

# Waimea Community Dam Update

25 September 2019

**Waimea Water; Damwatch Engineering; Fulton Hogan Taylors**



# Waimea Dam is underway and progressing well

Ground Breaking Ceremony 9 August 2019



# Agenda

- Design
- Construction update
- Environmental update
- Q&A



# Design

- Concrete Faced Rockfill Dam



3-D model overlaying existing site topography



Turitea Concrete Faced Rockfill dam. Palmerston North  
Constructed 1907, 1912, 1996

# Design Parameter

## ■ Features:

- 13 Mm<sup>3</sup> (13 billion litre) reservoir; 53m high; 220m crest length; 430,000 m<sup>3</sup> rock
- Rockfill embankment selected as most robust to seismic loads and uses indigenous material
- Concrete face membrane
- Zoning of material in embankment allows for drainage paths to mitigate internal erosion
- Grout curtain seals water migration around and beneath dam

## ■ Earthquake:

- Operating basis: No non-superficial damage and fully operational: **1:150 AEP (years)**
- Seismic evaluation basis: Retain reservoir & no-uncontrolled: **1:10,000 AEP (years)**
- GNS seismic assessment: 0.64g horizontal peak & 1.65g maximum spectral accelerations
- Active faults 8 km and 12 km from site

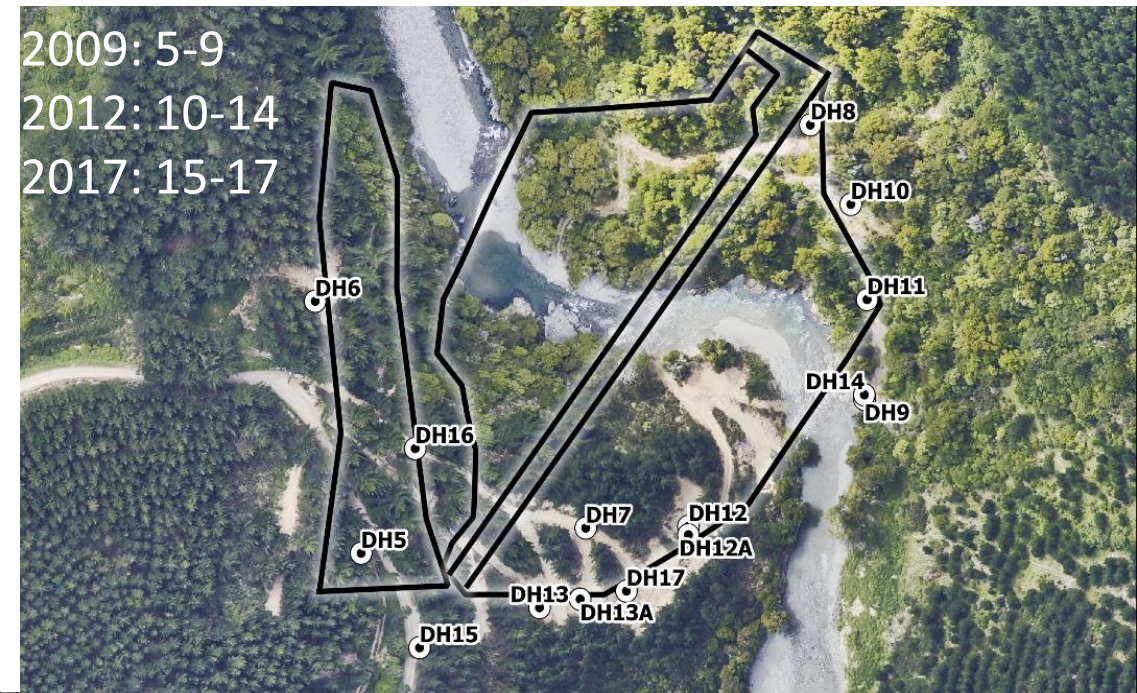
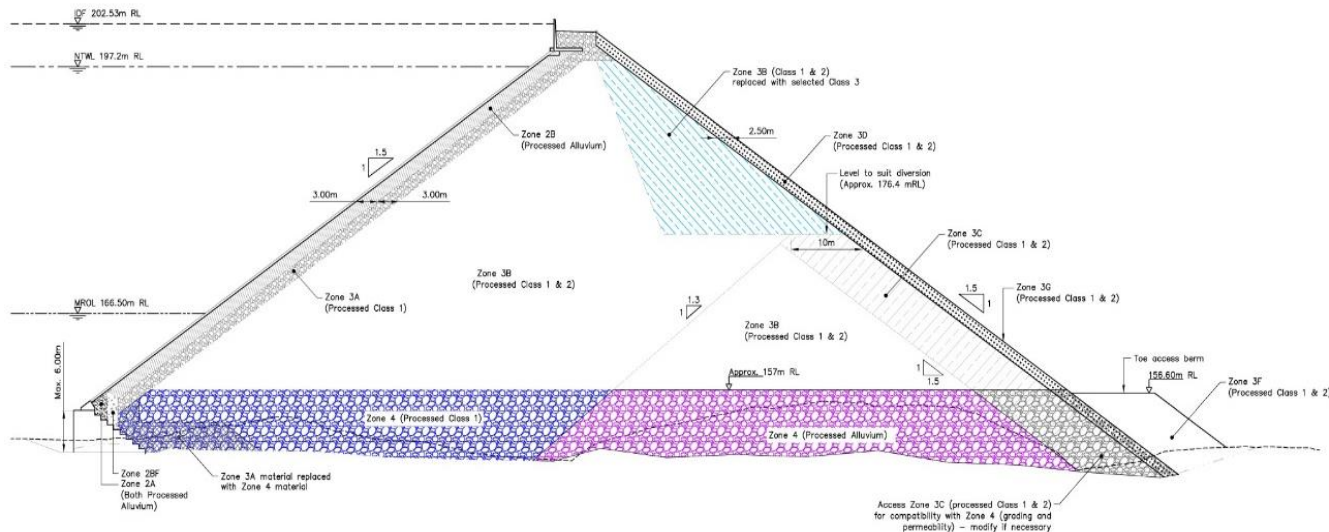
# Design Parameter

- Flood:
  - Probable maximum flood (PMF): **1094 m<sup>3</sup>/s (18.6 Mm<sup>3</sup> / 24 hour)**
  - 100 year flood: **375 m<sup>3</sup>/s**
  - 12 May 2019 1:50 year **250 m<sup>3</sup>/s (47 mm/hr)**
  
- Operational flow
  - Operational flow: **2.2 m<sup>3</sup>/s**
  - Environmental (min) flow and flushing flow: **0.5 m<sup>3</sup>/s and 5 m<sup>3</sup>/s**
  - Maximum: **17 m<sup>3</sup>/s (1.5 mM<sup>3</sup>/d = 10% reservoir / day)**
  
- Design Standards: NZSOLD / ANCOLD / ICOLD: **Highest category (High PIC)**



# Design

- Damwatch supporting design enhancements and construction verification (PS-4)
- Optimising zoning of rock fill materials to provide flexibility and robustness to geology
- Optimised spillway design to de-risk construction and operations
- Optimised plinth design and updated grout curtain specification
- Mechanical and Electrical design progressing (hydropower compatible)



# Construction

- Access Road: 5.5 km of 6.5 km complete.
- Pig Flat bridges underway
- Haul roads established
- Concrete batching plant operational
- Clearing Right Hand Abutment  
Inspected and mapped top exposed section
- Cutting down for Left Hand Abutment
- Excavating for Left Hand plinth  
Completed and cleaned for first 20m
- River training to Left Hand side
- Vegetation clearance, salvage and mulch underway





# Construction: Clearing LHS Abutment. As expected





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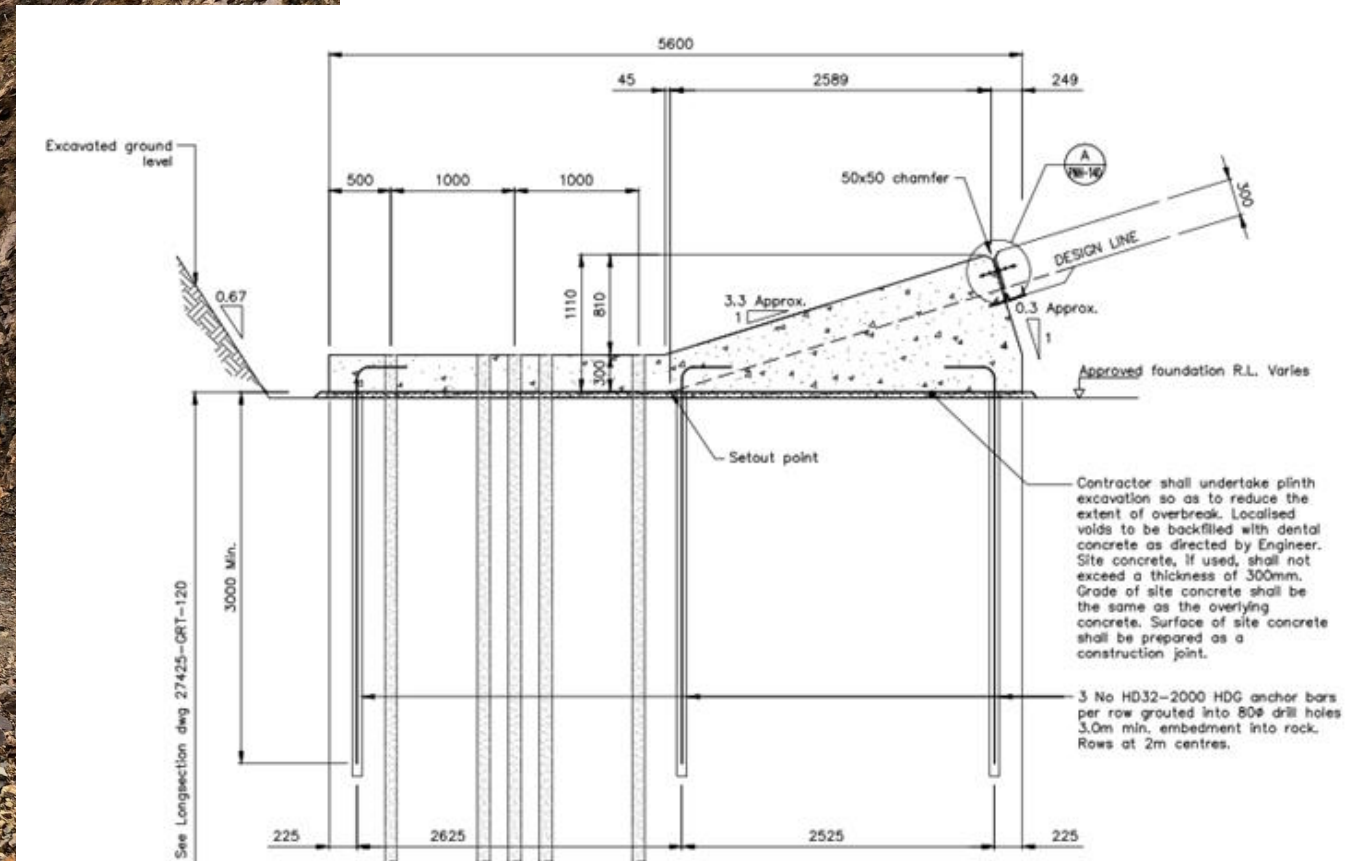


# Construction: Preparing for LHS Plinth. As expected





# Construction: Preparing for LHS Plinth. As expected





# Construction: Clearing RHS Abutment. As expected





# Construction: Clearing RHS Abutment. As expected





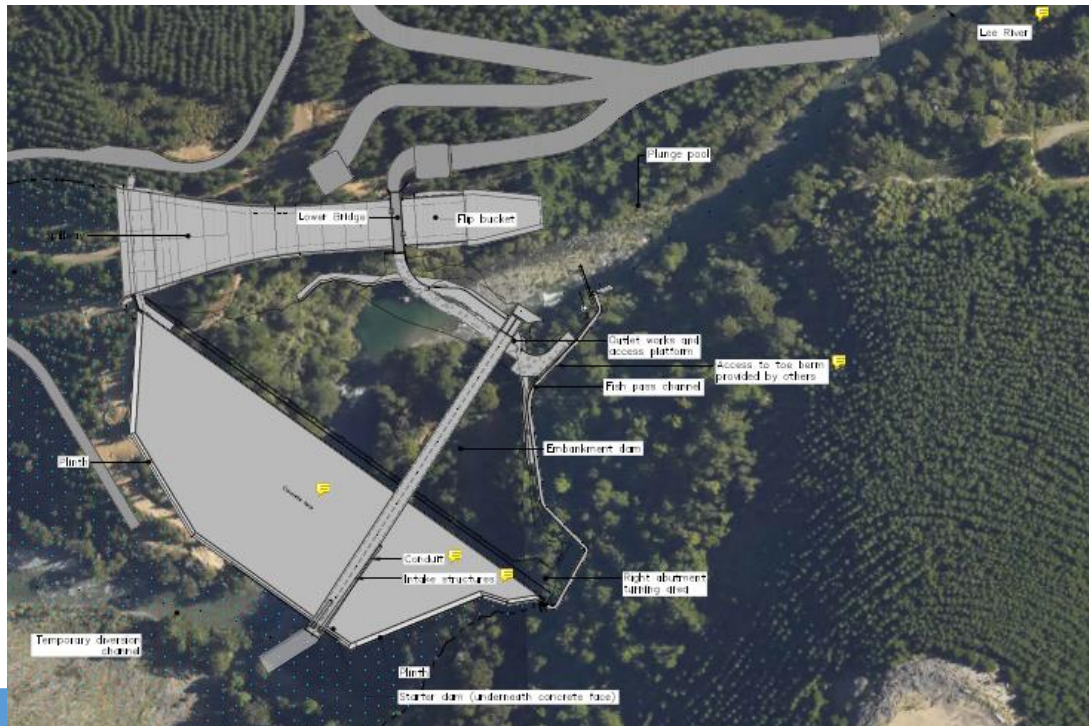
# Construction: Clearing RHS Abutment. As expected





# Construction: September to December 2019

- Clear the RHS and LHS abutments and plinth cut. Rock anchors and slope stabilisation
- Commence forming plinth LHS and RHS
- Construct diversion bunds to move river away from RHS for culvert construction
- Excavate for and commence forming culvert in RHS of riverbed
- Continue vegetation clearance in reservoir footprint



24/09/2019



Waimea Water Ltd

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# Environment and Sustainability

- 164 Resource Consent conditions; Working 98 action items
- Biodiversity Management Plan approved with 8 plans. BTAG

## Onsite

- 7/9 SCEMPS approved, implemented and being monitored
- 4 Sediment Retention Ponds & 8 Decanting Bunds operating
- Hydroseeding & mulching mitigates erosion and sedimentation
- Fortnightly independent water quality monitoring complies
- Continuous turbidity monitors guides river works
- 2/4 rare plant species being moved (BMP #2)

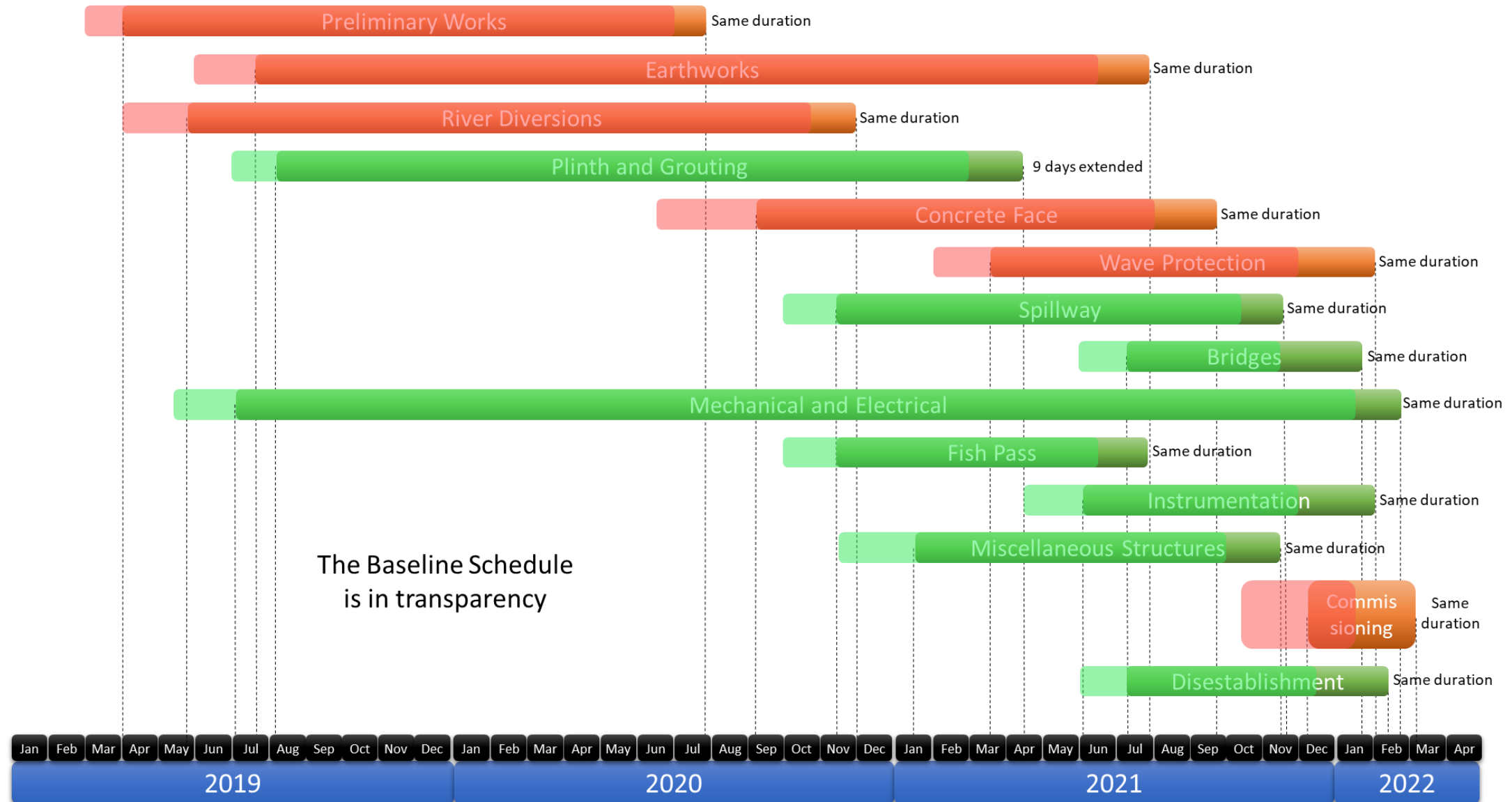
## Offsite

- Ordering 10,000 plants and weed control for Rough Island





# Program

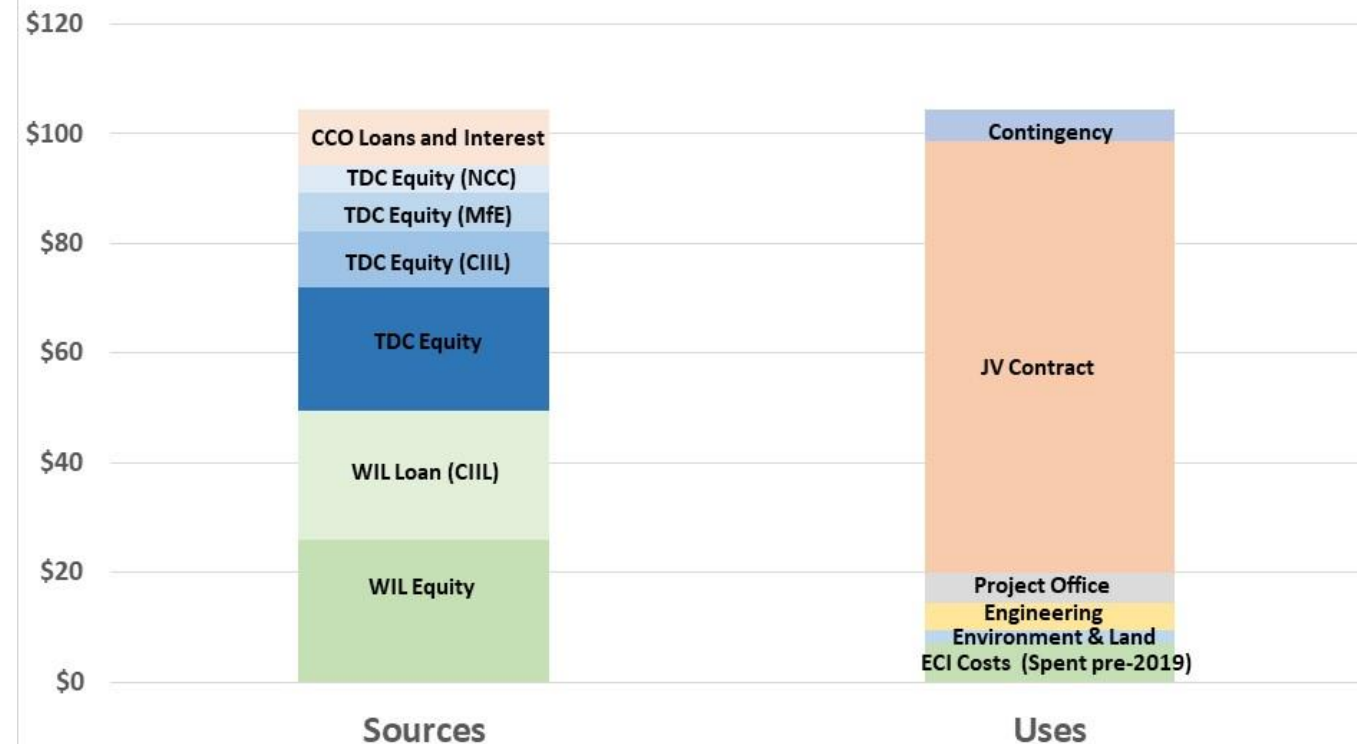




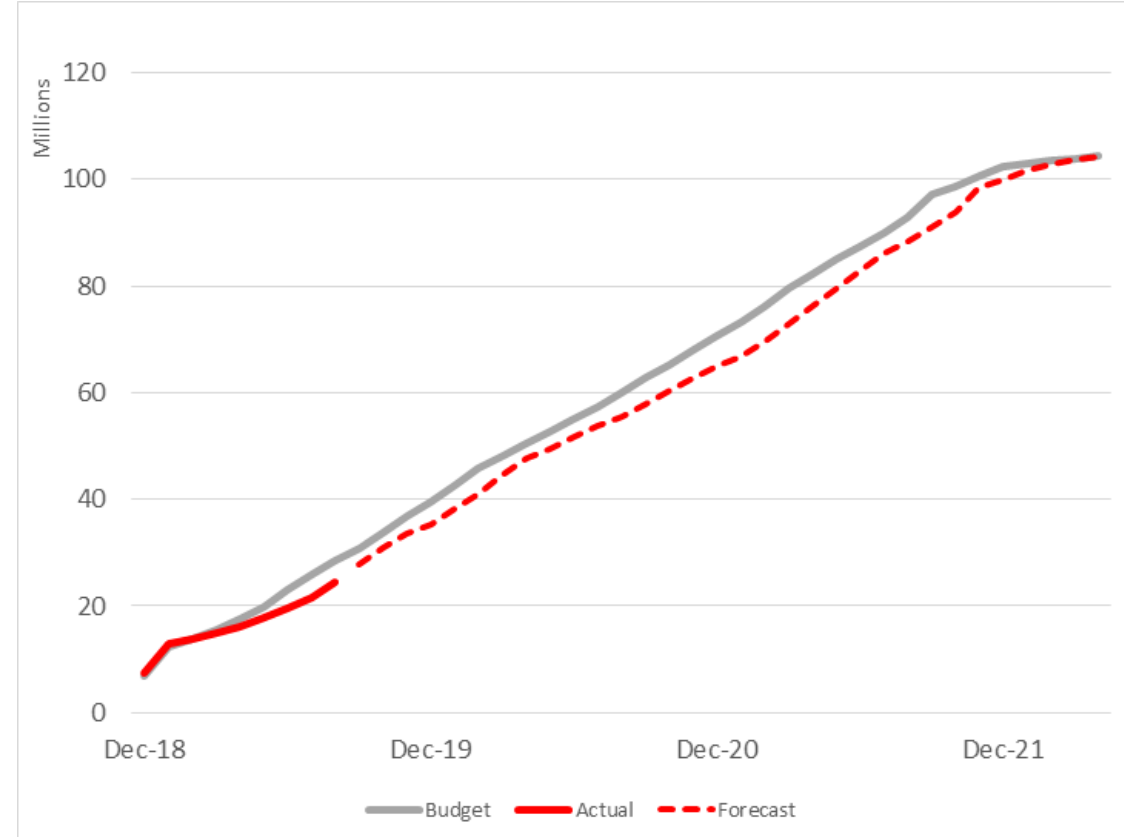
# SOI: We are doing what was said we would do

## Funding and Spend

WWL Sources and Uses of Funding (\$M)



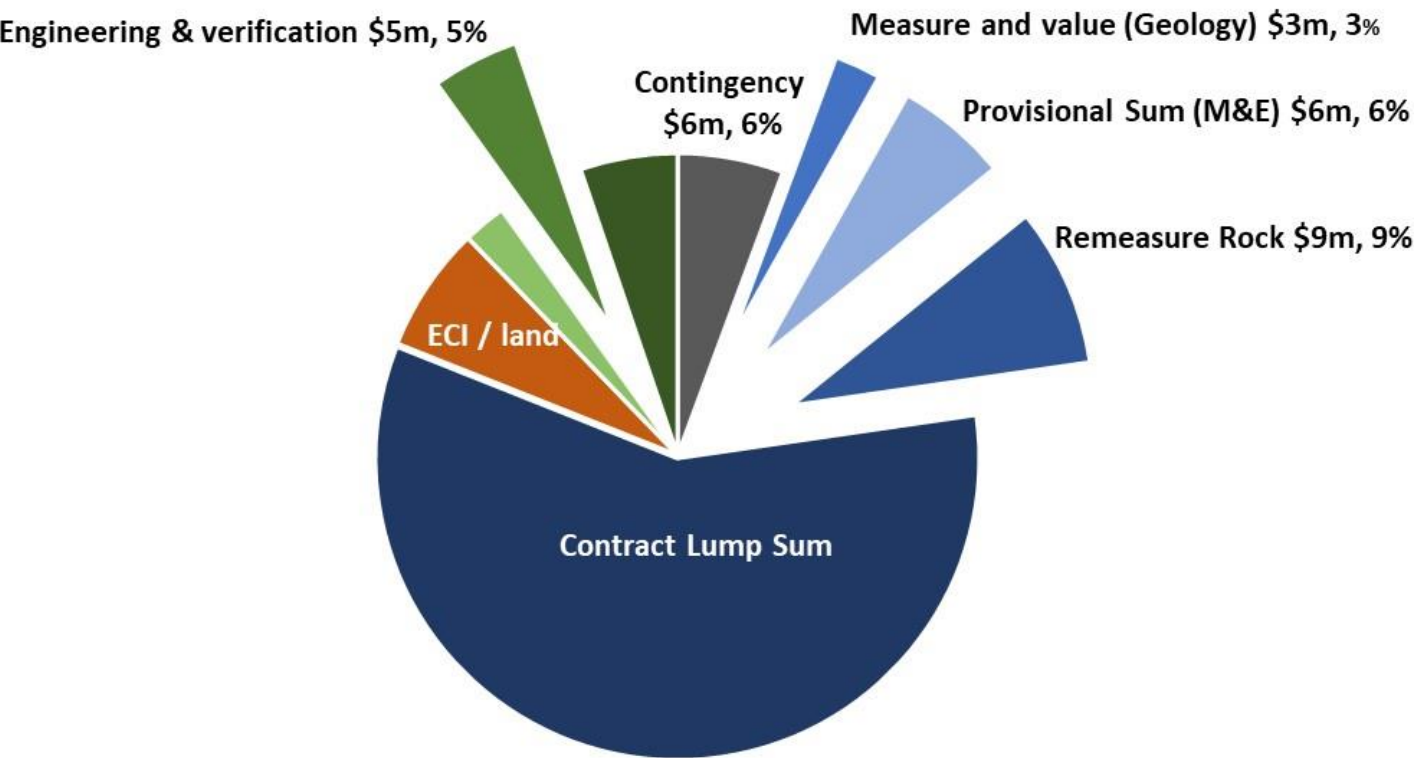
## Forecast cost & schedule to complete





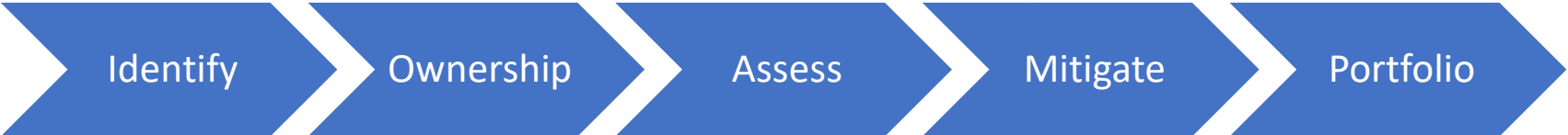
# SOI: We are doing what we said we would do

## Risk Management: 22% of Project Budget at Risk



### Risk Register (56 27)

- Compaction trials
- Further Borelogs
- Embankment design
- M&E Design
- Refine Grout Spec
- FM Preparedness



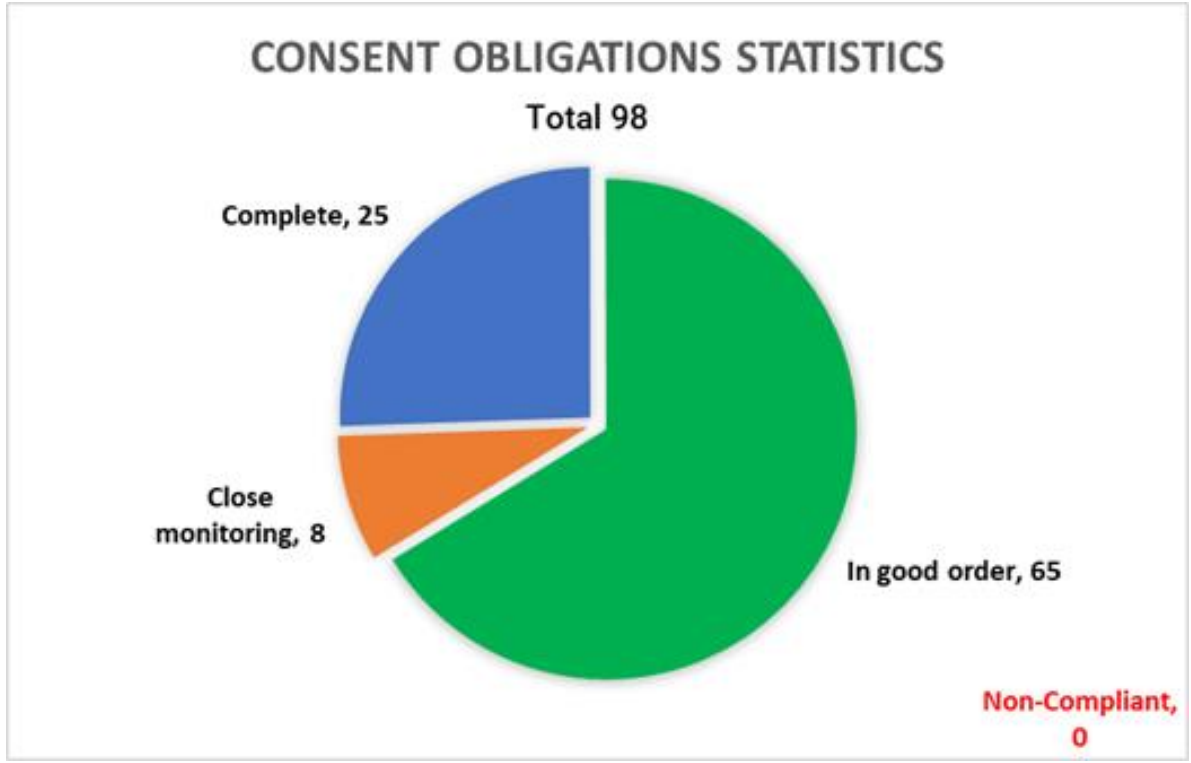


# SOI: We are doing what we said we would do

## Health and Safety



## Compliance and Audit



Late or urgent compliance issues: **0**



# More Information



Recent events



Check out the key facts about the dam



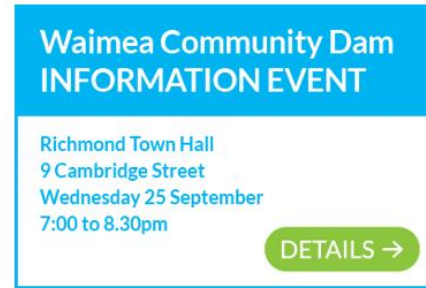
Read more news about the dam



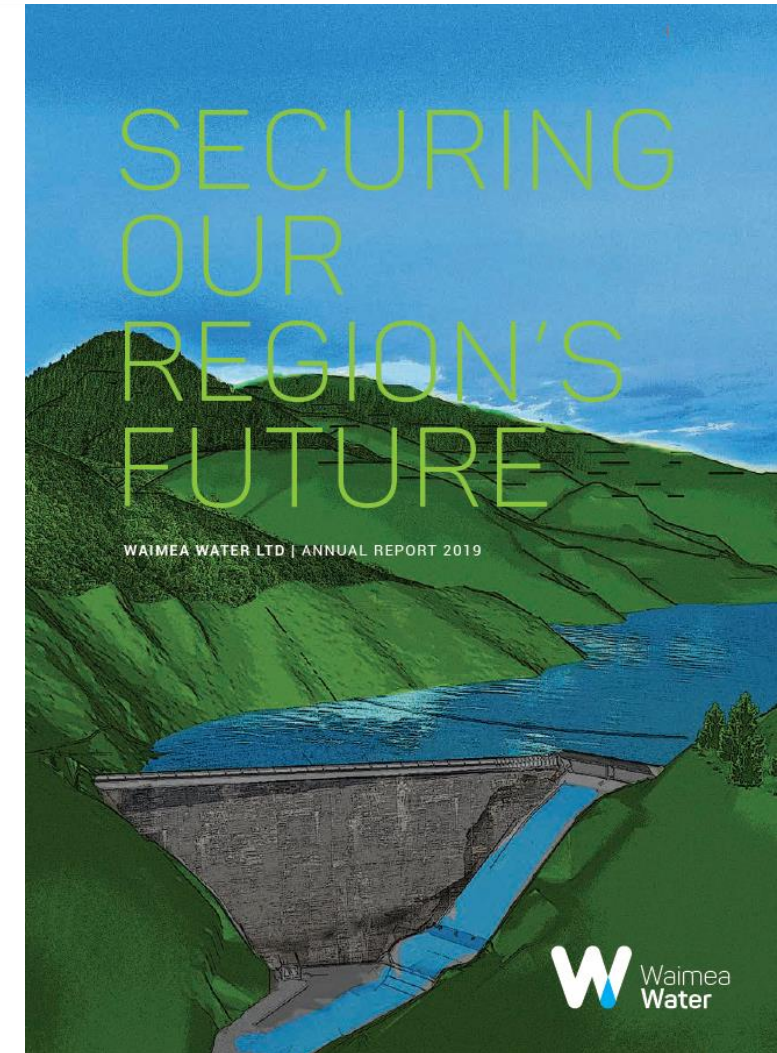
Construction update



Latest reports and presentations



Upcoming events





**Questions?**

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