



Asia

Perth New MetroRail – City Section (Western Australia)

Description of Work

New MetroRail (NMR) is the largest public transport infrastructure project ever undertaken in Western Australia with a budget of A\$1.5 billion. NMR will effectively double Transperth's rail network. The city centre section of the route includes 800m of twin bored 6.1m diameter tunnels, two deep station boxes and over 1km over cut and cover tunnels to be constructed in and under Perth's Central Business District, passing under the city's existing surface railway station and tracks.

Alignment constraints result in the twin bored tunnels being separated by less than one half diameter clearance and less than one diameter ground cover as the tunnel pass beneath an operating railway. GCG (Asia) Ltd are acting as Specialist Geotechnical Advisors to the Public Transport Authority of Western Australia (PTA) and as part of their brief was a commission to investigate the risk of adverse surface and subsurface ground movements during tunnel excavation and the interaction between closely spaced tunnels during sequential construction. Finite element analyses were carried out to estimate the incremental ground and tunnel lining displacements, as well as bending moment and hoop forces induced on the first tunnel segmental linings due to excavation of the second tunnel. This information was used by the client to assess risk of damage to the operating railway and determine level of construction insurance cover.

Client: Public Transport Authority of Western Australia (PTA)

Dates: 2004-present

Estimated Project Cost: A\$ 1.5 billion

