

Teretek® Helps to Remediate Lake Burley Griffin Foreshore Wall

PROJECT PROFILE
N20LA061 & N21LA047

mainmark



INDUSTRY

Infrastructure

STRUCTURE

Lake wall at Lake Burley Griffin

PROBLEM

Substantial structural voids and subsidence

LOCATION

Canberra, Australia

DURATION / YEAR

5 Months / 2020 - 2021

TECHNOLOGY

Teretek®

BUSINESS UNIT

Mainmark Australia

Summary

Situated in the heart of the National Triangle in Canberra, [Lake Burley Griffin](#) is a large artificial lake that occupies the flood plain of the Molonglo River. The lake is approximately 11km long with a varying width of between 300m to 1.2km at its widest point. The man-made lake has an approximate circumference of 40.5km. Completed in 1963, it is a popular recreational destination enjoyed by locals and tourists alike.

In the 55 years since the lake was filled, sections of the 10.88km concrete and stone lake wall had started to degrade due to constant impact of wind and lapping waves. Water was seeping through the wall's weathered and deteriorating mortar joints, drawing out the soil fines in the ground behind the wall, causing erosion. The loss of soil had caused voids and sinkholes to form in the area behind the wall, and the lake's pathway and landscaping along the foreshore to subside, creating a serious safety hazard for the public.

With ongoing damage and subsidence threatening the long-term structural integrity of the wall, the National Capital Authority (NCA) that manages Lake Burley Griffin embarked on a three-year lake wall renewal program to repair, strengthen and renew the stone wall and surrounding footpaths to stop further damage from occurring. The significant investment in the project drew local [media attention](#), with Lake Burley Griffin acknowledged as a "[central part of Canberra life](#)".

Mainmark was engaged by NCA's contractor, Projex Building Group, to provide a non-invasive and cost-effective ground improvement solution to consolidate the soils, fill voids, restabilise the wall and re-level the subsided pathways and adjoining grasslands.

Teretek® Helps to Remediate Lake Burley Griffin Foreshore Wall continued

Objectives

The aim of the works was to restore the structural integrity of the lake wall and reduce public safety risks. Safety was a critical consideration for this project as some areas along the lake experience heavy daily foot traffic.

Mainmark was required to agglomerate the soils behind the wall to minimise the loss of fines through the degrading mortar joints and fill voids that were contributing to ongoing subsidence. It was also important that the solution was environmentally inert and non-reactive to protect the lake's natural aquatic ecosystem.

As Mainmark was operating in a public area, it was important that the team adhered to the NCA's strict workplace health and safety protocols to protect both workers and members of the public.

Solution

Mainmark's Teretek resin injection was identified as an ideal solution to remediate the lake wall. Teretek is a unique two-in-one ground improvement and re-levelling solution that increases ground bearing capacity, fills voids and increases the cohesion of loose soils. It also reduces moisture within localised soil masses.

A trial was undertaken across a 30m to 50m on-site length of wall to validate Teretek's performance and suitability. After confirming the trial was a success, Projex Building Group engaged Mainmark to stabilise approximately 4km of concrete and stone walls around Lake Burley Griffin.

Teretek resin was injected via 16mm diameter injection tubes, completing the work in 1km sections at a time to maintain quality and consistency throughout the project. Mainmark aimed to achieve a 0.5mm -1mm lift to the affected subsided soil at the back of the wall with no movement of the actual concrete and stone lake wall. This ensured the integrity of the lake wall was maintained and soil behind the wall was improved, preventing further voids in the soil behind the wall and subsidence of the adjacent areas.

As the foreshore area remained open throughout the works, Projex Building Group and Mainmark needed to work around continuous traffic from pedestrians, skaters and cyclists by placing signage and barricades to create a safe environment for the public.

In total, more than **40 tonnes** of Teretek resin was used to complete the work over a period of 21 weeks, without the need for any invasive excavation or the use of heavy equipment and machinery.

According to Marc Jenner from Projex Building Group, Mainmark's responsiveness and communication throughout the remediation process was particularly appreciated, especially as maintaining workplace health and safety requirements were key considerations from the start of the project.

"The biggest factor for us was to work with contractors who had well-established safety processes," Marc said. "Workplace health and safety (WHS) was very important for this project as we were working in public areas and needed someone very reactive and responsive to the site conditions. Mainmark was flexible in adapting to the WHS protocols that were introduced for this project, given we were working near a large body of water."

"We were required to demonstrate that we were meeting all the requirements that the Federal Safety Commission had in place for construction projects and Mainmark responded to every request we made. The entire project was very well run and Mainmark was very responsive to our considerations."

The NCA were similarly impressed with Mainmark's performance, applauding the team's punctuality, professionalism and ability to deliver a high quality solution within the budget and project deadline.

