

# **GENERAL GEOLOGY AND GEOCHEMISTRY AROUND BUKIT QUOIN AND BUKIT KAWA, TAWAU SABAH**

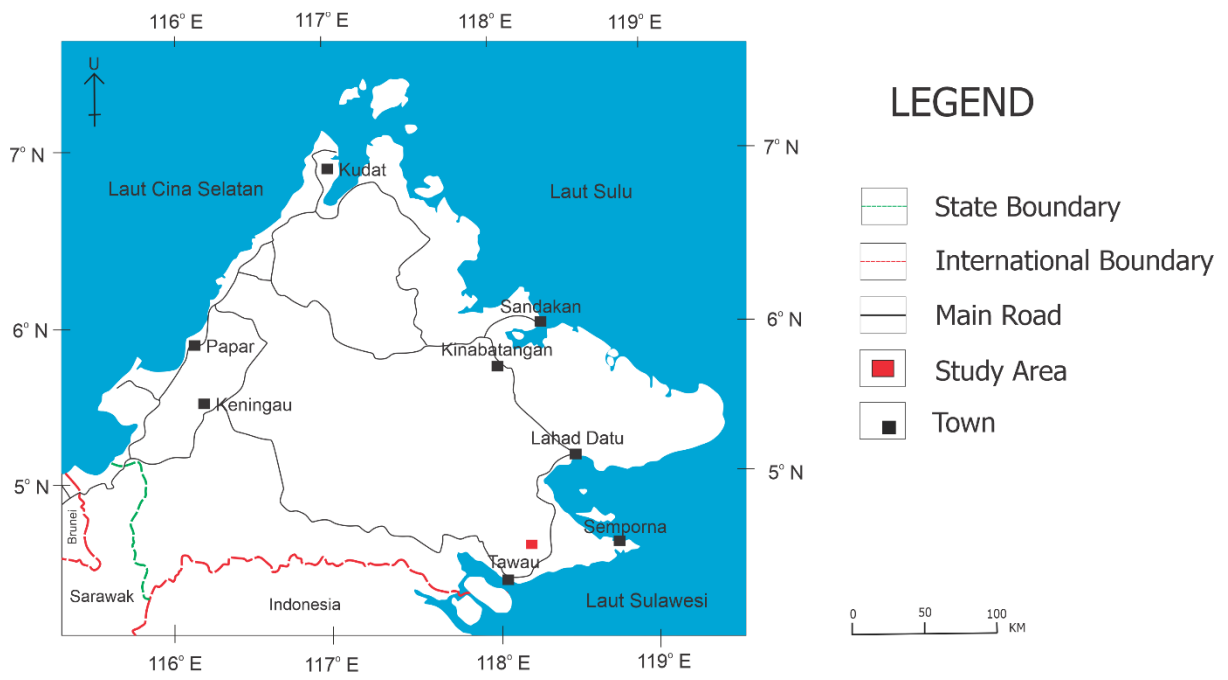
**Shah Aiman Arief Bin Amirudin**  
**Supervisor: Prof. Dr Baba Musta**

*Programme of Geology*  
*Faculty of Science and Natural Resources*  
*Universiti Malaysia Sabah*  
*88400 Kota Kinabalu Sabah*

## **Abstract**

The study area is located at Quoin Hill to Kawa Hill which is located at north of Tawau district about 500 km from Kota Kinabalu and 50 km from Tawau City. The study area is at latitude 04° 23' U to 04° 25' U and longitude 118° 05' T to 118° 01' T with expense of the study area is 100 km square. The surrounding area consists of Pleistocene andesite volcanic rocks and is overlapped by olivine basalt volcanic rocks around Quoin Hill and microdiorite porphyry plutonic rocks around Kawa Hill. A total of 50 soil samples are randomly scattered throughout the study area were analysed in determining the concentration of heavy metals. Chromium heavy metal concentration range is around 3.88-151.81 mg/kg, copper heavy metal concentration range at 3.65-58.77 mg/kg, heavy metal concentration for iron range around 12507.39-81047.81 mg/kg, manganese heavy metal concentration range around 11.87-4379.32 mg/kg, nickel concentration range at 0.77-53.96 mg/kg, lead heavy metal concentration range of 1.18-21.47 mg/kg and zinc heavy metal concentration around 4.92-93.96 mg/kg. Isopiestic mapping of heavy metals was performed to see the distribution pattern of heavy metal concentrations across the study area. Physio-chemical properties of soil including pH value, percentage of organic matter, percentage of soil moisture, classification of grain measurements was analysed to see the factors using the type of heavy metal adsorption mechanism Cr, Cu, Fe, Mn, Ni in soil while Pb concentration in soil depends on the organic matter in the soil. The relationship of Zn concentration to the percentage of clay and the percentage of weak soil organic matter changes the diversity of Zn forms that exist is strongly related to the pH value of the soil. The pH value of the soil in the area studied directly 5.58 times moderately acidic and the pH value of the air was in 7.23 neutral colours. The percentage of moisture content (%) is low by 38.65% different the percentage of organic matter is low with a value of 4.68%. For grain size classification the whole soil sample is mostly clay. The results of X-ray diffraction analysis found that the original sample of microdiorite porphyry had quartz, kaolinite and illite minerals while the original sample of andesite showed quartz and kaolinite minerals while the original sample of basalt showed quartz, kaolinite and illite minerals.

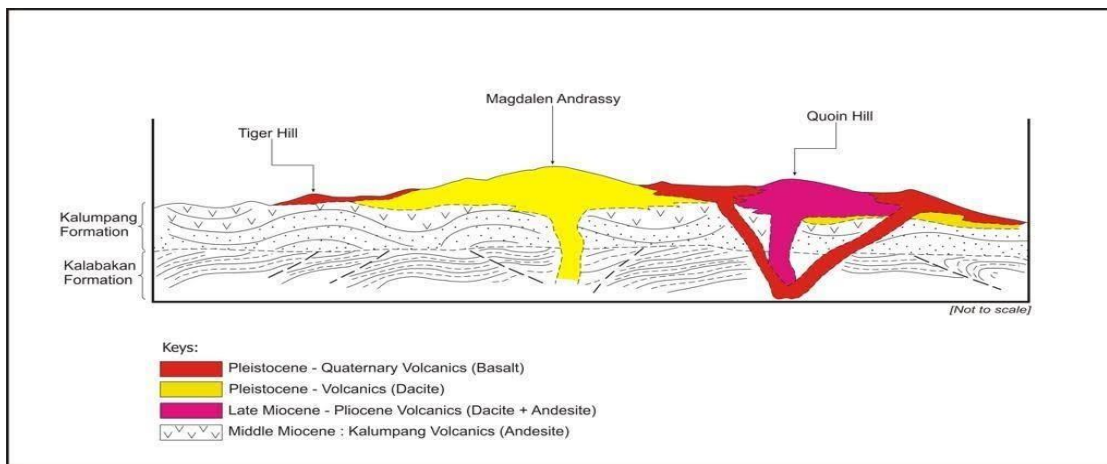
### Map of the study area



## Stratigraphic Sequence

Million Years (M.Y)	Period	Rock Unit	Igneous Rock
0	Quat		<i>Alluvium deposit and coral deposit Olivine basalt Dacitic and andesitic volcanic breccia and lavas</i>
5			
10	MIOCENE		<i>Dacitic and andesitic lava and piroclastics</i>
15			
20			
25	OLIGOCENE		<i>Volcanic andesitic and tectonci activities associated with the Kalumpang Formation</i>
30			
35			

## Cross section of volcanic Rock



## Outcrops of volcanic rock in Bt Kawa, Tawah

