WHAT IS JET GROUTING?

Jet grouting is a soil improvement technique used to strengthen and stabilise the ground.

It involves injecting high-pressure grout into the soil, which is then mixed with the surrounding earth to form a solidified structure.

It is typically used in construction and geotechnical engineering to address issues such as poor soil conditions, water seepage, and the need for reinforced foundations.

Jet grouting has been used in several hydro dam projects around the world, including Three Gorges Dam in China and the Grand Coulee Dam in the US, to stabilise the ground and improve foundations.

HOW WILL IT BE USED IN THE DAM?

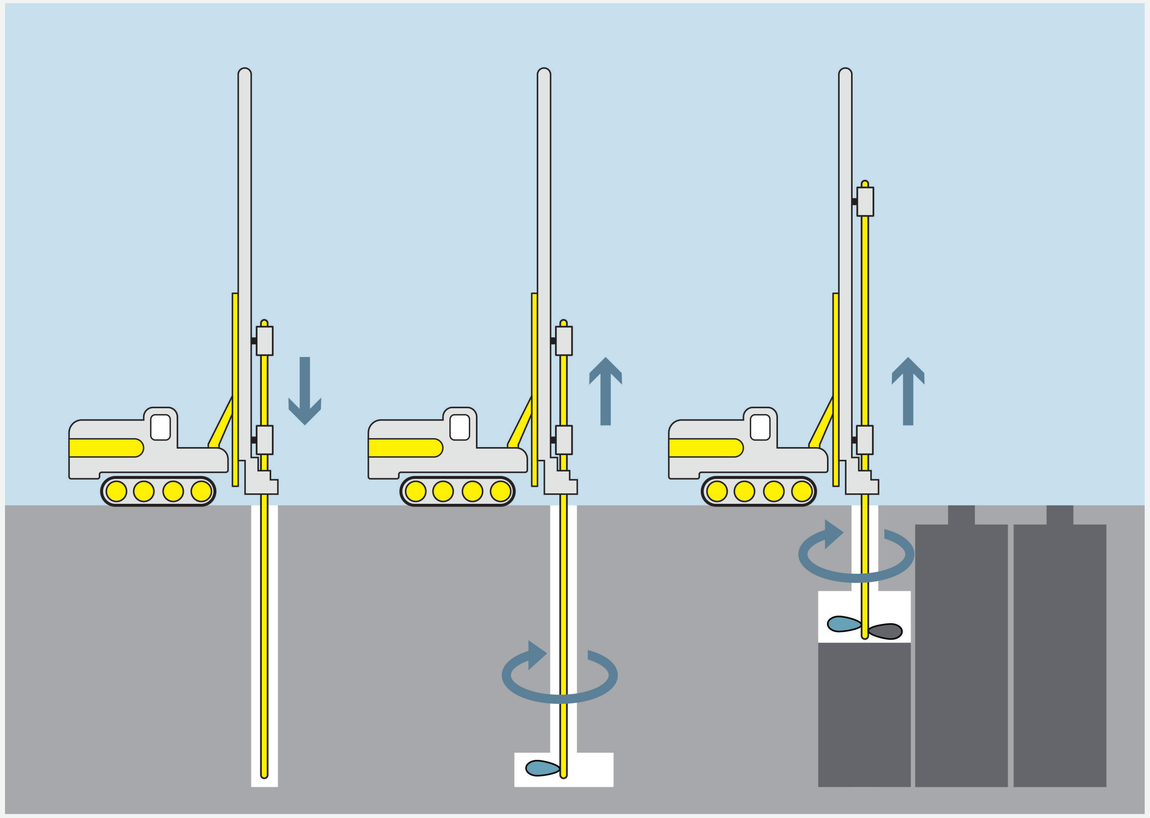
We conducted a jet grouting trial in mid-2025 to test how well it works with the geology at Arapuni Dam. The trial was successful; it confirmed jet grouting could cement the sediment trapped between the rock layers in the dam's abutment. This will help stabilise the sediment layers (comprising silts, sands and gravels) prior to building the main cutoff wall to protect the abutment from seepage.

HOW DOES IT WORK?

A drilling rig is used to bore holes into the ground. A jet grouting tool, usually a specialised drill rod, is lowered into the hole. The tool is fitted with a nozzle that can inject both air and grout under high pressure.

Once the tool reaches the target depth, a high-pressure jet of grout (a mixture of water, cement, and additives) is injected into the soil through the nozzle. The high-pressure jet fractures the soil and mixes it with the grout, creating a solidified column of treated soil.

The process can be repeated several times to create a series of interconnected columns that can overlap to form a continuous barrier. After the grout is injected and the soil column is formed, the material begins to harden over time, increasing the strength and impermeability of the treated soil.



Find out more about this project.

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