

Waimea Community Dam

25 February 2021

Waimea Water

Agenda

1. Progress Update
2. Cost and schedule forecast
3. Operating cost forecast



Overview

WWL efficiently delivering a safe, reliable, resilient and fit for purpose Waimea Community Dam

- ✓ Construction: ~50% complete and foundations largely exposed
- ✓ Design: Adapted to geological conditions. Completed M&E. Independently peer reviewed
- ✓ No serious harm injuries or lost time injuries to date. No high potential incidents in 2020/21 year
- ✓ Full compliance with resource consent requirements

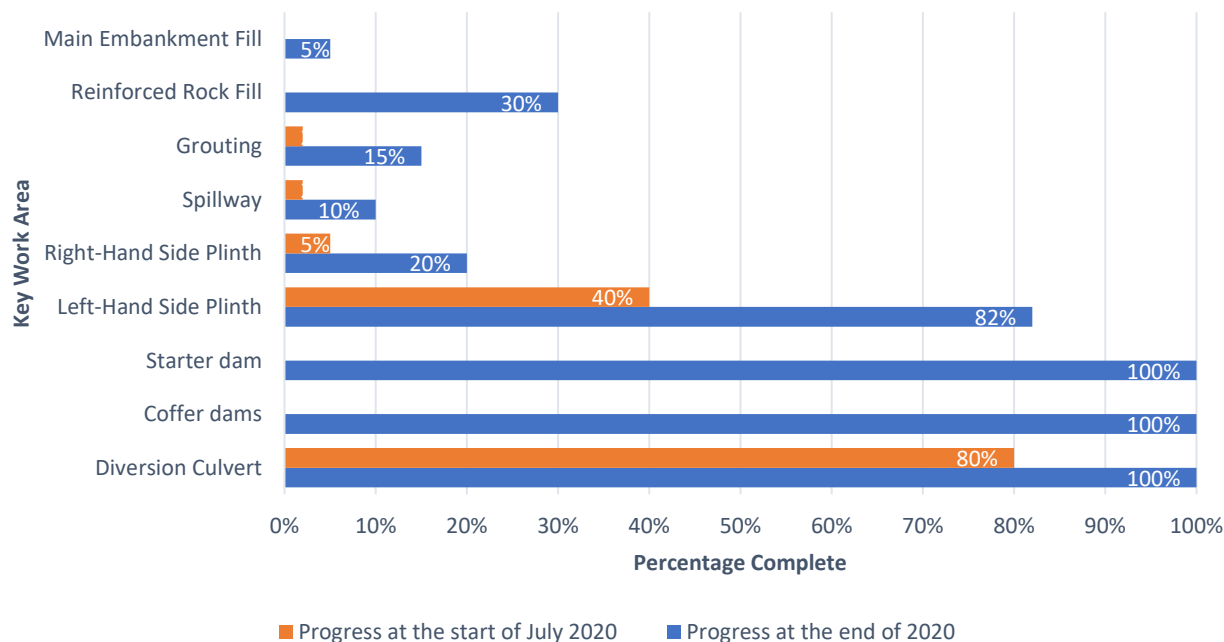


Progress Update

Progress on track with revised programme (complete May 2022)

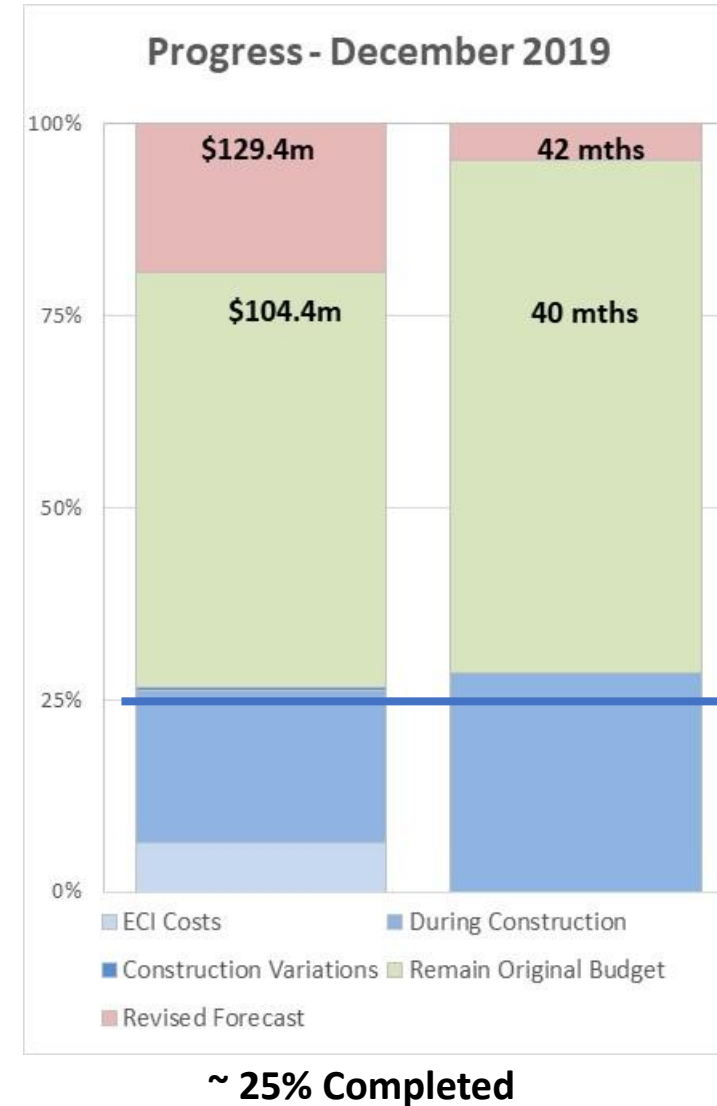
- Starter Dam completed before Christmas
- Reinforced Rockfill completed up to RL159m (7/24 m)
- Cleaning upstream 1/3rd foundation. Filling middle 1/3rd foundation with imported drainage material
- Prepared 5/18 spillway foundation sections and poured site concrete

Construction Progress to date



Recap Feb-2020: Cost Forecast

- ~ 25% project completed. 5/17 culvert.
- Forecast +\$25M
 - Geology / dirty indigenous rockfill breaking down
 - Need to redesign zones and import drainage rock
 - Stabilisation and voids
 - Enhanced spillway for topography
 - Underbudgeted items (M&E)



Encountered Conditions

- ❖ Embankment size + 57k m³ (13%)
 - Removed increased overburden
 - LIDAR survey inaccuracy (vegetated steep forested grade)
- ❖ Foundation Treatment
 - Embankment foundation treatment
 - Treatment / buttress to spillway foundation
- ❖ Flow preventing material (2B) off-spec
 - Insufficient flow prevention from river fines
 - Importing and blending sand
- ✓ Reduced drainage zones and imported rock
- ✓ Reduced plunge pool stabilisation



Encountered Conditions (continued)

- ❖ Plinth stabilisation
 - Filling of voids from unsuitable material / lack of rock
 - Buttress and beam to RHS lower 12m due to deficient foundation rock
- ❖ Grout Curtain
 - Greater grouting to seal sub-strata
 - Tracking at 11km drilling / ~750 bores (plan of 5km / ~300 bores)



Improved Resilience

❖ Spillway

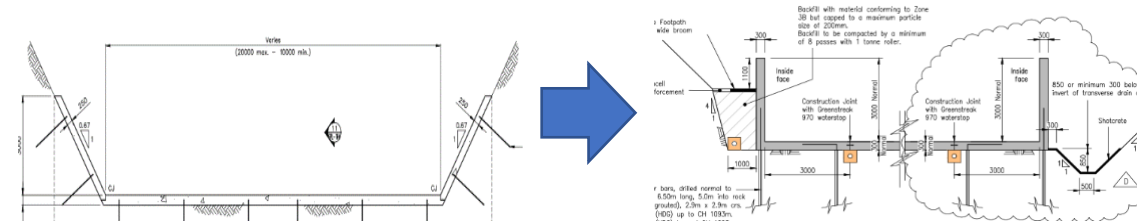
- Topography / geology
- Improve resilience in line with recent contemporary standards (ICOLD)
- Free standing cantilevered walls

❖ Approach Channel

- Straighten and deepen to avoid max flood (PMF) overtopping

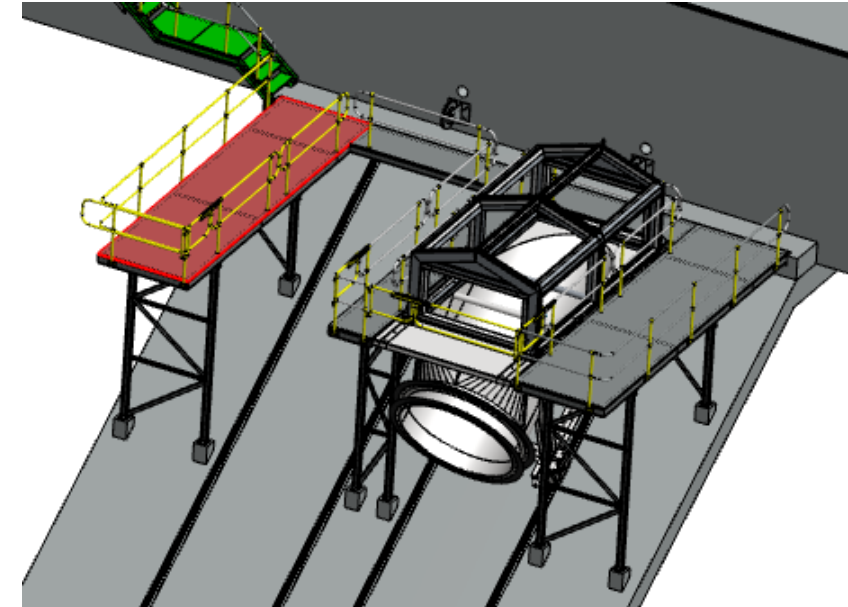
❖ Plunge Pool

- Mitigate greater erosion due to geology and threat to foundations
- Permanent apron slab beneath the flip bucket to avoid frequent replacing



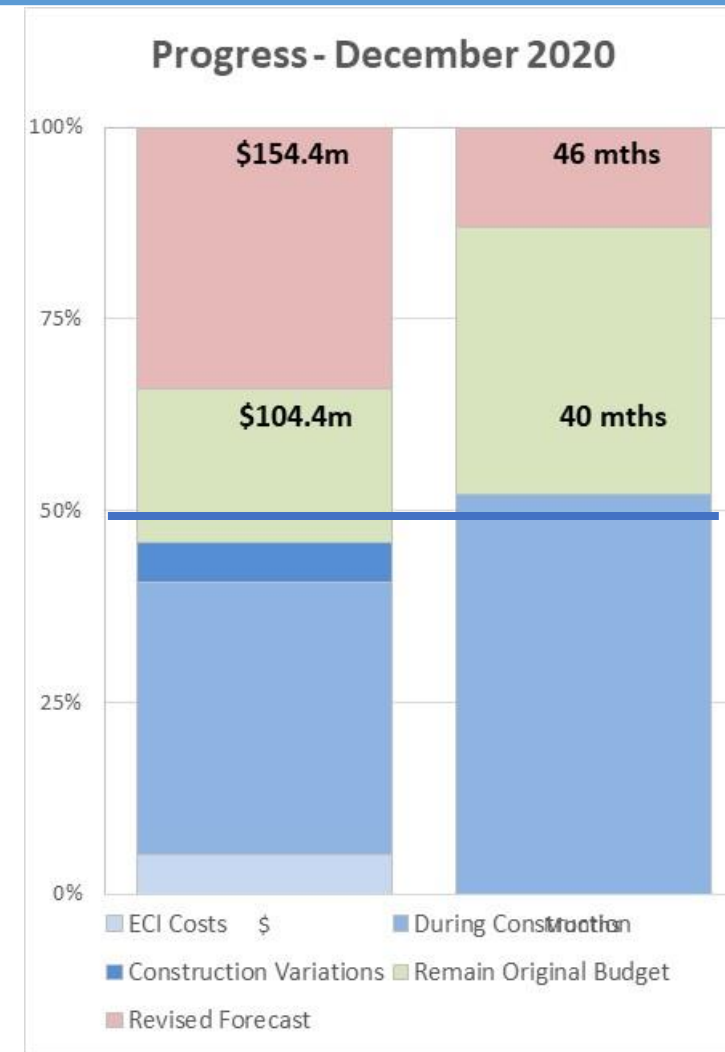
Underbudgeted

- ❖ Mechanical & Electrical
 - Not detailed designed or priced at funding
 - Single pipe reduces steel by 30% and pipe supports
 - Cannot land unspecified savings of -\$1.7m
 - Removing power and fibre cables saves \$0.7M and avoids \$1.7M of overrun
- ❖ Buildings
 - Required to meet seismic and workplace requirements
- ❖ Temporary River Diversion / closure
- ❖ WWL Overhead and Dam Engineering
 - Change in conditions. Additional project support

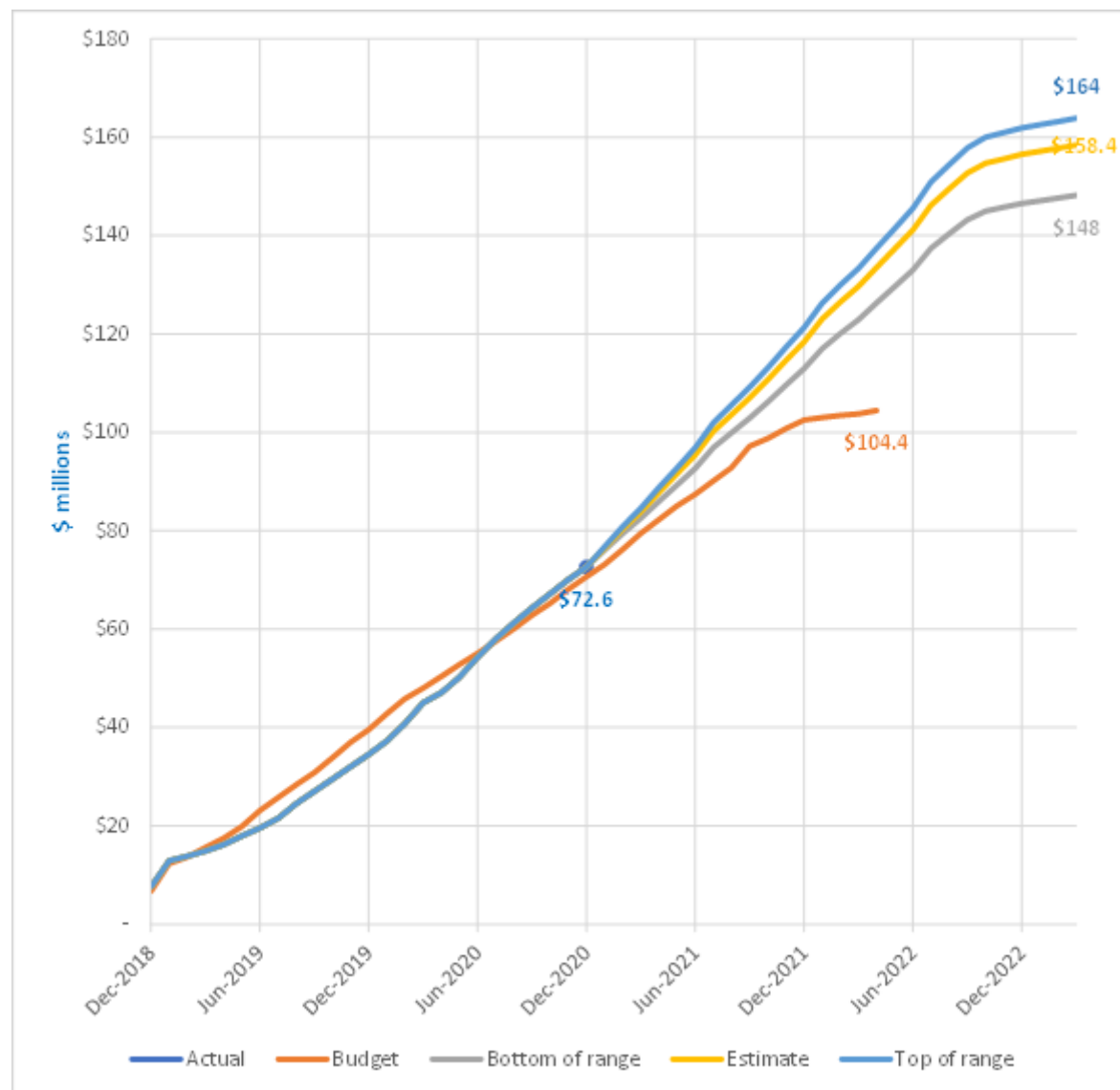


Feb-2021: Cost Reforecast

- ~ 50% project completed. Foundations largely exposed
- **Forecast \$147.2M expected cost + COVID / Delay**
- Forecast \$158.4M with COVID / Delay costs
- Includes unallocated contingency of 5% residual
- Risk range:
 - \$148M: Less COVID, grout, foundation treatment
 - \$164M: More grout, foundation treatment, M&E
- \$29M increase since March 2020
 - ❖ \$11.2M: COVID-19 + Delays (includes provisional allowance)
 - ❖ \$17.8M: geology / underbudgeted / resilience



Feb-2021: Cost Reforecast



Schedule Forecast

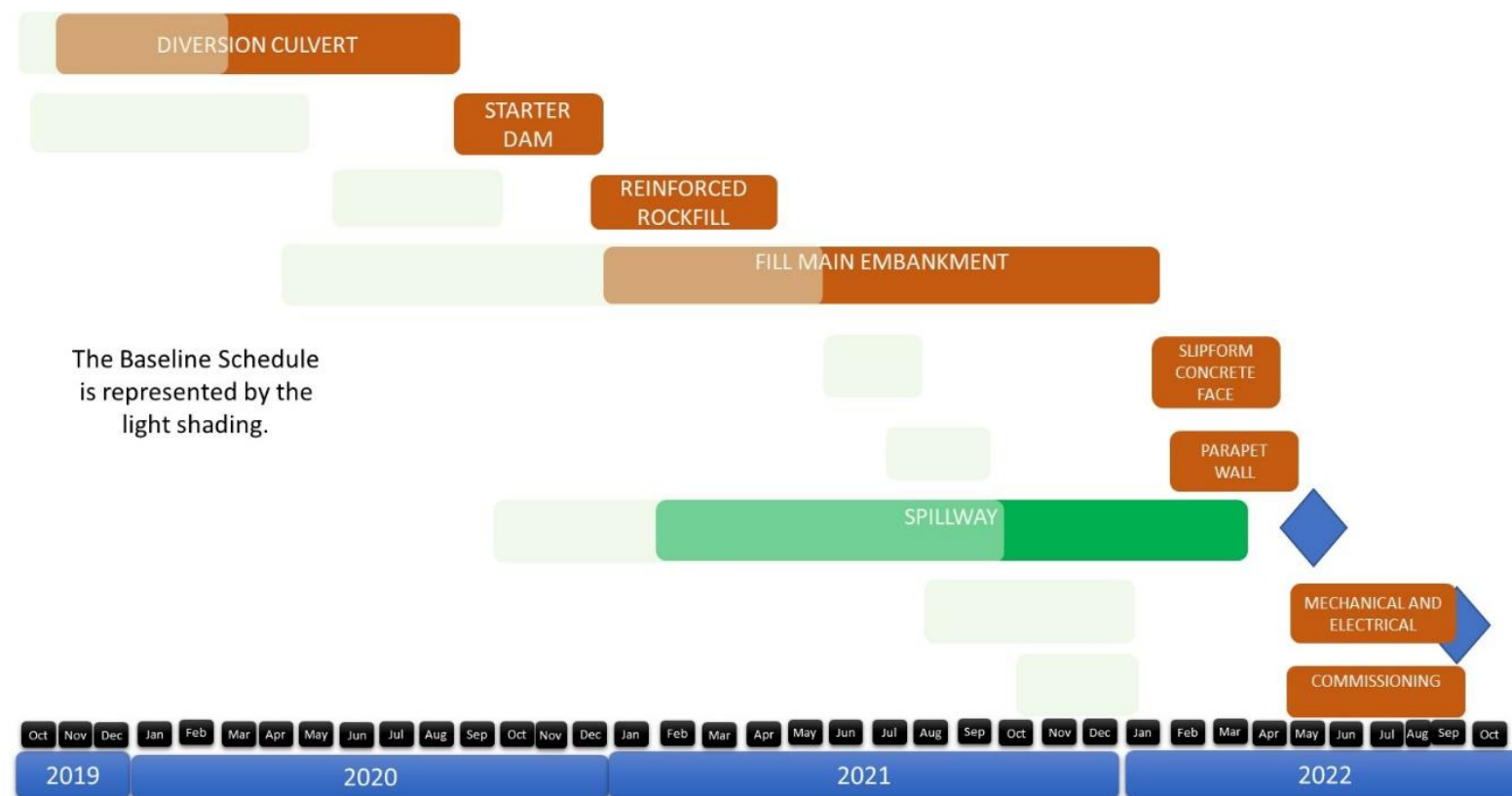
6 Month delay to construction

- Predominantly COVID-19 and loss of recovery time
- Design (embankment) changes
- Not close during summer / season

2 Month further delay to commissioning

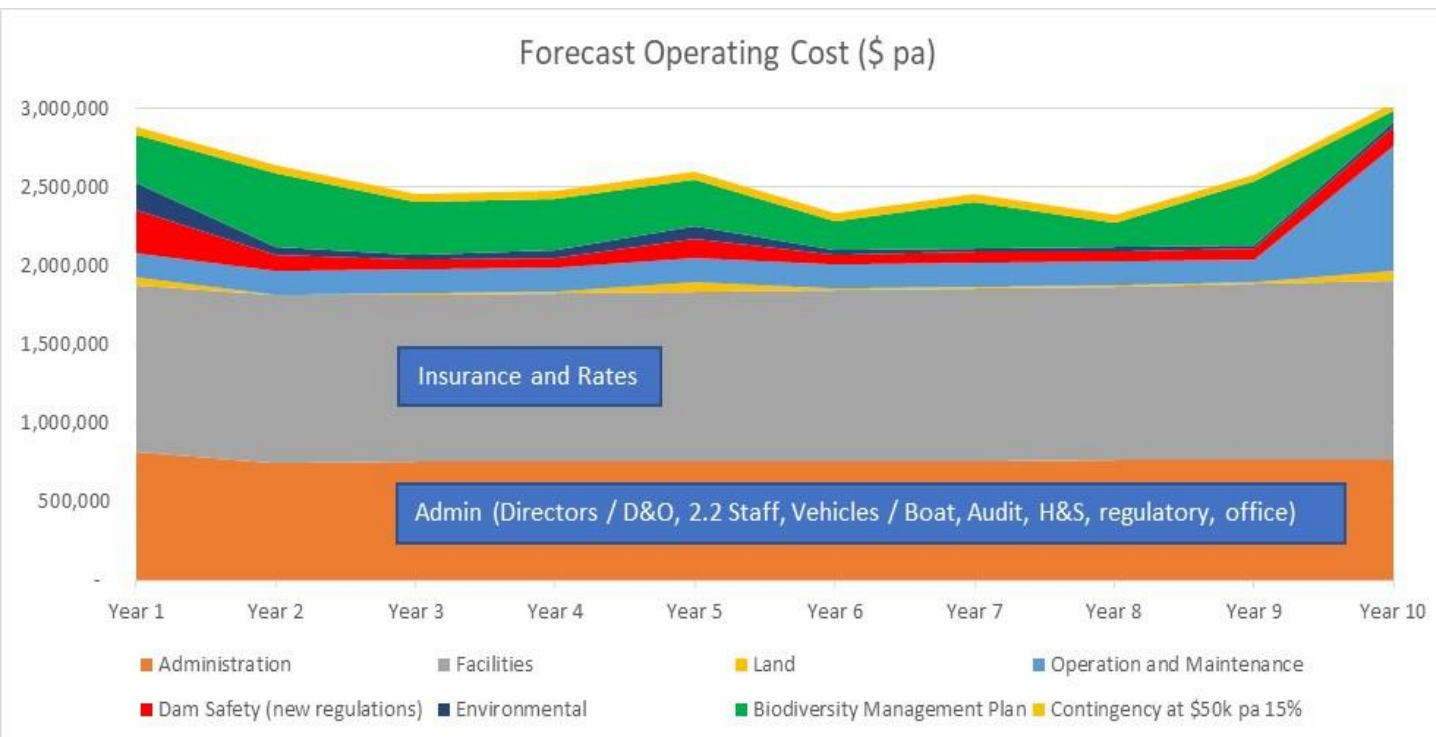
- Hold points (design work)
- Mechanical works

	Plan at Funding	Current Expectation
Complete Dam	28 October 2021	May 2022
Reservoir filled	23 January 2022	September 2022
Dam commissioned		



Operating cost forecast

- Operating costs expected to be:
 - \$2.75M pa years 1-2 (bedding in dam safety)
 - \$2.46M pa years 2-9
 - \$3.00M pa year 10 (major services)
- Pre-close estimate of \$1.5m pa underestimated operating requirements, rates and insurance



Thank You. Q&A

- 28 Feb 2021: Mid-Year report and cost forecast
- 1 March 2021: Draft SOI

