

Assessment of geological condition for tunnels analysis using Inverse Distance Weighting method (IDW)

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Abstract: The geological condition of tunnel construction site varies from project to project. It significantly influenced the tunnel construction in terms of planning and design stage. As maintaining the stability of tunnels and surrounding structures was the main concern during planning and design stage, the geotechnical and geological properties of ground required careful yet detail characterization. The features of ground must be well considered in the tunnel design. The ground condition surrounding urban tunnels is broadly divided into tunnelling in soil and tunnelling in rock. At tunnel excavation face, soft ground has trouble in remaining stable in the short, medium or long term (e.g. soil and weak rocks). While hard ground expected the presence of rock and able to remain stable for an extended period upon excavation. However, the ground

condition used to be more complicated as transition between soft ground and hard ground often occurred or existence of mixed ground condition. These two types of distinct ground condition have different tunnelling induced deformation mechanism. Detail consideration required in determination of ground condition as it determines the design approach of the construction. It also influenced the selection of construction methods. In the aspects of ground condition, tunnelling in soft ground is roughly divided into tunnelling in cohesive ground and cohesionless ground. The determination of this ground condition should be modelled using Inverse Distance Weighting (IDW) method. This study focused on the Klang Valley Mass Rapid Transit (KVMRT) project and determination of soil lithology is well established using IDW method.