

Waimea Dam Site Issues Inflate Cost

Wednesday, April 8, 2020



Officials at the Waimea Community Dam site in Lee Valley, New Zealand, have uncovered more issues at its construction site, which has in turn induced a cost blow out of roughly \$25 million, among other concerns.

Waimea Water Ltd—a joint-venture between Tasman District Council and Waimea Irrigators Ltd—are responsible for managing the dam's construction, operation and maintenance.

About the Project

According to [Waimea Water](#), the project involves building a concrete-face rock filled dam that, once finished, will stand 53 meters (roughly 174 feet) high and measure 220 meters long. The project intends to use 430,000 meters-cubed of rock to build the infrastructure, which will contain a lake capable of reaching 13 billion liters (3.4 billion gallons) of water, or roughly over 100 years' worth of the region's water supply.



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The joint venture reports that it hopes to fill and reservoir and conclude final commission by early 2022. Once in operation, the infrastructure will be able to release up to 2.2-meters-cubed per second of water into the Lee and Waimea River systems during drought season.

The dam is slated to provide roughly \$55 million over two years in economic benefits and between \$600-\$900 million over 25 years.

In August 2019, the project held a groundbreaking ceremony.

By February, *Stuff* reported that due to “unforeseen geological conditions,” the forecast build cost of the project would increase by an estimated \$25 million, landing the total cost at \$129.4 million.

Chief Executive of Waimea Water, Mike Scott, clarified that the forecasted increased, along with an expected 2-4-month construction delay could be blamed on the problems identified with rockfill testing earlier in the year.

"This particular rock was to be used for the drainage zones of the embankment but testing has confirmed that it is not of a high enough quality to be used for this purpose," Said Scott. "We're now looking at potential solutions, which may include purchasing and importing some rock from a nearby quarry for the drainage layers or using rock from other locations in the valley."

"We always knew the extent of the risk would not be fully understood until excavation and construction was well under way, and risks will persist throughout the period of construction."

At the beginning of March, Scott announced the suggestion of replacing the dam's concrete face with a geosynthetic (PVC) membrane instead. The substitution would not only improve the resilience, but has the potential to provide time and cost savings as well.

A review of the membrane's design was expected to be peer reviewed by GHD Engineering and decided on within the next three months. Although Scott couldn't provide exact numbers at the time, he reported that the endeavor could save millions.

However, Tasman District councilor Anne Turley, along with others, shared concerns about the long-lasting effects that PVC may have on people and the environment.

"We would urge investigation into possible in-stream and downstream impacts, and would be concerned about the potential for contamination of our waterways and any resulting impact on the fish, birds and animals that rely on the water if concerns were founded," said Forest & Bird top of the south regional manager Debs Martin.

If approved, plans for the infrastructure would have to be resubmitted to the Tasman District Council.

On March 25, Waimea Water announced that it would be suspending work on the project as a response to the [COVID-19 pandemic](#). While, the measures could be lifted should the Ministry of Business Innovation & Employment grant the companies access to continue, Waimea Water adds that safety checks of the construction site would still be taken during the construction shutdown.

In addition to the postponed construction efforts, an information event on the infrastructure that was slated to take place on March 31, was also canceled. Waimea Water is working on alternative ways to keep the community up to date on the project's progression.

What's Happening Now

According to the latest reports, the "[unforeseen geological conditions](#)" and rock issues discovered back in February—causing a project cost overrun expected to reach \$25 million—might have been avoided, had the issues been properly planned for.

In a report put together by council engineering services manager Richard Kirby and corporate services manager Mike Drummond, the two question if the rock issue could have been avoided.

The report looks over investigation and research efforts conducted by environmental and engineering consultants Tonkin & Taylor. From T&T's reports, both Kirby and Drummond note in their own report that the evidence doesn't support Waimea Water's belief that the issue was unforeseen.

"Staff believe that the various T&T reports from 2009 to 2018 did contemplate the possibility of the rockfill breaking down," the report says. "They also anticipated that the same rock may not be suitable in the drainage zones and suggested utilizing river gravels upstream of the dam site or from other sources in close proximity."

When T&T's involvement in the project ended in 2019, Waimea Water hired Damwatch Engineering Ltd to design the construction of the dam.

According to Scott, the design issued for construction by T&T at the start of 2019 did not contemplate the possibility of the rockfill breaking up and therefore, wasn't accommodated in the design.

"The possibility was identified but not expected or planned for," Scott said. "I believe the council, and for that matter WIL and CILL [funder Crown Irrigation Investments Ltd] relied on the T&T work that [alluded] to the 'possibility' but the design did not accommodate rock breaking down ... such risk was not included in the design or adequately priced."

While Waimea Water is still considering the replacement of the dams concrete face with a geosynthetic membrane to aid with cost savings of the rock issue, the joint venture is also expecting to have to pay associated costs with COVID-19 and its suspension of work onsite.