

## **ELECTRIFIED DOUBLE TRACK RAILWAY PROJECT**

The Malaysian Government has decided to extend the electrified double track railway from Ipoh to Padang Besar in Peninsular Malaysia. The electrified double track railway generally follows the alignment of the old railway line from Ipoh to Padang Besar with a total distance of 350km. G&P is the Geotechnical consultant engaged by MMC-Gamuda Joint Venture Sdn Bhd to design the ground treatment for a 200km stretch of the electrified double tracks from Padang Rengas to Alor Setar. The design speeds for passenger train and freight train are 180km/hour and 90km/hour respectively. The designed axle loads are 20 tonnes and 16 tonnes for passenger and freight trains respectively.

### **The Challenges**

As the railway tracks transverse a distance of 200km from north to south going through various geological formations, the subsoils vary from soft alluvium deposits to dense residual soils.

In addition, the geometrical tolerance of railway tracks is very stringent, especially for trains with high a design speeds of 180km/hour. The design performance requirements include differential settlement of not more than 10 mm over a chord length of 10m and settlement of not more than 25mm within 6 months after completion.

Hence, various ground treatment designs are required to meet the performance requirements and construction schedules are required, especially when long stretches of the embankment supporting the tracks are traversing very soft to soft alluvium deposits with thickness of 15m to 20m.

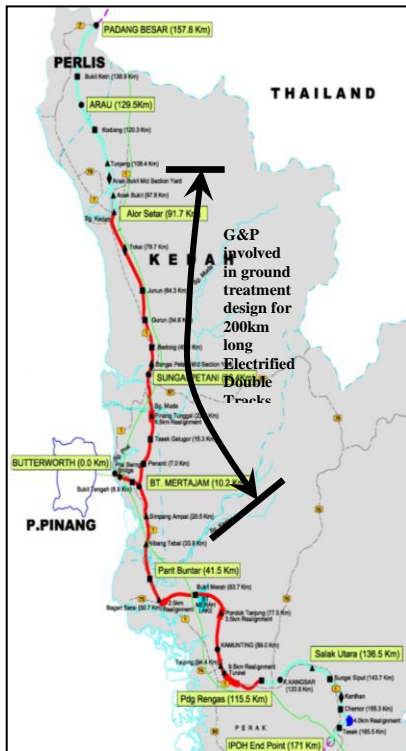
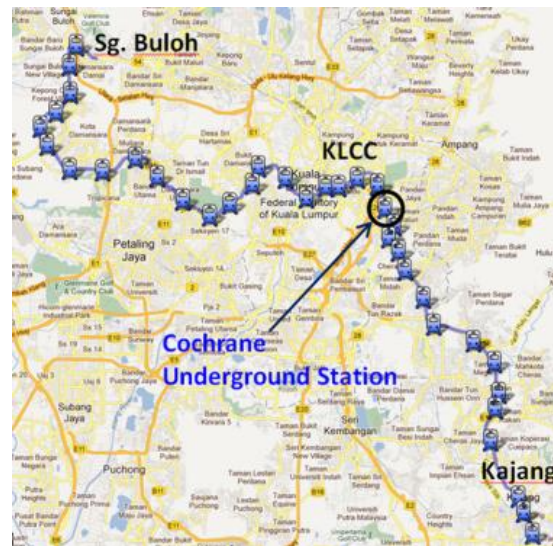


Figure 1: Location of Electrified Double Tracks Railway

## **KLANG VALLEY MRT UNDERGROUND STATION**

The Klang Valley Mass Rapid Transit (KVMRT) from Sg. Buloh to Kajang is one of the major infrastructure projects launched in 2011. It is the first MRT project in Malaysia. The project involved a 9.8km long tunnel from Semantan to Maluri with 7 underground stations and associated structures such as portals, ventilation shafts, escape shafts and crossovers to be constructed over the Klang Valley and Kuala Lumpur city areas. G&P is geotechnical consultant engaged by Mott Macdonald (Malaysia) for underground Section UG2 (Bukit Bintang to Maluri) with 3.8km long tunnel, 3 underground stations, 1 portal and 1 escape shaft.



*Figure 1: Location of the construction site*