

STRENGTHENING AND STABILISATION OF BOAT RAMP

Site Profile

In northern New South Wales, there is a coastal area where residents and visitors alike enjoy a variety of waterside activities. Waterside activities are made accessible through the council-provided boat ramp.



Figure 1. The concrete boat ramp located in Lake Munmorah

The Situation

The boat ramp constructed via a concrete slab over the ground was showing evidence of subsidence. This meant that the boat ramp was posing a safety threat to users which needed to be rectified in a timely manner.

Due to recent heavy rains as well as the constant tidal movement against the structure, the boat ramp had become inundated with water. The result was the creation of void beneath the structure caused by the washing away of the compounding soils.

Making the situation worse was the fact that dynamic loads in the form of boat trailers and other water sport activities was constantly being applied to the boat ramp. This meant that the void

beneath the structure was becoming increasingly compromised and suffering settlement.



Figure 2. The Resinject team working to fill the voids beneath the boat ramp

To ensure that the boat ramp would remain a safe and enjoyable space for the public, council sought a cost and time efficient solution to the project.

Our Solution

The Council engaged Resinject to propose a suitable solution to strengthen and improve the existing ground beneath the concrete slab. It was also required that the boat ramp surface be realigned to ensure safety for users. Subsequently, Resinject's experienced consultants promptly attended the site for assessment and to devise a treatment plan.

On assessment, it was proposed that a slab-jacking treatment be conducted in order to fill the voids, consolidate the ground and realign the boat ramp surface.

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During a slab-jacking treatment, Resinject's RSJ170 Polyurethane Resin is injected over a series of points between the slab and the founding soils. The resin is designed to completely fill any voids and cavities (the main causes of poorly compacted ground) around the targeted injection points. The product travels along the void areas, expanding up to 40 times its original fluid volume. This not only fills the voids and cavities but simultaneously compacts the surrounding fill material, improving its strength and capacity to support any overlying structures.

Additionally, Resinject identified that there was need to protect the surrounding water environment from the treatment process. It was proposed that a damming net be installed to ensure no product could enter the lake and cause contamination.



Figure 3. Setting up a damming net to protecting the environment

Council agreed to the proposed solution and Resinject's services were booked in for shortly thereafter.

The Results

Resinject completed the slab-jacking program as planned. Work was completed within a single day and post-treatment; the boat ramp was immediately reopened to the public and able to be trafficked.

After completing the injection program, Resinject confirmed through spatial data surveys that the concrete slab had been successfully realigned. This confirms that the soils beneath had been consolidated, supported and void-filled ensuring safe use of the boat ramp for years to come.

Acknowledgements

Resinject would like to thank the Council and the residents of the northern NSW town for the opportunity to demonstrate our sustainable, and cost and time effective solutions.

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