



# WRRRA Barlil & Cooranga technical update

23 April 2026

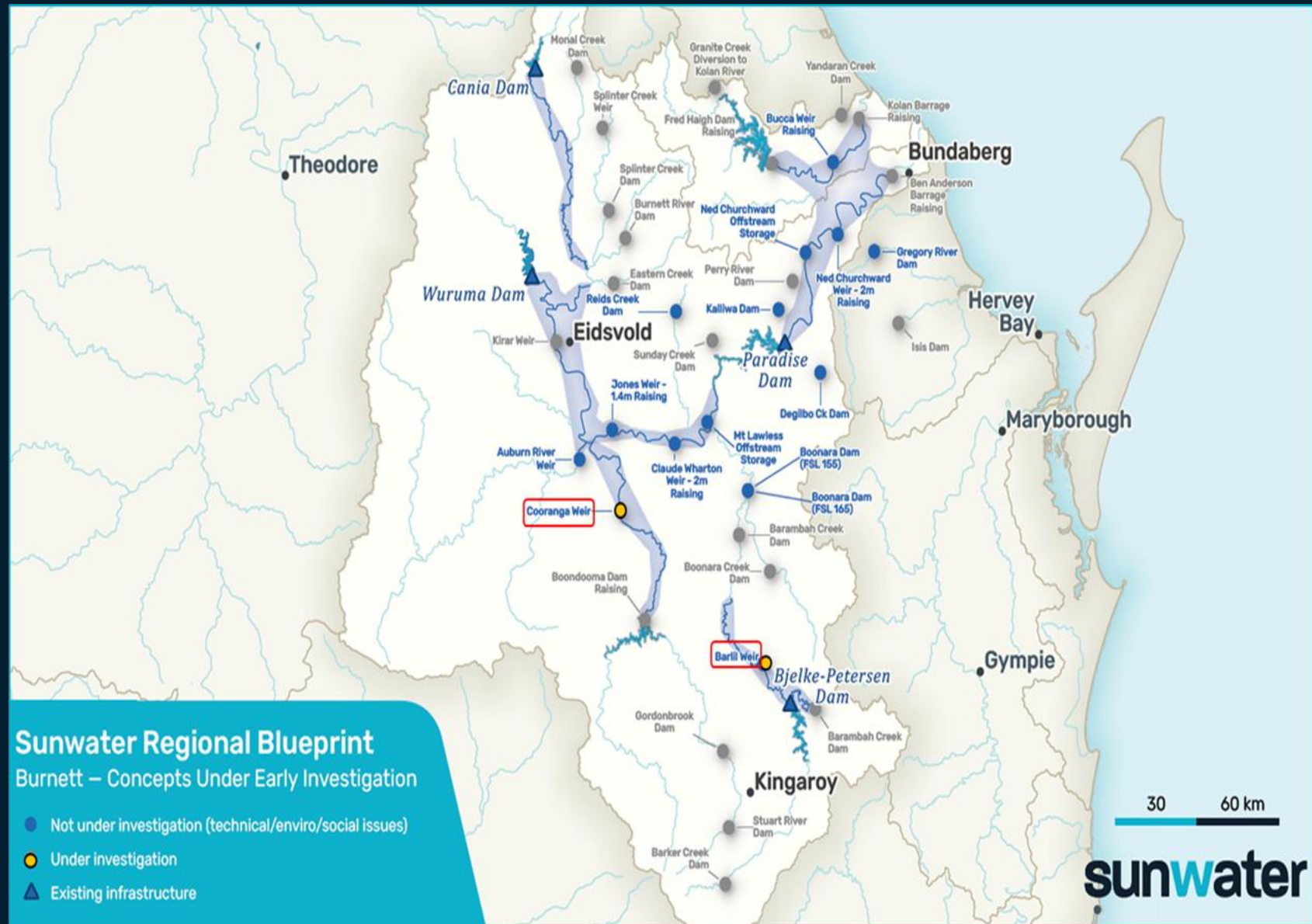
# Background

On behalf of the Queensland Government, Sunwater is assessing two new weirs to improve regional water security and support agricultural growth:

- **Barlil Weir**, near Murgon on Barambah Creek in South Burnett
- **Cooranga Weir**, near Mundubbera on Boyne River in North Burnett

The proposed weirs aim to increase the reliability of existing water allocations.

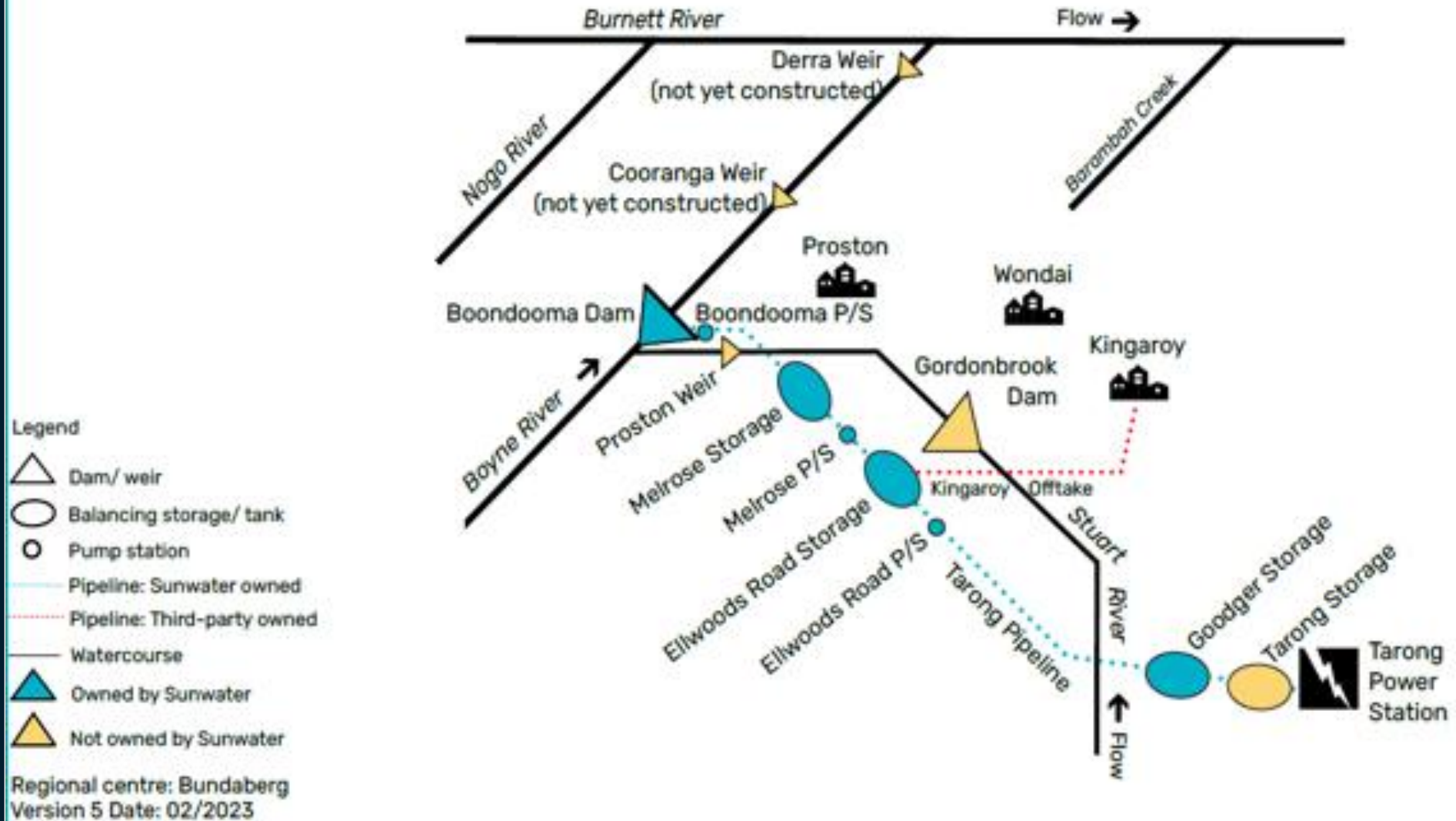
Both weirs have been the subject of previous design and feasibility studies and were recommended for future consideration in the Bundaberg and Burnett Regional Water Assessment (BBRWA).



# Cooranga Weir

# Weir overview

## BOYNE RIVER AND TARONG WATER SUPPLY SCHEME



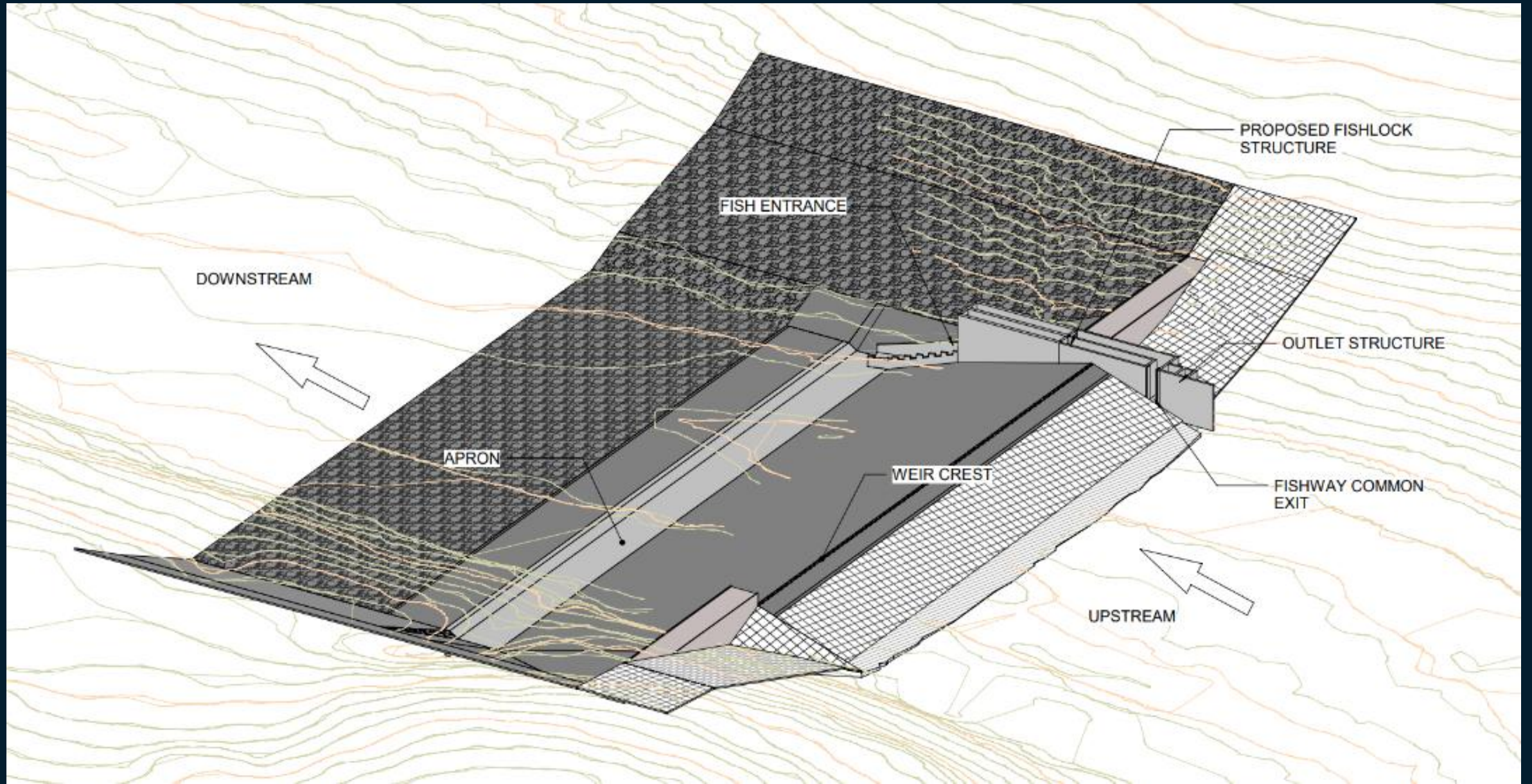
# Weir overview



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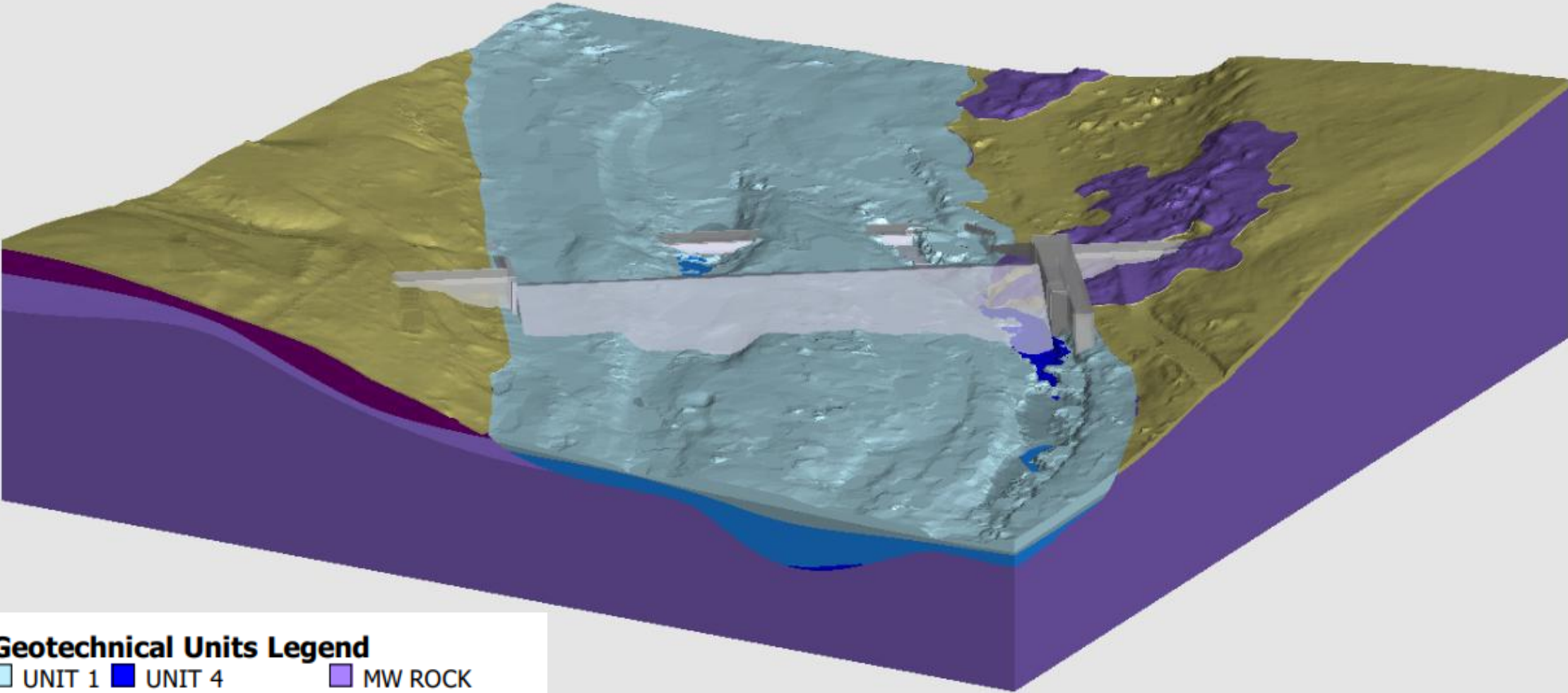


# Construction layout



# Geotechnical

# Geotechnical review – rock units under weir axis



**Geotechnical Units Legend**

UNIT 1	UNIT 4	MW ROCK
UNIT 2	RESIDUAL SOIL	SW - FR ROCK
UNIT 3	XW - HW ROCK	



# Geotechnical – phase 2

## Ground investigation summary

Priority area 1: sheet pile row 1 is designated priority 1 due to its critical role in seepage cut-off

Investigation approach:

- Continuous SPT testing conducted along the Sheet Pile Row 1 alignment
- Boreholes spaced at approximately 5 metres, where practical

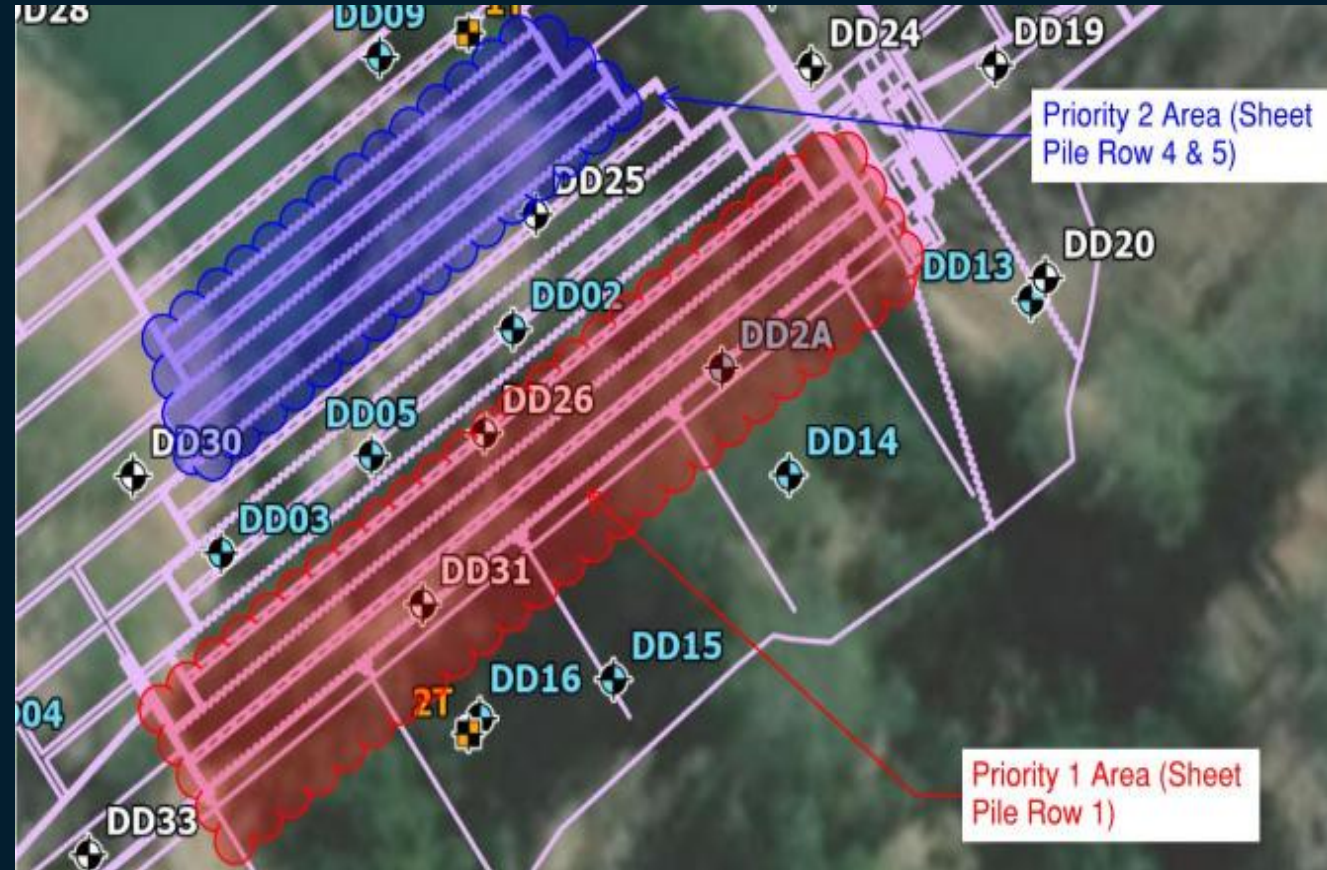
Priority area 2: following completion of Priority area 1

Investigation approach:

- Continuous SPT testing conducted along the Sheet Pile Row 4 and 5 alignment
- Boreholes spaced at approximately 5 metres, where practical

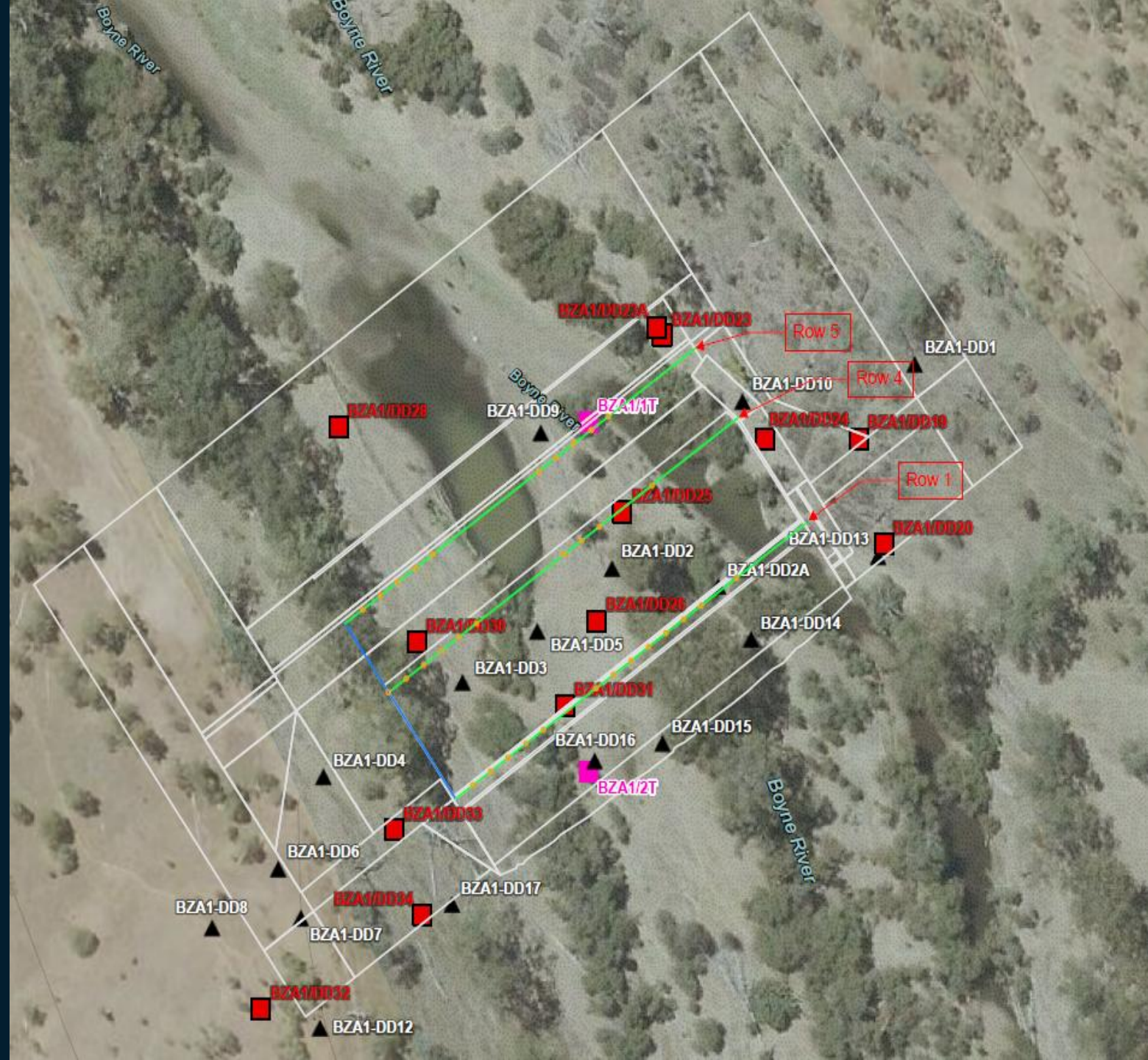
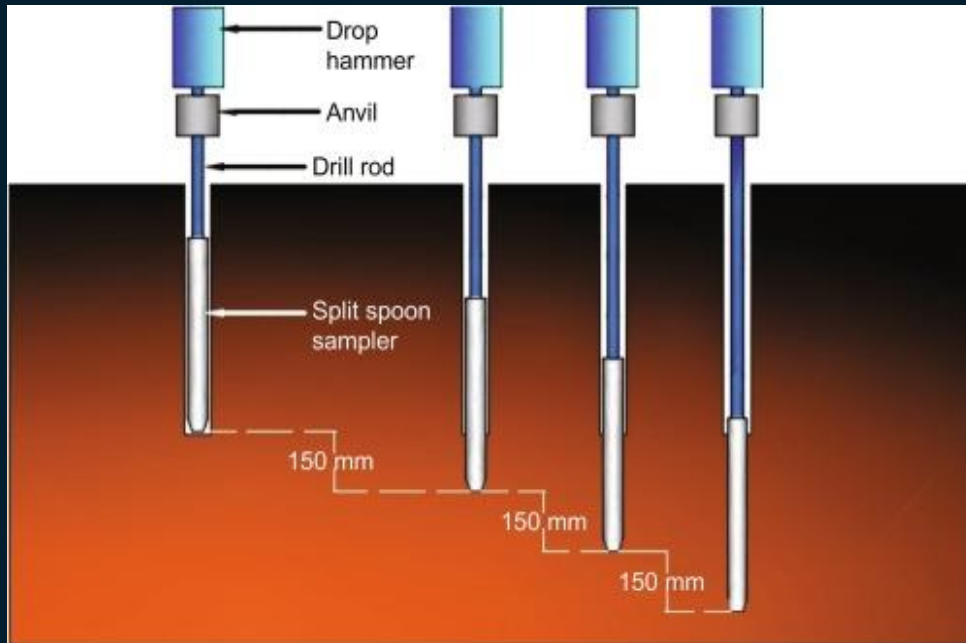
## Outcome

Confirmation of cobble horizons, bedrock depth, and continuous penetration resistance, supporting sheet pile design and construction planning



# Phase 2 - investigation

- **Objective:** determine where sheet piles might be refused along critical rows
- **Method**
- **Stage 1:** cone SPT Testing at 5 m intervals along Rows 1, 4 and 5
- **Stage 2:** washbore, core through obstruction and continue SPT test until rock foundation



PHM

# CFD and PHM modelling

Task Name	Finish
Model Commencement	
Model Design - Initial & Terrain	
Model Construction - Initial & Terrain	
Received Weir Design Geometry	
Model Design - Spillway & Structure	
Model Construction - Spillway & Structure	
Model Construction Complete	
Model Commissioning	
Model Testing	
Data Processing	
Reporting	
Modelling Complete	





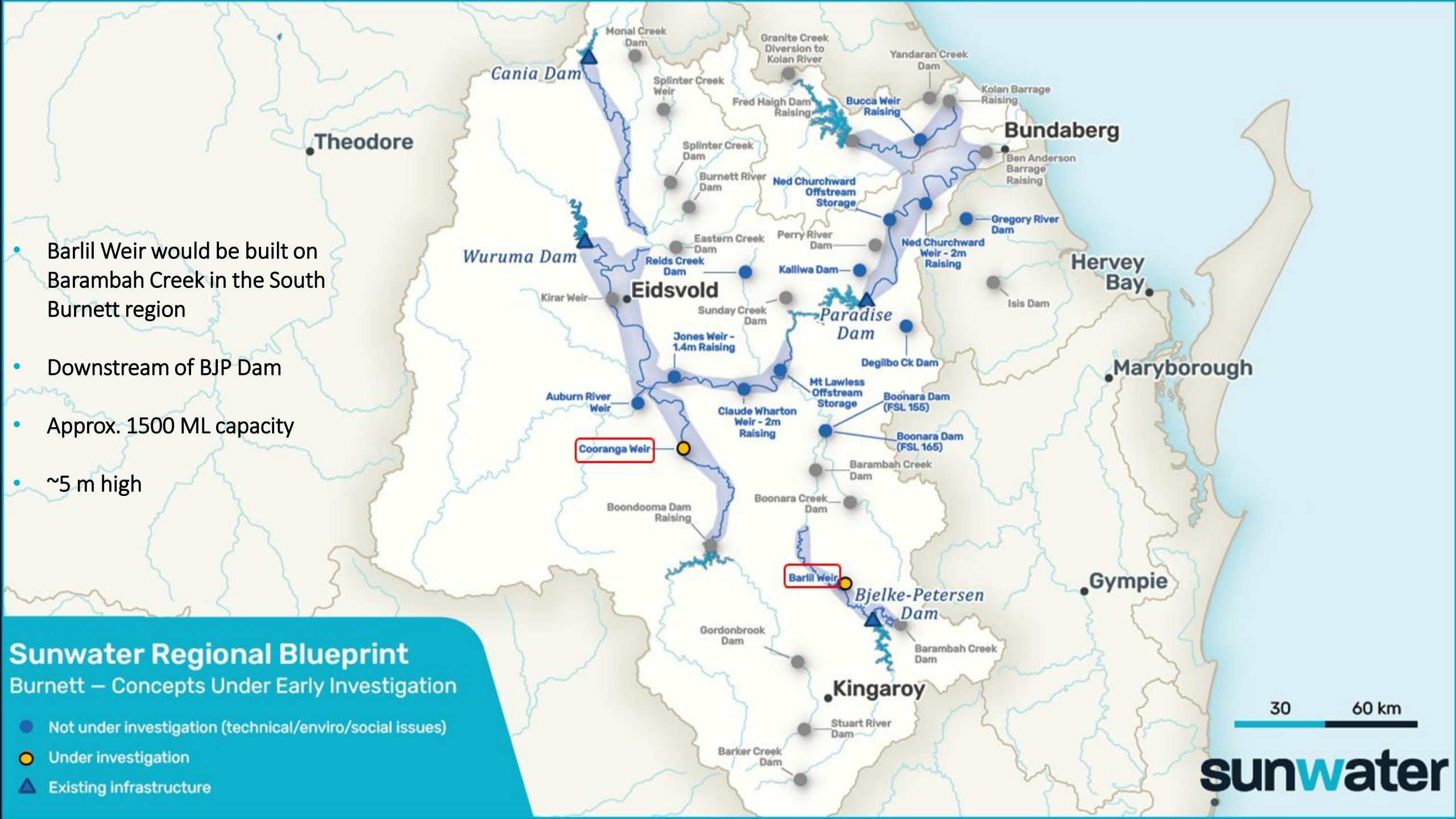
sunwater

# Barlil Weir

Briefing

April 2026





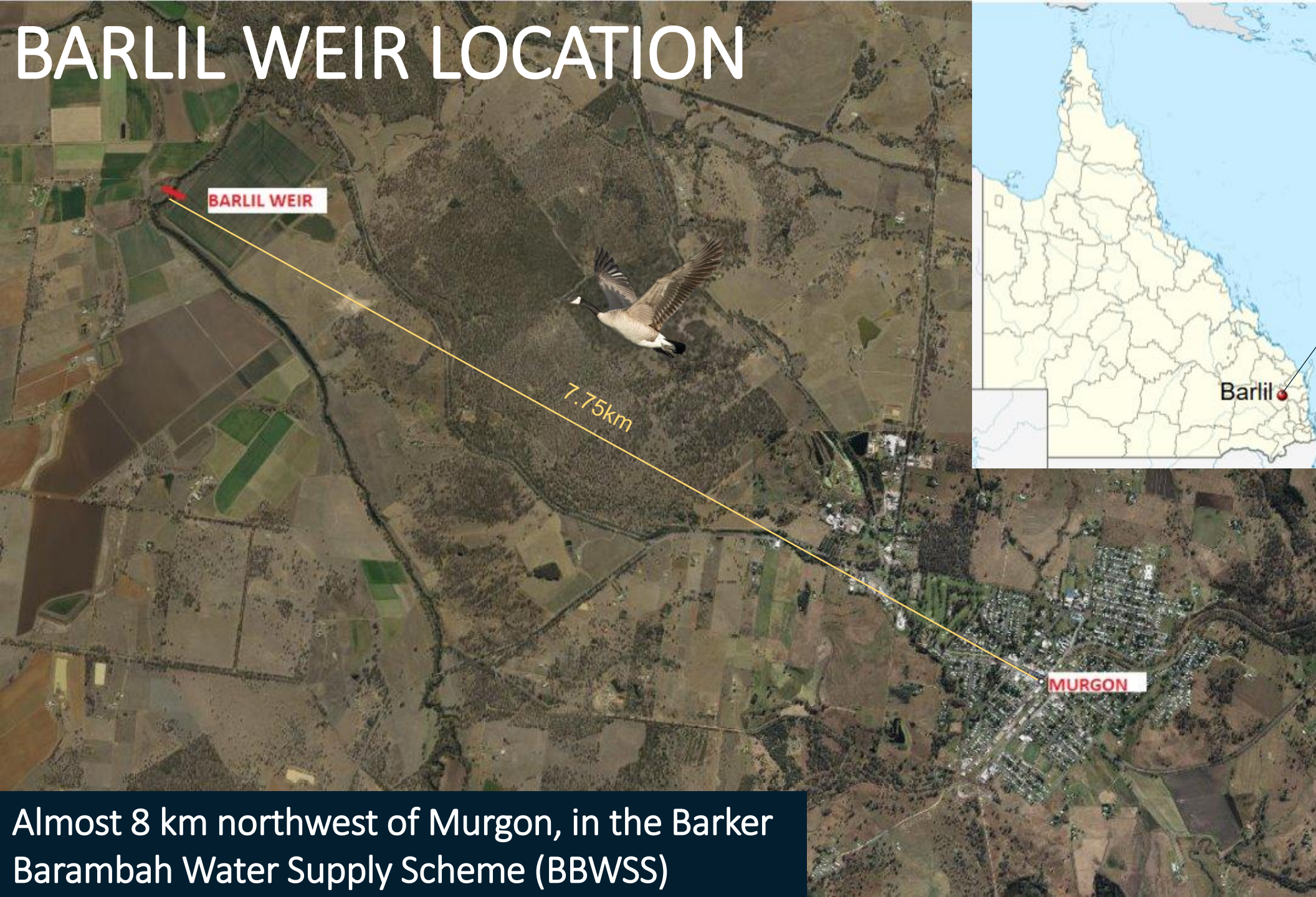
- Barlil Weir would be built on Barambah Creek in the South Burnett region
- Downstream of BJP Dam
- Approx. 1500 ML capacity
- ~5 m high

**Sunwater Regional Blueprint**  
 Burnett – Concepts Under Early Investigation

- Not under investigation (technical/enviro/social issues)
- Under investigation
- ▲ Existing infrastructure

30 60 km

# BARLIL WEIR LOCATION



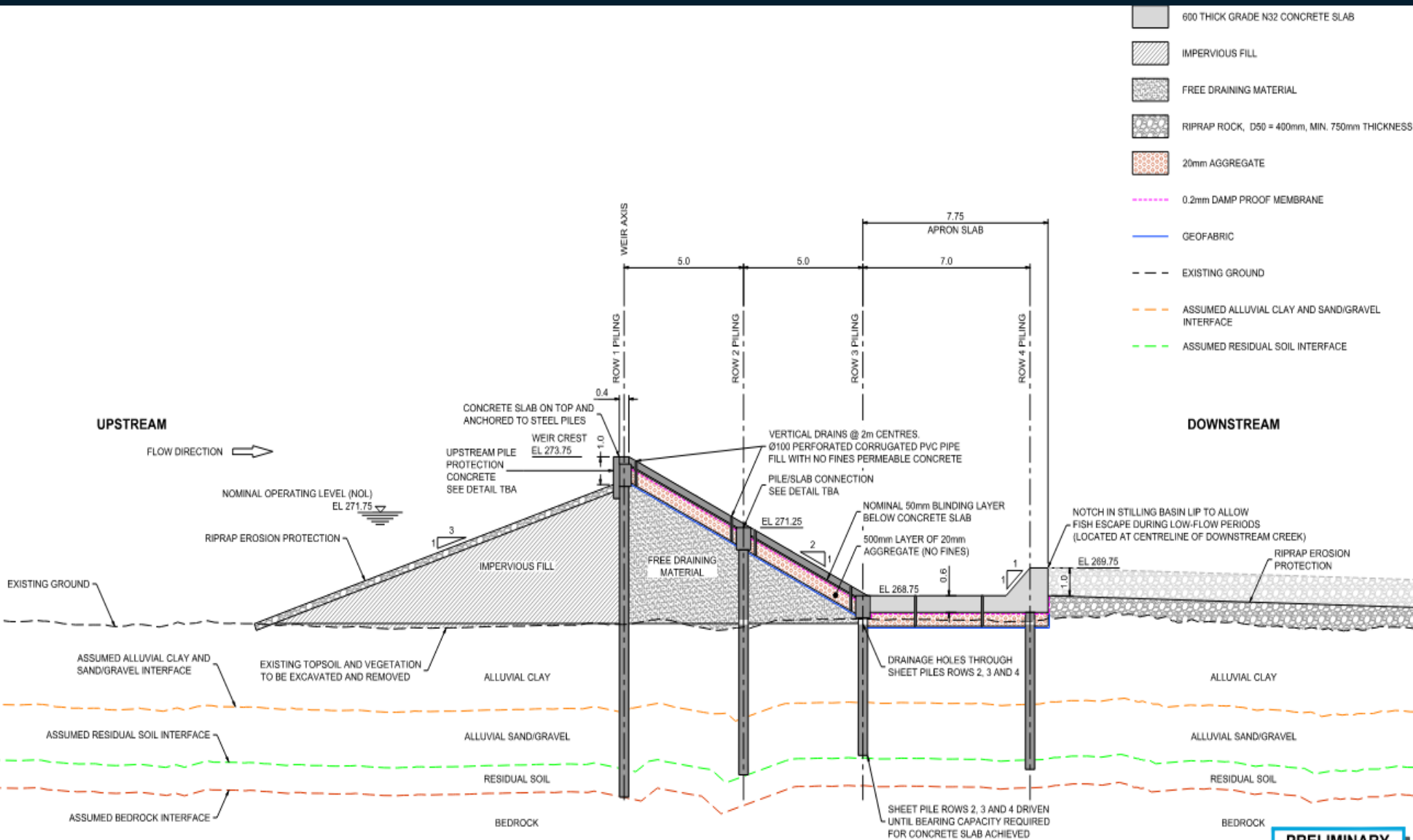
Nanango Electorate

Almost 8 km northwest of Murgon, in the Barker Barambah Water Supply Scheme (BBWSS)



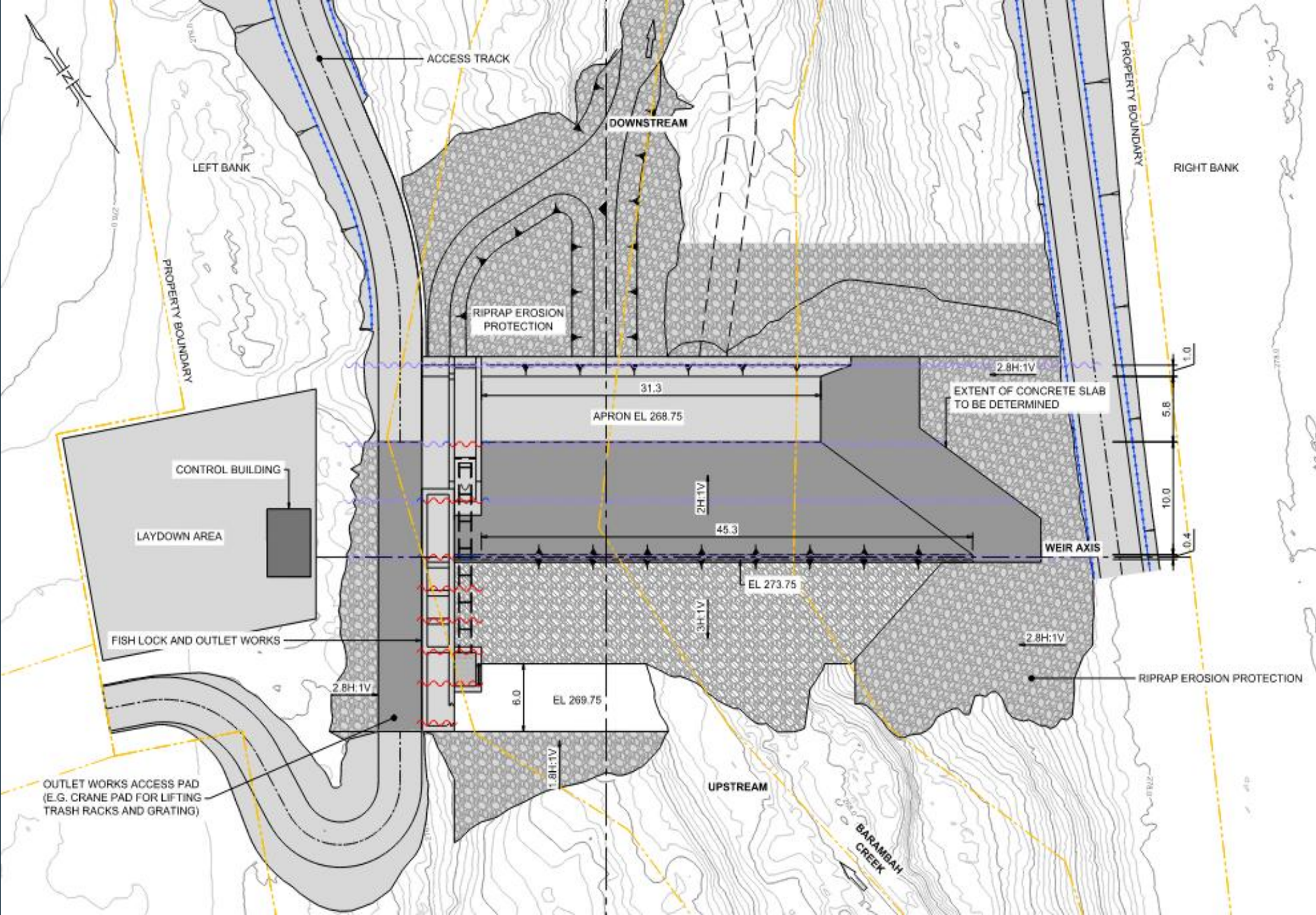
Viewpoint – Looking downstream towards proposed weir site location

# Weir section



- A steel sheet pile spillway capped with reinforced concrete slabs supported by free draining material
- A 7 metre spillway apron
- An outlet structure on the left bank
- Pile section is adequate for flexural, compressive, and bearing requirements under both granular and cohesive soil conditions

# Weir layout



# Geotechnical investigations

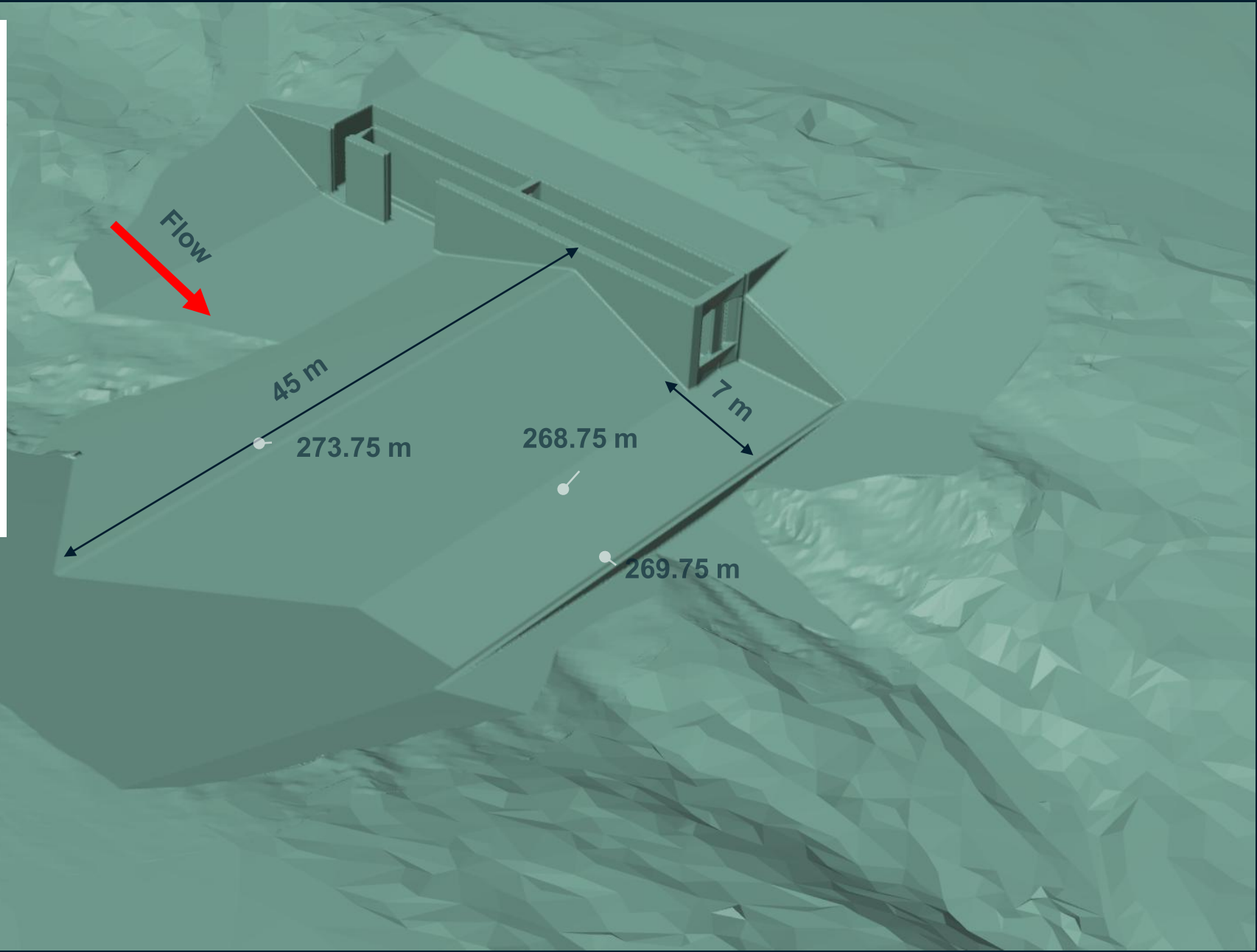
## Completed

- Three historic boreholes (2000)
- Left bank surface geophysics (2025)
- Six holes drilled on left bank (2025)
  - DD07 and DD07A drilled within the creek
  - DD06, DD12 and DD12A on left bank
  - DD04 in anabranch
- Three test pits within the anabranch (2025)
- **Planned (April 2026)**
- Right bank surface geophysics
- Four boreholes on right bank
- One left bank
- A sonic drilling in combination with auger and coring will be used for next phase



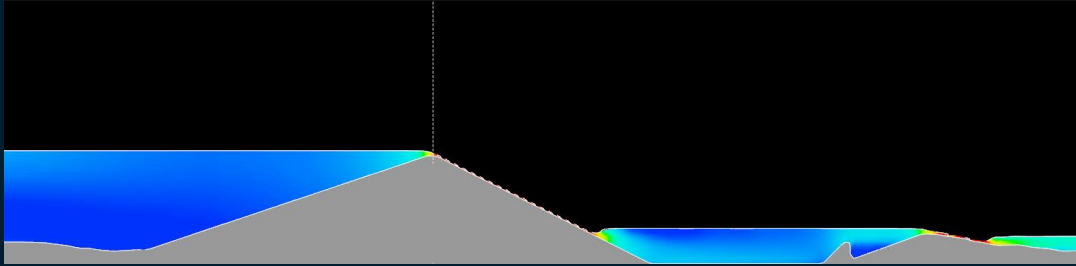
# Hydraulic design

- Weir crest = 273.75 m
- Bankfull level  $\sim$  275.5 m
- Weir drowns out at frequent flood events
- $\sim$  1 in 3 AEP
- $\sim$ 150 m<sup>3</sup>/s
- Afflux less than 200 mm

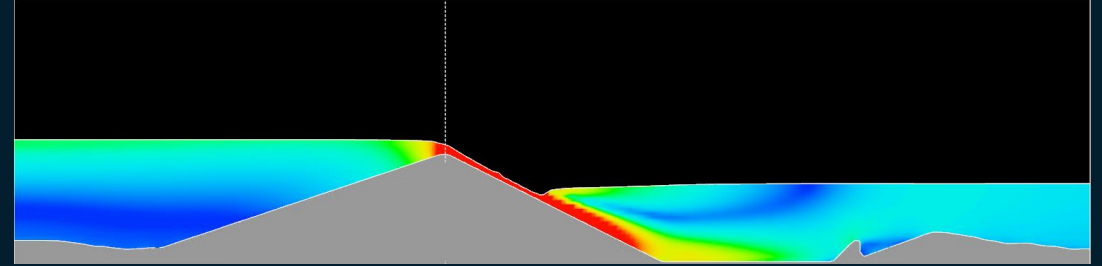


# Flow regime

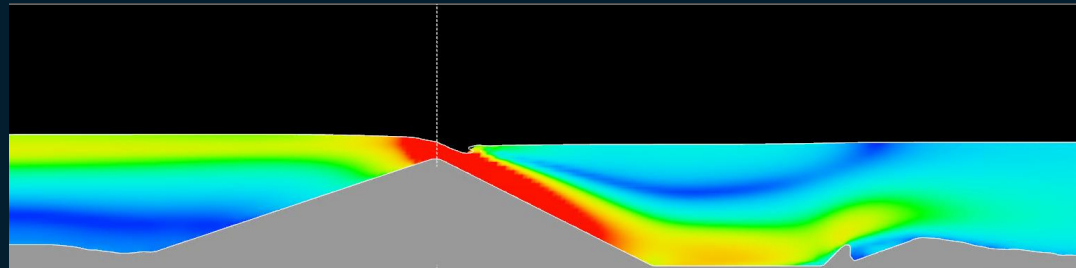
$H_1 = 0.25 \text{ m}$ ,  $Q = 10 \text{ m}^3/\text{s}$



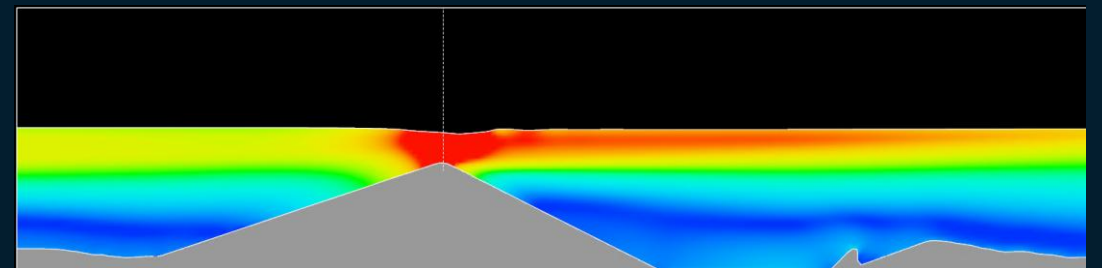
$H_1 = 0.75 \text{ m}$ ,  $Q = 56 \text{ m}^3/\text{s}$



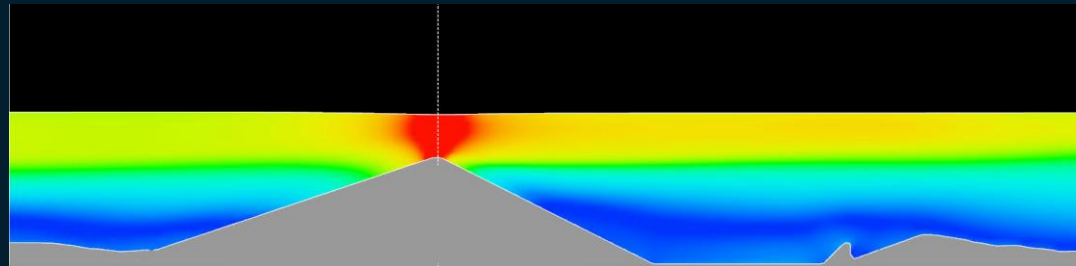
$H_1 = 1.25 \text{ m}$ ,  $Q = 122 \text{ m}^3/\text{s}$



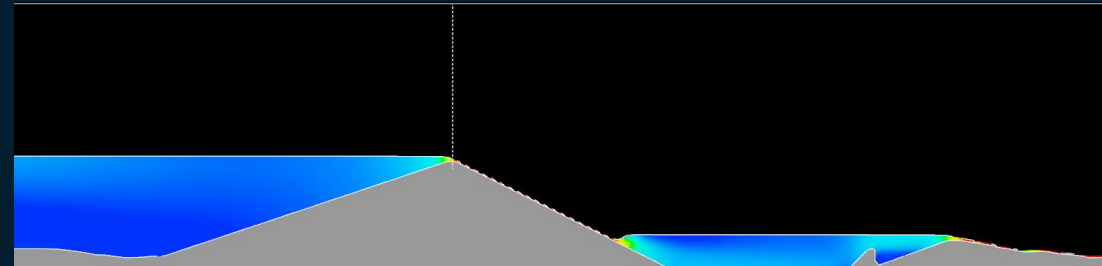
$H_1 = 1.75 \text{ m}$ ,  $Q = 168 \text{ m}^3/\text{s}$



$H_1 = 2.25 \text{ m}$ ,  $Q = 323 \text{ m}^3/\text{s}$

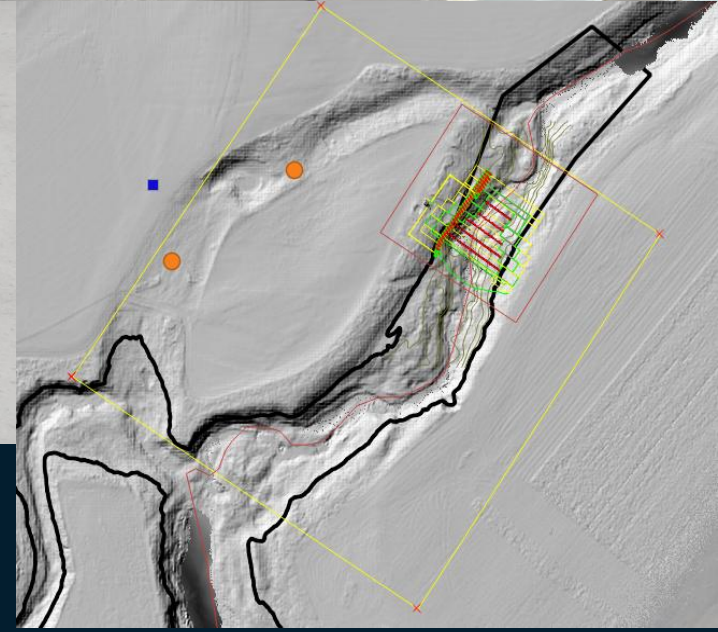
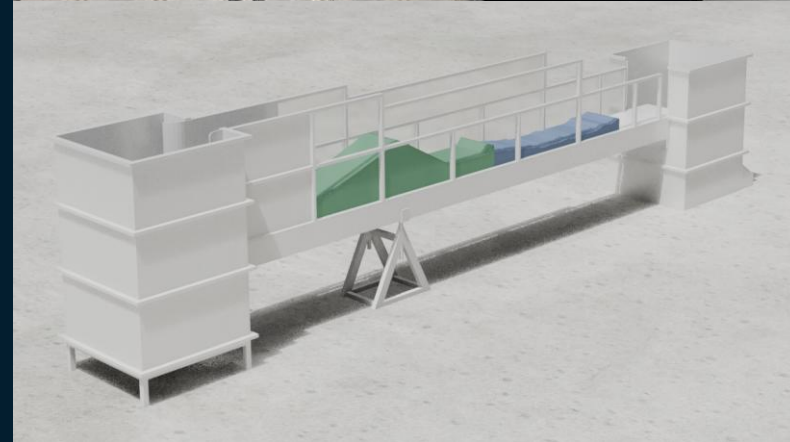
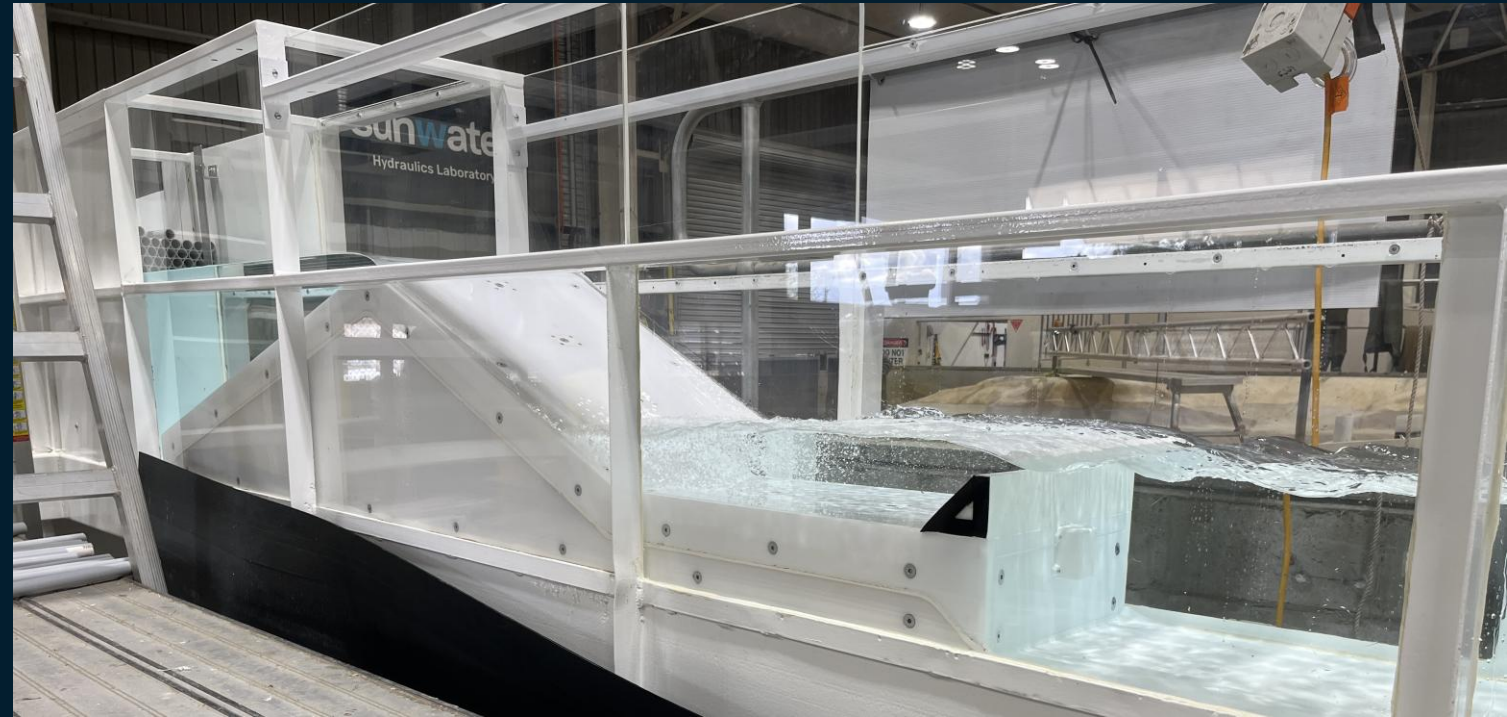


$H_1 = 0.25 \text{ m}$ ,  $Q = 10 \text{ m}^3/\text{s}$  (no TW – basin check)



# Barlil 2D model

- Small flume previously used for most Water Commission dam physical models e.g. BFD
- Recently refurbished
  - 0.45 m wide, 0.8 m high and 10 m long
- Fully automated instrumentation
- Tailwater variability
- Easy, modular customisation/instrumentation
- Allows small models and efficient geometry changes/optimisation to inform design and scour potential
- Barlil 2D model - scale 1:15, H= 0.4 m, L= 2 m, mobile bed w/sand downstream.



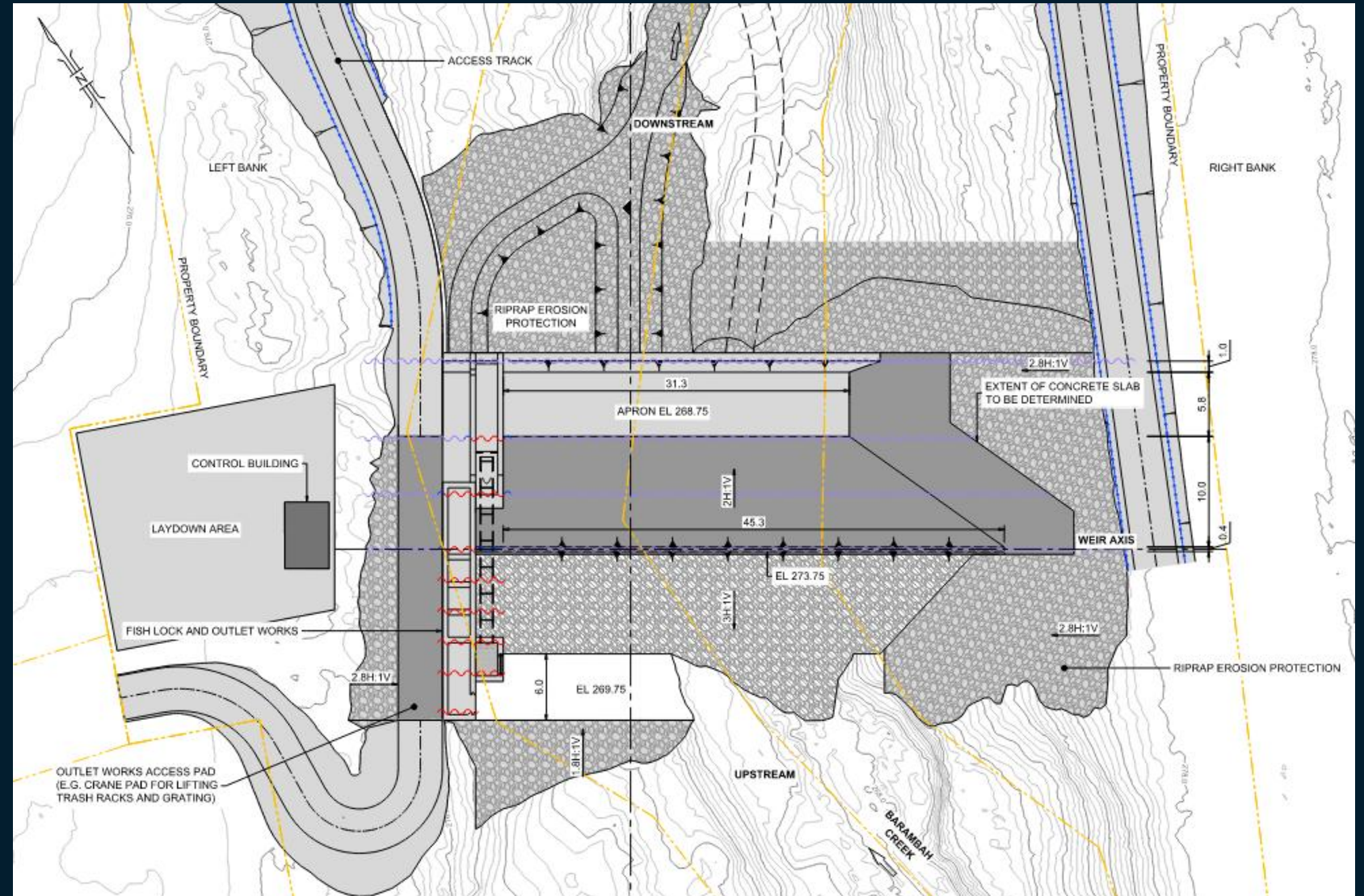
Rocklea hydraulics laboratory

# Barlil 2D model



# Methodology

- Material properties for steel, concrete and various fill conditions were carefully selected based on established codes and site requirements
- Conservative assumptions for load cases assumed, including flood events and scour, safety factors recommended by industry standards or as appropriate for weirs
- Reinforcement details for the spillway apron and sloped slabs were determined to meet strength and serviceability criteria, with hand calculations and Strand7 modelling verifying compliance with relevant Australian standards
- Erosion control considers reinforced concrete slabs, appropriately sized rip rap and weep holes



**Delivering water** for prosperity