

Forrestfield Tunnel

Perth, WA

We completed treatment of a 3m zone around the tunnel was completed from surface level and from within the tunnel. Read on for details..



The project

The Forrestfield-Airport Link is a A\$1.9B project that will improve rail connections between the centre of Perth and its growing eastern suburbs. As part of this project a number of tunnel cross passage soil blocks were jet grouted by other contractors for subsequent excavation. During excavation of the jet grout treated cross passage at Dundas Rd experienced a breach with significant water and soil flowing into the excavation, resulting in the formation of a large sinkhole at ground level and damage to approximately 30m of the tunnel liner. Remedial works were required to allow the damaged tunnel to be safely repaired.

The challenge

The project required a 3m annulus of previously treated soil and grout to be treated with grout to allow remedial lining works to be conducted. The subsoil conditions comprised of Bassendean Sand overlying Guildford Formation with predominantly clayey sand and silt enclosing the tunnel. Groundwater level is about 4m above the crown of the tunnel.

The solution

Keller’s global expertise and experience in similar projects was drawn upon to develop a remedial works solution to allow the damaged tunnel to be safely repaired. A permeation grouting solution using sodium silicate was selected as the most practical option to treat the soil within the treatment annulus given the myriad of site constraints to work within. Treatment was carried out over a period of approximately 4 months using Tube-A-Manchette (TAM) pipes with approximately 5,000 cubm of soil being grouted. The treatment works by Keller has allowed the tunnel liner repair works to commence and the construction of the tunnel to continue.

Project facts

Owner(s)

Metronet

Keller business unit(s)

Keller Australia

Main contractor(s)

Salini Impregilo-NRW JV

Solutions

Tunnelling

Markets

Infrastructure

Techniques

Permeation grouting