# Waimea Community Dam
# TDC

## 8 July 2021

**Waimea Water**

# Agenda

1. Progress update
2. Key issues
3. Cost and schedule forecast
4. Reservoir size
5. Operating cost forecast

# Overview

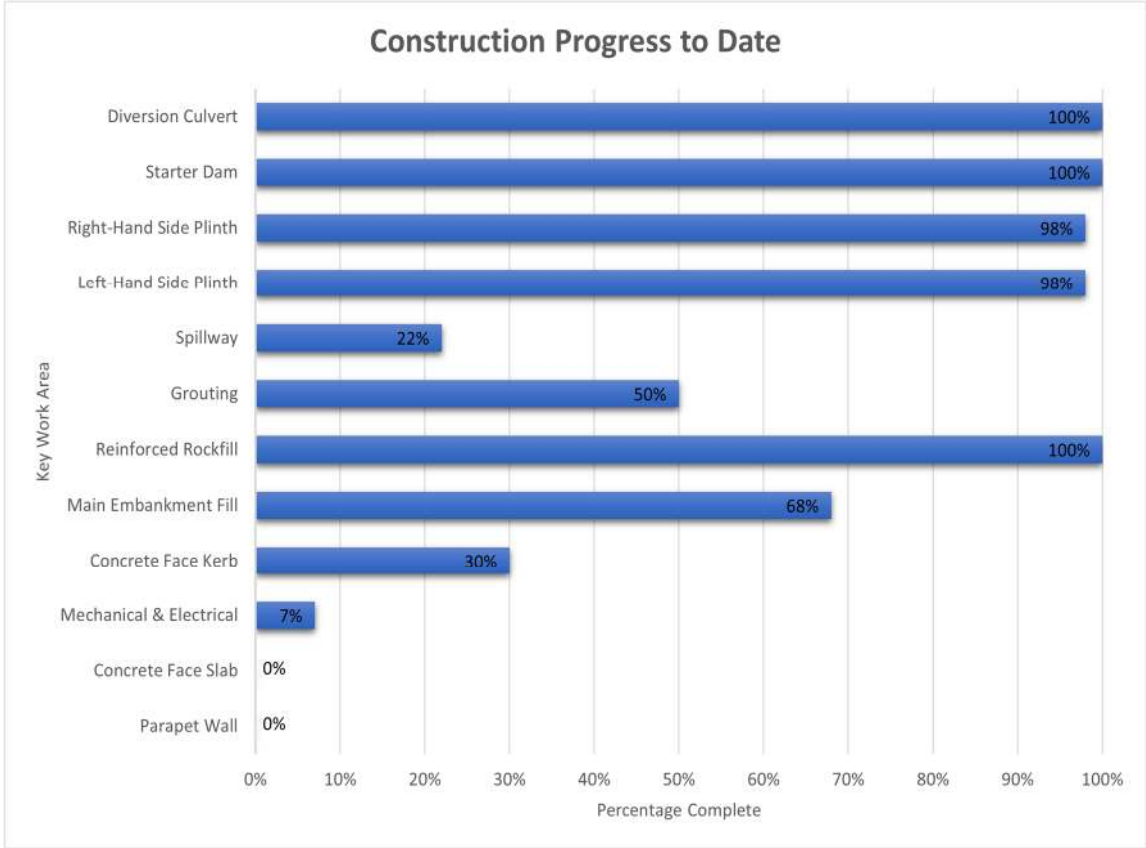
**WWL efficiently delivering a safe, reliable, resilient and fit for purpose Waimea Community Dam**

- ✓ Construction: ~**60%** complete and foundations largely exposed
- ✓ Design: Adapted to geological conditions. Completed M&E. Independently peer reviewed
- ✓ No serious harm injuries. No high potential incidents in 2020/21 year
- ✓ Full compliance with resource consent requirements. Water quality remains very good

# Progress Update

**Progress close to revised programme (mid-2022)**

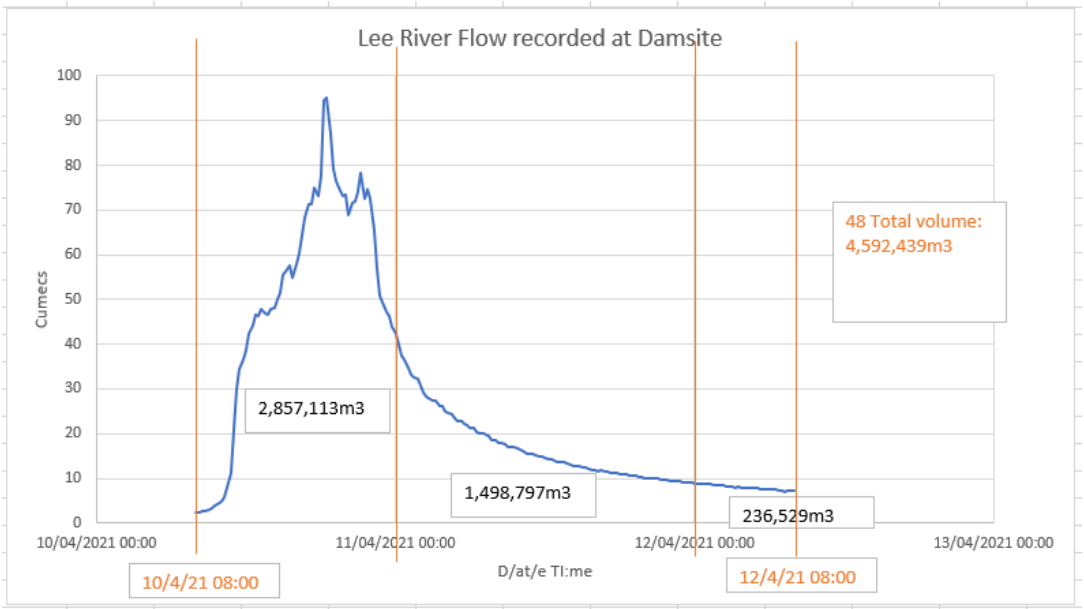
- Culvert, Starter Dam completed 2021
- Plinths near complete
- Reinforced Rockfill completed
- Embankment well progressed
- Spillway progressing
- Delay with 10 April 2021 flood



# Progress Update

**10 April 2021 Flood**

- 11m above riverbed
- 1 in 2 year 12 hour and 24 hour volumes
- 4.6M m3 over 48 hours (1/3rd reservoir)





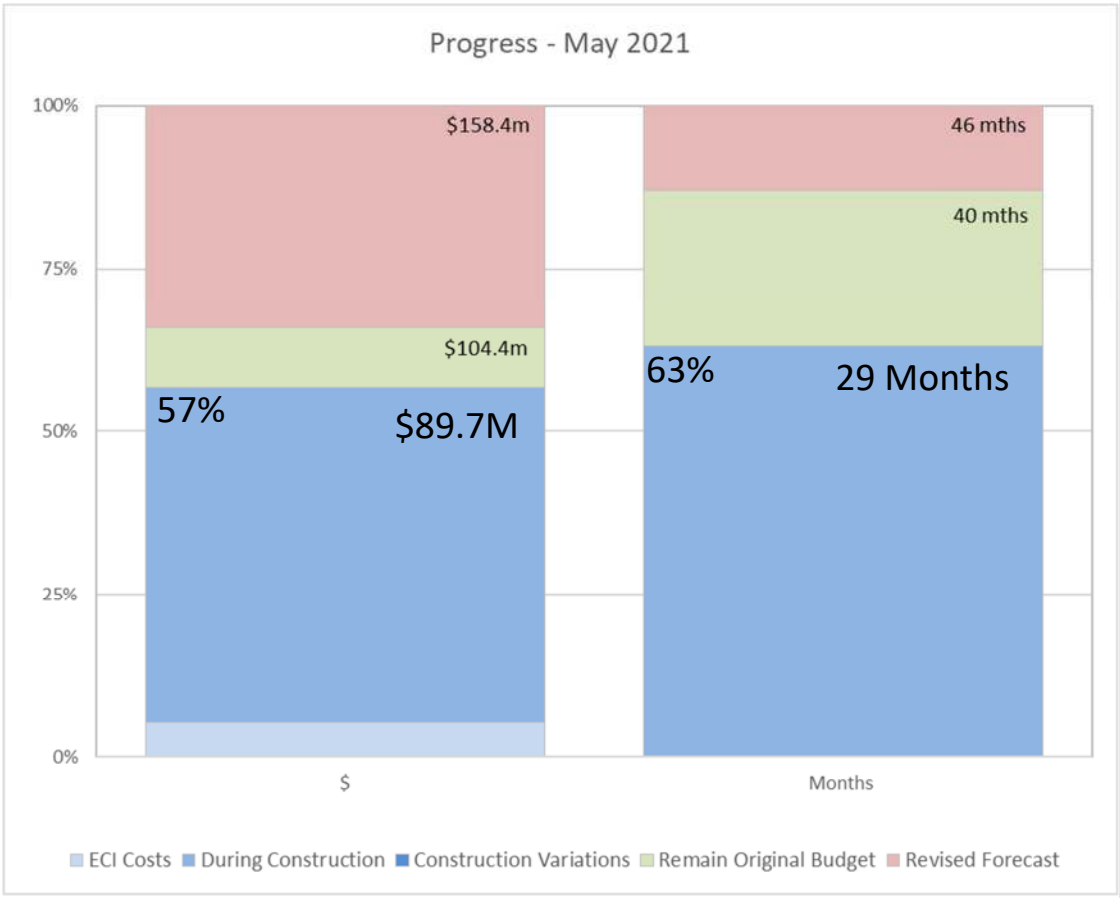
# Progress Update: Embankment well progressed

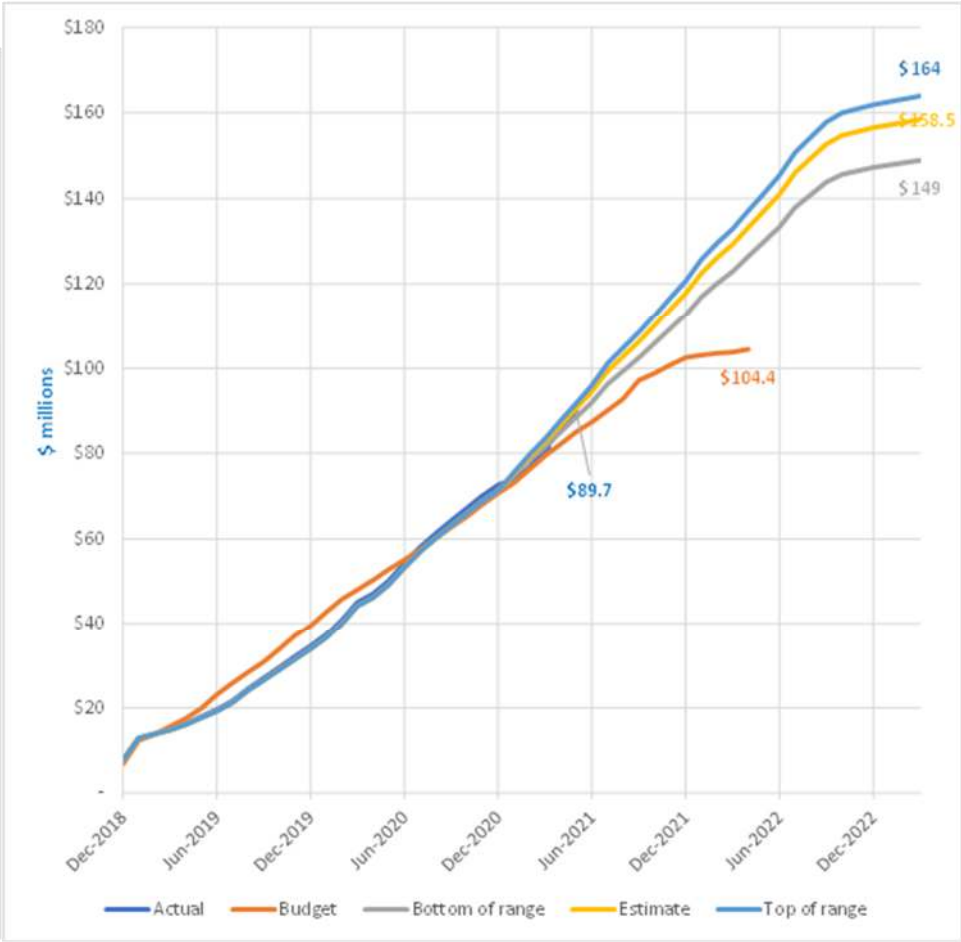
- Downstream reinforced rock-filled face completed (28m)
- Blanket drainage layer complete and covered with bulk fill
- Bulk filled 2/3rd of embankment with indigenous rockfill to 28m height above river. (Crest at 54m)
- Upstream kerbs, flow-preventing zone (+sand) and chimney drain completed to 20.4m above river (critical path)
- Edges to concrete face commencing. Slip-forming concrete face due to commence January 2022


# Progress Update: Spillway progressing

- Poured ~1,500m3 concrete in flip-bucket (replace unsuitable rock)
- Slip-formed wall bases to lower-spillway
- Preparing foundations to upper-spillway
- Commence walls to lower-spillway Aug-21

# Progress: ~60% complete



# Schedule Forecast

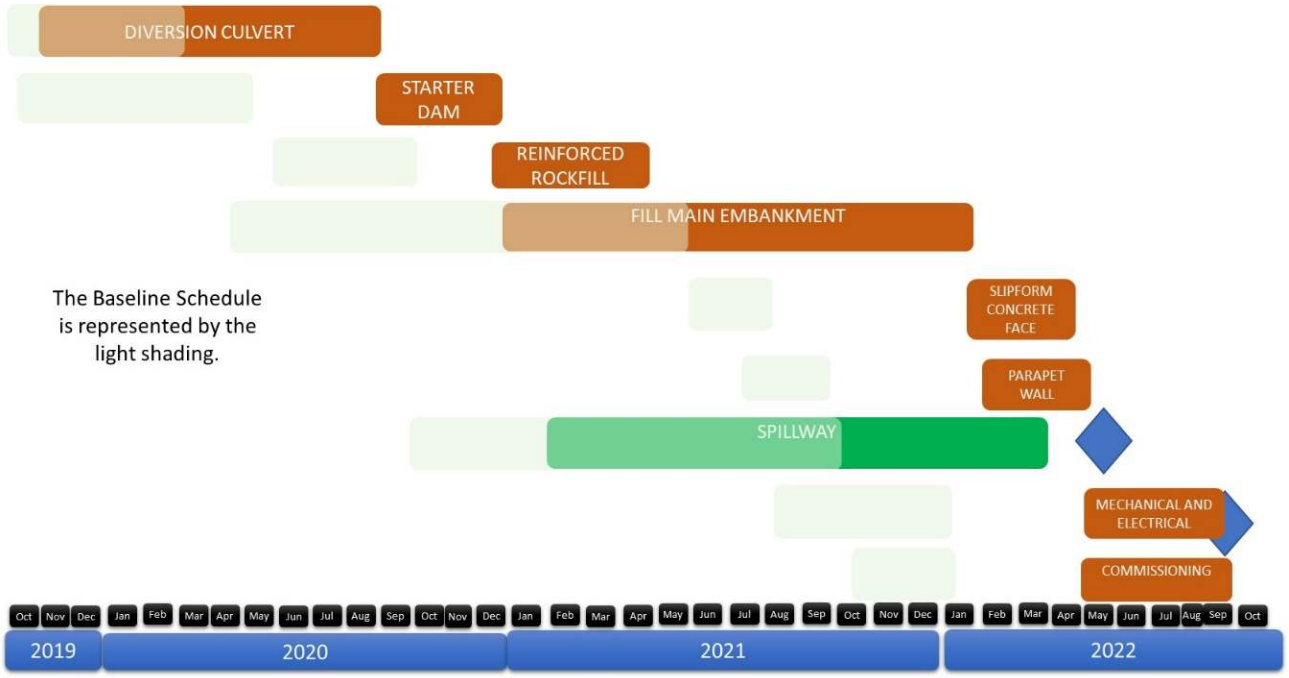
8 Month delay to construction

- Predominantly COVID-19 and loss of recovery time
- Encountered conditions (geology / embankment)
- Flood events
- Not close during summer / season

2 Month further delay to commissioning

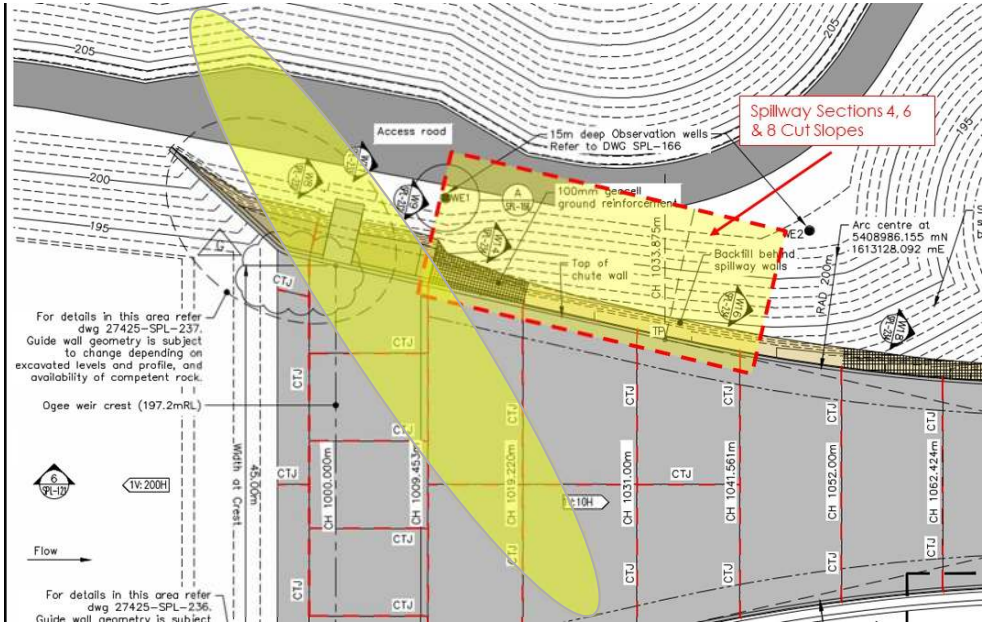
- Hold points (design work)
- Mechanical works

| | Plan at Funding | Current Expectation |
|---|---|---|
| **Complete Dam** | 28 October 2021 | ~~May~~ June/July 2022 |
| **Reservoir filled** | 23 January 2022 | ~~September~~ December 2022 |
| **Dam commissioned** | | |



# Challenge 1: Left Hand Side Foundation: Shear-zones

- Encountered shear-zone during June-2021.
  4-5 m wide of ground rock and clay matter
- Bisects top of spillway / ogee-weir
- Need to remove / treat to anchor spillway & seal sub-strata
- Need to stabilise above and below spillway




# Challenge 1: Left Hand Side Foundation: Highly fractured

- Recent (2Q21) removal of overburden / cleaning
- Highly fractured LHS embankment / foundation
  - × Worse, more treatment than expected in Feb-2021

- ➢ Increase flow-preventing (2B) material +30%
- ➢ Importing sand & gravels stressing supplies
- ➢ Increase stabilisation protection above spillway
- ➢ Treat shear-zone

⇒ Within, but consuming budget & contingency.
**High Risk remains**

# Challenge 2: M&E cost escalation

**Mechanical and Electrical Costs Challenged**

✓ Single pipe *reduced* steel & welding by 30%, pipe supports, valves

× Feb-21 cost forecast budgeted $12M (provisional sum $6.3M)

- ❖ Under-designed at funding
- ❖ Underestimated at funding (included unspecified savings)

× Unprecedented construction inflation

- ❖ ~20%-30% construction inflation since 2020
- ❖ Iron Ore +80%; finished steel +40% to +60% since 2020
- ❖ Stainless steel +20%, China duty +13% since March-21
- ❖ Freight costs +200% – 300%; 40 month delivery lead time
- ❖ Labour strained with competing demand
- ❖ Opportunistic pricing

⇒ Within, but consuming budget & contingency. **High Risk remains**

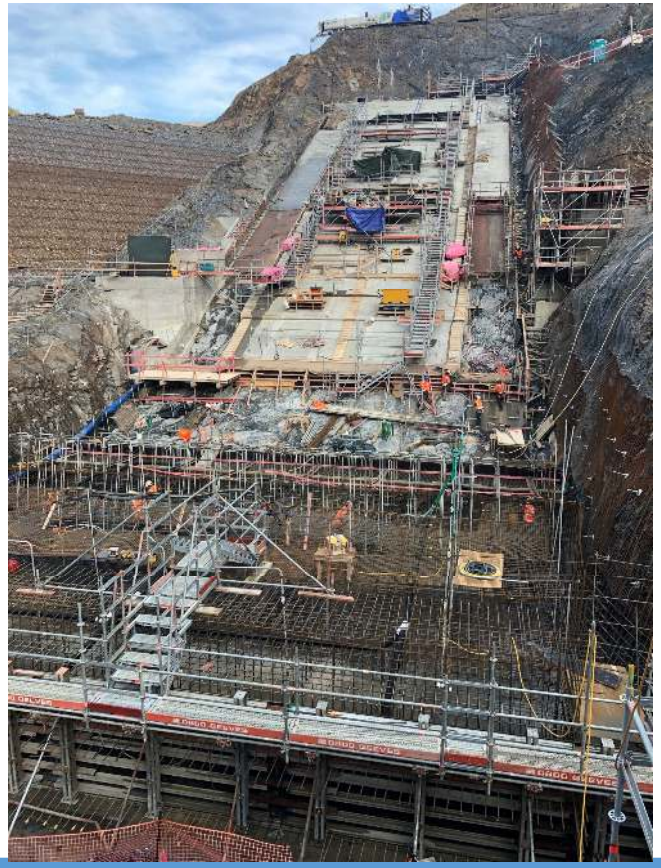
+63% since 1 Jan 2021



+42% since 1 Jan 2021

# Prognosis

On known conditions, anticipate cost towards upper end of Feb-21 risk range: $158.4M to $164M.  Fill >mid-2022

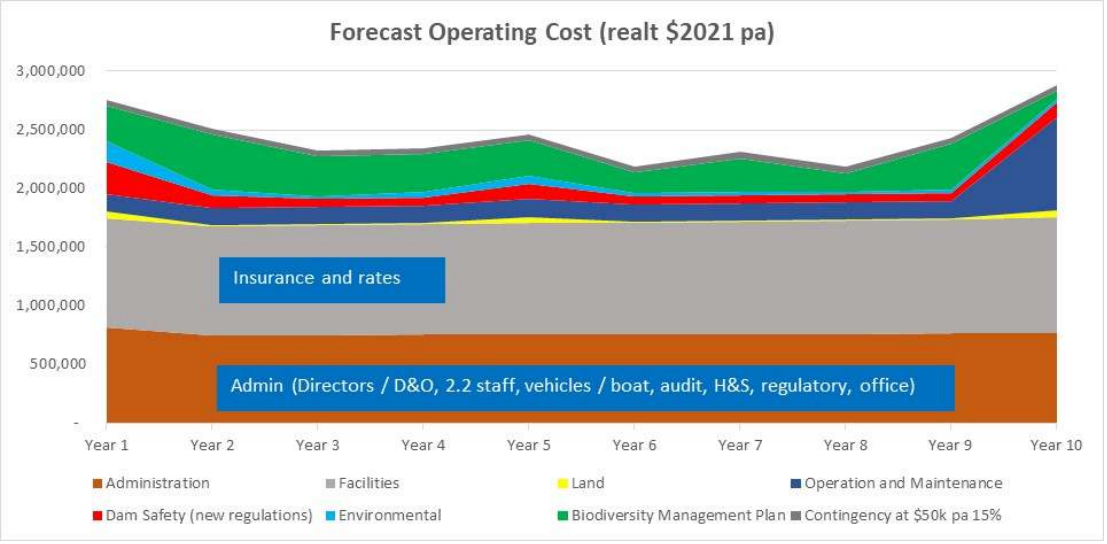


# Reservoir Size

- Recent Lidar survey indicates reservoir volume close to design size (within 2% error range)
- WWL exploring lifting Ogee-Weir 300 mm / 0.2M m3 with better spillway efficiency.

# Operating cost forecast: Revised and submitted

- Operating costs (slightly reduced) expected to be:
  - $2.6M pa years 1-2 (bedding in dam safety)
  - $2.3M pa years 2-9
  - $2.9M pa year 10 (major services)
- Insurance (~$650k pa) remains key uncertainty and risk
- Pre-close estimate of $1.5m pa underestimated operating requirements




| Cost Increase Component | +$k pa (average) |
|---|---|
| Insurance, rates and land costs | +$340k |
| Dam safety surveillance and surveying | +$ 63k |
| Dam maintenance, (+boom and screen cleaning) | +$107k |
| Increased staffing costs of +1.4 FTE | +$263k |
| Increased governance, support (H&S etc), facilities | +$170k |

# Thank You. Q&A

Statement of Intent 1 July 2021- 30 June 2022

STATEMENT OF INTENT

1 July 2021 – 30 June 2022

VERSION: Final 26 May 2021

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Waimea Water Limited

Quarterly Report

Period ending

31 March 2021

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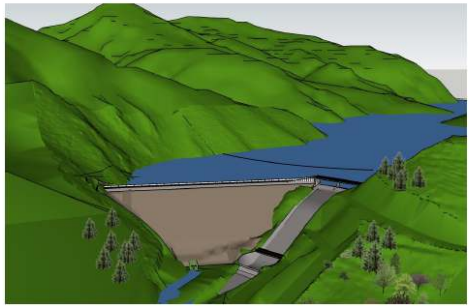
Waimea Community Dam Operational Management Plan
Document Number: **WWL-OPP-RPT-001**



**Waimea Community Dam**

Operational Management Plan

30 June 2021

Document Number: **WWL-OPP-RPT-001**

| Revision | Date | Produced By | Checked By | Revision History |
|---|---|---|---|---|
| Rev 0 | 16 March 2021 | WWL | MAS | First draft for comment |
| Rev 1 | 30 June 2021 | WWL | MAS | Final after consultation |

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