

LANE COVE RIVER TUNNEL

EPPING TO CHATSWOOD RAIL LINE PERMEATION GROUTING



Client: Thiess Hochtief Joint Venture

Specialist Contractor: Menard Bachy Pty Ltd

THE PROJECT

The Parramatta Rail Link project was built by THJV (Thiess-Hochtief Joint Venture) to link Chatswood and Epping via a tunnel 12.8km long. The tunnel path crosses the Lane Cove River channel and that's where is located the Lane Cove River cut and cover tunnel. This site was used to construct the twin tunnels under a section of the Lane Cove River. The tunnels site approximately one metre below the bed of the Lane Cove River. This work was done in stages across the River to allow the water to flow throughout the construction period and limit environmental impact to the minimum.

MENARD BACHY'S ROLE

Menard Bachy was awarded the project in early 2003 as a specialty contractor to carry out the design and execution of the following:

- Site investigation campaign including test drilling throughout the area of the work, grout injection and assessment of rock characteristics and geotechnical / hydrogeological conditions
- Grouting of the cofferdam boundaries for temporary use of the tunnel excavation from the river channel level up to a depth of 25 metres with a target lugeon value of $5(L.s^{-1}.m^{-1})$
- Grouting of the boundaries of the basement of a service facility for permanent use from a depth of 4 meters to 23 meters under existing surface level with a target lugeon value of $1(L.s^{-1}.m^{-1})$.

- Design and trial of a range of grout mixes to overcome challenging site conditions and satisfy THJV requirements in terms of; technical specifications, environmental constraints, time imperatives and financial targets
- Bentonite was used to increase grout penetration in areas where a dense matrix of seams was present in the rock
- Silica Fume was also incorporated in some mixes to reduce grout shrinkage
- Where larger seams were encountered special mixes including blockers were used to reduce the loss of grout (and subsequent environmental damage) by drastically decreasing the time for the grout to set
- Other products were used to improve grout fluidity and workability.

Menard Bachy was chosen for its unique know-how in designing custom made grout solutions to overcome challenging site conditions. a large range of mixes, including various additives, were successfully used in the highly variable conditions encountered in the ground and to complete the job in a timely and cost effective manner.

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