

SYDNEY LPG CAVERN

PORT BOTANY



MENARD BACHY



Client: ELGAS Ltd
Designers: Geostock

Contractor: Walter Construction Group Limited
Specialist Contractor: Menard Bachy Pty Ltd

THE PROJECT

The Elgas Underground Storage Facility in Port Botany will provide the capacity to store 65,000 tonnes of LPG (Liquefied Petroleum Gas). The first Australian LPG facility is located 130m underground in Hawkesbury sandstone where 140,000m³ of rock has been excavated.

Four 230m long, 14m wide, 11m high storage galleries are joined by connection galleries 5.5m wide and 5.5m high. A water curtain gallery 4m wide and 3.5m high is located 15m above the LPG storage galleries to maintain saturation of the rock. The pressure exerted by the groundwater contains the LPG in the cavern.

MENARD BACHY'S ROLE

Construction on the project commenced in March 1996. Following the commencement of the excavation and the need to closely control the influx of ground water, Menard Bachy's assistance was requested in September 1997.

During the excavation process, water ingress into the main gas storage caverns proved greater than had been foreseen following primary ground treatment by grouting from the water curtain galleries.

Menard Bachy Geotechnical Division engineers worked closely with the project team on:

- Proposing solutions to effectively grout without affecting the general mining cycle. Supplying specialised grouting plant and materials,
- Providing labour and supervision to perform the specialised grouting operations.
- Designing the grout and application

A range of specialist grouts and techniques were developed for the many differing water flow situations in the project to inject the following grout mixes

- Ordinary cement mixes with a small proportion of bentonite
- Microfine cements were used in areas where the water tests showed a fine fissures present
- Chemical grouts such as sodium silicate grouts in certain problem areas

Menard Bachy had 8 grouting crews working 24 hours a day on a 6 day cycle to complete the grouting operations. This project was completed in June 1999.

SYDNEY

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