



The Waimea Community Dam more than 70% complete. March 2022.

## Message from CEO

The Waimea Community Dam has passed some significant construction milestones over the last six months, including finishing the rock-filled embankment, lower spillway, flip-bucket and the plinths.

Construction of the dam is now more than 70% complete. If the weather and COVID-19 aren't too disruptive this year, the civil parts of the dam will be completed by early spring.

This would mean we could fill the reservoir over next spring, and the dam would be in use during the 2022/2023 summer.

As well as construction progress, three key activities being worked on have been the procurement of various mechanical and electrical components, planning for the dam's operation in the next financial year and designing solutions for the encountered geology and the ongoing production of the embankment's safety-critical material.

In this newsletter we provide some information about the costs of the dam, show you some of the key features of the dam, and outline how it will work once it is finished later this year.

Please also visit our website for more information about the project. In particular you may be interested to read our mid-year report at [waimeawater.nz/about/reports](https://waimeawater.nz/about/reports) or watch our construction videos.

I thank you for your ongoing support.

**Mike Scott**

CEO, Waimea Water Ltd (WWL)

## FEATURES OF THE WAIMEA COMMUNITY DAM



## THE DAM'S COST

Like all current construction projects, our procurement of mechanical items is significantly impacted by the high inflationary environment, resource constraints and global supply chain disruptions resulting from a very buoyant and constrained global construction sector.

Also, during construction we found highly fractured rock in the left-hand side of the site, with multiple large shear zones (areas of ground rock and clay) bisecting the top of

the spillway, and weak rock under the plunge pool. See more about the upper spillway and the plunge pool below.

The extent of these inflationary and geological challenges was not evident when the project cost was forecast in early 2021 and the project is now expected to cost \$185M.

The project's cost increase is not what anyone wanted, and Waimea Water is doing all it can to minimise costs, without compromising safety, reliability and sustainability.

### Shear zones bisecting the spillway

During 2021, two large shear zones were uncovered and found to transverse the approach channel, bisecting the top of the spillway. While shear zones are common in this geology, this location is unfortunate. If left untreated, it could lead to hydrostatic uplift pressures beneath the spillway. A 4,000m<sup>2</sup> impermeable apron upstream of the spillway, further surveillance and additional grouting will protect the spillway's integrity.



### Plunge Pool

During preliminary excavation in late 2021, the foundation of the plunge pool was found to be very weathered and soft, with two large shear zones cutting across the area. To strengthen it, an apron will run beneath the spillway and an enhanced cut-off wall is being constructed beneath the plunge pool floor to protect the spillway from erosion. Shear zones will also be stabilised with anchors and mass concrete.



## PROGRESS AS OF MARCH 2022



## MECHANICS OF THE WAIMEA COMMUNITY DAM

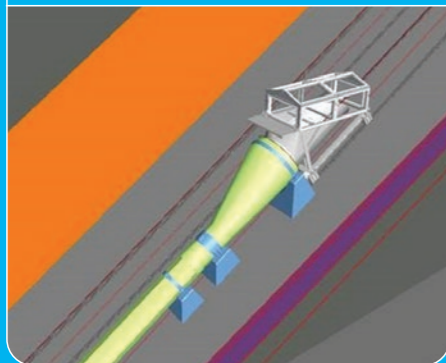
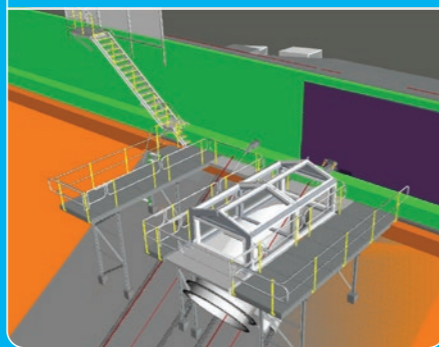
Water from the upstream reservoir flows into either or both of the lower and upper intake screens. The screens work as a filter to exclude fish and debris from the outlet works. The water then flows through the screens into the upstream valve chamber, where the water from the two intakes is mixed to maintain water quality targets. After flowing through approximately 120m of pipework the length of the dam, the water reaches the downstream valve chamber where cone valves control the release of the water to the river.

▲ UPSTREAM CONSTRUCTION

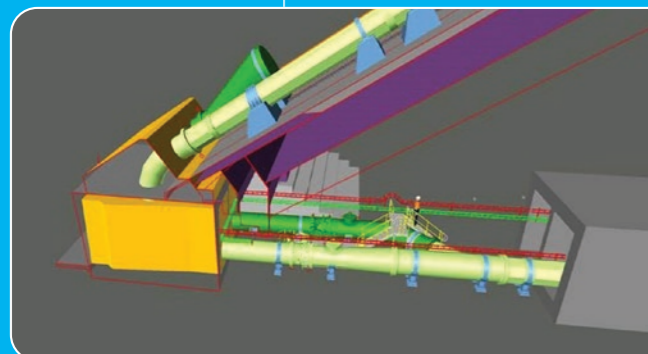
▼ DOWNSTREAM CONSTRUCTION

Reservoir water is filtered through the upper and lower INTAKE SCREENS, to meet water quality objectives. The 20mm screen openings prevent harm to fish and eels and prevent debris from entering the pipes and valves.

The INTAKE SCREENS can be winched to the dam crest for ease of cleaning and maintenance, with a platform to make it safe for personnel.



The two intake pipes enter the UPSTREAM VALVE CHAMBER, where water quality is achieved by mixing the flows from the two pipes using butterfly valves.



A VALVE CHAMBER DOWNSTREAM houses fixed cone valves to allow safe discharges to the river. Also inside the valve chamber is the micro hydropower turbine, which provides power for the dam and a ventilation system so it is safe for personnel to access the conduit.



A DOWNSTREAM VALVE CHAMBER houses fixed cone valves to safely discharge water into the river by dissipating energy. The micro-power turbine is also inside the valve chamber to power the dam.

During dry periods, the Waimea Community Dam's stored water is released to maintain even flows in the Lee and Lower Waimea rivers. The flowing rivers top up the Waimea aquifers to maintain water levels for extraction, reduce the risk of saltwater intrusion from the coast and maintain a healthy river habitat for plants and animals. The flow from the dam will support both horticulture and the domestic water wells near Appleby that supply water to the combined Richmond / Nelson water network. Mapua, Ruby Bay, Brightwater and Wakefield also use bores in the Waimea Plains, benefitting from the recharged aquifers. The Waimea Community Dam catchment covers approximately 26% of the full Waimea River catchment. In an average year the dam is expected to be full 83% of the time. The size of the reservoir mitigates the impact of a drought greater than a 1:50 year event.