

Jet Grout Underpinning of Transmission Towers Tamar River, Tasmania



Driven Timber piles supporting large transmission towers were showing signs of degradation. Jet Grout underpinning provided the answer.

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Project

Two large transmission towers either side of the Tamar River near Launceston are each founded on 12 timber piles. Recent investigations revealed that the piles were rotting over the top 3.5m of the pile. The piles had been driven inclined at an angle of approximately 15°. Keller Ground Engineering was asked to provide potential solutions.

Soil Conditions

Records from the original pile driving and more recent dynamic probe data indicated the underlying soil to consist of extremely soft alluvial clays overlying denser alluvial layers at depths greater than 5m. Ground water level was highly variable given the close proximity to the tidal Tamar River. The location of the works was subject to regular flooding.

Solution

A major challenge on the project was provided by the size of the reinforced concrete pile cap which extended to a depth of 1.5m below ground level. Following 3D AutoCad modelling Keller proposed a solution using Jet Grouting to underpin the cap and also encapsulate the remaining timber pile section.

A solution based upon installing 4 No. 1.8m diameter jet grout columns per tower pad was developed. Three of the columns were installed from the side of the pad with the column angled beneath the pile cap and a single vertical column was installed through a pre-cored hole through the pile cap.

Prior to installation a series of test columns were installed and excavated to demonstrate the achieved jet grout column parameters.

The works were successfully completed in environmentally sensitive location with no delays.

Specialist Geotechnical Contractor:
Keller Ground Engineering Pty Ltd
Principal Contractor:
Aurora Energy