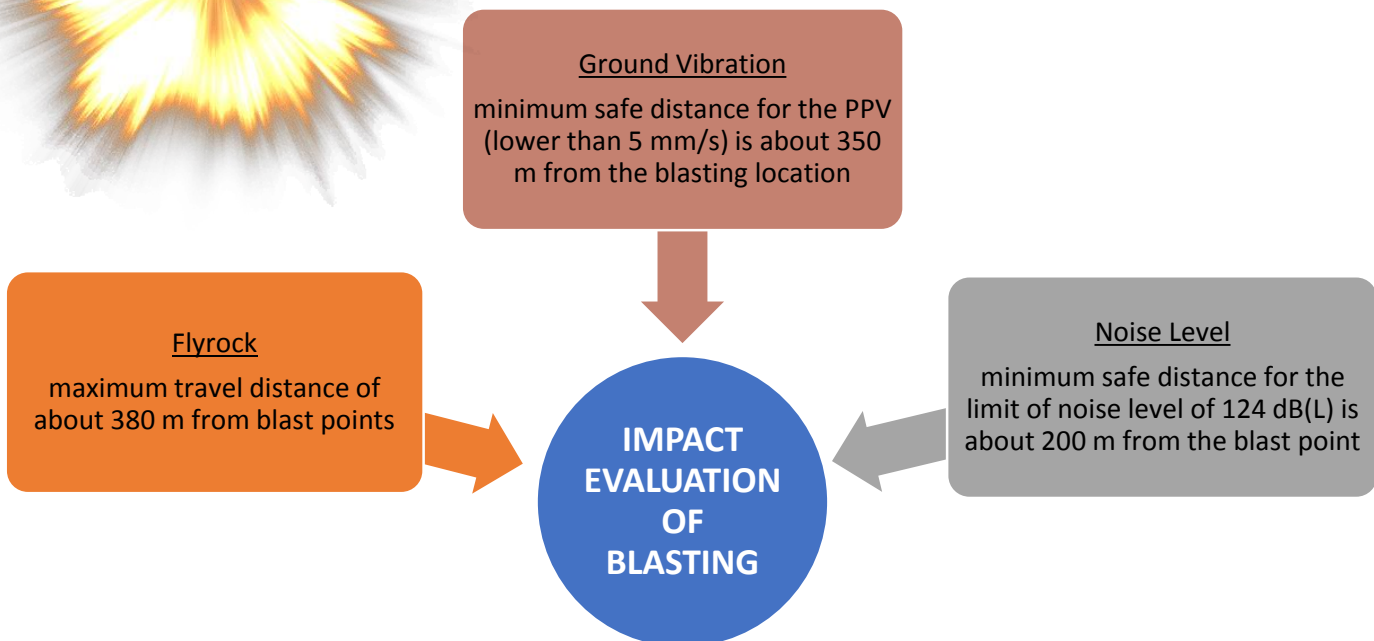
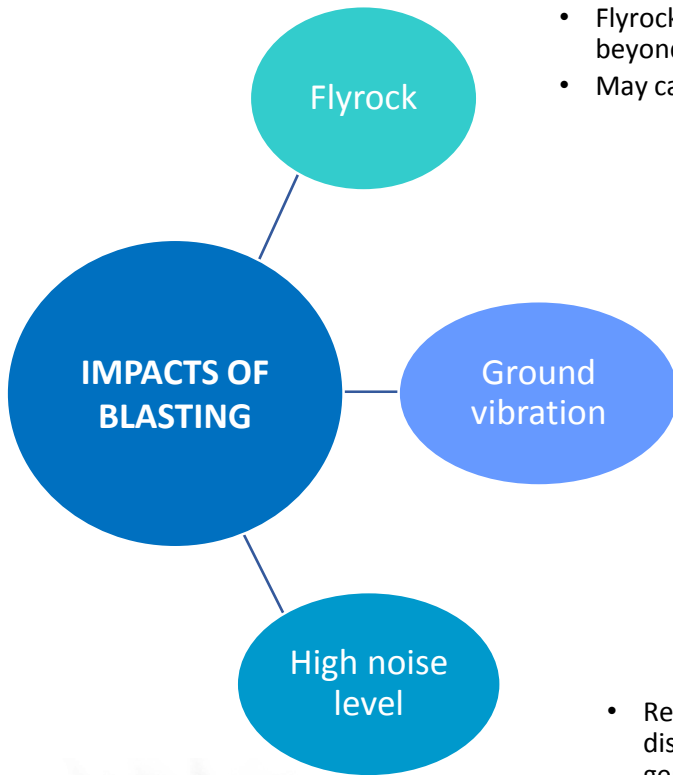
POTENTIAL IMPACTS	MITIGATION MEASURES
<b>Hydrology</b> <ul style="list-style-type: none"> <li>The increased of surface run-off during construction activities.</li> <li>Flooding problem due to increase of directly connected impervious area.</li> </ul>	<ul style="list-style-type: none"> <li>Installation of BMPs such as silt trap, silt fence, crusher run, temporary earthdrain, etc.</li> </ul>
<b>Waste Generation</b> <ul style="list-style-type: none"> <li>Biomass</li> <li>Sewage and solid waste</li> <li>Scheduled waste</li> <li>Construction waste</li> </ul>	<ul style="list-style-type: none"> <li>No open burning.</li> <li>Provide garbage and RORO bins.</li> <li>Proper storage area.</li> <li>Proper waste management according to SW regulations</li> </ul>
<b>Traffic</b> <ul style="list-style-type: none"> <li>Increase in the number of heavy vehicles plying the roads during construction stage.</li> </ul>	<ul style="list-style-type: none"> <li>Provide Traffic Management Plan (TMP).</li> <li>Prepare a Transportation Plan for their heavy vehicles to access the work sites.</li> <li>Movement of vehicles should be done within working hours only.</li> </ul>
<b>Ecology</b> <b>Flora</b> <ul style="list-style-type: none"> <li>Vegetation loss</li> <li>Change in forest profile</li> <li>Reduction in soil quality</li> <li>Retard of growth and development (operational stage)</li> </ul> <b>Fauna</b> <ul style="list-style-type: none"> <li>Loss of species diversity and poaching</li> <li>Human-wildlife conflict</li> <li>Roadkills</li> <li>Loss of habitat and illegal hunting of avifauna</li> </ul>	<ul style="list-style-type: none"> <li>Monitor vegetation changes at all stage and area.</li> <li>Create routes for wildlife to relocate to other areas in adjacent forests.</li> <li>Safe translocation methods should be made to ensure preservation of wildlife.</li> <li>Prohibit wildlife hunting and poaching.</li> <li>Collaborate with the Department of Wildlife and National Park (DWNP) in the event of human-wildlife conflicts.</li> <li>The Wildlife Management Plan (WMP) should be referred and followed.</li> </ul>
<b>Socio-economy</b> <ul style="list-style-type: none"> <li>Lost of income of Orang Asli Jeram Kedah.</li> <li>Influx of workers.</li> <li>Disruption of river water supply.</li> <li>Traffic disruption.</li> <li>Pollution (air, noise and vibration).</li> <li>Human-wildlife conflict.</li> </ul> <u>Operational stage</u> <ul style="list-style-type: none"> <li>Increase traffic volume.</li> <li>Travel time and cost saving.</li> <li>Increase land and property values.</li> <li>Promote growth and development.</li> </ul>	<ul style="list-style-type: none"> <li>Residents shall be notified first before any site works to allow them to prepare themselves.</li> <li>Project Proponent must provide adequate utilities, amenities, and facilities to the foreign workers.</li> <li>The existing remaining Orang Asli Jeram Kedah's land reserve should remain untouched and be reserved with proper fencing.</li> </ul>
<b>Health</b> <ul style="list-style-type: none"> <li>Ambient air hazards (PM10, PM2.5, SO2, NO2, CO, O3) due to earthwork and heavy vehicles movement.</li> <li>Noise (disturb growth and mental health).</li> </ul>	<ul style="list-style-type: none"> <li>Project proponent should adhere to FOMEMA rules and guidelines on the employment of any foreign workers.</li> <li>Advanced notice is required with appropriate signages.</li> </ul>

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### POTENTIAL IMPACT & MITIGATION MEASURES

- Flyrock is a rock fragment ejected into the air that flies beyond the blasting area.
- May cause injuries to people and damage to property.
- The explosives energy decreases to a level, which causes no further shattering or displacement and continues to travel through the rock as an elastic ground vibration.
- Consists of 2 types: surface wave & body wave.
- The effects of ground vibration on human and structure depend on the individual psychology and the sensitivity of structures.
- Related to airblast as large quantity of expanding gases dissipates its energy into the atmosphere, thereby generating shock waves.
- Consists of both audible (noise) and inaudible (concussion) energy may reach peak action level and causing damage to structures as well as annoyance to humans.



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### PERFORMANCE MONITORING (PM)

LD-P2M2 TOOLS	PARAMETERS	RECOMMENDED LIMITS	FREQUENCY
Sediment basin/trap	Silt marker	2/3 depth from sediment trap	Weekly or after rain event (in- situ)
Perimeter drain	Performance	-	Quarterly
Earth drain with check dam	Sediment level		
Wash trough	Sediment level		
Temporary or permanent waterway crossing(culvert/bridge	Structure and performance		

### COMPLIANCE MONITORING (CM)

COMPONENTS	PARAMETERS	COMPLIANCE LIMITS	FREQUENCY
Air quality	PM <sub>10</sub>	100 µg/m <sup>3</sup>	Quarterly
Noise level	L <sub>Aeq</sub>	Day 60 dBA Night 55 dBA	Quarterly
Vibration	Peak Particle Velocity at Z-axis	Guidelines for Environmental Vibration Limits & Control	Quarterly
Water quality (Discharged from silt trap/ sediment basin)	Total suspended solids (TSS)	50 mg/l	Monthly or after 12.5mm rainfall (refer to rain gauge)
	Turbidity	250 NTU	

### IMPACT MONITORING (IM)

COMPONENTS	PARAMETERS	COMPLIANCE LIMITS	FREQUENCY
Air quality	PM <sub>10</sub>	100 µg/m <sup>3</sup>	Quarterly
Noise level	L <sub>Aeq</sub>	Day 60 dBA Night 55 dBA	Quarterly
Vibration	Peak Particle Velocity at Z-axis	Guidelines for Environmental Vibration Limits & Control	Quarterly
Water quality	TSS	50 mg/l	Monthly
	Turbidity	50 NTU	
	DO	5-7 mg/l	
	BOD	3 mg/l	
	COD	25 mg/l	
	NH3-N	0.3 mg/l	
	pH	6-9	