

Determination of the typical subsurface soil thickness in Kota Belud, Sabah using geoelectrical resistivity imaging technique

ABSTRACT

The sedimentary rock of the Crocker Formation with Late Eocene to early Miocene age and the Wariu Formation with Middle Miocene age dominate the study area in Kota Belud. The Quaternary alluvium and weathered materials are overlain on both parent rocks. The primary goal of this research is to determine the thickness of weathered materials, identify the types of parent rock that underlies the flatland area, and characterize the geological structures or parent rock using geoelectrical resistivity and induced polarization. Results from three survey stations with 200 meters survey line each employing Schlumberger array provide almost 40 meters depth of investigation. Zones of high, medium, and low resistivity were classified along with high and low chargeability for IP in all three stations. The typical thickness of weathered materials is around 9 to 13 meters. The resistivity and IP data shows a prominent occurrence of shale or mudstone dominated zone below the weathered materials layer. This zone is attributed to the shale or mudstone dominant facies of the Crocker Formation. The dip and strike trends interpreted from the resistivity images in the shale dominated zone is estimated to be around Northeast – Southwest and the pattern matches the observed outcrop from the study area.