

## Evaluation of tunnel interaction in Kenny Hill Formation using finite element modelling

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**Abstract:** The number of town population growth is the reason for the expansion of transportation and infrastructures in metropolitan cities. Due to that urban tunnelling is turn out to be common in the most area. Considering the environmental impacts, going underground become a feasible choice for the development of transportation. But, when dealing with urban tunnelling always meet with complex mechanism due to soil interaction between ground and tunnels. Tunnelling problem must be considered as a three-dimensional problem. However, we can simulate the three-dimensional plane problem into a two-dimensional plane problem by considering certain assumption which governs the missing dimension. This paper is to show the simplified method for ground settlement prediction of tunnelling excavation using the PLAXIS 2D software. The two simplified methods are lining contraction and stress

reduction method. The comparison between these two methods is described in this paper in terms of contraction ratio and unloading factor which can be used for tunnelling problems. This study was done in the Kuala Lumpur Kenny Hill Formation basically based on geotechnical data of Klang Valley Mass Rapid Transit (KVMRT) system. Hardening soil model chooses as the constitutive model for this analysis because of it able to represent the actual soil behaviour compared to Mohr Coulomb Model. The effectiveness of simulation using these two methods was verified with the monitored ground movement data. A relationship between these two methods was formed as the outcome of the study.

**Keywords:** Lining contraction, stress reduction, Kenny Hill Formation, hardening soil model, tunnelling