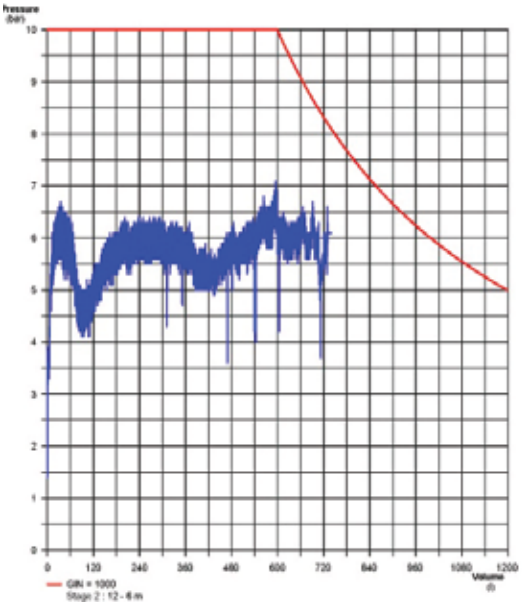
Barden Ridge Dam, Sutherland, NSW – Installation of a Grout Curtain using the Grout Intensity Number (GIN) Method



Volume vs pressure plot for each grout injection. The GIN curve is shown in red.

Using the GIN grouting method, Keller was able to regulate and control the grout volumes and pressures being applied to the specified treatment area.

AUSTRALIA
NEW ZEALAND
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INDONESIA

Enquiries to:
PO Box 7974
Baulkham Hills NSW 1755

Level 1, 4 Burbank Place
Baulkham Hills NSW 2153
Australia
t: (02) 8866 1155
f: (02) 8866 1151
e: info@kellerge.com.au

Project

A grout curtain was required as part of the construction of a new dam at Barden Ridge, Sutherland. Keller Ground Engineering provided the required advanced equipment and experienced personnel to perform the specified Grout Intensity Number (GIN) method of grouting.

Ground Conditions

The area consisted of Sandstone bedrock with numerous weathered rock fissures and localized clay in filling. The grout curtain was required to be installed to a depth of up to 23m below dam foundation level.

Solution

The GIN grouting method was specified due to the improved control on grout volume and flow characteristics together with the ability to record in real time the flow pressures and volumes for subsequent analysis.

At the commencement of the works a small trial section of work was performed to confirm the Grout Intensity Number to be used for the project. The GIN number is a function of the anticipated grout volume required to fill the fissures and the maximum pressure that can be applied to the rock before fracturing occurs.

Construction

Using state-of-the-art grouting equipment and software, grout volumes and pressures were monitored and recorded in real time during each injection.

Analysis of the injection parameters allowed subsequent injections to be targeted in accordance with the varying ground conditions and fracture frequency. Real-time graphs and drawings along with grouting details as recorded by the computer and submitted on a daily basis to the Consulting Engineer.

Grouting of primary, secondary and tertiary holes was completed within 4 weeks on site with extremely difficult access for drilling rigs due to the steep valley walls. Pump tests were performed following the grout to validate the grouting results.

Client:
Sutherland Shire Council

Consulting Engineer:
GHD Pty Ltd

Principle Contractor:
Haslin Constructions Pty Ltd.

Specialist Geotechnical Constructor:
Keller Ground Engineering Pty Ltd

KELLER GROUND ENGINEERING