

ROSEBERRY MINE, TASMANIA



MENARD BACHY

UPCAST VENTILATION SHAFT LONGHOLE GROUTING



Client: Pasma Mining

Consultant: Coffey Partners International Pty Ltd

Specialist Contractor: Menard Bachy Pty Ltd

THE PROJECT

The 4.0 metre diameter ventilation shaft at Pasma's Roseberry Mine was constructed by reaming to 1.8 metre diameter from a HQ geotechnical diamond drill hole, and then bench stripping to final size. Water inflows of 2000 litres per minute occurred at breakthrough of the geotechnical investigation hole into the existing underground development at the base of the shaft at a depth of 544 metres. This investigation hole showed a sequence of weathered, highly fractured shear and fault zones as the source of water ingress.

MENARD BACHY'S ROLE

Due to the nature of the problem, Menard Bachy were required to develop a quick and innovative solution that would both reduce water inflow into the mine to a far more manageable level and also improve ground conditions to allow successful completion of the shaft excavation.

Water testing was carried out to determine the nature and location of the major zones of water inflow and to design a grouting program. Two zones were identified:

Zone 1 - Between 0 and 160 metres below surface at 400 litres/minute.

Zone 2 - Between 289 and 337 metres below surface at 1600 litres/minute.

A detailed grouting program was then designed by Menard Bachy. Due to the vast difference in groundwater inflow and ground conditions separate grouting procedures were assigned to deal with each zone.

Menard Bachy then carried out specialist resin grouting between 290-340 metres followed by cement based grouting over inflow zones of poor permeability. This was then followed by a series of 125mm percussion holes drilled by others around the shaft pilot hole to a depth of 175 metres and cement pressure grouting to form a grout curtain, using a single packer in upstages. Finally a series of HQ parent holes were drilled to 280 metres depth with up to 3 NQ holes wedged off each parent hole to a depth of 320 metres. This concept allowed testing of penetration from previous grouting as well as the implementation of curtain grouting around the major inflow zone.

Menard Bachy undertook an intense 10 day period of hands-on design and supervision by specialist staff which provided huge project savings.

A total of 120 tonnes of dry weight Portland cement was used in the grouting program. Grout penetration from all stages of the grouting program was clearly visible in areas of poor ground encountered during the shaft excavation. Final bench excavation of the 544 metre deep shaft was completed to a final diameter of 4 metres in just over 6 months.

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