



Future Ready Project Webinar Series
Burrawang to Avon Tunnel



Acknowledgement of Country

The Tharawal (or Dharawal) people have a relationship with the country south of **Botany Bay** and the **Georges river**, west to **Appin**, down as far as **Goulburn** and to **Wreck Bay** near **Nowra**.

We would like to pay our respect and acknowledge all the traditional custodians of this land on which we meet, including the Tharawal People, for it is in their country that the project will be built.

We would like to pay our respects to Elders past, present and future.



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Burrawang to Avon Tunnel



Future Ready

**See the future
more clearly**

**Design for
it today**

**Better
outcomes for
people and
places**

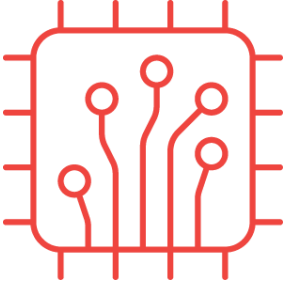
Taking a Holistic View



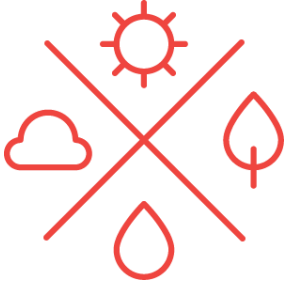
Climate



Society



Technology



Resources

Speakers



Doug Graham

**Project Director and Section Executive
Geotechnics & Tunnels Australia**



Gareth Evans

**Project Manager and Senior
Principal Geotechnical Engineer**

Burrawang to Avon Tunnel



Avon Dam

Water NSW

WaterNSW (WNSW) is a State Owned Corporation responsible for:

- Operating NSW's rivers and water supply
- Providing bulk water supply to NSW
- Protecting water sources
- Plan, build, maintain, operate essential water infrastructure

WNSW operates 43 dams, tunnels and pipelines

The Metropolitan Water Sharing Plan 2017 guides WNSW in its investment decisions relating to:

- water demand
- environmental and hydrological constraints
- System resilience



Project overview

The Burrawang to Avon Tunnel (BAT) is a key element in the Metropolitan Water Sharing Plan

In January 2019 WaterNSW engaged WSP to develop the concept design for the project.

The study involved:

- Option selection process
- Geotechnical site investigation with deep boreholes
- Concept design of the water transfer scheme
- Concept design of hydroelectric power plant (HEPP)



Project location



Project area located 150km SW of Sydney, in NSW

Project Benefits

The BAT project includes:

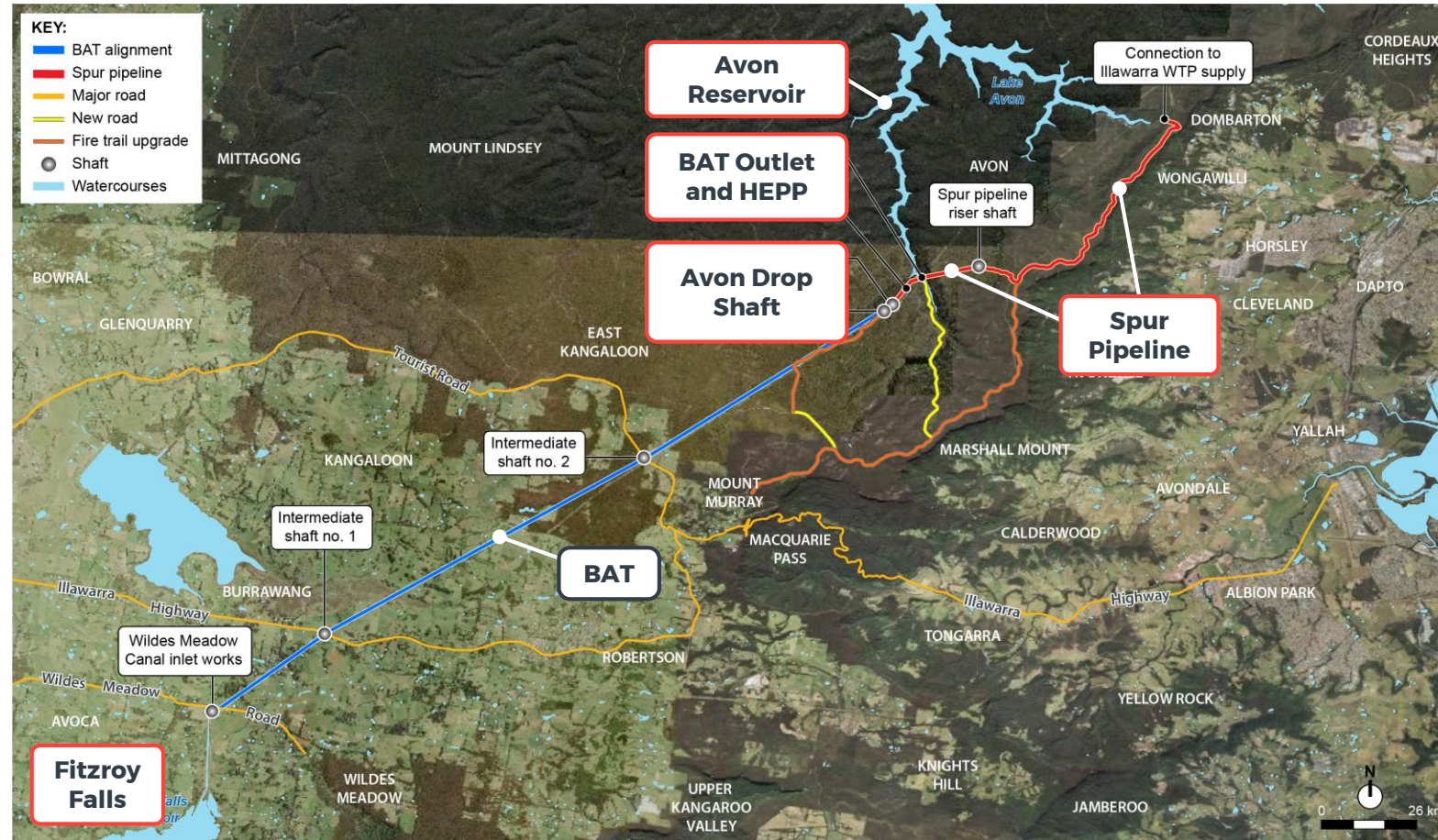
- 19km, 3.5m internal diameter tunnel
- Capacity of 1800 ML/d
- Allows increased active storage of Avon Dam by 65GL
- 9km spur pipeline

The Benefits of the BAT include:

- Maintains river health and protects environmental flows
- Provides water security
- Reduces pressure on the Warragamba Catchment
- Provides opportunity for future hydropower generation - 200m head



Project Background



Project Location

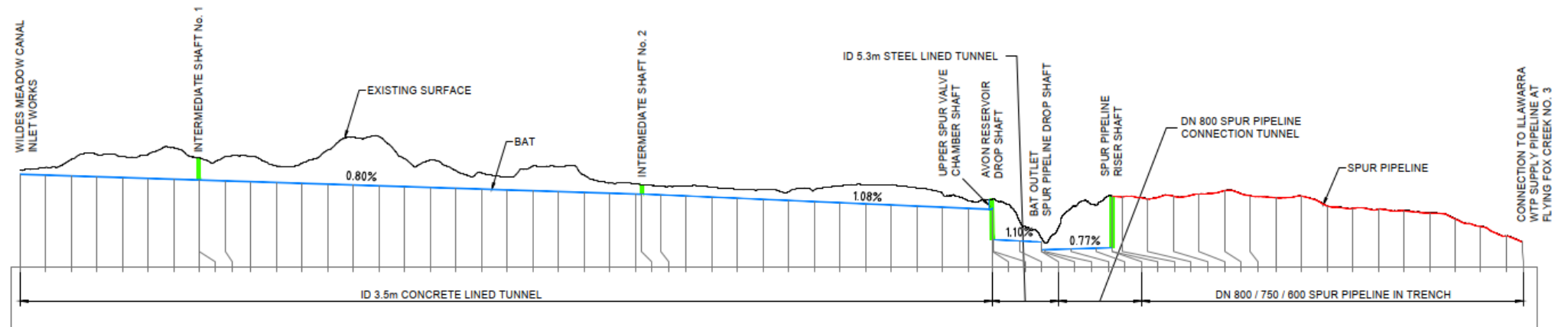
Burrawang to Avon Tunnel

Technical Highlights

Fitzroy Falls

Avon Reservoir

WTP connection



Long Section

Burrawang to Avon Tunnel

Future Trends



HOTTER & DRIER

With Australia predicted to become hotter and drier, the adaptive capacity of our people, infrastructure, environment and economy will be severely tested



RENEWABLES REIGN?

In our transition to a more renewable energy future, wind and solar power generation represent a huge unrealised opportunity especially in primary energy consuming sectors such as transport.



WATER SCARCITY

As water scarcity continues to accelerate, it is firmly at the core of short and long term - infrastructure planning and investment.

Burrawang to Avon Tunnel

Future Trends

Forecast population growth from 5 million people today, to 9 million people in 2100, greater water scarcity unless capacity is increased

Climate change causing hotter drier and more unpredictable weather – more frequent droughts, more intense rainfall

Infrastructure needs to be developed to capture and store more rain when it falls

Additional yield is required to be introduced to the system to provide availability during periods of drought

Environmental flows required to maintain river health will decrease the available yield

The BAT project is one of many needed between now and 2100.



Burrawang to Avon Tunnel

Renewables Reign

Key requirement of the project is to future proof the water transfer infrastructure to allow future augmentation of a hydroelectric Power Plant or HEPP

Conventional HEPP using water supply from Fitzroy Falls to Avon reservoirs not economically viable due to limited and intermittent water supply

Pumped storage HEPP was determined to be feasible

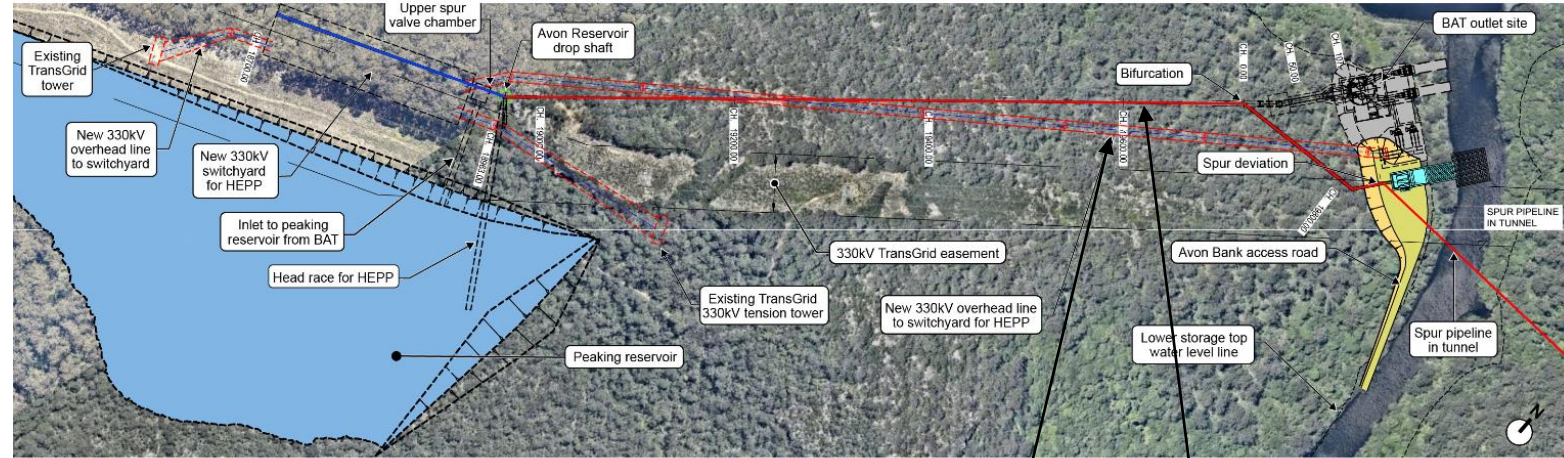
Turbine size of 2 x 100MW was determined as optimum economically



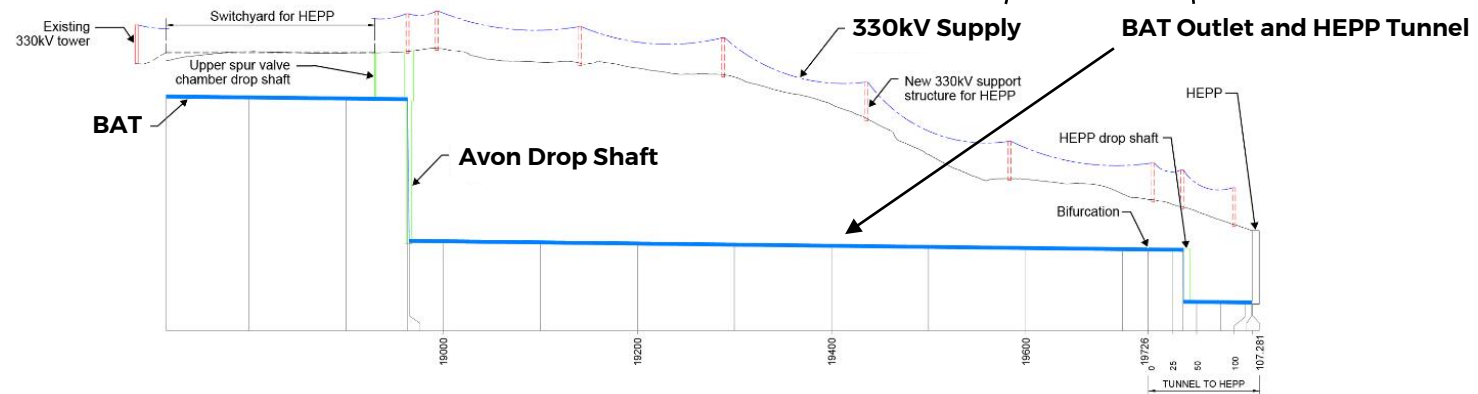


Burrawang to Avon Tunnel

Renewables Reign



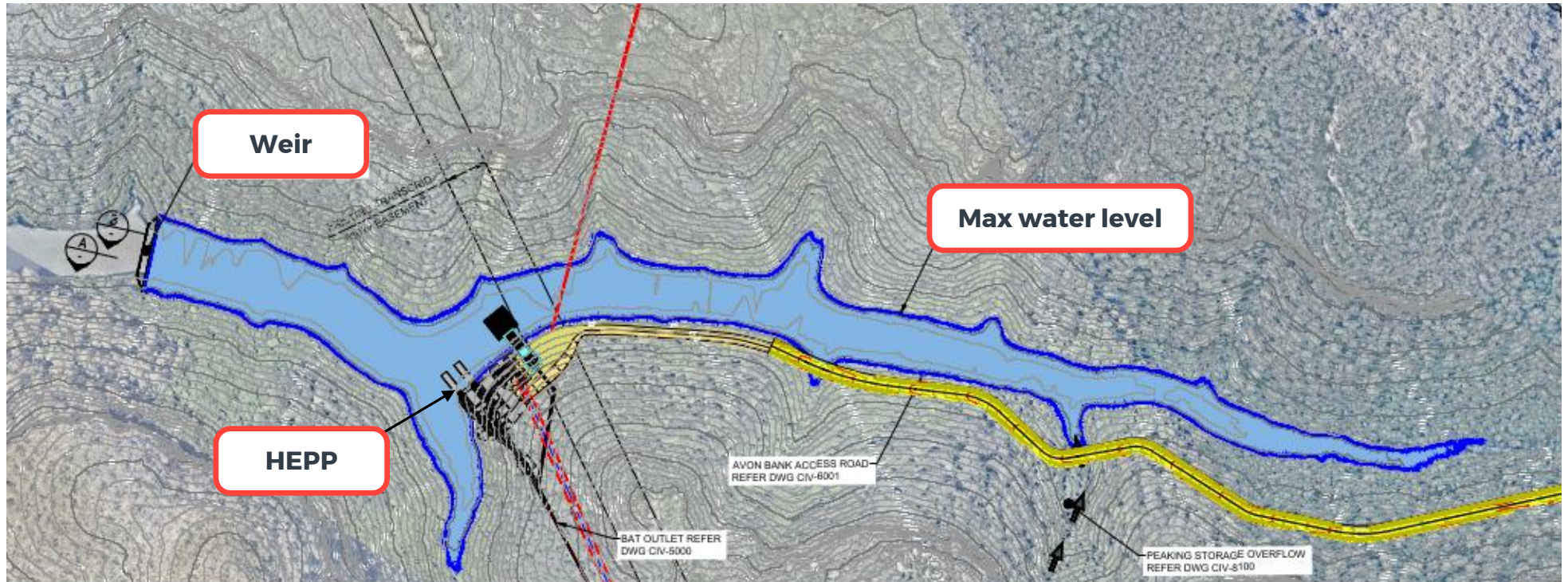
PLAN
SCALE 1:2000





Burrawang to Avon Tunnel

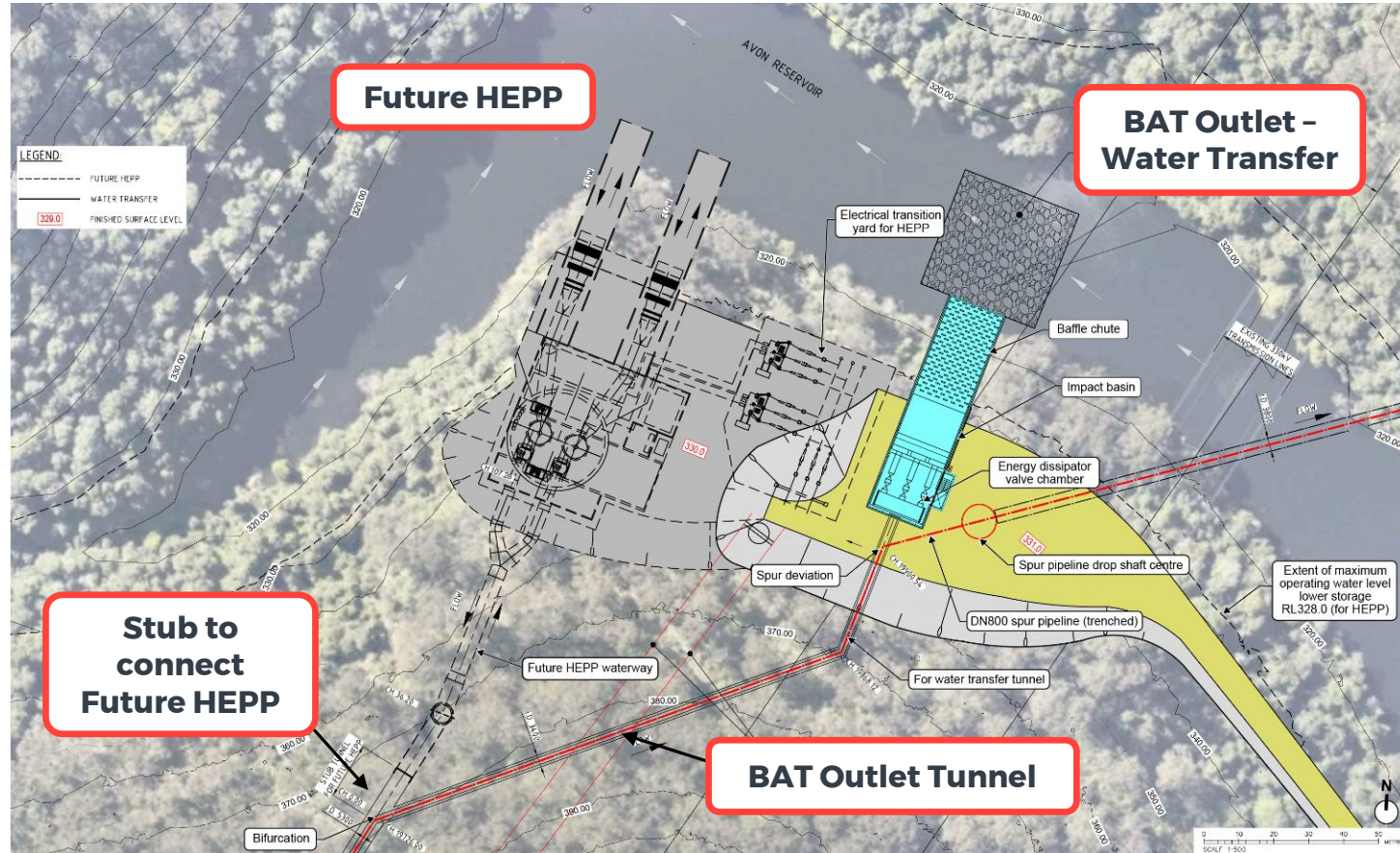
Renewables Reign





Burrawang to Avon Tunnel

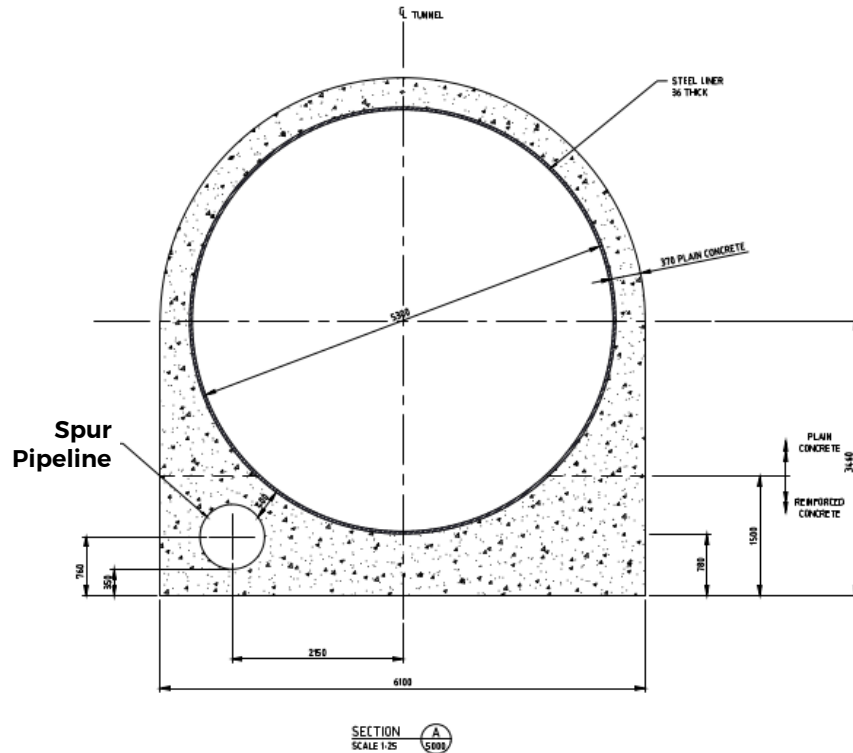
Renewables Reign



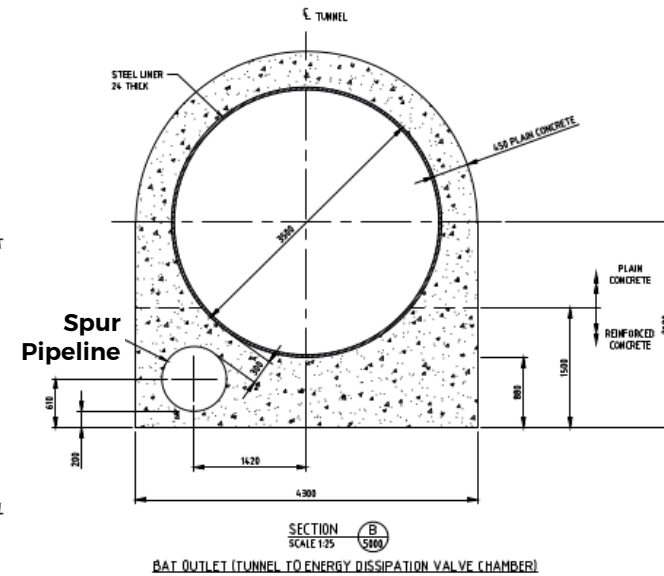


Burrawang to Avon Tunnel

Renewables Reign



**Water transfer and
HEPP Flow**

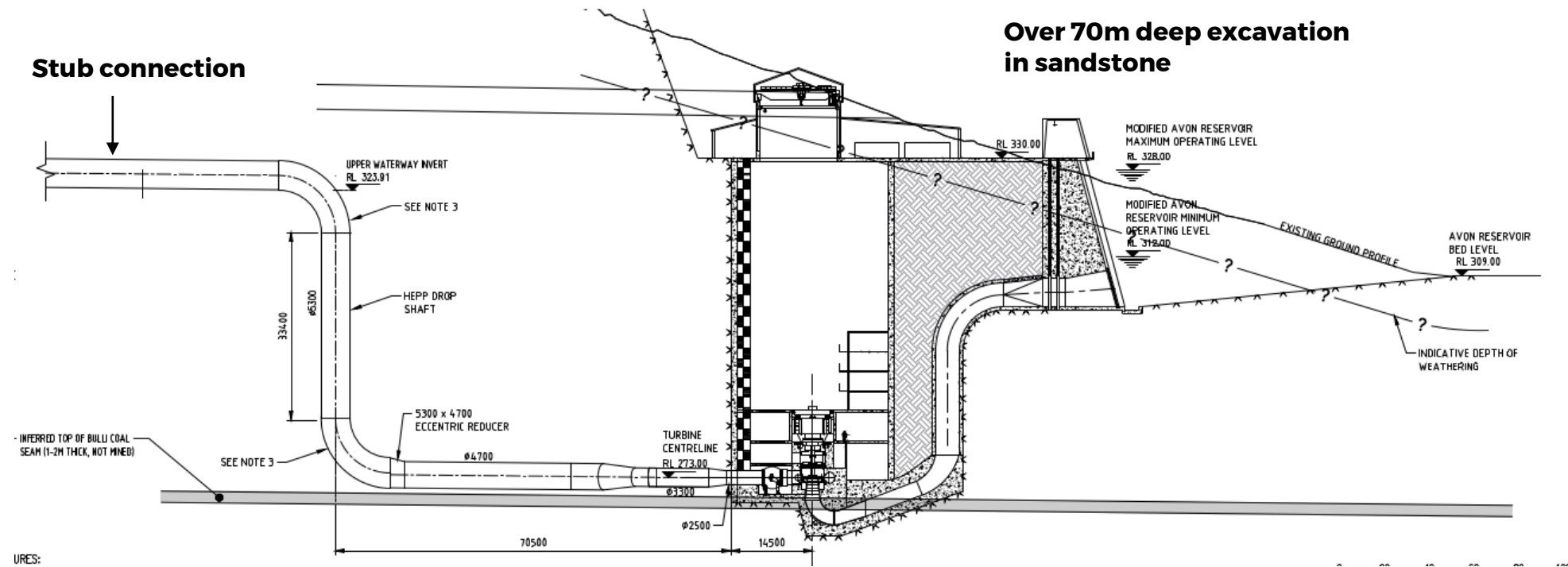


Water transfer only

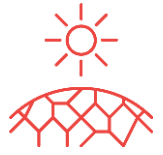


Burrawang to Avon Tunnel

Renewables Reign



Section through HEPP



Burrawang to Avon Tunnel

Future Ready Approach



Avon Dam

Q & A

Doug Graham and Gareth Evans

wsp.com

Upcoming Webinars

Tell your friends

Sustainable Urban Generation in the Heart of Sydney

Thursday 16 April, 12pm (AEST)



Katie Fallowfield
Associate Director - Sustainability

Going Underground to Strengthen Community Connection in New Zealand

Wednesday 22 April, 12pm (AEST)

Revitalising Communities and Creating Public Space in Victoria

Thursday 30 April, 12pm (AEST)

Creating Smart Cities for the Future

Tuesday 5 May, 12pm (AEST)

Designing Transport Facilities for all Ages and Abilities (AAA) in the Community

Wednesday 13 May, 12pm (AEST)