EXECUTIVE SUMMARY

INTRODUCTION

This is an Environmental Impact Assessment (EIA) prepared for Nam Heng Brothers Housing Sdn. Bhd. for the **"*CADANGAN INDUSTRI KUARI DI ATAS LOT 192, 198, 200, 238, 251, 1475, 1484, 1485, 1486, DAN 1928, MUKIM 17, JALAN BERAPIT, DAERAH SEBERANG PERAI TENGAH, PULAU PINANG*"**. This an EIA report is to be submitted to Department of Environment (DOE), Pulau Pinang. Hereafter it will be known as 'the Project'.

PROJECT PROPONENT AND QUALIFIED PERSON

PROJECT OWNER AND PROJECT PROPONENT

NAM HENG BROTHERS HOUSING SDN. BHD. (NHBH)

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PROJECT PROPONENT AND QUALIFIED PERSON

QUARRY OPERATOR

BOON YONG LEE CONSTRUCTION SDN. BHD. (BYL)

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Contact Person : Boon Cheon Sheon

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EIA CONSULTANT (FIRM)

KAMARUDDIN HARUN CONSULTANTS SDN. BHD. (KHCSB)

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EIA STUDY TEAM MEMBER

EIA Team Leader

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Project Description, Erosion and Sediment Control, Quantitative Risk Assessment

EIA Team Member

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Air and Noise Modelling
2. Ts. Siti Isma Hani binti Ismail
EIA Consultant & Subject Specialist (CEP-CS0436)
Social Impact Study
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Subject Specialist (CEP-SS0464)
Mining and Quarrying
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EIA Consultant (CEP-CS0036)
Water Quality Monitoring, Water Quality Assessment, Waste Management

EIA Assistant Consultant

1. Nurjannah Kamaruddin
Assistant Consultant (CEP-AC0132)
Social Survey, Land Use
2. Cheah Jin Xun
Assistant Consultant (CEP-AC0771)
Project Coordinator, Water Quality Modelling, Erosion and Sediment Control

LEGISLATIVE REQUIREMENTS

This Project which falls under First Schedule, Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 2015:

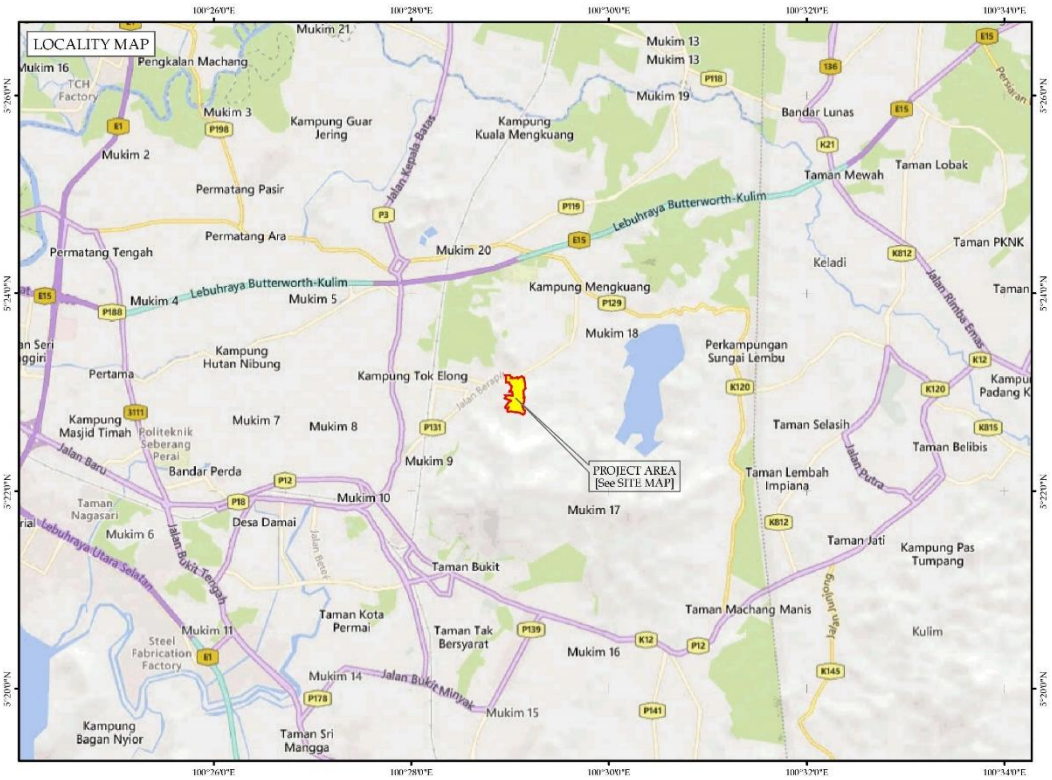
- Activity 19: Quarry: Quarrying of Rock Material

STATEMENT OF NEED

- The value of construction works in Pulau Pinang has grown by 45.76% from RM 6.575 billion in 2018 to RM 9.584 billion in 2023. Opening a new quarry could help meet these demands and support ongoing infrastructure projects in Pulau Pinang.
- Quarrying activities can contribute to the local economy by creating job opportunities and generating revenue through the sale of extracted materials. This could be seen as a potential economic boost for the region.
- Local supply of aggregates has decreased as the aggregate output in Pulau Pinang has decreased by 20.45% from 5.33 million Metric Tonnes (MT) in 2016 to 4.24 million MT in 2022, and the number of quarries operating in Pulau Pinang has decreased from 17 nos. in 2016 to 11 nos. in 2022. A local quarry can reduce transportation costs and environmental impact associated with transporting materials from distant quarries, thereby promoting sustainability and supporting the local supply chain.
- Opening a new quarry in Penang could provide a more reliable and consistent source of construction materials.
- New quarry would meet the demands of the growing population and industry while addressing environmental concerns and sustainability issues raised by local authorities and residents.
- The need for this Project is therefore justified from environmental and health point of view, besides offering scope for economic growth, as well as business and job opportunities.

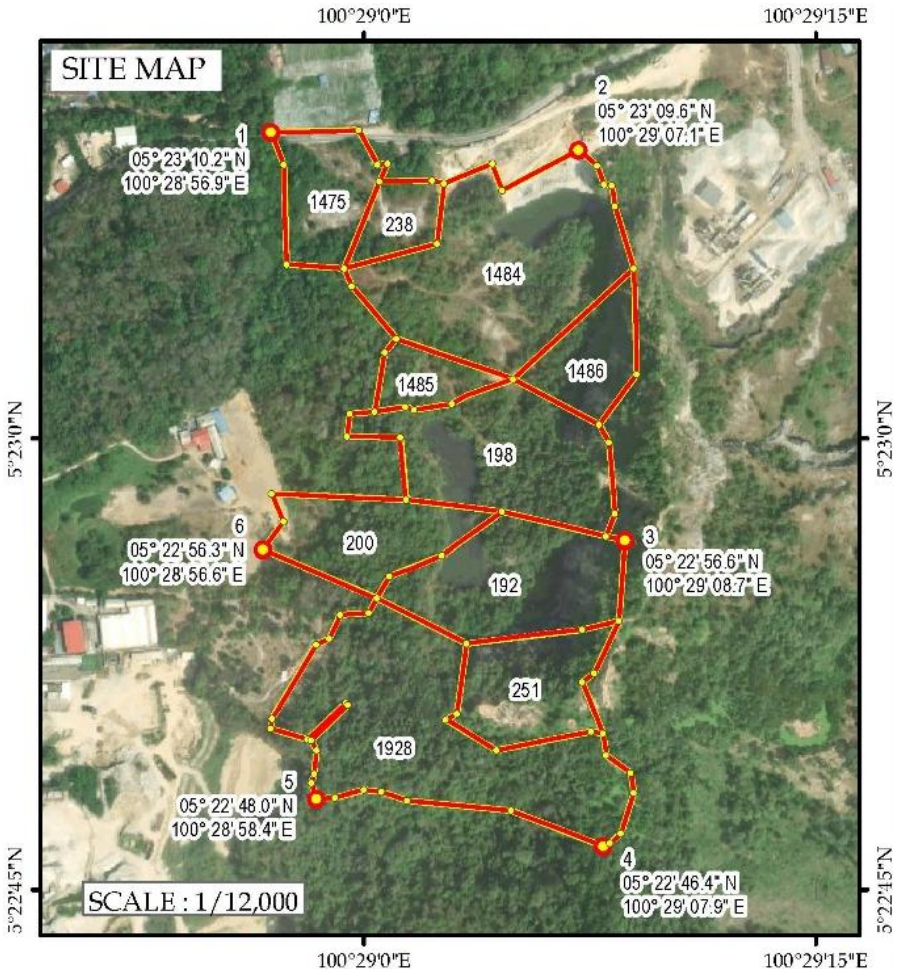
PROJECT LOCATION

LOCALITY MAP



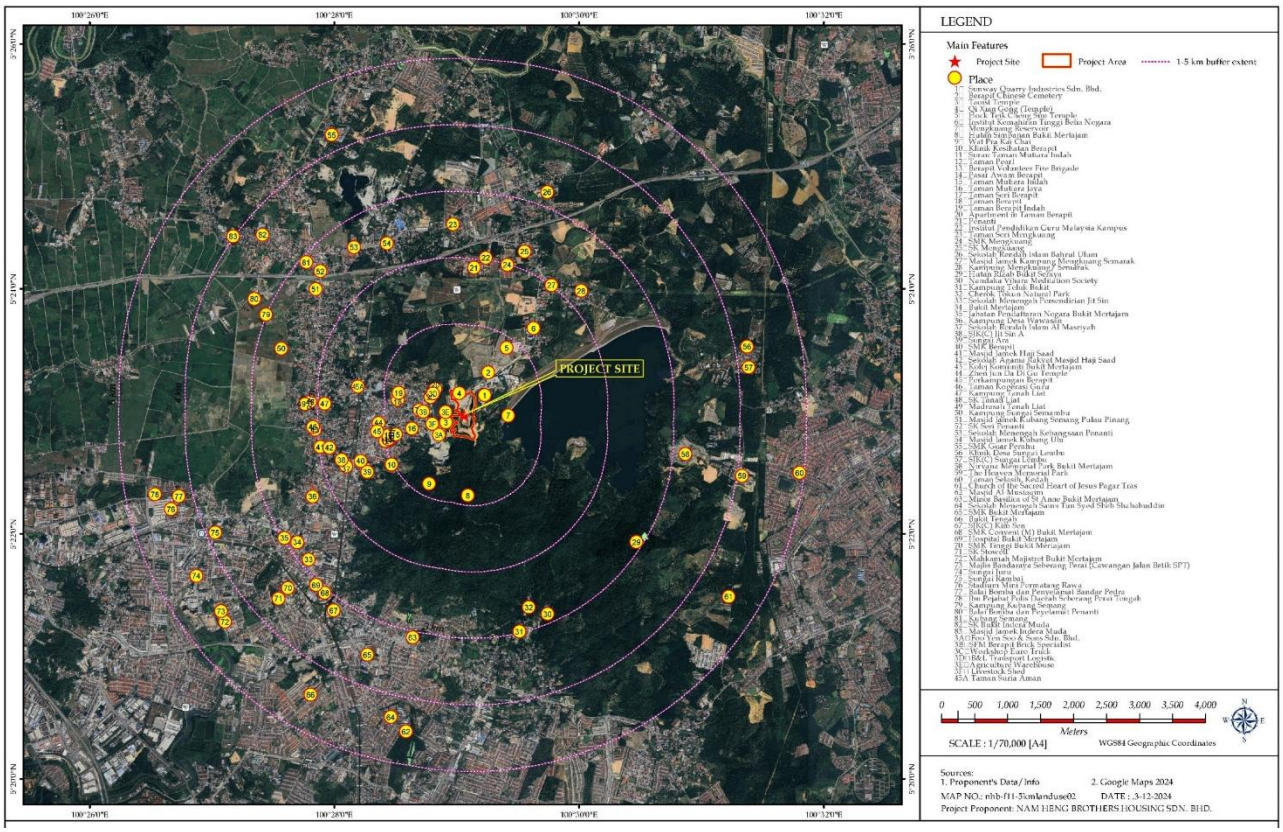
Source: Project Proponent's Data/ Info, Bing Maps 2023, Google Earth 2023

SITE MAP



Source: Project Proponent's Data/ Info, Google Earth 2023

LANDUSE MAP – 5 KM



Source: Proponent's Data/ Info, Google Earth, Satellite Map, 2024

SENSITIVE RECEPTORS

Mengkuang Dam

Berapit Chinese Cemetery

Perkampungan Berapit

Nearest Institution – Klinik Kesihatan Berapit

Taman Mutiara Jaya

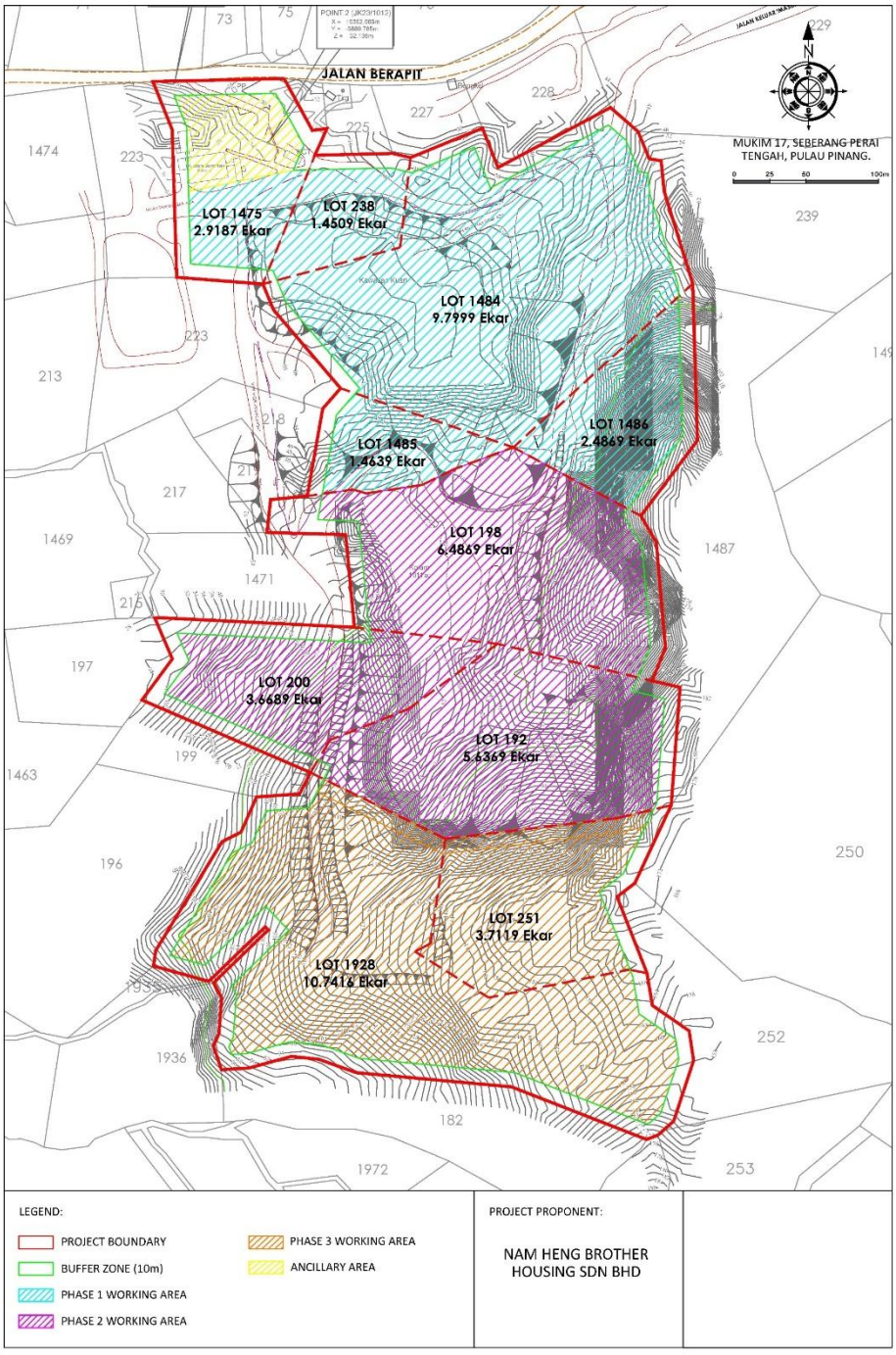
SMK Berapit

Source: Land Use Assessment, 2022

DETAILS OF LAND USAGE

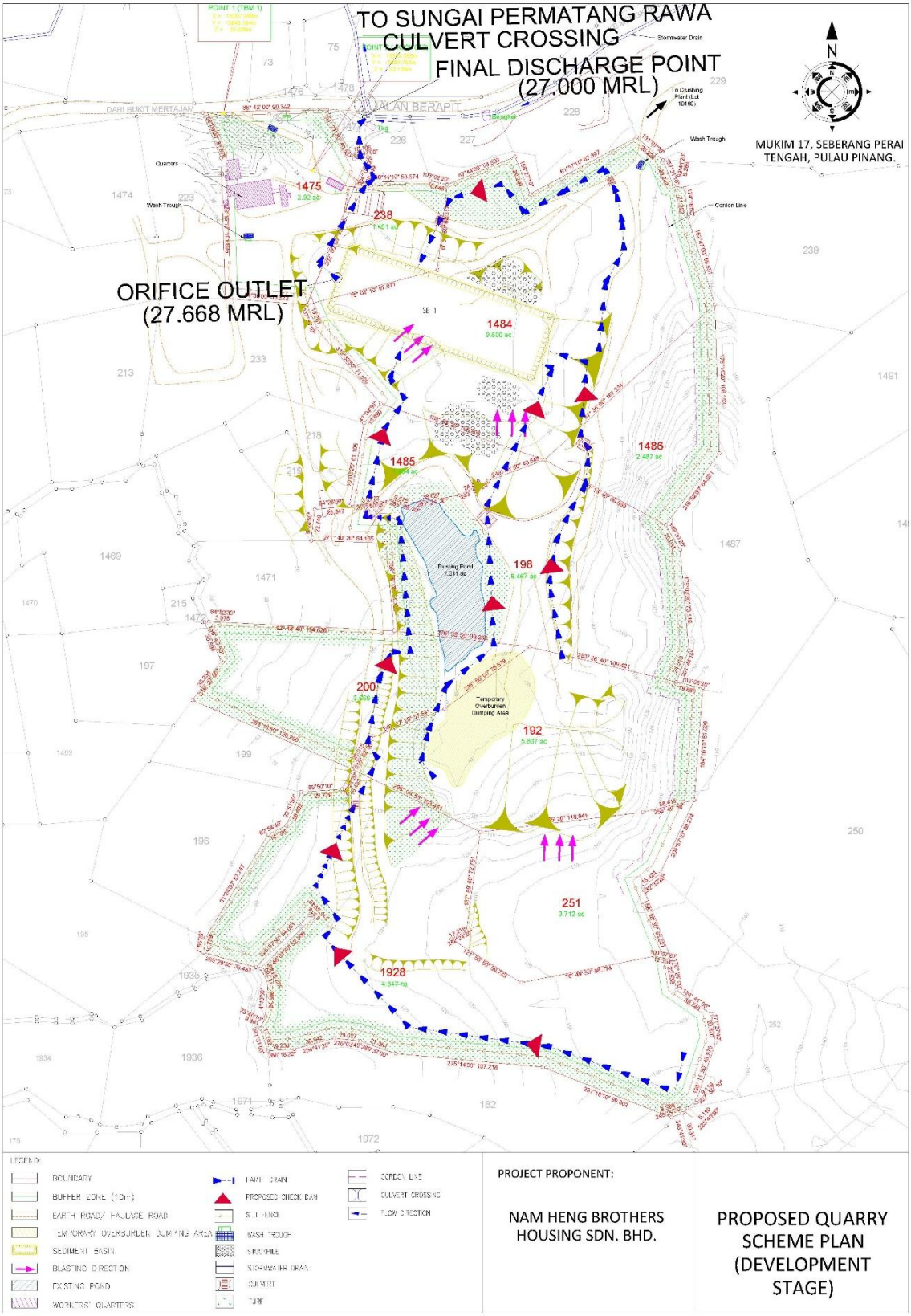
No.	Usage	Area (Ha.)	Percentage (%)
1.	Phase 1 working area	5.8353	29.8
2.	Phase 2 working area	5.6589	28.9
3.	Phase 3 working area	4.8959	25.0
4.	Ancillary Area	0.4424	2.3
5.	Buffer zone	2.7407	14.0
	Total	**19.5732**	**100.0**

Source: Project Proponent's Info, Consultant's Calculation



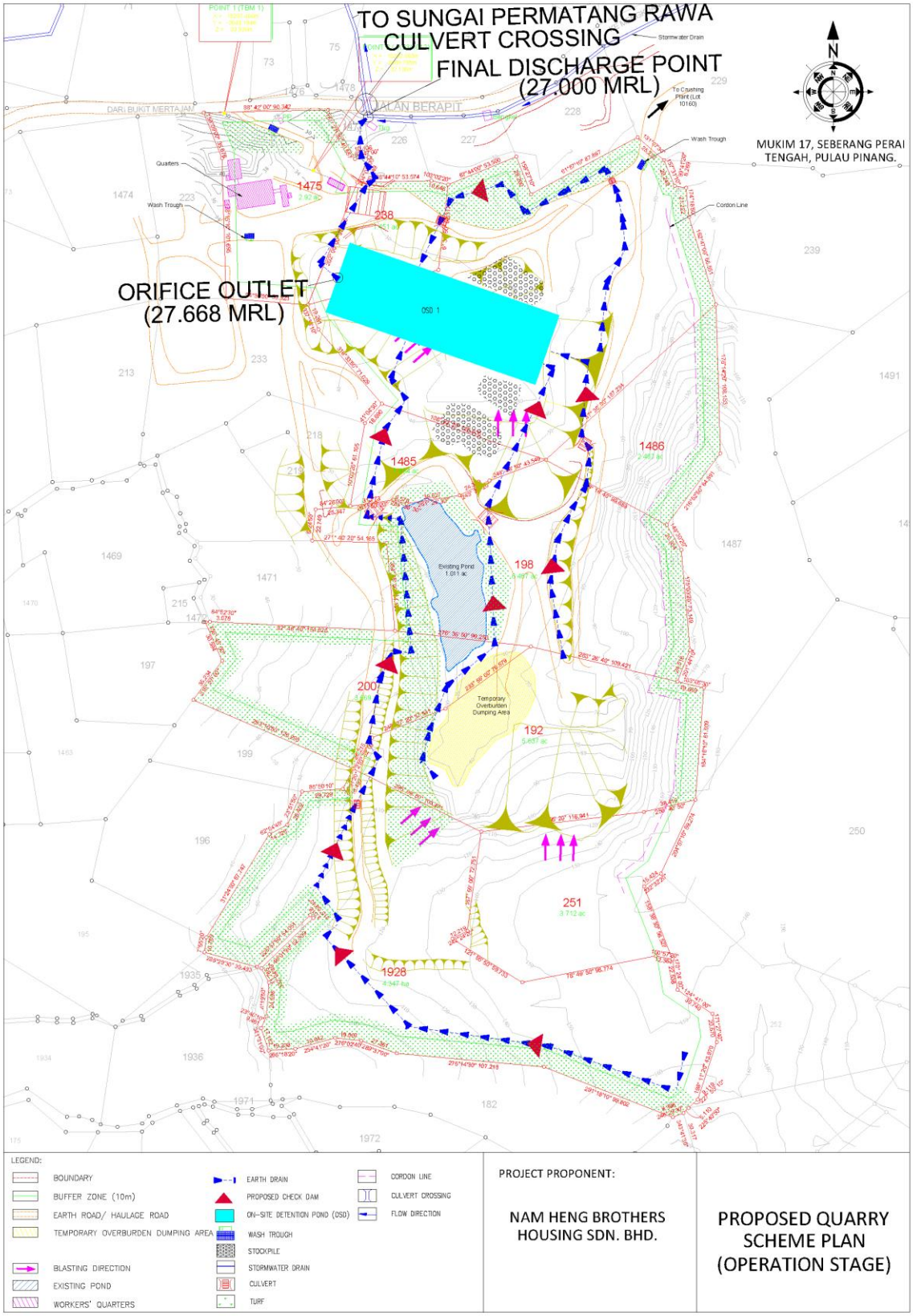
Source: Survey Info, Project Proponent's Info, Consultant's Assessment

PROPOSED QUARRY SCHEME LAYOUT (DEVELOPMENT STAGE)



Source: Survey Info, Project Proponent's Info, Consultant's Planning

PROPOSED QUARRY SCHEME LAYOUT (OPERATION STAGE)



Source: Survey Info, Project Proponent's Info, Consultant's Planning

PLANNED PRODUCTION RATE

Month	Production (MT)
1st Month	5,000
2nd Month	10,000
3rd Month	15,000
4th Month	20,000
5th Month	25,000
6th Month	30,000
7th Month (Optional)	40,000
8th Month (Optional)	50,000

Source: Consultant's Estimation, Project Proponent's Info

QUARRY OPERATION LIFE

The expected operational life of the quarry is 28 years.

COMPOSITION OF PRODUCTS

Aggregate Type	Aggregate Proportion (%)
0 – 5 mm Crushed Rock	15
5 – 10 mm Crushed Rock	15
10 – 20 mm Crushed Rock	30
20 – 35 mm Crushed Rock	20
35 – 50 mm Crushed Rock	15
Waste Product	5

Source: Consultant's Estimation, Project Proponent's Info

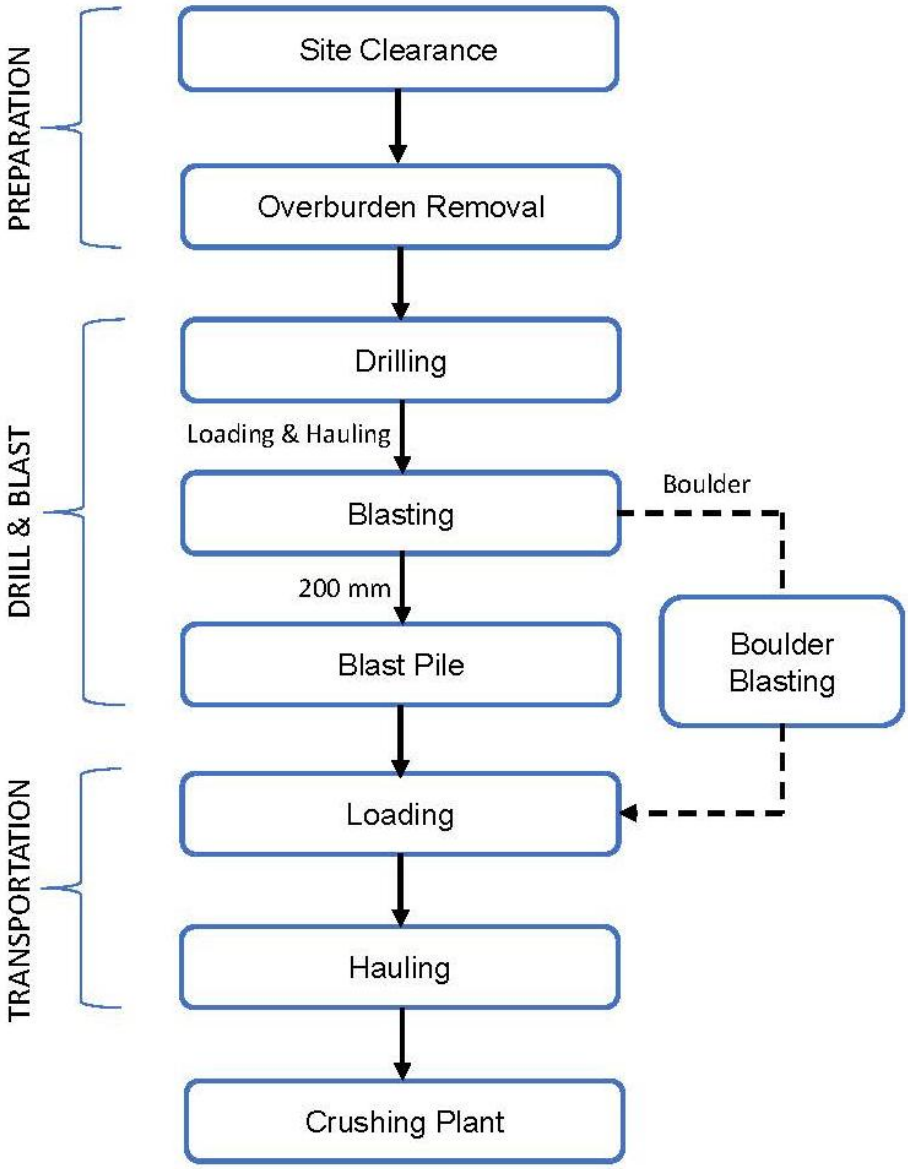
PROJECT DESCRIPTION

PROJECT STAGES

Project operation involves the following stages:

- Investigation stage – investigation of the impact of Project to surrounding.
- Development stage – it involves construction of facilities for operation stage activities.
- Operation stage – it involves rock extraction, processing, transportation, sales and maintenance.
- Abandonment stage – unforeseen event of abandonment or cessation of Project.

PROJECT OPERATION FLOWCHART



Source: Project Proponent's Info, Consultant's Estimation

PROJECT ACTIVITIES

INVESTIGATION PHASE

- Site investigation
- EIA report study

DEVELOPMENT PHASE

- Site Clearing and Earthwork
- Transportation and Stockpiling of Overburden
- Placement of Infrastructure and Construction of Building

OPERATION PHASE

- Maintenance of Access Road
- Drilling Operation
- Blasting Operation
- Haulage of Overburden and Blasted Rock
- Storage and Stockpile of Overburden

ABANDONMENT PHASE

- Progressive Rehabilitation, Final Rehabilitation and Reclaimation

EXISTING ENVIRONMENT

GEOLOGY

Intrusive rocks, acid intrusives (undifferentiated).

TOPOGRAPHY

This Project will be sited within Mukim 17, Daerah Seberang Perai Tengah that have elevation between 28 m to 188 m RL.

SOILS

Holyrood-Lunas and Steep Land

CLIMATE

Climate Data Station for Year 2012 to 2022: Butterworth
Average Annual Rainfall: 2,294.3 mm
24-hr mean temperature: 27.2ºC to 28.6ºC
24-hr mean relative humidity: 73.8% to 84.2%
Surface winds often blow from the east direction (27.5%), followed by northeast (16.9%) and then northwest (13.3%) and west (10.6%).

HYDROLOGY

The surface runoff will be discharged to external monsoon drain, and then to Sg. Permatang Rawa and Sg. Juru.

LANDUSE

Within the Project site:

- The immediate neighboring lots of the Project site is Qi Xian Gong (Temple).

Within 3-km Radius from the Boundary of the Project site:

- The surrounding area within 1 km radius from the boundary, there are existing agricultural, forest, water body, worship, and residential areas.
- Landuse within 1 km hingga 3 km radius from the boundary of the Project site area made up of agricultural, institution, residential, forest and infrastructure and utility areas.

PERFORMANCE MONITORING (PM) PROGRAM

The proposed Project site is installed with sediment control to mitigate soil erosion impact. The performance monitoring shall be conducted to ensure the LD-P2M2 facilities are performing effectively.

The PP shall appoint dedicated and trained personnel to monitor the performance of the LD-P2M2 facilities. These personnel shall be trained under DOE competent person training courses.

The appointed trained person with competency should conduct the preventive maintenance of LD-P2M2 facilities in different periods of time such as weekly, monthly, semi-annually. The procedures for the preventive maintenance facilities are shown in table below.

No.	Control Measures	Monitoring Frequency	Inspection
1.	Silt Traps/ Sediment Basins	After every rain or storm event and on a regular basis at least twice per week, especially in locations where earthwork activity is in progress or in areas where permanent protective measures have yet to be carried out	• Amount of silt/sediment retained – no more than 2/3 of the depth of the silt trap or 66% of the total basin volume • Integrity of side walls and bund – there must not be any leaks or breaches of the bund walls where water can bypass the bund wall or the pipe outlet • The aggregate material surrounding the perforated pipe should be inspected to ensure that these are not compacted with settled silt • Presence of vegetative debris or construction waste material inside the silt trap • Water discharge from silt trap/sediment basin to be inspected shall not have a value greater than permissible of TSS concentration and NTU value for turbidity determined by DOE, as specified in the EIA Approving Conditions.

PERFORMANCE MONITORING (PM) PROGRAM

No.	Control Measures	Monitoring Frequency	Inspection
2.	Silt Fence	After every rain or storm event and on regular basis at least twice per week, especially in areas where active earthworks are in progress and on slopes where permanent protective measures have not been implemented	• Sediment accumulation – where large amounts of sediment has accumulated on the upside of the silt fence, these should be cleared so as not to collapse the fence • Integrity of fence supports – the silt fence must be vertical and not have collapsed over due to surface water flow • Integrity of silt fence material – must not be breached or torn or missing in any form that allows water to bypass • Presence of vegetative debris or construction waste material inside the silt fence
3.	Temporary Drain	Must be inspected after every rain or storm event and also on a weekly basis	• Presence of erosion in drain • Presence of accumulated sediments
4.	Drainage Outlet Protection	After each significant rainfall	• to be inspected for erosion and/or disruption of the rock (followed by immediate repairs)
5.	Check Dams	After each rainfall	• inspected for sediment build-up and signs of erosion around the check dam
6.	Stabilized Construction Access	Inspected monthly and after each rainfall event	• Presence of surface voids • Presence of sediment deposited on paved roadways

Source: Guidelines on Land-Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2), 2017

COMPLIANCE MONITORING (CM) PROGRAM

Compliance monitoring (CM) is the monitoring of the performance of the implemented P2M2 within the facility, which shall be carried periodically to ensure the proposed P2M2 to be implement and EIA conditions of approval (COAs) are complied all the times during the operation. It could assess the overall project compliance and provide opportunity for optimization and further improvement in environmental management of the Project.

Compliance Monitoring for water discharge from the silt trap or sediment basin is on Total Suspended Solids (TSS) and turbidity parameter, and the respective compliance level is 50 mg/L and 250 NTU.

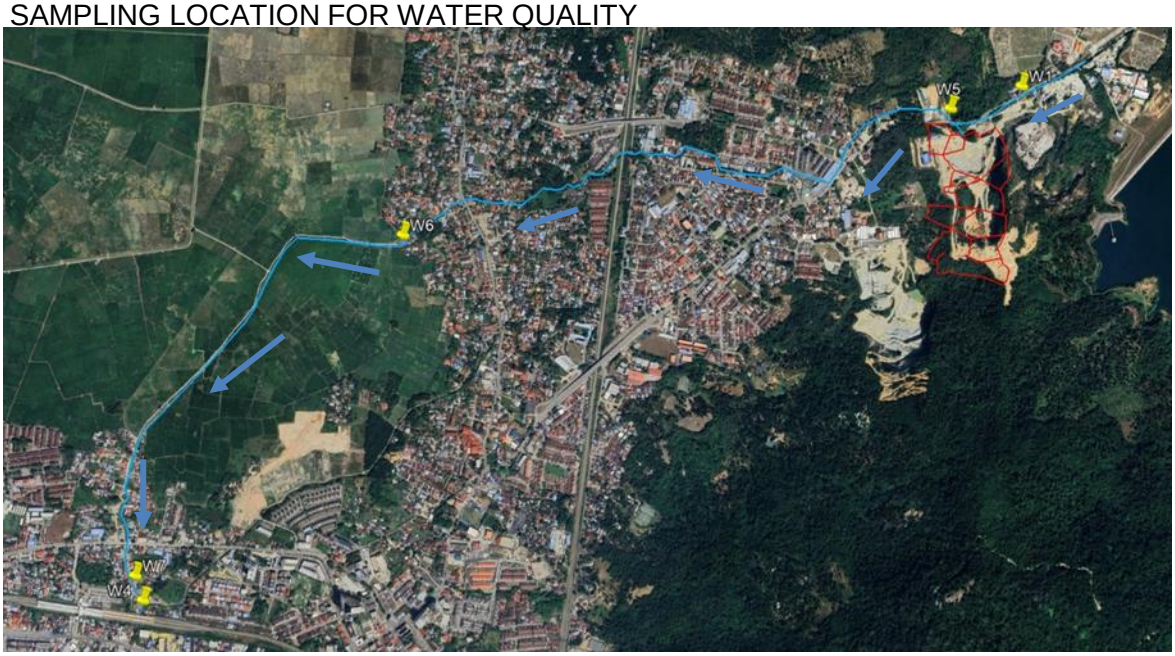
IMPACT MONITORING (IM) PROGRAM

An environmental impact monitoring (IM) program to identify the predicted and unanticipated changes to the environment brought about by the proposed Project will be carried out as stated below.

A quarterly Environmental Quality Monitoring Report is recommended for submission to DOE based upon monitoring data collected monthly, quarterly or annually. The locations and frequencies of monitoring are shown in the table below.

IMPACT MONITORING (IM) PROGRAM

SAMPLING LOCATION FOR WATER QUALITY



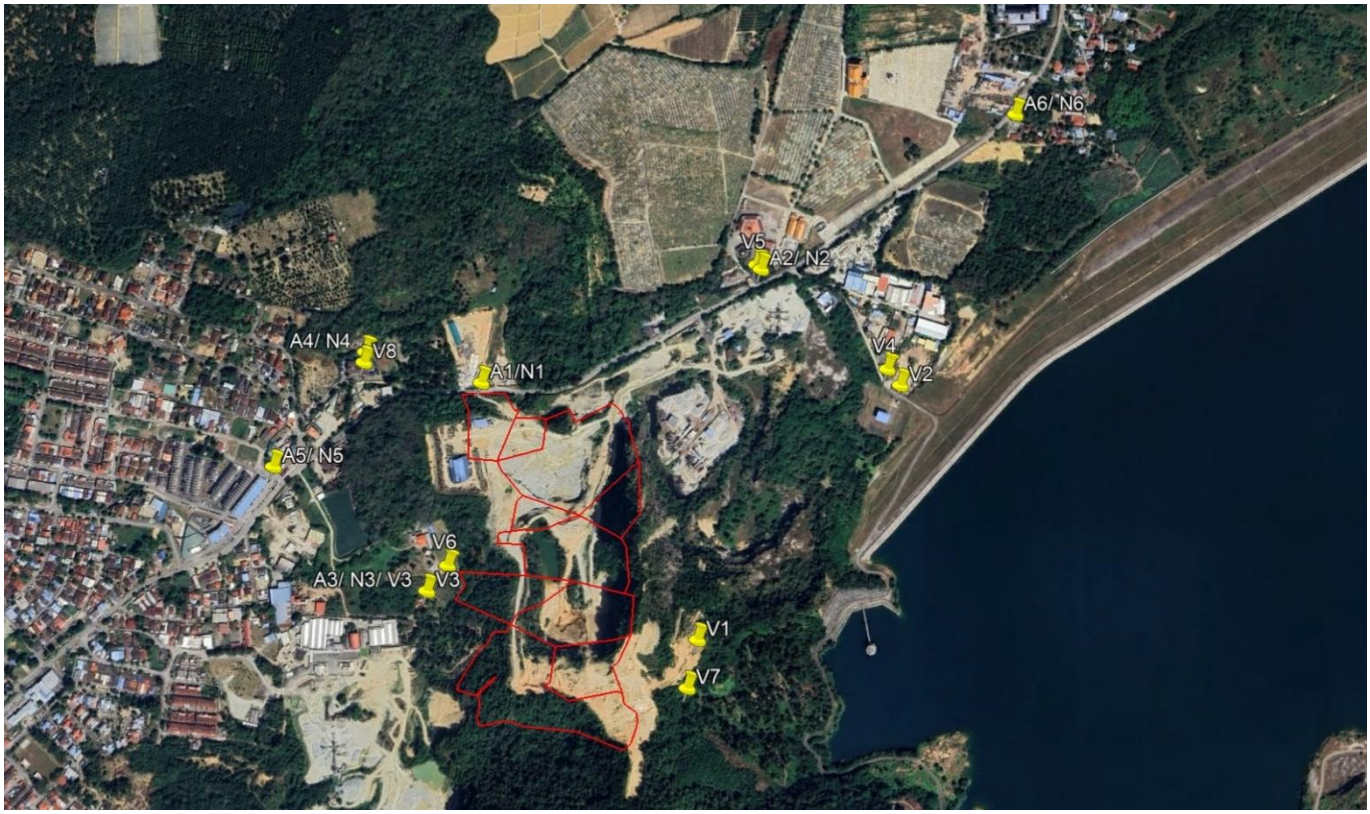
Source: Google Earth and Satellite Map, 2024

Location	Coordinate	
	Latitude	Longitude
W1	5°23'14.00"N	100°29'11.00"E
W5	5°23'10.66"N	100°29'0.35"E
W6	5°22'51.90"N	100°27'38.90"E
W7	5°22'2.08"N	100°26'59.90"E
W4	5°21'58.51"N	100°27'01.09"E

Source: Google Earth

IMPACT MONITORING (IM) PROGRAM

SAMPLING LOCATIONS FOR AIR, NOISE AND VIBRATION MONITORING



Source: Google Earth and Satellite Map, 2024

Location	Coordinate	
	Latitude	Longitude
A1/ N1	5°23'09.67"N	100°28'58.19"E
A2/ N2	5°23'17.51"N	100°29'17.30"E
A3/ N3/ V3	5°22'55.61"N	100°28'54.73"E
A4/ N4	5°23'11.77"N	100°28'50.25"E
A5/ N5	5°23'03.95"N	100°28'44.18"E
N6/ N6	5°23'28.38"N	100°29'35.04"E
V1	5°22'52.37"N	100°29'12.92"E
V2	5°23'09.50"N	100°29'26.76"E
V4	5°23'10.6"N	100°29'25.9"E
V5	5°23'17.8"N	100°29'17.0"E
V6	5°22'57.3"N	100°28'56.1"E
V7	5°22'49.19"N	100°29'12.24"E
V8	5°23'11.07"N	100°28'50.16"E

Source: Google Earth

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
Development Phase				
1. Water pollution due to Soil Erosion	Site Clearing and Earthwork	Significant	Proper implementation of LDP2M2 measures Regular inspection of site BMP's	**Section 8.1, 8.2**
2. Air pollution	Overburden stockpile; Dust from vehicles; Construction of infrastructure	Significant Significant Can be Significant	Seed stockpiles with suitable crops, smooth stockpile to a neat and tidy outline. Spray water on access road at regular intervals. Ensure that the vehicles and machinery used are properly maintained with regular servicing. Enforce speed limit of 30 km/h in access road. Avoid overloading of trucks to ensure no spillage of rock fragments. All vehicles to go through the washing bay before exiting the site.	**Section 8.7**
3. Noise pollution	Site Clearing and Earthwork; Construction of Infrastructure	Significant Can be Significant	The hours of operation of noise equipment must be restricted, preferably to daylight hours only. Ensure that the vehicles and machinery used are properly maintained with regular servicing. Vegetation fringing the sites and the roads should be preserved to optimize noise attenuation.	**Section 8.8**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
4. Safety and Health Hazards	Site Clearing and Earthwork; Transportation and Stockpiling of Overburden; Construction of Infrastructure	Significant Significant Significant	The first few benches developed will have shorter heights to improve slope stability, while the lower benches can be taller since the rock is more competent. Provide PPE to protect workers who are constantly exposed to dust. Prevent exposure to excessive noise that is above 90 dB(A) for continuous sound and 115 dB(A) for impulsive noise. Provide approved hearing protection device such as earmuffs or earplugs to employees working on site. Provide Audiometric Testing Program for employees exposed to excessive noise. Road signs should be installed in strategic places to warn road users on movement of vehicles. Maintain access road surface free of potholes. Ensure that the health, safety and general welfare of the employees by enforcing safety rules, maintenance of machinery and vehicles, and providing training.	**Section 8.4, 8.7, 8.8, 8.11**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
5. Solid Waste	Construction Waste Waste Disposal by Employee Sewage Disposal	Insignificant Insignificant Insignificant	Installation of adequate sewerage disposal facilities such as septic tanks, etc. Regular collection and disposal of the waste materials at a designated dumping site. Biomass waste shall be cut into smaller pieces and stockpiled at designated area for natural composting.	**Section 8.10**
6. Scheduled Waste	Oil And Grease	Insignificant	Grease and oil wastes must be centrally collected and stored in strong containers. The containers to be placed in proper storage area. Waste to be disposed at DOE approved facilities.	**Section 8.10**
7. Social	Site Clearing and Earthwork; Transportation and Stockpiling of Overburden; Construction of Infrastructure	Can be significant Can be significant Can be significant	Implement the P2M2 measures for air and noise pollution, and safety and health hazards. Continuous engagement with the local community. Landscaping to reduce visual disturbances from the Project. Put signs at strategic locations to inform people on movement of vehicles and other information of the Project. Provide the local community job opportunities.	**Section 8.11**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
8. Traffic	Increase movement of vehicles	Significant	Vehicle routing, and speed limit shall be controlled. Traffic safety measures shall be provided. Traffic Management Plan (TMP) shall be prepared based on recommendation and findings by Traffic Impact Assessment (TIA). Road Safety Audit (RSA) shall be conducted.	**Section 8.9**
9. Flood	Water flow during heavy rain	Can Be Significant	Construction of retention pond, sediment traps, and channels that channel water to controlled discharge points Installation of monitoring and pumping systems to control water levels in retention pond	**Section 8.13**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
Operation Phase				
1. Water pollution	Maintenance of Access Road; Storage and stockpile of Overburden;	Insignificant; Significant;	Proper implementation of LDP2M2 measures Regular inspection of site BMP's	**Section 8.1, 8.2**
2. Air pollution	Dust from machinery – Drilling Operation, Blasting Operation; Dust from vehicles - Haulage of Overburden and Blasted Rock	Significant; Significant;	Seed stockpiles with suitable crops, smooth stockpile to a neat and tidy outline. Cover stockpile area. Use hydraulic drills that are designed and equipped with dry dust collector. Spray water on access road at regular intervals. Water spray nozzles are recommended to be installed at dust emission points. Enforce speed limit of 30 km/h in access road. Cover transported quarry products in trucks with canvas. Avoid overloading of trucks to ensure no spillage of rock fragments.	**Section 8.7, 8.8, 8.9**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
3. Noise pollution	Drilling Operation; Blasting Operation;	Significant Significant	The hours of operation of noise equipment must be restricted, preferably to daylight hours only. Ensure that the vehicles and machinery used are properly maintained with regular servicing. Vegetation fringing the sites and the roads should be preserved to optimize noise attenuation.	**Section 8.8**
4. Safety and Health Hazards	Drilling Operation; Blasting Operation; Haulage of Overburden and Blasted Rock	Significant Significant Significant	The first few benches developed will have shorter heights to improve slope stability, while the lower benches can be taller since the rock is more competent. Provide dust respirators to protect workers who are constantly exposed to dust. Prevent exposure to excessive noise that is above 90 dB(A) for continuous sound and 115 dB(A) for impulsive noise. Provide approved hearing protection device such as earmuffs or earplugs to employees working on site. Provide Audiometric Testing Program for employees exposed to excessive noise. Best Management Practices (BMP) relating to blasting operation are to be practiced at all times. Road signs should be installed in strategic places to warn road users on movement of vehicles. Maintain access road surface free of potholes. Ensure that the health, safety and general welfare of the employees by enforcing safety rules, maintenance of machinery and vehicles, and providing training.	**Section 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 8.11, 8.12**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
4. Safety and Health Hazards	Drilling Operation; Blasting Operation; Haulage of Overburden and Blasted Rock	Significant Significant Significant	Incorporate safety margin in blasting operation Limit over pressure in blasting operation. Limit Flyrock in blasting operation. Ensure safety procedures in blasting operation. Ensure qualified personnel to handle explosives according to safety procedures.	**Section 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 8.11, 8.12**
5. Vibration	Blasting Operation	Significant	Delay detonators to be used in the proposed blast design of the quarry to delay firing time.	**Section 8.5**
6. Solid Waste	Waste Disposal by Employee Sewage Disposal	Insignificant Insignificant	Installation of adequate sewerage disposal facilities such as septic tanks, etc Regular collection and disposal of the waste materials at a designated dumping site.	**Section 8.10**
7. Scheduled Waste	Oil And Grease	Insignificant	Grease and oil wastes must be centrally collected and stored in strong containers. The containers to be placed in proper storage area. Waste to be disposed at DOE approved facilities.	**Section 8.10**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
8. Social	Drilling Operation; Blasting Operation; Haulage of Overburden and Blasted Rock;	Can be significant Can be significant Can be significant	Implement the P2M2 measures for noise pollution, and safety and health hazards. Continuous engagement with the local community. Landscaping to reduce visual disturbances from the Project. Put signs at strategic locations to inform people on movement of vehicles and other information of the Project. Provide the local community job opportunities.	**Section 8.11**
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10. Flood	Water flow during heavy rain	Can Be Significant	Construction of retention pond, and channels that channel water to controlled discharge points Installation of monitoring and pumping systems to control water levels in retention pond	**Section 8.13**

Impact	Sources of Impact	Degree of Impact	Proposed P2M2	Reference in EIA Report
Abandonment Phase				
1. Aesthetic	Abandonment of Quarry	Can be significant	Remedial measures in the form of restoration and rehabilitation of the area to return the area to an acceptable environmental condition	**Section 8.14**