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ENGINEERING GEOLOGY OF THE KOTA KINABALU AREA, SABAH, MALAYSIA

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ABSTRACT: The geology of the Kota Kinabalu area provides a favourable setting for engineering geological instability. Kota Kinabalu is underlain by the Late Eocene – Early Miocene Crocker Formation and Quaternary Alluvium. The Crocker Formation is composed of thick sandstone unit, interbedded sandstone – shale unit and shale unit. These rock units are dissected by numerous lineaments with complex structural styles developed during series of regional Tertiary tectonic activities. The tectonic complexities reduced the physical and engineering properties of the rock masses and produced intensive displacements and discontinuities among the strata, resulting in high degree of weathering process and instability. The weathered materials are unstable and may cause subsidence, sliding and falling induced by high pore pressure subjected by both shallow and deep hydrodynamic processes. This paper describes the engineering geological investigation, appreciation of the complex geology, examination of material properties under specific geological laboratory tests, field testing and mapping, verification of the mechanism of failure and the deduced possible causes of slope failures, settlement, land subsidence and foundation instability. Much of the findings could not have been ascertained without sound understanding of the site geological evolution, inherited unfavourable geological relics and the peculiar but hazardous engineering properties in the Kota Kinabalu area. Geological evaluation should be prioritized and take into consideration in the initial step in all infrastructure program. This engineering geological study may play a vital role in engineering geological problems assessment to ensure the public safety.