

CHAPTER 6

6.1 EXISTING ENVIRONMENT

This chapter shall explain clearly the sources of information used to describe the existing (or baseline) environment. The description of the existing environment shall conform to the following specifications, wherever appropriate:

- (i) The zone of study is a minimum 5 kilometers radius from project boundaries except for linear projects where the zone of study is a minimum of 0.5 kilometers
- (ii) The baseline conditions of the physio-chemical, biological, social, and economic setting prior to the implementation of the project is described in qualitative and quantitative terms
- (iii) Special attention is given to environmental sensitive areas, and areas of special or unique scientific, socio- economic or cultural values

Uncertainties of information obtained shall be discussed.

In an Environmental Impact Assessment study, physical environment of the proposed Project is one of the most important areas that need to be looked into. These physical land characteristics are sourced from various published reports and maps. Field works have also been undertaken for verification and confirmation purposes. Photographs showing the overall physical features of the Project site are shown in below.



Photo 6-1: View of the proposed access road to the proposed project site



Photo 6-2: View of surrounding proposed project site.



Photo 6-3: View of the proposed project site.



Photo 6-4: View of the existing quarry (Hardy Builder Sdn Bhd) located 1km northern from the proposed project site.



Photo 6-5: View of Kampung Tebing Tembah located 750m western from the proposed project site.



Photo 6-6: View of the Loji Air Bukit Bauk (Jabatan Bekalan Air Dungun) located 5.7KM north western from the proposed project site.



Photo 6-7: View of the existing quarry (Paka Kuari Sdn Bhd) located adjacent to the proposed project site.

6.2 TOPOGRAPHY

The proposed Project area is located within forestry area. The proposed quarry site is covered hilly area with elevations ranging from 5 m above Mean Sea Level (MSL) to the highest of 100 m.

No resident located within 500m radius. The nearest receptors are Kampung Tebing Tembah which situated about 750m western. Meanwhile, Kampung Baharu and Kampung Kongsu which are situated about 1.75km southwest from the proposed Project site respectively. The existing quarries located adjacent to the proposed project area which are Paka Kuari Sdn. Bhd. and about 1.0km northern from the proposed project area which is Hardy Builder Sdn. Bhd.. The quarries are currently operating.

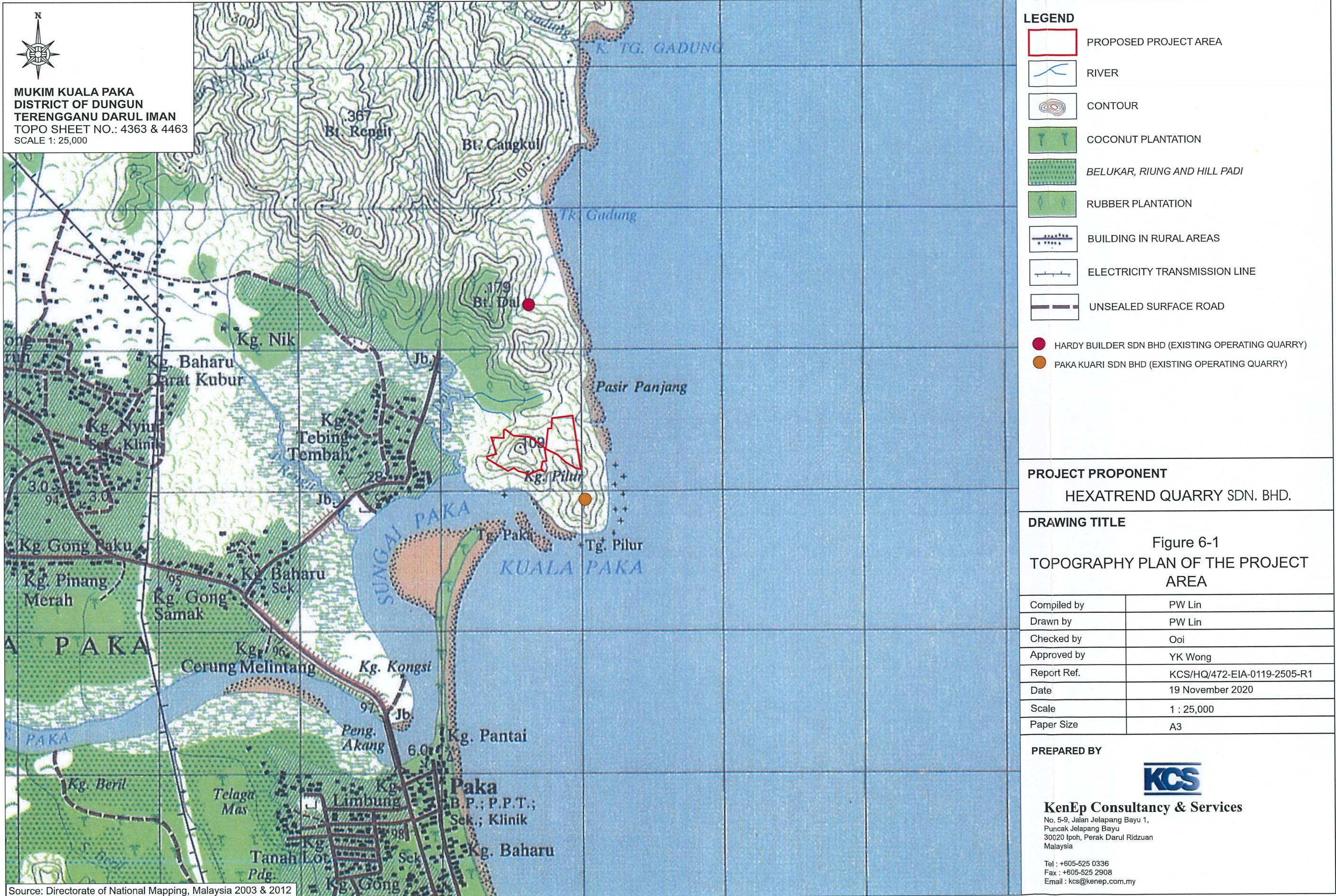
6.2.1 RIVER AND LITHOGRAPHY

Viewing to the topography map, the runoff discharge from the Project site area will be discharged into tributaries Of Sungai Dol. The topography of the Project site is depicted in **Figure 6-1**.

6.3 GEOLOGY

6.3.1 Regional Geology

In order to obtain a proper understanding of the geology of the Project site, the geological setting and its surrounding area is here discussed and shown in **Figure 6-2**. Based on "Geological Map of Peninsular Malaysia 1985", the Project site is composed of acid intrusive. Commonly acid intrusive in Malaysia are referring to granite. Peninsular Malaysia is divided into four tectonic subdivisions which are Western Stable shelf, Main Range Belt, Central Graben and Eastern Belt. The project site is belongs to the Main Range Belt which characterized by large Main Range batholith that forms mountain range from the region of Malacca to Thailand. These granite bodies comprise a series of large mesozonal batholiths and plutons of biotite granite that emplaced into Lower to Middle Paleozoic-grade metamorphic rocks in Peninsular Malaysia. Regional geology indicates that the area is near the contact zones between the acid intrusive and the sedimentary rock and metamorphic rock of the Silurian to Ordovician age in the east.



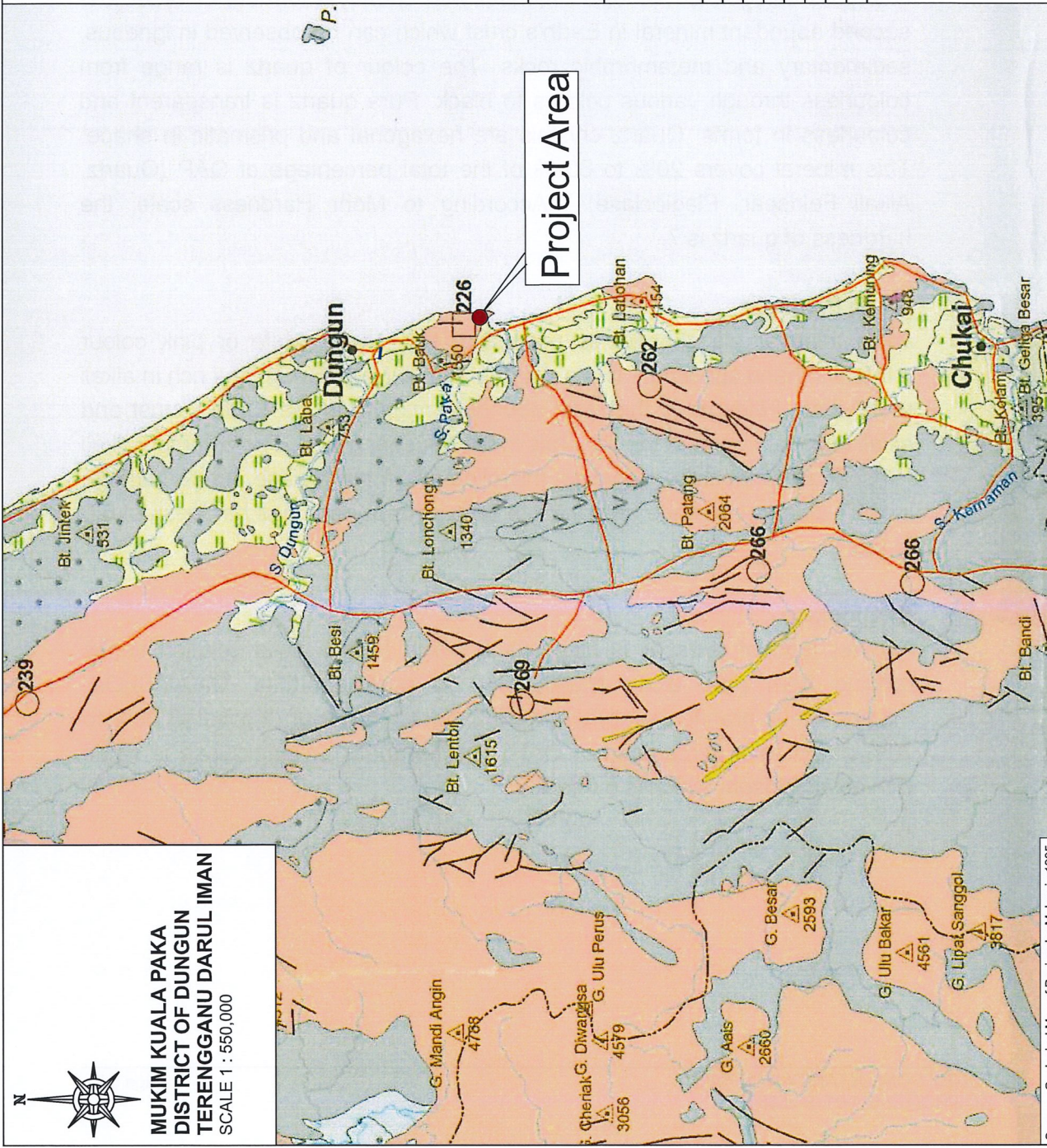
| LEGEND | EXPLANATION |
|--------|---|
| | PROPOSED PROJECT AREA |
| | QUATERNARY - Marine and continental deposits: clay, silt, sand, peat with minor gravel. Basalt of Early Pleistocene age in the Kuantan area. |
| | CARBONIFEROUS - Phyllite, slate, shale and sandstone; argillaceous rock are commonly carbonaceous. Locally prominent development of limestone. Volcanics of acid to intermediate composition locally present. |
| | UNCONSOLIDATED DEPOSITS |
| | Peat, humic clay and silt |
| | SEDIMENTARY AND METAMORPHIC ROCKS |
| | SANDSTONE / METASANDSTONE |
| | INTRUSIVE ROCKS |
| | ACID INTRUSIVE (UNDIFFERENTIATED) |

PROJECT PROPONENT
HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
Figure 6-2
REGIONAL GEOLOGY SETTING OF THE PROJECT AREA

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Check by | Ooi |
| Approved by | YK Wong |
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Source : Geological Map of Peninsular Malaysia 1985

Generally, granite is composed of three major rock forming minerals in its composition and used for nomenclature. These minerals are quartz, alkali feldspar and plagioclase. The other rock forming minerals are classified as minor forming minerals such as olivine, mica, pyroxene and amphibole while biotite is one of the usual mineral found in granite under mica group.

Quartz

Quartz is categorized as oxide mineral with chemical formula of SiO_2 . It is second abundant mineral in Earth's crust which can be observed in igneous, sedimentary and metamorphic rocks. The colour of quartz is range from colourless through various colours to black. Pure quartz is transparent and colourless in forms. Quartz crystals are hexagonal and prismatic in shape. This mineral covers 20% to 60 % of the total percentage of QAP (Quartz, Alkali Feldspar, Plagioclase). According to Mohr Hardness scale, the hardness of quartz is 7.

Alkali Feldspar

Alkali feldspar also known as potassium feldspar is white or pink colour mineral in hand specimen. It has a formula of $(\text{K}, \text{Na})[\text{AlSi}_3\text{O}_8]$ and rich in alkali metal ions. Feldspar is the most abundant mineral in the Earth's crust and alkali feldspar is one of the minerals in the feldspar group. The common alkali feldspar are orthoclase, sanidine, microcline and anorthoclase. It's percentage in QAP diagram is range from 10% to 65%. This mineral has hardness of 6.0 to 6.5.

Plagioclase

Another type of feldspar is plagioclase which form a solid solution series ranging from pure albite $\text{Na}(\text{AlSi}_3\text{O}_8)$, to pure anorthite, $\text{Ca}(\text{Al}_2\text{Si}_2\text{O}_8)$. Plagioclase in granite usually white, pink, or red in colour. It covered 20% to 70% of the total percentage of QAP. The hardness of plagioclase is same with alkali feldspar which is 6.0 to 6.5.

Biotite

Biotite is a brown to brownish black mineral which commonly found in granite. It is one of the minerals from mica group other than muscovite. It has vitreous luster and one perfect cleavage. The chemical formula of biotite is $K(Mg,Fe)_3AlSi_3O_{10}(F,OH)_2$. The hardness of biotite is 2.5 to 3.0 which is lower than quartz, alkali feldspar and plagioclase.

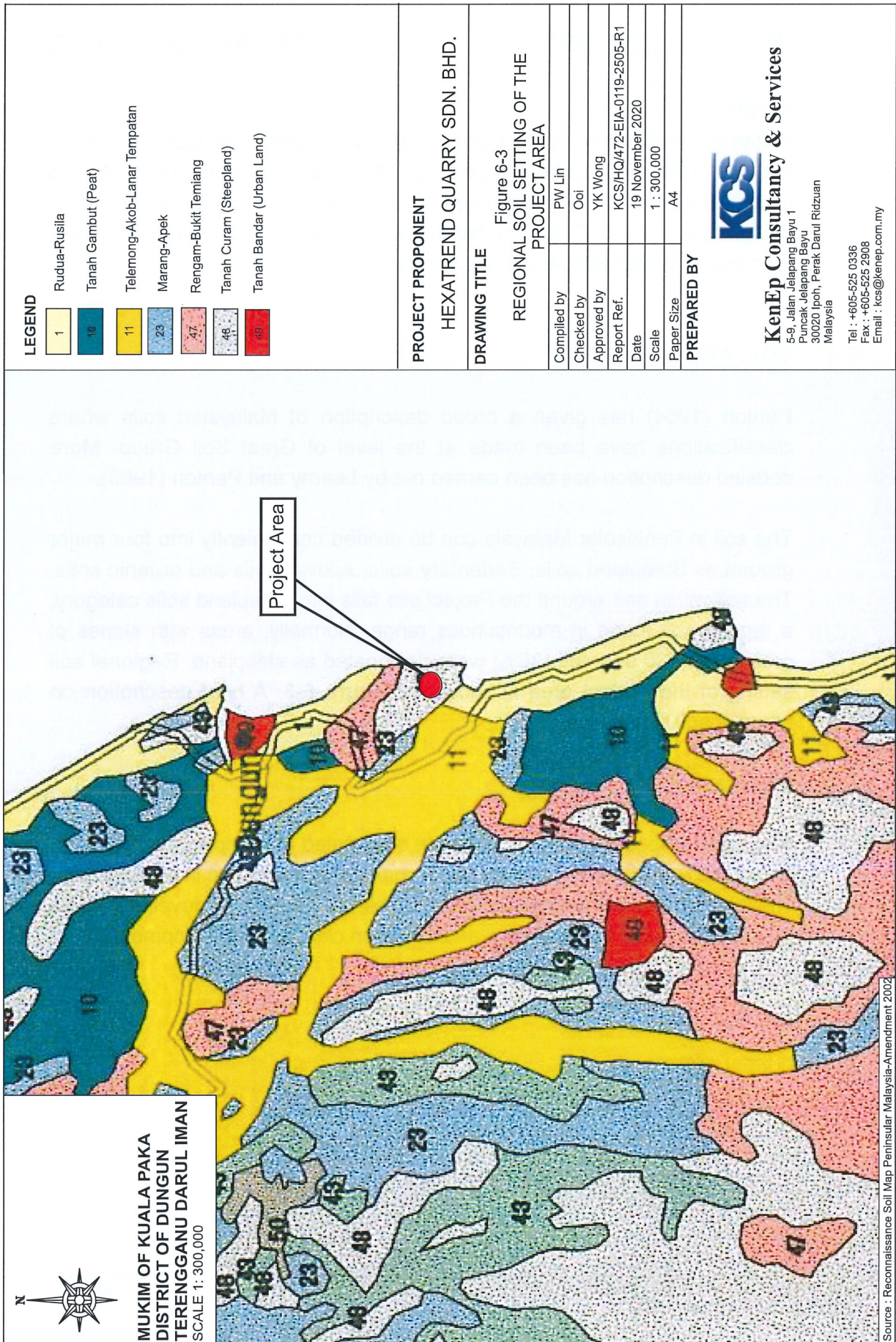
6.4 SOIL AND LITHOLOGY

Panton (1964) has given a broad description of Malaysian soils where classifications have been made at the level of Great Soil Group. More detailed description has been carried out by Leamy and Panton (1966).

The soil in Peninsular Malaysia can be divided conveniently into four major groups as Steepland soils, Sedentary soils, Alluvial soils and organic soils. The soil within and around the Project site falls into Steepland soils category, a regular soil found in mountainous range. Normally, areas with slopes of greater than 20 degrees (38%) were designated as steepland. Regional soil setting of the Project area is shown in **Figure 6-3**. A brief description on types of soil is as follows:

Steepland

Areas with slopes in excess of 38% are designated as steepland on the map. In fact the whole area of project site is marked as steepland in the soil map. These areas are considered to be unsuitable for agricultural development as they are subjected to severe soil erosion when cleared for development.



LEGEND

- 1 Rudua-Rusila
- 10 Tanah Gambut (Peat)
- 11 Telemong-Akob-Lanar Tempatan
- 23 Marang-Apek
- 47 Rengam-Bukit Temiang
- 48 Tanah Curam (Steepland)
- 49 Tanah Bandar (Urban Land)

PROJECT PROPONENT
HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
 Figure 6-3
REGIONAL SOIL SETTING OF THE PROJECT AREA

| | |
|-------------|-----------------------------|
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MUKIM OF KUALA PAKA
DISTRICT OF DUNGUN
TERENGGANU DARUL IMAN
 SCALE 1 : 300,000

Source : Reconnaissance Soil Map Peninsular Malaysia-Amendment 2002

6.5 CLIMATE

The Project area experiences an equatorial type of climate, which is characterized by warm and humid weather all year round. As with the rest of the country, it is under the influence of the Asian Monsoon system. There are two distinct monsoon seasons, the Northeast Monsoon (from November to March) and the Southwest Monsoon (from May to September). In between these cycles, the area experiences inter-monsoon or transition month.

6.5.1 Source of Data

No meteorological observations are available at the Project site. However, the Malaysian Meteorological Services (MMS) maintains two principal meteorological stations at Hospital Dungun and Kuala Terengganu. For the purpose of this study, meteorological observations taken at the Hospital Dungun station (Latitude N 4°45'07" and Longitude E 103°24'53"), elevation 3 m above MSL and Kuala Terengganu station (Latitude N 5°23" and Longitude E 103°6"), elevation 5.2 m above MSL can be considered as representative of the Project site.

The meteorological observations taken at the MMS meteorological station include surface winds, temperature, rainfall and relative humidity. The climate of the area is of the equatorial type, which is characterized by relatively high and uniform temperatures throughout the year, high rainfall, high humidity and light winds. The meteorology of areas under this climate regime is influenced very much by local factors such as the topography of the area, land cover and water bodies.

6.5.2 Temperature and Relative Humidity

General, the daily mean temperature fluctuates in a small range between 26.1°C to 28.6°C, with fluctuation of 2.5°C. Maximum mean relative humidity recorded on October 81.9% while minimum relative humidity recorded on April 74.4%. The daily mean temperature for year 2018 and the 24 hours mean relative humidity records for 2018 are shown in **Figure 6-4(a)** and **Figure 6-4(b)**, respectively.

The monthly variations coincide with the dry and wet seasons. It is expected that the Project site should experience a similar range of humidity.

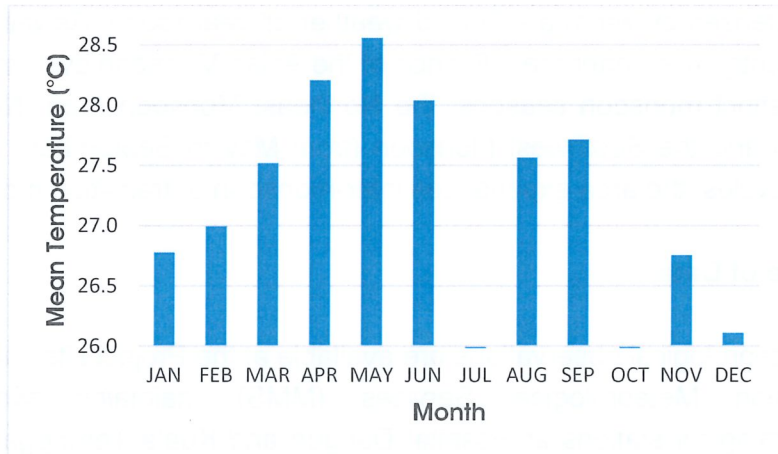


Figure 6-4 (a): Records of 24 hours Temperature (°C) at Hospital Dungun (2018)

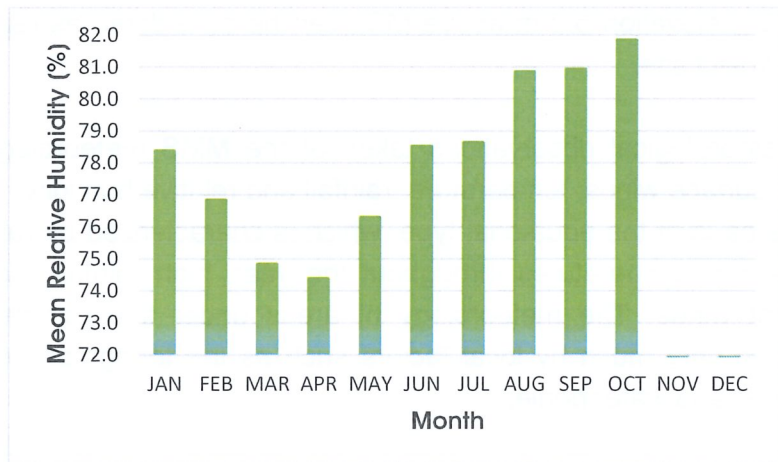


Figure 6-4(b): Records of 24 hours Mean Relative Humidity (%) at Hospital Dungun (2018)

6.5.3 Rainfall

Figure 6-4(c) shows annual rainfall recorded by the meteorological station in Hospital Dungun from year 2007-2017. It shows that highest rainfall (4006.4 mm) recorded at year 2009 and the lowest rainfall (1936.0 mm) recorded at year 2015. The heaviest total annual rainfall is about 2981.7 mm from the year 2007 to year 2017.

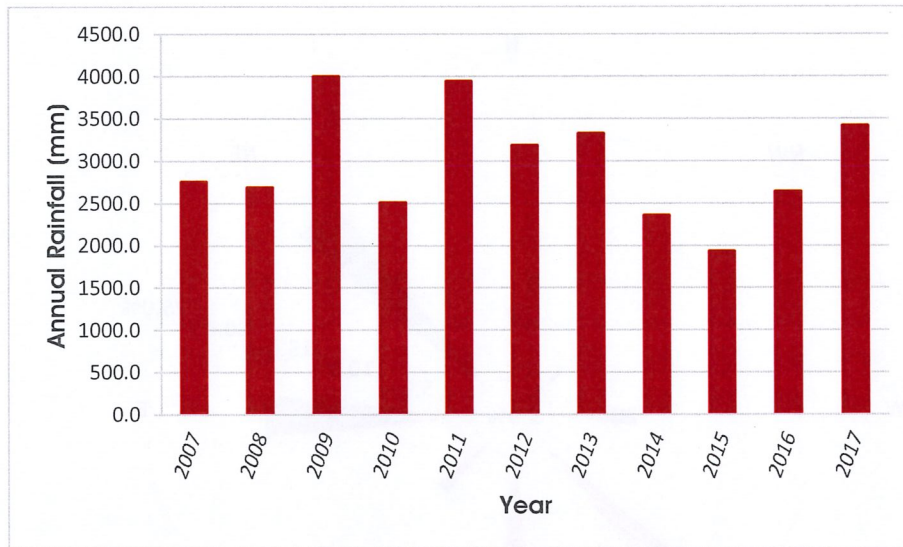


Figure 6-4(c): Records of Total Annual Rainfall at Hospital Dungun (2007-2017)

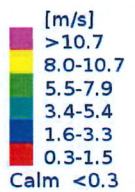
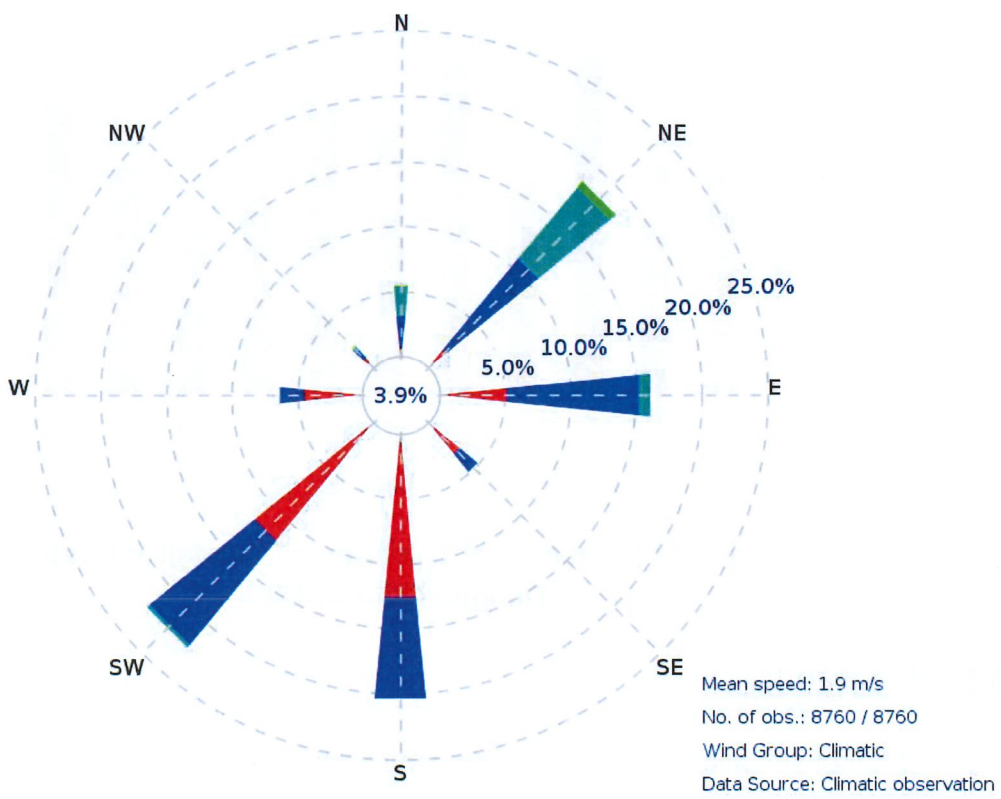
6.5.4 Wind Profiles

Wind observations at Kuala Terengganu Station, averaged over the period of 2018 are summarized in an annual wind rose and presented in **Figure 6-4(d)**. The north east, east, south and south-western wind had the highest velocity which ranges from 1.4 m/s to 7.9 m/s (meter per second), when compared to other wind direction. The highest frequency of wind occurrence is from 3.1%.

ANNUAL WIND ROSE SUMMARY KUALA TERENGGANU 2018

TIME : 24 HOURS

ANNUAL



HEXATREND QUARRY SDN. BHD.

Figure 6-4(d)
ANNUAL 24-HOURS WIND
ROSE SUMMARY



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Scale as Shown

6.6 SURFACE HYDROLOGY

The proposed Project site is located within the catchments area of Sungai Dol and Sungai Paka. The runoff discharge from the Project area will be channelled into proposed sediment basin before flowing into seasonal waterways, Sungai Dol and Sungai Paka then eventually flow into Kuala Paka. Referring to the Environmental Quality Act 1974 (Act 127), Third Schedule, Regulation 7, there is no water supply scheme listed in Sg. Dol and Sg. Paka, therefore, Standard B applies. There was one (1) listed nearest water intake at Loji Air Bukit Bauk is located in different catchment about 9.8KM from the project site as shown in **Table 6-1**.

However, there was a *Loji Air Bukit Bauk (Jabatan Bekalan Air Dungun)* which is located 5.7KM north western from the proposed project site. **Figure 6-5a** shows the general drainage system with respect to the Project site. Meanwhile, **Figure 6-5b** has shown the nearest water intake location to the Project site.

Table 6-1: Water Intake Location

| Point | Distance from proposed Project site | Name of River/Reservoir/Well | Water Supply Scheme | Location | | Water Flow Direction |
|-------|-------------------------------------|------------------------------|---------------------|------------|--------------|----------------------|
| | | | | Latitude | Longitude | |
| 1 | 9.80 KM | Loji Air Bukit Bauk | Dungun | N 4°40'40" | E 103°21'20" | Upstream |

The hydrological impact and flood assessment has been done to analyze the possible impact and proposed the prevention and mitigation measures in order to prevent any adverse impact to the environmental. The report is attached in **Appendix 7-2**.

6.7 GROUNDWATER HYDROLOGY

The general trend of the groundwater flow at the Project site is from the hills towards the valleys where run-off tends to flow. The groundwater flow is generally localized, controlled by local topography and soil characteristics. On regional scale, the flow pattern is anticipated to be towards Sg. Paka which located out of the Project site.



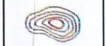

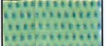

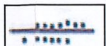
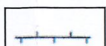


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MUKIM KUALA PAKA
DISTRICT OF DUNGUN
TERENGGANU DARUL IMAN
TOPO SHEET NO.: 4363 & 4463
SCALE 1: 25,000



LEGEND

-  PROPOSED PROJECT AREA
-  RIVER
-  CONTOUR
-  COCONUT
-  BELUKAR, RIUNG AND HILL PADI
-  RUBBER
-  BUILDING IN RURAL AREAS
-  ELECTRICITY TRANSMISSION LINE
-  UNSEALED SURFACE ROAD
-  WATER FLOW DIRECTION

PROJECT PROPONENT

HEXATREND QUARRY SDN. BHD.

DRAWING TITLE

Figure 6-5(a)
GENERAL DRAINAGE SYSTEM WITH
RESPECT TO THE PROJECT AREA

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Checked by | Ooi |
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| Point | Distance from Proposed Project Site | Name of River | Water Supply Scheme | Location | | Water Flow Direction |
|-------|-------------------------------------|---------------------|---------------------|--------------|---------------|----------------------|
| | | | | Latitude | Longitude | |
| 1 | 9.8 KM | Loji Air Bukit Bauk | Dungun | N 04° 40'40" | E 103° 21'20" | Upstream |



LEGEND

- PROPOSED PROJECT AREA
- RIVER
- WATER FLOW DIRECTION
- CONTOUR
- COCONUT PLANTATION
- BELUKAR, RIUNG AND HILL PADI
- RUBBER PLANTATION
- BUILDING IN RURAL AREAS
- ELECTRICITY TRANSMISSION LINE
- UNSEALED SURFACE ROAD
- LOJI AIR BUKIT BAUK (JABATAN BEKALAN AIR DUNGUN)

PROJECT PROPONENT
HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
Figure 6-5(b)
NEAREST WATER INTAKE POINTS
TO THE PROJECT SITE

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Checked by | Ooi |
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Source: Directorate of National Mapping, Malaysia 2003 & 2012

6.8 SURFACE WATER QUALITY

6.8.1 Water Quality Standard

Water quality (WQ) is characterized by the values of some appropriate parameters of variables at those points where the water is to be used for specific purpose. In this respect, the Department of Environment (DOE) has established a set of criteria by which water bodies are classified into five categories based on the prevailing quality of their water in relation to the various downstream needs.

As the DOE WQ Standards is specifically tailored for local environment valuations and interpretation of water quality data gathered during this study will be based primarily on this standards. However, the National Water Quality Standard (NWQS) will be complied with and showed in **Appendix 6-1**.

Water Quality Index

Based on the above results, the quality of water samples can be referred to the DOE's Water Quality Index (WQI). The WQI can be classified into 5 classes based on the degree of pollution from the least to the most polluted as shown below;

- WQI \geq 91.75 - Class I (least polluted)
- WQI \geq 75.36 - Class II
- WQI \geq 51.67 - Class III (moderately polluted)
- WQI \geq 29.61 - Class IV
- WQI $<$ 29.61 - Class V (most polluted)

The water quality parameters used to calculate this index are the BOD, COD, DO, pH, TSS and AN. The sub-index for each parameter is based on ninety percentile values. The WQI is calculated using the following equation where SI is a sub-index value for each designated parameter;

$$\text{WQI} = (0.22 \times \text{SIDO}) + (0.19 \times \text{SIBOD}) + (0.16 \times \text{SICOD}) + (0.15 \times \text{SIAN}) + (0.16 \times \text{SITSS})$$

6.8.2 Existing Water Quality Status

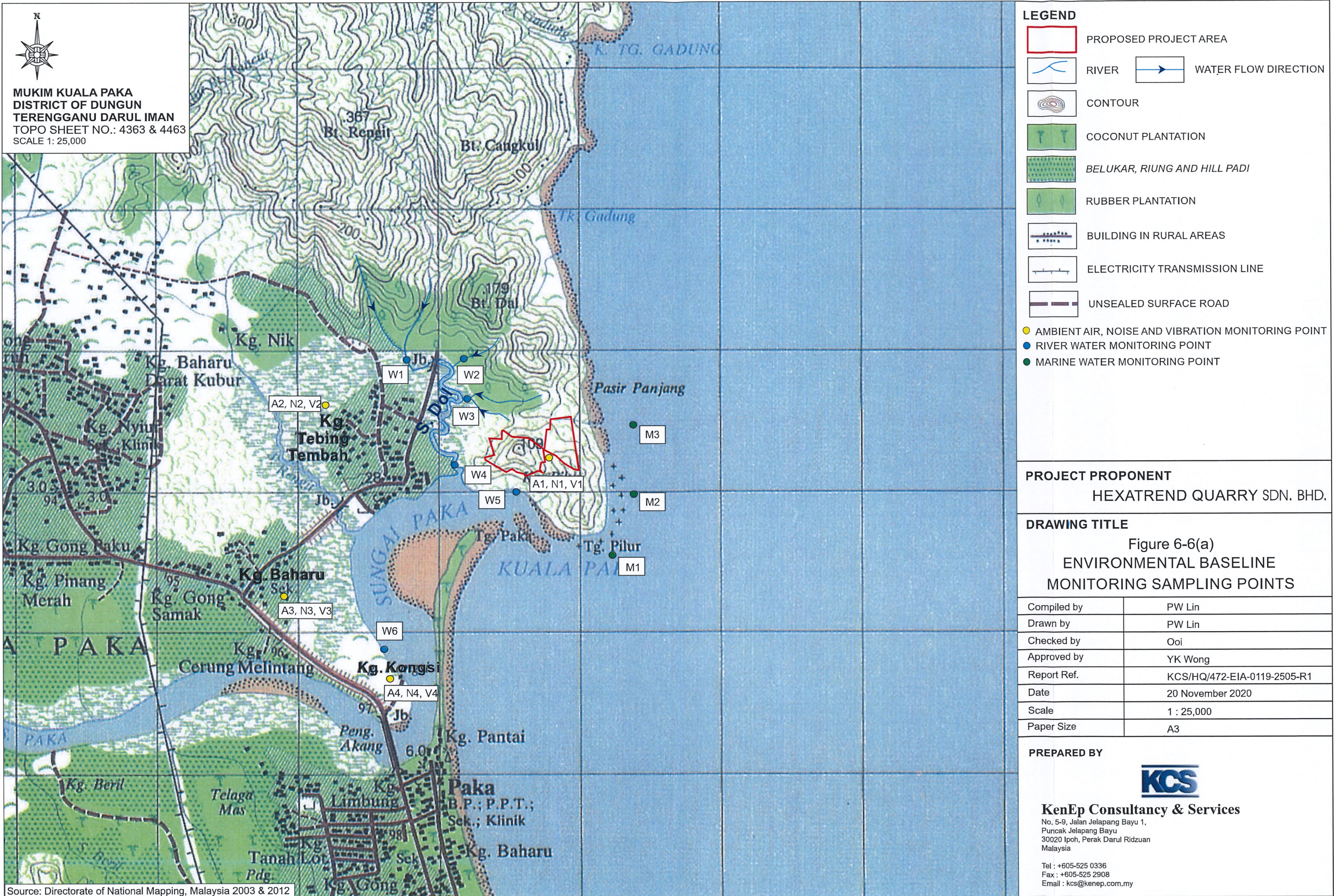
The water quality status of principal watercourses, which potentially receive surface run-offs from the Project site, is of main concern here. Its quality has been assessed based on information garnered from ad hoc water quality monitoring exercises carried out during the course of this EIA study and other relevant desk studies.

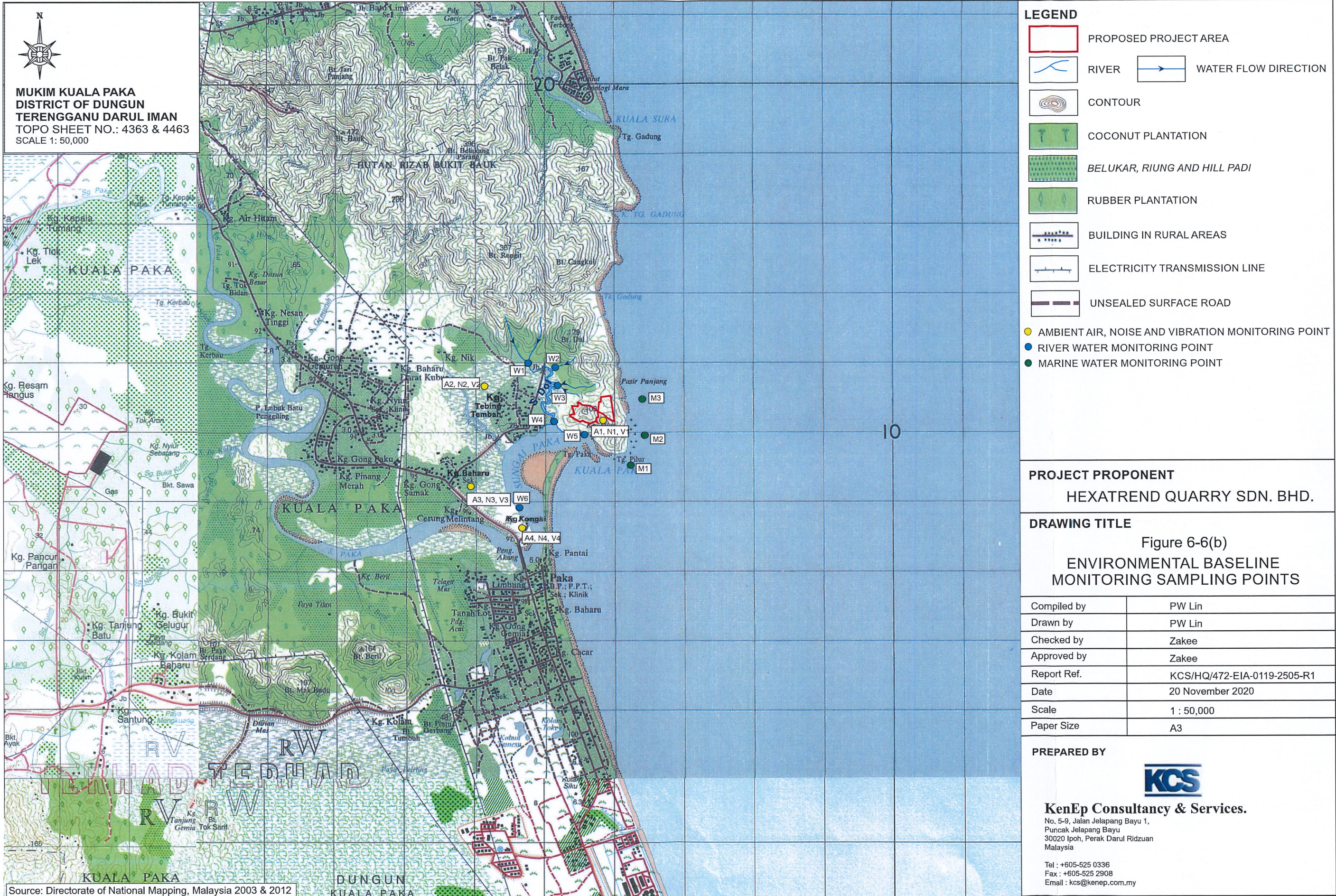
6.8.3 Sampling Locations

The in-situ measurements and grab samplings were taken at 6 locations for baseline analyses dated on 5th July to 9th July 2018. First sample (W1) and (W2) were collected at tributary upstream of Sungai Dol, respectively. Water sample (W3) was collected at tributary midstream of Sungai Dol. Water samples (W4) was taken from the downstream of Sungai Dol. While, water samples (W5) and (W6) were taken from the downstream of Sungai Paka, respectively. The locations of sampling points along the watercourse are summarized in **Table 6-2** and shown in **Figure 6-6(a)**, **Figure 6-6(b)** and **Figure 6-6(c)**.

Table 6-2: Water Sampling Locations

| Sampling No. | Sampling Location | Coordinate |
|--------------|---|--------------------------------|
| W1 | Upstream tributary of Sungai Dol | 4°39'59.07"N 103°26'9.81"E |
| W2 | Upstream tributary of Sungai Dol | 4°39'58.32"N 103°26'23.91"E |
| W3 | Midstream tributary of Sungai Dol (discharge from proposed Project site) | 4°39'48.95"N 103°26'24.79"E |
| W4 | Downstream of Sungai Dol | 4°39'33.23"N 103°26'21.07"E |
| W5 | Downstream of Sungai Paka | 4°39'28.22"N 103°26'35.83"E |
| W6 | Downstream of Sungai Paka | 4°38'48.51"N 103°26'6.07"E |





LEGEND

- PROPOSED PROJECT AREA
- ~ RIVER WATER FLOW DIRECTION
- CONTOUR
- COCONUT PLANTATION
- BELUKAR, RIUNG AND HILL PADI
- RUBBER PLANTATION
- BUILDING IN RURAL AREAS
- ELECTRICITY TRANSMISSION LINE
- UNSEALED SURFACE ROAD
- AMBIENT AIR, NOISE AND VIBRATION MONITORING POINT
- RIVER WATER MONITORING POINT
- MARINE WATER MONITORING POINT

PROJECT PROPONENT
HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
Figure 6-6(b)
**ENVIRONMENTAL BASELINE
MONITORING SAMPLING POINTS**

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Checked by | Zakee |
| Approved by | Zakee |
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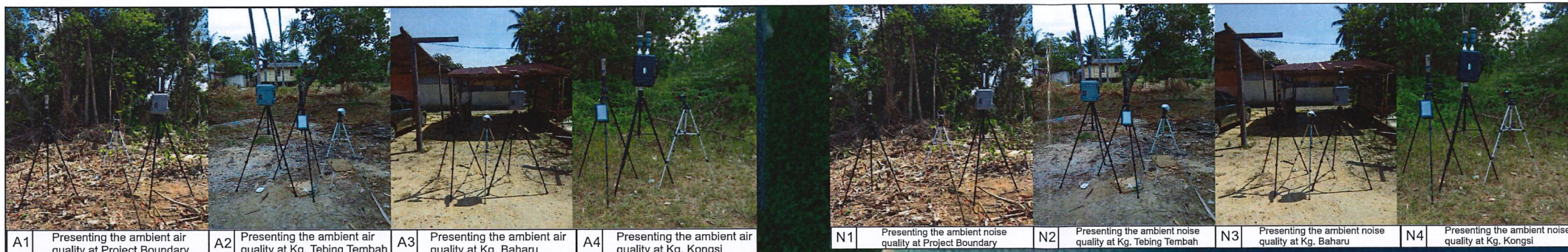
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Source: Directorate of National Mapping, Malaysia 2003 & 2012

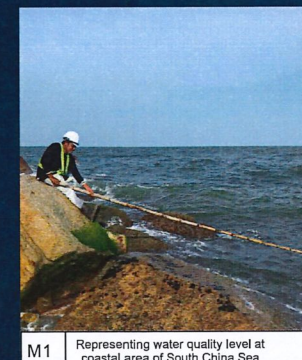


A1 Presenting the ambient air quality at Project Boundary
 A2 Presenting the ambient air quality at Kg. Tebing Tembah
 A3 Presenting the ambient air quality at Kg. Baharu
 A4 Presenting the ambient air quality at Kg. Kongs
 N1 Presenting the ambient noise quality at Project Boundary
 N2 Presenting the ambient noise quality at Kg. Tebing Tembah
 N3 Presenting the ambient noise quality at Kg. Baharu
 N4 Presenting the ambient noise quality at Kg. Kongs

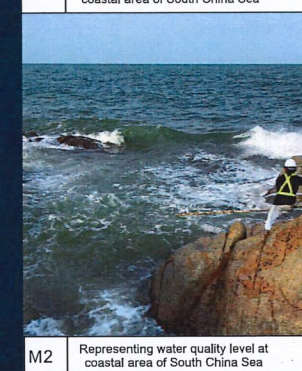
LEGEND

- PROPOSED PROJECT AREA
- AMBIENT AIR, NOISE AND VIBRATION MONITORING POINT
- RIVER WATER MONITORING POINT
- MARINE WATER MONITORING POINT

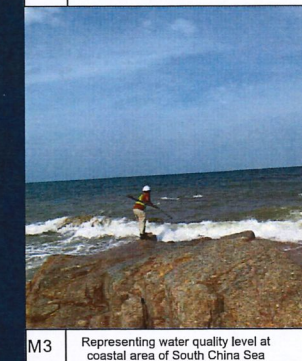
esan Tinggi



M1 Representing water quality level at coastal area of South China Sea



M2 Representing water quality level at coastal area of South China Sea

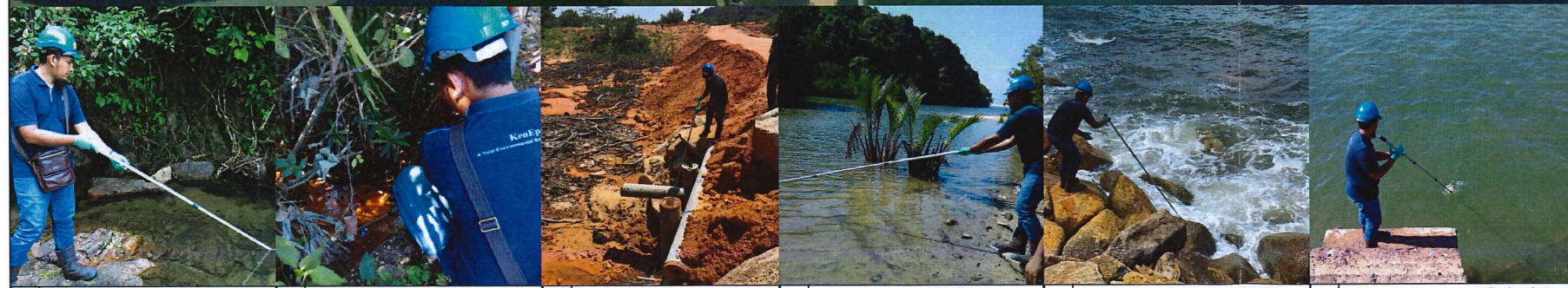


M3 Representing water quality level at coastal area of South China Sea

PROJECT PROPONENT
 HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
 Figure 6-6(c)
 GOOGLE IMAGE PLAN SHOWING ENVIRONMENTAL BASELINE MONITORING

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Checked by | Ooi |
| Approved by | YK Wong |
| Report Ref. | KCS/HQ/472-EIA-0119-2505-R1 |
| Date | 20 November 2020 |
| Scale | 1 : 25,000 |
| Paper Size | A3 |



W1 Representing water quality level at upstream tributary of Sungai Dol
 W2 Representing water quality level at upstream tributary of Sungai Dol
 W3 Representing water quality level at midstream tributary of Sungai Dol
 W4 Representing water quality level at downstream of Sungai Dol
 W5 Representing water quality level at downstream of Sungai Paka
 W6 Representing water quality level at downstream of Sungai Paka

MUKIM KUALA PAKA
DISTRICT OF DUNGUN
TERENGGANU DARUL IMAN
 SCALE 1: 25,000

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6.8.4 Data Analyses and Results (EIA Baselines)

Water samplings, in-situ measurements and laboratory analyses were carried out on the same day the samples being taken. Non-conservative non-preserved parameters were analyzed in-situ during the sampling exercises. Samples for non-conservative but preservable parameters and other conservative preservable parameters were acidified to pH 2 prior to analyses at the laboratory. The water quality parameters measured were the physical parameter of pH, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solid (TSS), Oil & Grease and the content of Ammoniacal Nitrogen (AN). The physical parameter would give a rapid indication of the state of water quality. The BOD parameter would induce degree of pollution by organisms.

To evaluate the status of the current water quality, the results of analyses are compared to the National Water Quality Standard for Malaysia (NWQS) (Class IIA and III). Results obtained from the water sampling exercise are presented in **Table 6-3**. Certificate of analysis for the sampling points and the accredited certificate for the laboratory conducted the analysis are enclosed in **Appendix 6-2**.

Understandably, the sampling results represent only the conditions prevailing during sampling exercise. Brief accounts on selected water quality parameters are presented in the following paragraphs:

pH

pH is a measurement of how acidic or how basic (alkaline) a solution is. pH is measured on a scale of 0 to 14. Water that is neutral has a pH of 7. Acidic water has pH values less than 7, with 0 being the most acidic. Likewise, basic water has values greater than 7 with, with 14 being the most basic. And for the water sample of the proposed project, pHs of all samples ranges from 6.2 to 8.2. This is within the normal range of the pH of natural water.

Table 6-3: Results of Water Quality Analysis

| Test Parameter | Sample Identification | | | | | | NWQS Class IIA | NWQS Class III |
|--------------------------------|----------------------------------|----------------------------------|--|--------------------------|---------------------------|---------------------------|----------------|----------------|
| | W1 | W2 | W3 | W4 | W5 | W6 | | |
| pH (on site) | 6.9 | 6.2 | 6.6 | 7.6 | 7.3 | 8.2 | 6.5 - 9.0 | 5.0 - 9.0 |
| COD, mg/L | 85 | 40 | 41 | 110 | 160 | 180 | 25 | 50 |
| BOD ₅ @ 20 °C, mg/L | 26 | 12 | 15 | 36 | 45 | 49 | 3 | 6 |
| Suspended Solids, mg/L | 28 | 82 | 56 | 46 | 40 | 38 | 50 | 150 |
| Ammoniacal Nitrogen, mg/L | 0.01 | 0.08 | 0.12 | 0.27 | 0.21 | 0.25 | 0.3 | 0.9 |
| Dissolved Oxygen, mg/L | 10.3 | 10.0 | 9.1 | 7.3 | 9.3 | 8.9 | 5 - 7 | 3 - 5 |
| Oil & Grease, mg/L | ND<2.0 | ND<2.0 | ND<2.0 | 6.0 | ND<2.0 | ND<2.0 | - | - |
| WQI | 70.19 | 75.59 | 75.15 | 60.49 | 58.95 | 56.33 | - | - |
| CLASS | III | II | III | III | III | III | - | - |
| Water Quality Status | Moderately Polluted | Least Polluted | Moderately Polluted | Moderately Polluted | Moderately Polluted | Moderately Polluted | - | - |
| River Involved | Upstream tributary of Sungai Dol | Upstream tributary of Sungai Dol | Midstream tributary of Sungai Dol (discharge from proposed Project site) | Downstream of Sungai Dol | Downstream of Sungai Paka | Downstream of Sungai Paka | - | - |

Note: ND< = Not detected; NWQS = National Water Quality Standard

Bold indicate exceed the limits.

Dissolved Oxygen (DO)

Dissolved Oxygen (DO) levels in the water basically depend on two main factors, its production and its consumption. The DO levels in the sampling points appear to fall ranging between 7.3 mg/l to 10.3 mg/l. Low level of DO indicates high organic loading which may otherwise pose serious impediment to the biological activities of the waterbody. Thus, DO is a vital component for living organism in any waterbody system.

Oil and Grease (O&G)

Oil and grease is defined as any material or substance that is soluble in the solvent (Standard Methods, 1992). Oil and grease are considered one of the major contaminants in any water streams. The source of oil and grease in a water streams include vehicle exhaust, vehicle drippings, crankcase oil spillage at gas stations and illegal discharges. Almost all of the samples read from ND < 2.0 mg/l except for the water sample (W4) which detected as 6.0 mg/l.

Biological Oxygen Demand (BOD)

BOD is normally used as an indicator for organic loading of natural waterbody. The level of BOD indicates the total of oxygen consumed by the aerobic bacteria to decompose organic matter within certain time limit and temperature. BOD level recorded to fall ranging between 12 mg/l to 49 mg/l for water samples W1, W2, W3, W4, W5 and W6. The BOD level is also reflective to the dissolved oxygen (DO) level. If the level of BOD is high, it indicates high organic loading and therefore, reduces the DO level in the waterbody.

Ammoniacal Nitrogen (AN)

When nitrogenous organic matter is destroyed by microbiological activity, ammonia is produce. Higher concentration occurs in water polluted by sewage, fertilizers, agricultural wastes or industrial wastes containing organic nitrogen. The presence of excessive concentration of AN and phosphorus may lead to eutrophication which then reduce DO.

Eutrophication shall impede the regeneration of the benthic organisms and the quality of the water ecosystem. The ammoniacal nitrogen level for the samples shows low overall presence of nutrients, AN and phosphorus within the watercourses. Results of samples analyzed for AN show that the samples at water samples W1, W2, W3, W4, W5 and W6 were fall ranging between 0.01 mg/l to 0.27 mg/l.

Chemical Oxygen Demand (COD)

The concentration of COD measures the presence of non-biodegradable matter in waterbody. It may act as indicator of chemical pollution in any waterbody. Analyses of COD usually are act as complement to BOD analyses. The water samples marked the present of COD level at respective points were recorded ranging from 40 mg/l to 180 mg/l.

Total Suspended Solids (TSS)

TSS in water is indicative of the presence of inorganic and organic particles and immiscible liquids. These materials are common constituents of surface water due to water erosion and may include silt, clay, plant fibers and biological solids. TSS level recorded ranging from 28 mg/l to 82 mg/l.

6.9 MARINE WATER QUALITY

The proposed project involves the quarry activity near the shoreline of coastal area, thus it is necessary to access the marine water quality. The sampling was conducted on 27 July 2018 and immediately sent to analysis at Laboratory. The marine water quality shall be compare with the Malaysia Marine Water Quality Criteria and Standard.

6.9.1 SAMPLING LOCATIONS

The in-situ measurements and grab samplings were taken at 3 locations for baseline analyses dated on 27 July 2018. First sample (M1), second (M2) and third (M3) were collected at coastal area of South China Sea. The locations of sampling points along the watercourse are summarized in **Table 6-4**.

Table 6-4: Water Sampling Locations

| Sampling No. | Sampling Location | Coordinate |
|--------------|---------------------------------|--------------------------------|
| M1 | Coastal area of South China Sea | 4°39'12.56"N 103°26'59.04"E |
| M2 | Coastal area of South China Sea | 4°39'26.77"N 103°27'3.62"E |
| M3 | Coastal area of South China Sea | 4°39'42.69"N 103°27'3.45"E |

6.9.2 Data Analyses and Results (EIA Baselines)

Water sampling and in-situ measurements were carried out using a standard water sampler and in-situ meters. Non-conservatives and non-preserved parameters were analysed in-situ during the sampling exercises. Samples for non-conservative but preservable parameters and other conservative preservable parameters were acidified to pH 2 prior to analyses at laboratory. Analyses were carried out by accredited laboratory. To evaluate the status of the current water quality, the results of analyses are compared to the Malaysia Marine Water Quality Criteria and Standard as enclosed in **Appendix 6-3**. Results obtained from the water sampling exercise performed along shoreline are presented in **Table 6-5**. Certificate of analysis for each sample are enclosed in **Appendix 6-2**. Understandably, these results represent only the conditions prevailing during sampling exercise. The results of analysis indicated that the water quality was good with all parameters tested within the allowable Malaysia Marine Water Quality Criteria and Standard.

6.10 AIR QUALITY

Ad hoc monitoring of the air quality within the Project site was undertaken to determine the existing ambient air quality. Monitoring was carried out on 4th July to 5th July 2018 at locations marked A1, A2, A3 and A4 as shown in **Figure 6-6(a), (b) and (c)**. The results of the monitoring that serve as environmental air monitoring baseline data are summarized in **Table 6-6**. The environmental monitoring had assessed its compliance to the Malaysian Recommended Environmental Air Quality Guidelines as enclosed in **Appendix 6-4**. The ambient air monitoring report is enclosed in **Appendix 6-2**.

Table 6-5: Results of Marine Water Quality Analysis

| Test Parameter | Sample Identification | | | MWQCS Class III |
|--|-----------------------|--------|--------|---|
| | M1 | M2 | M3 | |
| Temperature (°C) | 24.8 | 24.6 | 25.1 | ≤2 |
| Total Suspended Solids, mg/L | 140 | 95 | 160 | 100 |
| Oil & Grease, mg/L | ND<2 | ND<2 | ND<2 | 5 |
| Mercury as Hg, µg/L | 2 | 2 | 2 | 50 |
| Cadmium as Cd, µg/L | 3 | 3 | 3 | 10 |
| Hexa-Chromium, µg/L | 1 | 1 | 1 | 48 |
| Arsenic as Ag, µg/L | 16 | 14 | 16 | 50 |
| Cyanide as CN, µg/L | 2 | 1 | ND<1 | 20 |
| Lead as Pb, µg/L | ND<2 | ND<2 | ND<2 | 50 |
| Copper as Cu, µg/L | ND<4 | ND<4 | ND<4 | 10 |
| Zinc as Zn, µg/L | ND<4 | ND<4 | ND<4 | 100 |
| Phenol, µg/L | 8 | ND<1 | ND<1 | 100 |
| Nitrate Nitrogen as NO ₃ -N, µg/L | 120 | ND<100 | ND<100 | 1000 |
| Dissolved Oxygen, mg/L | 5.8 | 5.2 | 5.4 | 3 |
| Phosphate as PO ₄ -P, µg/L | 400 | 800 | 700 | 75 |
| Faecal Coliform, MPN/100 mL | ND<1.8 | ND<1.8 | ND<1.8 | 200 faecal coliform 100 mL ⁻¹ |
| Ammonia (unionized), µg/L | ND<70 | ND<70 | ND<70 | 320 |
| Nitrite as NO ₂ -N, µg/L | 920 | 1,070 | 500 | 1,000 |
| Salinity, psu | 54 | 48 | 34 | - |

Table 6-6: Environmental Air Monitoring Baseline Data Result

| Points | Sampling Location | Coordinates | Test Parameter | Result | Specification | |
|--------|---|--------------------------------|-------------------|---------------------------|------------------------|-----------------------|
| | | | | | Averaging Time (Hours) | Standard 2020 |
| A1 | Presenting the ambient air quality at Project Boundary | 4°39'37.01"N 103°26'43.07"E | TSP | 87 µg/m ³ | 24 | - |
| | | | PM _{2.5} | 22 µg/m ³ | 24 | 35 µg/m ³ |
| | | | PM ₁₀ | 39 µg/m ³ | 24 | 100 µg/m ³ |
| | | | NO ₂ | ND<0.01 µg/m ³ | 1 | 280 µg/m ³ |
| | | | SO ₂ | ND<0.1 µg/m ³ | 1 | 250 µg/m ³ |
| | | | CO | 2.7 mg/m ³ | 1 | 30 mg/m ³ |
| A2 | Presenting the ambient air quality at Kg. Tebing Tembuh | 4°39'47.12"N 103°25'49.93"E | O ₃ | 193 µg/m ³ | 1 | 180 µg/m ³ |
| | | | TSP | 76 µg/m ³ | 24 | - |
| | | | PM _{2.5} | 26 µg/m ³ | 24 | 35 µg/m ³ |
| | | | PM ₁₀ | 46 µg/m ³ | 24 | 100 µg/m ³ |
| | | | NO ₂ | ND<0.01 µg/m ³ | 1 | 280 µg/m ³ |
| | | | SO ₂ | 35.7 µg/m ³ | 1 | 250 µg/m ³ |
| A3 | Presenting the ambient air quality at Kg. Baharu | 4°39'1.72"N 103°25'39.71"E | CO | 3.2 mg/m ³ | 1 | 30 mg/m ³ |
| | | | O ₃ | 89.92 µg/m ³ | 1 | 180 µg/m ³ |
| | | | TSP | 88 µg/m ³ | 24 | - |
| | | | PM _{2.5} | 22 µg/m ³ | 24 | 35 µg/m ³ |
| | | | PM ₁₀ | 47 µg/m ³ | 24 | 100 µg/m ³ |
| | | | NO ₂ | ND<0.01 µg/m ³ | 1 | 280 µg/m ³ |
| A4 | Presenting the ambient air quality at Kg. Kongsu | 4°38'40.58"N 103°26'3.49"E | SO ₂ | ND<0.1 µg/m ³ | 1 | 250 µg/m ³ |
| | | | CO | 1.6 mg/m ³ | 1 | 30 mg/m ³ |
| | | | O ₃ | 76.33 µg/m ³ | 1 | 180 µg/m ³ |
| | | | TSP | 88 µg/m ³ | 24 | - |
| | | | PM _{2.5} | 25 µg/m ³ | 24 | 35 µg/m ³ |
| | | | PM ₁₀ | 50 µg/m ³ | 24 | 100 µg/m ³ |
| | | | NO ₂ | ND<0.01 µg/m ³ | 1 | 280 µg/m ³ |
| | | | SO ₂ | ND<0.1 µg/m ³ | 1 | 250 µg/m ³ |
| | | | CO | 3.3 mg/m ³ | 1 | 30 mg/m ³ |
| | | | O ₃ | 184.81 µg/m ³ | 1 | 180 µg/m ³ |

The Total Suspended Particulate (TSP) monitored at points A1, A2, A3 and A4 were found to be 87 $\mu\text{g}/\text{m}^3$, 76 $\mu\text{g}/\text{m}^3$, 88 $\mu\text{g}/\text{m}^3$ and 88 $\mu\text{g}/\text{m}^3$ during the 24 hours monitoring. These results compiled to the Malaysian Recommended Environment Air Quality Guideline limit of 260 $\mu\text{g}/\text{m}^3$.

The Particulate Matter with size less than 2.5 micron ($\text{PM}_{2.5}$), recorded level of 22 $\mu\text{g}/\text{m}^3$, 26 $\mu\text{g}/\text{m}^3$, 22 $\mu\text{g}/\text{m}^3$ and 25 $\mu\text{g}/\text{m}^3$ during the 24 hours monitoring at stations A1 (project boundary), station A2 (Kg. Tebing Tembah), station A3 (Kg. Baharu) and station A4 (Kg. Kongsi), respectively. The sampling shows that the result for $\text{PM}_{2.5}$ was well within the Malaysian Ambient Air Quality Standards of 35 $\mu\text{g}/\text{m}^3$, Standard 2020.

Furthermore, Particulate Matter with size less than 10 micron (PM_{10}) was recorded at project boundary, Station A1 with value of 39 $\mu\text{g}/\text{m}^3$. Station A2 at Kg. Tebing Tembah recorded PM_{10} with level of 46 $\mu\text{g}/\text{m}^3$. Meanwhile, value of 47 $\mu\text{g}/\text{m}^3$ and 50 $\mu\text{g}/\text{m}^3$ were recorded at Station A3 (Kg. Baharu) and station A4 (Kg. Kongsi). The sampling shows that the result for Particulate Matter with size less than 10 micron was within the Malaysian Ambient Air Quality Standards of 100 $\mu\text{g}/\text{m}^3$ (24 hours), Standard 2020.

Moreover, Ozone (O_3) was recorded at project boundary, Station A1 with value of 193 $\mu\text{g}/\text{m}^3$. Station A2 at Kg. Tebing Tembah recorded O_3 with level of 89.92 $\mu\text{g}/\text{m}^3$. Meanwhile, value of 76.33 $\mu\text{g}/\text{m}^3$ and 184.81 $\mu\text{g}/\text{m}^3$ were recorded at Station A3 (Kg. Baharu) and station A4 (Kg. Kongsi). The sampling shows that the result for Ozone was within the Malaysian Ambient Air Quality Standards of 180 $\mu\text{g}/\text{m}^3$ (1 hour), Standard 2020.

Apart from that, Carbon Monoxide (CO), recorded level of 2.7 $\mu\text{g}/\text{m}^3$, 3.2 $\mu\text{g}/\text{m}^3$, 1.6 $\mu\text{g}/\text{m}^3$ and 3.3 $\mu\text{g}/\text{m}^3$ during an hour monitoring at stations A1 (project boundary), station A2 (Kg. Tebing Tembah), station A3 (Kg. Baharu) and station A4 (Kg. Kongsi), respectively. The sampling shows that the result for CO was well within the Malaysian Ambient Air Quality Standards of 30 $\mu\text{g}/\text{m}^3$, Standard 2020.

For the Sulphur Dioxide (SO₂) was not detected at points (A1, A3 and A4) monitored. But it was detected at point (A2), Kg Tebing Tembah which was recorded level with 35.7 µg/m³. The sampling shows that the result for SO₂ was well within the Malaysian Ambient Air Quality Standards of 250 µg/m³, Standard 2020. Nitrogen Dioxide (NO₂) was not detected at all points (A1, A2, A3 and A4) monitored.

6.11 AMBIENT NOISE LEVEL

The results of the monitoring were compared with the Guidelines for Environmental Noise Limit and Control, Third Edition, 2019 as shown in **Appendix 6-5**. The limits specified by the guidelines are 65 dB(A) for day time and 60 dB(A) for night time measured at the Project boundary. While, the limits specified by the guidelines are 60 dB(A) for day time and 55 dB(A) for night time measured at the residential area. The ambient noise monitoring was carried out at 4 locations (N1, N2, N3 and N4) on 4th July to 5th July 2018 as shown in **Figure 6-6(a)**, **Figure 6-6(b)** and **Figure 6-6(c)**. Monitoring reports of the noise monitoring are enclosed in **Appendix 6-2**. **Table 6-7** shows the results of ambient noise monitoring.

Table 6-7: Results of Ambient Noise Monitoring

| Points | Monitoring Station | Coordinate | Period | Noise Level (dBA) | | | | DOE Guideline Leq, dB(A) |
|--------|---|--------------------------------|--------|-------------------|-----------------|-----------------|-----------|--------------------------|
| | | | | L ₁₀ | L ₅₀ | L ₉₀ | Total Leq | |
| N1 | Presenting the noise level at Project Boundary | 4°39'37.01"N 103°26'43.07"E | Day | 68.7 | 50.6 | 44.2 | 47.4 | 65 |
| | | | Night | 64.7 | 54.5 | 51.3 | 52.9 | 60 |
| N2 | Presenting the noise level at Kg. Tebing Tembah | 4°39'47.12"N 103°25'49.93"E | Day | 64.7 | 50.0 | 41.7 | 45.9 | 60 |
| | | | Night | 53.7 | 46.2 | 44.3 | 45.3 | 55 |
| N3 | Presenting the noise level at Kg. Baharu | 4°39'1.72"N 103°25'39.71"E | Day | 65.0 | 54.1 | 47.5 | 50.8 | 60 |
| | | | Night | 67.4 | 52.8 | 46.1 | 48.5 | 55 |

Table 6-7: Results of Ambient Noise Monitoring (Cont')

| Points | Monitoring Station | Coordinate | Period | Noise Level (dBA) | | | | DOE Guideline Leq, dB(A) |
|--------|--|-------------------------------|--------|-------------------|-----------------|-----------------|-----------|--------------------------|
| | | | | L ₁₀ | L ₅₀ | L ₉₀ | Total Leq | |
| N4 | Presenting the noise level at Kg. Kongsu | 4°38'40.58"N 103°26'3.49"E | Day | 82.2 | 57.8 | 53.1 | 55.5 | 60 |
| | | | Night | 76.4 | 56.4 | 47.4 | 48.3 | 55 |

The overall noise level monitored (Leq) for the duration of 15 hours monitoring during day time at Point N1, N2, N3 and N4 were found to be 47.4 dB(A), 45.9 dB(A), 50.8 dB(A) and 55.5 dB(A), respectively. The overall noise level monitored (Leq) for the duration of 9 hours monitoring during night time at Point N1, N2, N3 and N4 were found to be 52.9 dB(A), 45.3 dB(A), 48.5 dB(A) and 48.3 dB(A), respectively.

6.12 VIBRATION BASELINE LEVEL

Table 6-8 shows the results of vibration monitoring at the nearest receptor. The results of the vibration level were compared with JMG guideline to meet the standard of 5 mm/s for Vibration and 124 dBL for airblast. While referring to The Planning Guidelines for Vibration Limits and Control; Annex A Schedule of Recommended Vibration Limits Schedule 1 Recommended Limits for Damage Risk in Buildings published by Department of Environment as shown in **Table 6-9**, the result is with safe level. The vibration baseline monitoring data is shown in **Appendix 6-2**. Vibration measurements were carried out to assess the vibration baseline level at site by using Vibrometer. Calibration of Vibrometer was conducted at begin and end of each measurement.

Table 6-8: Results of Vibration Baseline Monitoring

| Points | Monitoring Station | Coordinate | Period | Vertical Vibration Peak Velocity, V_{max} |
|--------|-----------------------|--------------------------------|------------|---|
| | | | | (mm/s) |
| V1 | Project Boundary | 4°39'37.01"N 103°26'43.07"E | 1 hours | 1.91 |
| V2 | Kampung Tebing Tembah | 4°39'47.12"N 103°25'49.93"E | 1 hours | 1.35 |
| V3 | Kampung Baharu | 4°39'1.72"N 103°25'39.71"E | 1 hours | 0.127 |
| V4 | Kampung Kongsu | 4°38'40.58"N 103°26'3.49"E | 1 hours | 0.68 |

Table 6-9: Recommended Limits for Damage Risk in Buildings from Steady State Vibration

| Damage Description | Vertical Vibration Peak Velocity V_{max} (mm/s) (0 to Peak) (10-100 Hz) |
|--|---|
| Safe | Less than 3 |
| Caution Level (Damage Not Necessary Inevitable) | 3 to 5 |
| Minor Damage | 5 to 30 |
| Major Damage | More than 30 |

Reference: The Planning Guidelines for Vibration Limits and Control; Annex A Schedule of Recommended Vibration Limits Schedule 1 Recommended Limits for Damage Risk in Buildings published by Department of Environment

6.13 TRAFFIC

Currently, the proposed Project site can be accessed via Tebing Tembah Road. It is approximately 1.0km before reaching the quarry site. The Project Proponent will develop the internal road during the pre-construction stage.

The study of its traffic volume is carried out annually by the Ministry of Works, Highway Planning Unit (HPU) at station TR 202 (Route No. 3), Jalan Kuala Terengganu-Dungun-Paka. A summary of the nationwide HPU traffic census is available in a publication entitled Road Traffic Volume Malaysia - 2015, hereinafter referred to as the HPU publication. The data from the HPU station shall be used to forecast traffic demand in terms of trips generation and attraction from the Project. The average annual growth rate in traffic volume based on the corresponding 16-hours volume data is depicted in **Table 6-10**

**Table 6-10: Annual Growth Rate and 16 Hours Traffic Volume 2006-2015
(for Station TR 202)**

| Year | Traffic Composition |
|---------------|---------------------|
| 2006 | 20,954 |
| 2007 | 25,215 |
| 2008 | 23,463 |
| 2009 | 29,051 |
| 2010 | 28,602 |
| 2011 | 30,035 |
| 2012 | 27,856 |
| 2013 | 29,864 |
| 2014 | 28,124 |
| 2015 | 28,170 |
| Normal Growth | 2.8 |

(Source: Ministry of Works Malaysia, Highway Planning Unit, Road Traffic Volume Malaysia 2015)

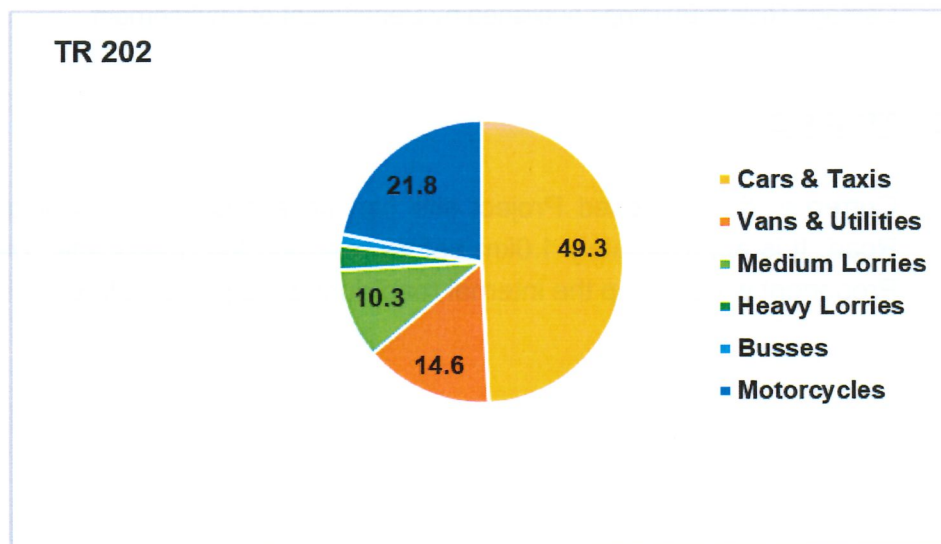


Figure 6-7: Pie Chart of Equivalent Passenger Car Value

(Source: Ministry of Works Malaysia, Highway Planning Unit, Road Traffic Volume Malaysia 2015)

6.14 BIOLOGICAL ENVIRONMENT

The proposed Project area is located within forestry area. No resident located within 500m radius. The nearest receptors are Kampung Tebing Tembah which situated about 750m western and Kampung Baharu and Kampung Kongsu which situated about 1.75km southwest from the proposed Project site respectively. The existing quarries located adjacent to the proposed project area which are Paka Kuari Sdn. Bhd. and about 1.0km northern from the proposed project area which is Hardy Builder Sdn. Bhd.. The quarries are currently operating.

The natural biological resources at the surrounding area had been greatly disturbed by existing quarry activity located adjacent to the proposed project area which is Paka Kuari Sdn. Bhd. and 1.0km northern from the proposed project area which is Hardy Builder Sdn. Bhd.. Thus, there is no significant biological habitat in this area as the habitat for wildlife and primary vegetation has been disturbed by surrounded approved quarry activities. Large wildlife has long vanished and the common fauna found are those that can co-exist with man.

Meanwhile, we have requested secondary wildlife data from Jabatan Perhilitan Negeri Terengganu. As informed by Jabatan Perhilitan Negeri Terengganu, the data was still under process by Jabatan Perhilitan Malaysia. Thus, the secondary data shall be included in the EMP stage. However, a Wildlife Management Plan (WMP) has been elaborated in **Chapter 8**.

6.15 HUMAN ENVIRONMENT AND SOCIO-ECONOMIC

The proposed Project site is currently zoned for forestry area. No resident located within 500m radius. The nearest receptors are Kampung Tebing Tembah which situated about 750m western and Kampung Baharu and Kampung Kongsu which situated about 1.75km southwest from the proposed Project site respectively. The existing quarries located adjacent to the proposed project area which are Paka Kuari Sdn. Bhd. and about 1.0km northern from the proposed project area which is Hardy Builder Sdn. Bhd.. The quarries are currently operating. Viewing to the situation, the proposed Project site is already surrounded by forest, agricultural and quarry activities.

Based on Population Distribution and Basic Demographic Characteristics, *Pejabat Daerah dan Tanah Dungun*, the total population of Mukim Paka was recorded 19,319 people (9,171 male and 10,148 female) which covers a total of 10 villages. The data of total population by gender, administration villages are tabulated in **Table 6-11**. The information of the nearest settlements to the proposed Project site are shown in **Figure 6-8**.

Table 6-11: Total Population by Gender, Administration Villages

| No. | NAMA KAMPUNG | Male | Female | Total |
|--------------|---------------------------|-------------|--------------|--------------|
| 1 | <i>Durian Mentangau</i> | 496 | 471 | 967 |
| 2 | Gong Beting | 437 | 405 | 842 |
| 3 | <i>Gong Gemia</i> | 758 | 781 | 1539 |
| 4 | Kampung Nyior | 680 | 645 | 1325 |
| 5 | <i>Kampung Cacar Baru</i> | 2450 | 2550 | 5000 |
| 6 | <i>Kampung Limbong</i> | 1047 | 1304 | 2351 |
| 7 | Pinang Merah | 510 | 514 | 1024 |
| 8 | <i>Santong</i> | 354 | 334 | 688 |
| 9 | Tebing Tembah | 2032 | 2351 | 4383 |
| 10 | <i>Telaga Mas</i> | 407 | 793 | 1200 |
| Total | | 9171 | 10148 | 19319 |

(Source: *Pejabat Daerah dan Tanah Dungun, 2018*)

A social economic study has been carried out on 26 November until 27 November 2020 with the local community at Kampung Tebing Tembah and Kampung Baharu which situated about 750m western and 1.75km southwest from the proposed Project site respectively. Only these two villages were located along the transportation route of the lorry to deliver the products from the quarry site.

The project site is located at the one of the eleven (11) mukim in District of Dungun, which is Mukim Kuala Paka. According to *Rancangan Tempatan Daerah Dungun 2035*, a total population of 180,530 was recorded at District of Dungun in 2020. It is estimated to have a population of 264,490 in the year of 2035. Main occupation of the population in these residences are private, though there are some housewives, own business, and government offices.

The settlements where located within 5 km radius of the project site are summarized **Table 6-12**.



MUKIM KUALA PAKA
DISTRICT OF DUNGUN
TERENGGANU DARUL IMAN
TOPO SHEET NO.: 4363 & 4463
SCALE 1: 50,000



LEGEND

- PROPOSED PROJECT AREA
- RIVER
- CONTOUR
- COCONUT PLANTATION
- BELUKAR, RIUNG AND HILL PADI
- RUBBER PLANTATION
- BUILDING IN RURAL AREAS
- ELECTRICITY TRANSMISSION LINE
- UNSEALED SURFACE ROAD

PROJECT PROPONENT
HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
Figure 6-8
INFORMATION ON NEAREST
SETTLEMENTS TO THE PROPOSED
PROJECT SITE

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Checked by | Ooi |
| Approved by | YK Wong |
| Report Ref. | KCS/HQ/472-EIA-0119-2505-R1 |
| Date | 20 November 2020 |
| Scale | 1 : 50,000 |
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| No. | Location |
|-----|--------------------|
| 1 | Durian Mentangau |
| 2 | Gong Beting |
| 3 | Gong Gemia |
| 4 | Kampung Nyior |
| 5 | Kampung Cacar Baru |
| 6 | Kampung Limbong |
| 7 | Pinang Merah |
| 8 | Santong |
| 9 | Tebing Tembah |
| 10 | Telaga Mas |

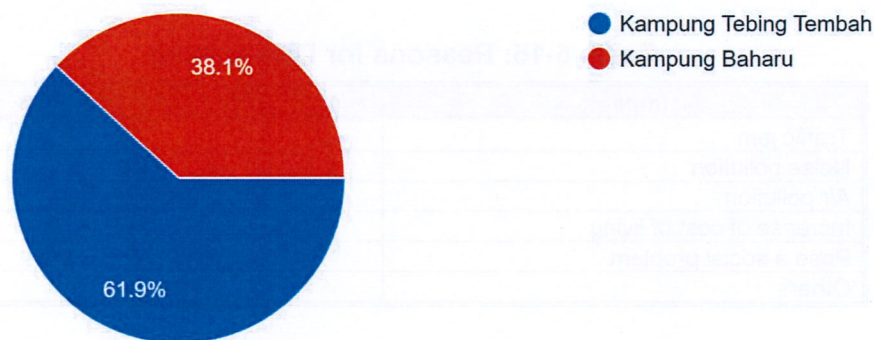
Table 6-12: Settlements within 5km Radius of the Project Site

| Settlement | Distance from Project Site (km) |
|-----------------------|---------------------------------|
| Kampung Tebing Tembah | 0.75km |
| Kampung Baharu | 1.75km |

Thus, the local communities listed in **Table 6-12** were those inhabitants who live within the zone of influence.

6.16.1 Social Survey

Survey works were conducted in the month of 26th November until 27th November 2020 targeting the local community. During the survey a total of 63 inhabitants of the affected region were interviewed and that the figure is more than sufficient to provide the necessary information to meet the objective of the study. **Figure 6-9** shows the pie chart of distribution of sample by villages.

**Figure 6-9: Distribution of Sample by Villages**

Through the social survey, there were 42 of the respondents '*Agreeable*' with the proposed project implementation while the remaining respondents were '*not agreeable*' (See **Table 6-13**).

Table 6-13: Attitude towards Project

| Attitude towards Project | Frequency |
|--------------------------|-----------|
| Strongly agreeable | 0 |
| Agreeable | 42 |
| Not agreeable | 19 |
| Strongly not agreeable | 2 |
| Total | 63 |

Among those who agreed, main reason given was the fact that the project when completed will be able to 'Increase local economic growth' (See **Table 6-14**).

Table 6-14: Reasons for Agreeing

| Reasons for Agreeing | No. of Respondents |
|--|--------------------|
| Increase in job opportunities | 31 |
| Increase property | 3 |
| Create business opportunities | 5 |
| Change into more comfortable lifestyle | 0 |
| Increase local economic growth | 40 |
| Increase income level | 2 |
| Others | 0 |

On the other hand, 21 from 63 of those who disagreed stated traffic jam, air and noise pollution as the main reason not to agree with the project (See **Table 6-15**).

Table 6-15: Reasons for Disagreeing

| Impacts | No. of Respondents |
|----------------------------|--------------------|
| Traffic jam | 18 |
| Noise pollution | 16 |
| Air pollution | 18 |
| Increase of cost of living | 1 |
| Pose a social problem | 0 |
| Others | 1 |

Generally, the people met during the investigation major in support for the proposed project. They believe this the project will generate economic growth to the area. Despite the fact that the project is very important to them they were some respondents also wary about the negative impacts that may be brought along during its operation such as:

- health and safety problem,
- air pollution such as dust and particles,
- noise pollution, and
- water pollution and so forth.

Mitigation measures to reduce the impacts were proposed in the social survey report is enclosed in **Appendix 6-6**.

6.16 EXISTING AND FUTURE LAND USE

The proposed Project area is located within forestry area. No resident located within 500m radius. The nearest receptors are Kampung Tebing Tembah which situated about 750m western and Kampung Baharu and Kampung Kongsu which situated about 1.75km southwest from the proposed Project site respectively. The existing quarries located adjacent to the proposed project area which are Paka Kuari Sdn. Bhd. and about 1.0km northern from the proposed project area which is Hardy Builder Sdn. Bhd.. The quarries are currently operating. Therefore, the proposed Project is seen to be compatible with the existing land use. However, there was a *Loji Air Bukit Bauk (Jabatan Bekalan Air Dungun)* which is located 5.7KM north western from the proposed project site.

Apart from that, there is a Terowong Dungun which located 7.0KM north western from the proposed Project Site. Terowong Dungun is one of the tunnels for the East Coast Rail Link (ECRL) construction site at Bukit Bauk. ECRL is a high impact project under the *Rancangan Malaysia Ke-11 (RMK11)* which is a construction of rail route that will connect the East Coast states with the Klang Valley. The project is divided into three phases, from the Klang Valley to Kuantan, Kuantan to Kuala Terengganu and Kuala Terengganu to Kota Baru and Tumpat in Kelantan.

Viewing to the situation, areas particularly in vicinity of the Project site shall be enjoying the progressive economic growth, directly or indirectly in the near future. 500m google image of the proposed Project site is shown in **Figure 6-9(a)**. Meanwhile, the existing land use profile within 5-km radius of the Project site is summarized in **Table 6-16** and illustrated in plan enclosed in **Figure 6-9(b)**.

Table 6-16: General Land Use Profile Surrounding the Project Site

| Sector | Land Use Profile | |
|---------------|-------------------------|--|
| 0 km – 0.5 km | North | Hilly area, Shrub and Bushes |
| | Northeast | Pasir Panjang, South China Sea, Shoreline |
| | Northwest | Hilly area, Shrub and Bushes, Sg. Dol |
| | South | Tanjung Paka, Hilly area, Sg. Paka, Paka Kuari Sdn Bhd |
| | Southeast | Tanjung Pilur, South China Sea, Hilly area, Shoreline |
| | Southwest | Tanjung Paka, Sg. Paka |
| | East | Shoreline, South China Sea |
| | West | Hilly area, Shrub and Bushes, Sg. Dol |
| 0.5 km - 1 km | North | Hilly area, Hardy Builder Sdn. Bhd. |
| | Northeast | South China Sea |
| | Northwest | Shrub and Bushes, Sg. Dol |
| | South | Kuala Paka, South China Sea |
| | Southeast | South China Sea |
| | Southwest | Sg. Paka, Tanjung Paka |
| | East | South China Sea |
| | West | Shrub and Bushes, Kg. Tebing Tembah |
| 1 km - 2 km | North | Tk. Gading, Shoreline, Hilly area |
| | Northeast | South China Sea |
| | Northwest | Kg. Nik, Shrub and Bushes, Secondary forest, Hilly area |
| | South | South China Sea |
| | Southeast | South China Sea |
| | Southwest | Kg. Pantai, Kg. Kongsu, Kg. Baharu, Kg. Cerung Melintang |
| | East | South China Sea |
| | West | Shrub and Bushes |
| 2 km – 3 km | North | Shoreline, Hilly area |
| | Northeast | South China Sea |
| | Northwest | Hilly area |
| | South | South China Sea, Kg. Baharu, Shrub and Bushes |
| | Southeast | South China Sea |
| | Southwest | Kg. Limbung, Kg. Tanah Lot, Kg. Gong Samak, Kg. Gong Gemia |
| | East | South China Sea |
| | West | Kg. Baharu Darat Kubur, Kg. Nyiur, Kg. Gong Paku |
| 3 km - 4 km | North | Tg. Gadung, Hilly area, Shrub and Bushes, Kuala sura |
| | Northeast | South China Sea |
| | Northwest | Shrub and Bushes, Hilly areas, Kg. Gong Gemuruh |
| | South | South China Sea, Kg. Cacar |
| | Southeast | South China Sea |
| | Southwest | Kg. Beril, Shrub and Bushes |
| | East | South China Sea |

Table 6-16: General Land Use Profile Surrounding the Project Site

| Sector | Land Use Profile | |
|---------------|-------------------------|--|
| 3 km - 4 km | West | Sg. Paka, Shrub and Bushes |
| 4 km – 5 km | North | Institut Teknologi Mara, Shoreline, Shrub and Bushes |
| | Northeast | South China Sea |
| | Northwest | Hilly areas, Hutan Rizab Bukit Bauk, Kg. Nesan Tinggi, Kg. Dusun Besar |
| | South | Shoreline, Shrub and Bushes, South China Sea |
| | Southeast | South China Sea |
| | Southwest | Secondary forest, Shrub and Bushes, Kg. Kolam |
| | East | South China Sea |
| | West | Sg. Paka, Secondary forest, Shrub and Bushes |



LEGEND

- PROPOSED PROJECT AREA
- EXISTING ACCESS ROAD
- EXISTING MAIN ROAD

| No. | Location |
|-----|-----------------------|
| ① | Hardy Builder Sdn Bhd |
| ② | Kampung Tebing Tembah |
| ③ | Paka Kuari Sdn Bhd |

PROJECT PROPONENT
 HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
 Figure 6-9(a)
 500M RADIUS PLAN OF THE PROPOSED
 PROJECT AREA

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Checked by | Ooi |
| Approved by | YK Wong |
| Report Ref. | KCS/HQ/472-EIA-0119-2505-R1 |
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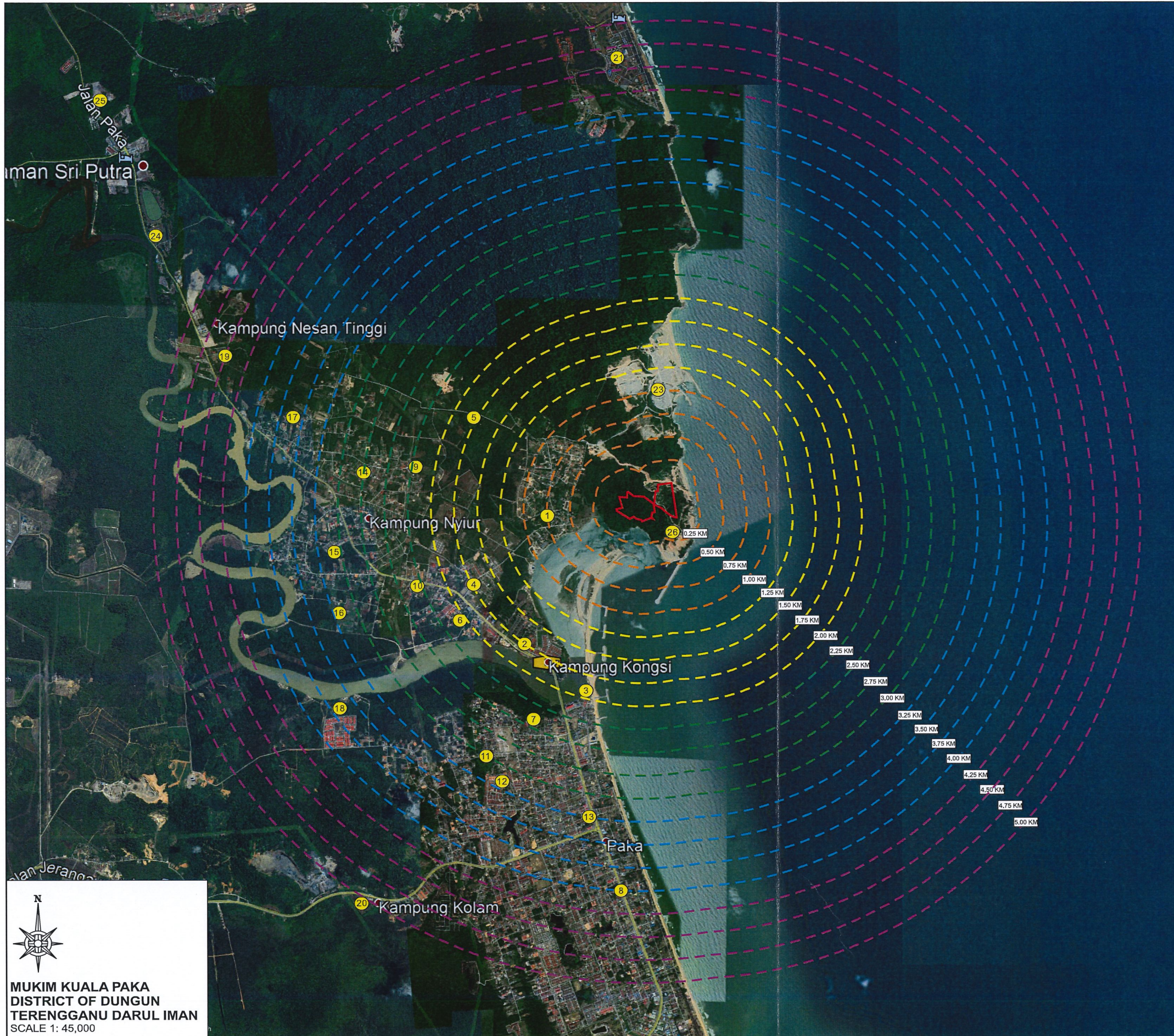
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MUKIM KUALA PAKA
DISTRICT OF DUNGUN
TERENGGANU DARUL IMAN
 SCALE 1 : 8,000



LEGEND


| | |
|---|--|
|  | PROPOSED PROJECT AREA |
| No. | Location |
| 1 | Kampung Tebing Tembah |
| 2 | Kampung Kongsi |
| 3 | Kampung Pantai |
| 4 | Kampung Baharu |
| 5 | Kampung Nik |
| 6 | Kampung Cerung Melintang |
| 7 | Kampung Limbung |
| 8 | Kampung Baharu |
| 9 | Kampung Baharu Darat Kubur |
| 10 | Kampung Gong Samak |
| 11 | Kampung Lot Tanah |
| 12 | Kampung Gong Gemia |
| 13 | Kampung Cacar |
| 14 | Kampung Nyiur |
| 15 | Kampung Gong Paku |
| 16 | Kampung Pinang Merah |
| 17 | Kampung Gong Gemuruh |
| 18 | Kampung Beril |
| 19 | Kampung Nesan Tinggi |
| 20 | Kampung Kolam |
| 21 | Institut Teknologi Mara |
| 22 | Kampung Dusun Besar |
| 23 | Hardy Builder Sdn. Bhd. |
| 24 | Loji Air Bukit Bauk (Jabatan Bekalan Air Dungun) |
| 25 | ECRL Terowong Dungun |
| 26 | Paka Kuari Sdn Bhd |

PROJECT PROPONENT
HEXATREND QUARRY SDN. BHD.

DRAWING TITLE
Figure 6-9(b)
5 KM RADIUS GOOGLE PLAN OF THE PROPOSED PROJECT AREA

| | |
|-------------|-----------------------------|
| Compiled by | PW Lin |
| Drawn by | PW Lin |
| Checked by | Ooi |
| Approved by | YK Wong |
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