

## Tunnels



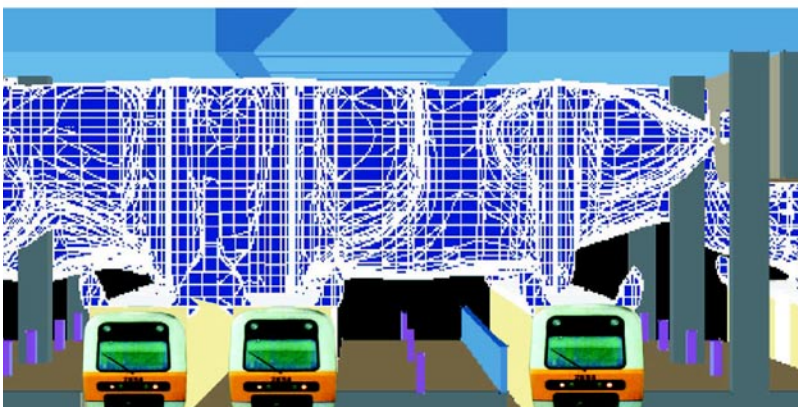
Nundah Bypass, Brisbane



Whalers Tunnel, Perth



New Southern Railway, Cooks Crossing, Sydney



Britomart Queen Street Station, Auckland, New Zealand

Arup applies a multidisciplinary approach to tunnelling and underground engineering projects providing a comprehensive service to clients in Australasia.

Our skills in tunnel engineering and underground technology are extensive and we are constantly improving these services by seeking innovative, cost effective solutions to ensure we remain at the forefront of technical development and project delivery.

Arup's underground engineering expertise incorporates a complete design and project management service for tunnels, shaft construction, large excavations, deep basements, cavern formation and mine stabilisation.

We provide clients with cost-effective solutions based on the priorities of each particular project. Our tunnel designers have extensive experience in choosing and designing tunnel lining systems for a wide range of applications, including complex three dimensional sprayed concrete lining tunnel junctions as well as traditional circular tunnel solutions.

Our geotechnical experience has been invaluable in the assessment of the settlement, or damage, to structures caused by tunnelling. We have also advised developers on the effects of new buildings on existing tunnels.

Our range of services include:

- transportation tunnels
- service tunnels
- water and sewer tunnels
- cut and cover tunnels
- immersed tunnels
- caverns and shafts
- lining design
- tunnel refurbishment
- ground movement assessment
- damage assessment
- face stability assessment