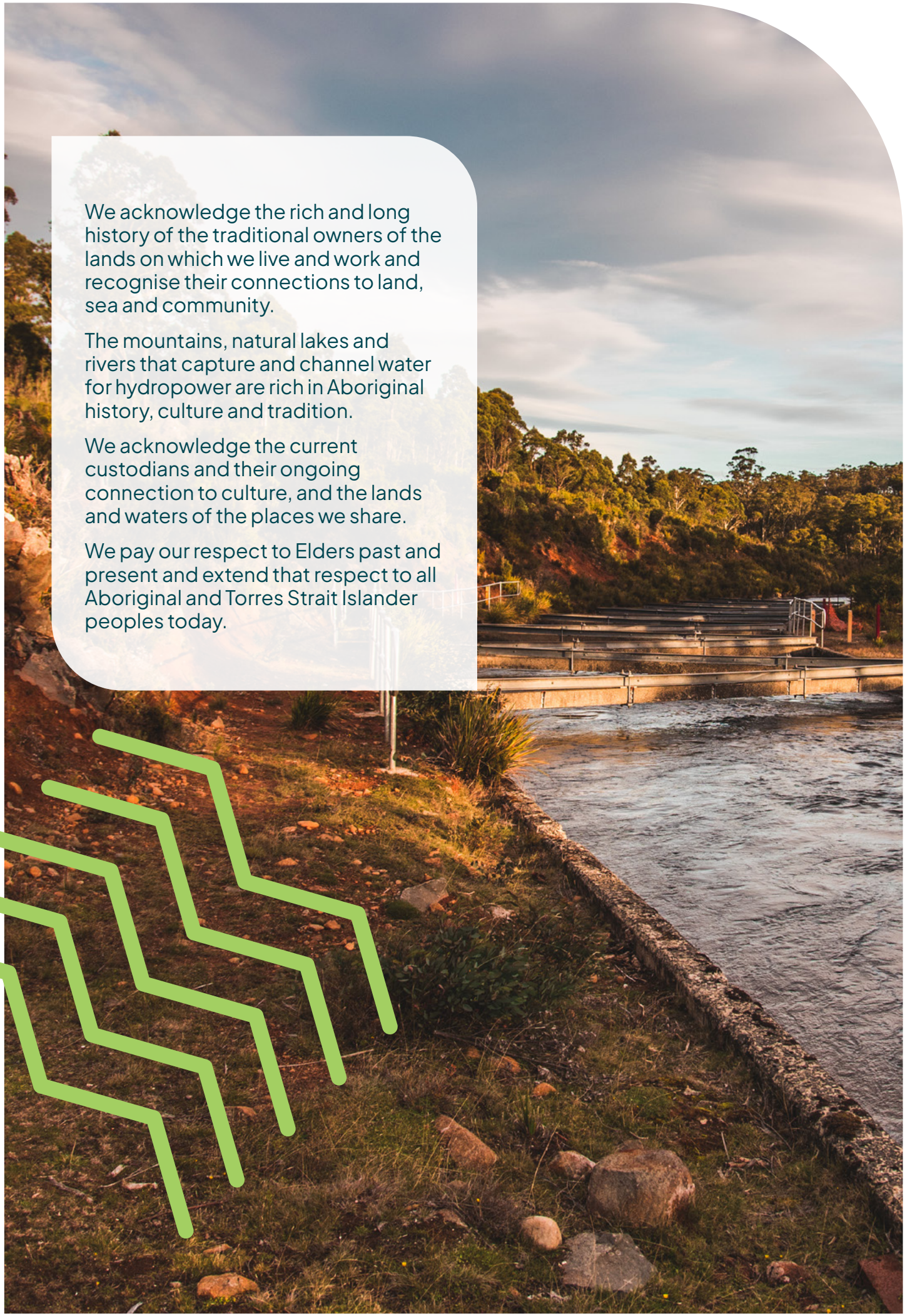
Hydro Tasmania

Tarraleah Redevelopment Business Case Overview

May 2025



We acknowledge the rich and long history of the traditional owners of the lands on which we live and work and recognise their connections to land, sea and community.

The mountains, natural lakes and rivers that capture and channel water for hydropower are rich in Aboriginal history, culture and tradition.

We acknowledge the current custodians and their ongoing connection to culture, and the lands and waters of the places we share.

We pay our respect to Elders past and present and extend that respect to all Aboriginal and Torres Strait Islander peoples today.

Project snapshot

A hydropower icon in Tasmania

The Tarraleah scheme was a visionary project built in the 1930s. It has been generating clean energy for more than 85 years. It plays an important role in Tasmania's energy system, generating 7.3% of Tasmania's energy every year.

The scheme is approaching the end of its operational life, and there is no acceptable 'do nothing' option. As we plan for the scheme's future, we have the opportunity to transform Tarraleah - ready to deliver clean, reliable energy for another generation and return even more value to Tasmania.

Because it is ageing, there are three main issues to address:

1. Environmental:

The canals and pipelines that carry water many kilometres from Lake King William to the station are approaching the end of their operational life. A failure could impact the adjacent World Heritage Area.

2. Value:

It takes a long time to ramp energy generation up or down because of the scheme's aged conveyance technology. In the fast paced energy market, demand changes every 5 minutes but the Tarraleah scheme is slow to respond. We miss opportunities to generate revenue and value for Tasmania.

3. Reliability:

Due to its age, there are frequent outages and high maintenance costs.

Reimagining Tarraleah for a bright future

After carefully reviewing several options, Hydro Tasmania determined that fully redeveloping the scheme would provide the most value to Tasmania.

Investing in the scheme's future means we can deliver more energy and flexible capacity to meet growing demand in the state, address the risks posed by ageing assets and increase revenue and value that can be returned to Tasmanians.

The proposed Redevelopment at a glance

- Building a new, higher capacity power station next to the old one.
- Replacing the old existing canals and penstocks with a new pipeline to carry water.
- Connecting the new pipeline to a new water intake currently under construction at Lake King William.
- Upgrading transmission infrastructure.
- Preserving the historic power station in its original location.

Project snapshot

A new future for Tarraleah

What this means for Tasmania

1. More clean energy:

A new power station will provide more than double peak capacity and generate 30% more electricity from the same amount of water. That means there will be more energy to power Tasmanian homes, businesses and industries.

2. More revenue:

More efficient use of water means we can turn the station on and off quickly to respond to fluctuating market demand. That brings greater revenue opportunities by generating when the energy is most valued.

3. More jobs & local investment:

There will be around 250 jobs during construction, a boost to local investment and lasting benefits for communities.

4. More returns to Tasmania:

Greater Hydro Tasmania profits mean greater returns as dividends to support schools, hospitals and housing.

What will it cost?

The estimated cost of Redevelopment is $1.96 billion (2024 dollars). Our cost estimates are now based on more detailed planning and geotechnical work since the 2023 Preliminary Business Case (PBC) and provide greater confidence. Estimates for construction costs and inflation have also risen since the PBC.

The revenue projections have also improved and detailed commercial analysis is showing that the Tarraleah Redevelopment stacks up financially and delivers the strongest estimated returns of all options considered.

Next steps

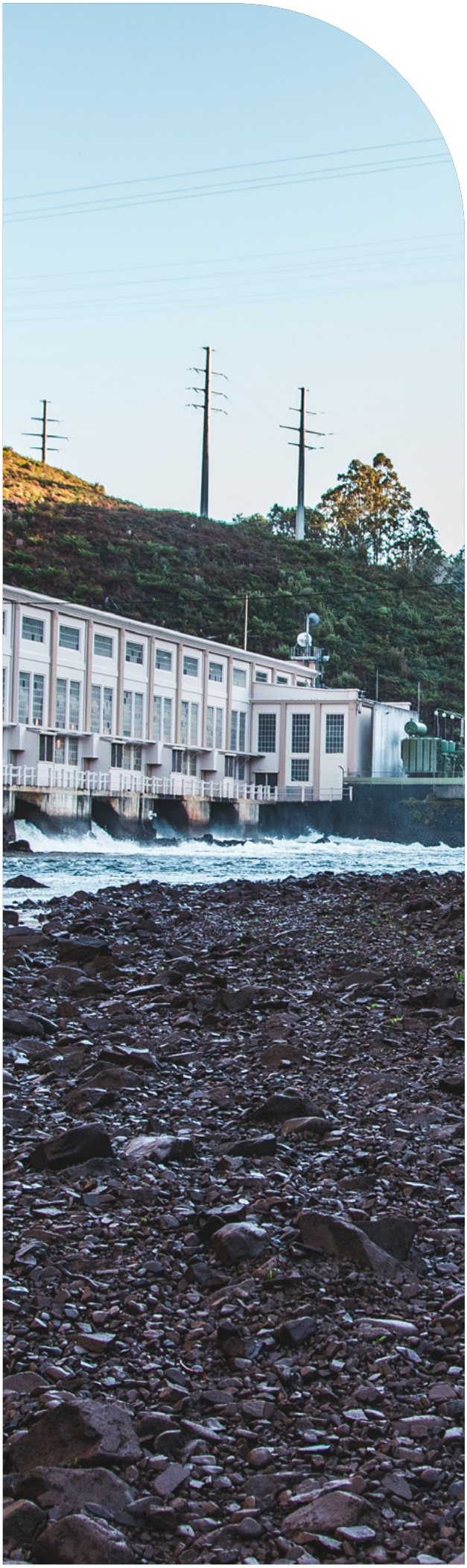
It takes a lot of work to get a project of this scale to a Final Investment Decision (FID) and the project will only proceed if there is a strong commercial case and it benefits Tasmania. Next steps are:

- market testing the cost estimate and procuring the right contractors
- continued consultation with community and stakeholders
- progressing Local, state and federal approvals
- seeking approval from the Tasmanian Parliament.

Stay up-to-date:

https://connect.hydro.com.au/reimagining-tarraleah

This document provides an overview of the latest business case. It demonstrates how the proposed redevelopment creates a once-in-a-generation opportunity to reimagine the Tarraleah scheme to support Hydro Tasmania's strategic objectives and Charter, maximise value for investment and deliver significant long-term benefits to Tasmania.



Contents

Executive Summary

The Tarraleah hydropower scheme (Tarraleah Scheme), located in the Central Highlands of Tasmania, was commissioned in the 1930s. The scheme plays a significant role in the state's hydropower production, representing 7.3% of Hydro Tasmania's total annual generation.

As one of the oldest large-scale hydropower schemes, it has served Tasmania well, but its ageing condition now presents growing risks to reliability, operational performance and long-term resilience. It requires significant investment to facilitate continued safe and reliable operation.

The issues to be addressed are:

- **Environmental:** Risk of asset failure and impact to the adjacent World Heritage Area.
- **Value:** Inflexible operations that can't respond quickly to energy market needs which means less opportunity to generate revenue and value for Tasmania.
- **Reliability:** Inefficient, with frequent outages and high maintenance costs.

There is no acceptable 'do nothing' option for the Scheme.

Hydro Tasmania has conducted an extensive and robust analysis of a range of options for the Tarraleah Scheme, from alternative lower cost options to full redevelopment. From this, we identified the preferred option to modernise and optimise the Scheme. A full redevelopment (the Project) is proposed to replace ageing infrastructure with a new, more flexible power station and a more efficient pressurised conveyance system. It will increase efficiency, capacity and flexibility and address environmental risk. Critically, it will help meet growing Tasmanian demand, including from new industrial growth, and ensure the scheme continues to provide reliable and affordable energy for decades to come.

To support a Final Investment Decision, Hydro Tasmania is advancing its business case development. In May 2023, Hydro Tasmania's Board approved the Preliminary Business Case (PBC), which explored several options for addressing the problems facing the Tarraleah Scheme and established a strong rationale for full redevelopment as the optimal project option.

Since the PBC approval, Hydro Tasmania has undertaken significant work to further evaluate and advance the Project, incorporating updated cost estimates and revenue projections. This work considered the inflationary cost environment, detailed engineering assessments, evolving market dynamics, revised multi-criteria analysis and risk comparisons. Further analysis compared the Tarraleah Redevelopment to alternative lower cost options that would prolong the life of existing Tarraleah Scheme assets, and either stage or delay further investments.

This work confirmed that full redevelopment continues to deliver the greatest value for investment and remains the preferred option. It is the option that has the greatest revenue potential, is expected to deliver the greatest value to Tasmania in alignment with Hydro Tasmania's Ministerial Charter and most effectively addresses the identified problems.

Based on our detailed analysis, our central cost estimate for redevelopment is $1.96 billion (2024 dollars). Modelling shows that while costs have increased, revenue projections (which reflect the latest market input assumptions, evolving market dynamics and observable market data) have also improved. This has been validated using external revenue modelling and price forecasting. A full redevelopment delivers the strongest returns of all options considered.

This document provides an overview of the latest business case, and progress through the independent assurance process. The next step is to commence procurement, which will provide more accurate and market-tested cost estimates to inform the Final Investment Decision.

Tarraleah Redevelopment at a glance

Current state

85+ year old assets – nearing end of operational life

Revenue potential impacted by being constrained to 70–80 MW capacity (of 90MW peak capacity)

Risk of asset failure impacting World Heritage Area

Inflexibility limits revenue as the scheme is not responsive to energy market needs

Unreliable - frequent outages, high maintenance costs, lost generation

Inefficient water management

After Redevelopment

Extended operational life for future generations

Higher revenue potential with capacity doubled - up to 190 MW flexible peak capacity

Most fully mitigates the risk of asset failure

Increased revenue potential and value through flexibility to respond to market need

Reliable – lower maintenance costs

More energy – higher efficiency means 30% more energy from same water (up to 200 GWh extra annual energy generation)

About the Tarraleah Scheme

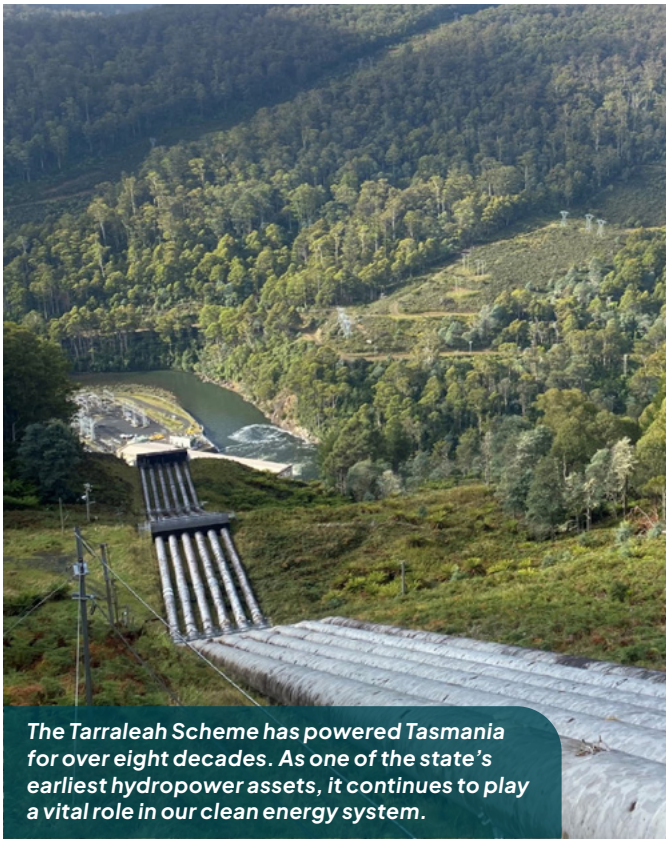
The Tarraleah Scheme is one of Hydro Tasmania's longest operating generation assets, generating clean electricity for over 85 years, and it remains a vital contributor to Tasmania's energy security.

The Tarraleah Scheme consists of three power stations, as illustrated in Figure 1 below, with the Tarraleah Power Station being the largest and most significant in terms of output.

At the heart of the Tarraleah Scheme lies a large headwater storage at Lake King William. Water is transported from Lake King William to the Tarraleah Power Station along an intricate 20-kilometre-long network of tunnels, canals, siphons, flumes, penstocks and pipes.

The No. 1 canal and multiple intermediate headponds (Mossy Marsh Pond, No. 1 Pond, and No. 2 Pond) regulate flows to the Tarraleah Power Station before discharging into the Nive River.

Several key conveyance structures are located within close proximity to the Tasmanian Wilderness World Heritage Area, with some assets less than 10 metres from the boundary.



The Tarraleah Scheme has powered Tasmania for over eight decades. As one of the state's earliest hydropower assets, it continues to play a vital role in our clean energy system.

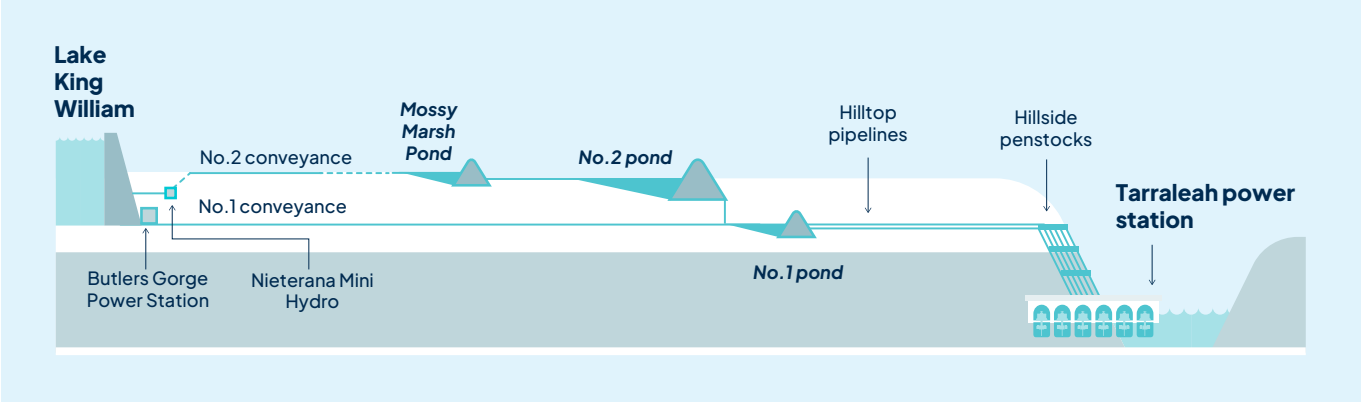


Figure 1: The existing Tarraleah Scheme

The case for investment

The Tarraleah Scheme has been a cornerstone of the State's energy production. But infrastructure is approaching the end of its operational life and requires significant investment to ensure it can keep operating safely and reliably.

Hydro Tasmania is investing in optimising its hydropower assets to meet the needs of a modern energy system. This will support Tasmania's growing energy needs and provide the flexibility to adapt to market conditions, maximising value for Tasmania in the evolving National Electricity Market (NEM).

The challenges facing the scheme

The Tarraleah Scheme has served Tasmania well for more than 85 years. But its ageing condition now presents growing risks, its outdated design and manual operation limits the ability to respond dynamically and adjust operations (and therefore limiting revenue opportunities) and ageing equipment means increased operational costs and lost generation.

1. Risk of an environmental incident

Critical assets in the scheme, particularly the No. 1 canal and mechanical and electrical components of the power station, are approaching the end of their operational life. As the scheme ages, there is increased risk of conveyance failure and subsequent consequences, including on the adjacent Tasmanian Wilderness World Heritage Area (TWWHA). Major asset failure could also result in significant generation outages and high remediation costs.

2. Inflexibility in a changing market

The Tarraleah Scheme was designed in the early 20th century and is not well suited to a modern energy market. The current configuration only allows for manual operation (one of the few stations left that isn't run remotely) and inflexible generation (taking many hours to ramp up and down). This limits the ability to respond to market signals and adjust energy generation, resulting in lost revenue opportunities.

3. Reliability risk

As machinery continues to age, planned and unplanned shutdowns will increase in frequency, reducing operational flexibility. These shutdowns impact on our ability to generate energy. Current peak output is also regularly constrained to 70–80 MW (below installed capacity) to manage the condition of the assets.

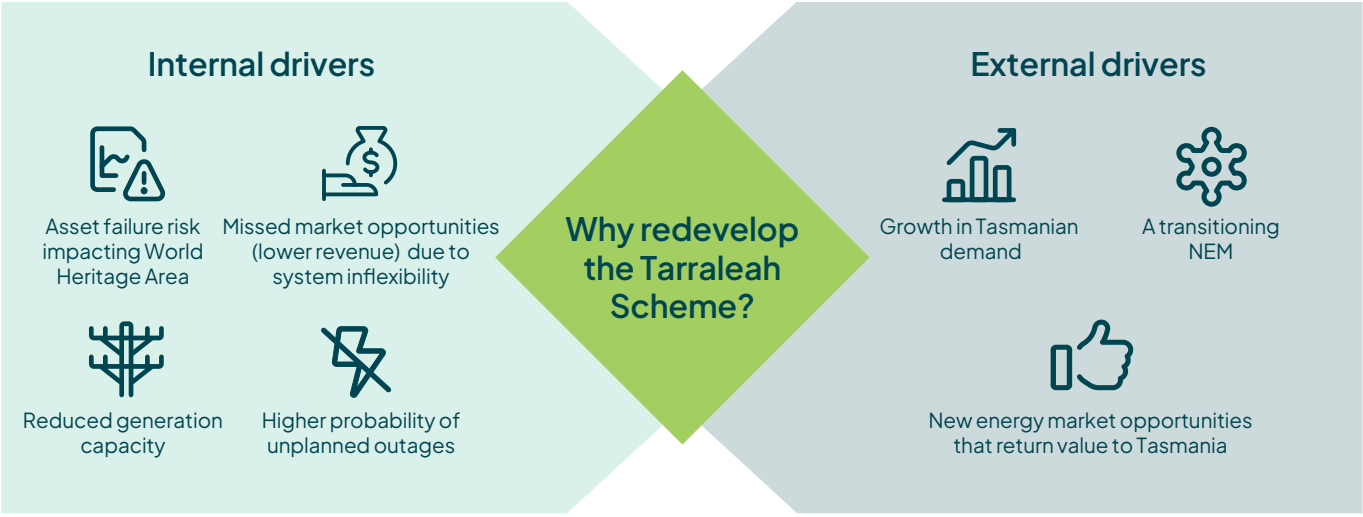


Figure 2: Drivers for redevelopment

The case for investment

A new energy future

Tasmania's energy demand is expected to increase over the next 30 years. As shown in Figure 3 below, this is expected to be largely driven by the electrification of transport and industries, increased energy consumption and electricity-intensive industries.

Australia's National Electricity Market (NEM) is also undergoing a fundamental shift, with most coal-fired power stations forecast to retire by 2038. Wind and solar will become the dominant form of generation, offering clean, low-cost energy. However, they are variable, weather dependant forms of generation and significant amounts of dispatchable capacity is required to fill supply shortfalls.

Hydropower can play that vital role, providing reliable clean energy when wind and solar aren't generating or generation is reduced. By investing in our hydropower assets such as the Tarraleah Scheme, we can increase flexibility, reliability and efficiency. This helps meet growing Tasmanian demand and allows us to better respond to the changing dynamics of our energy system.

The role of interconnection

Further interconnection to the national grid will unlock Tasmania's renewable energy potential. It is anticipated that this will create intergenerational jobs, attract significant investments in clean industries, accelerate the development of renewable projects and drive economic growth.

For Hydro Tasmania, there are greater revenue opportunities from further interconnection, reflecting the high value of our flexible dispatchable generation to the NEM. With increasing reliance on wind and solar, the demand for reliable, dispatchable generation is set to grow - making our assets more valuable. By offering reliable and clean supply here in Tasmania and firming capacity more broadly in the NEM, Hydro Tasmania can play a pivotal role in decarbonising the NEM and deliver long-term value back to Tasmanians.

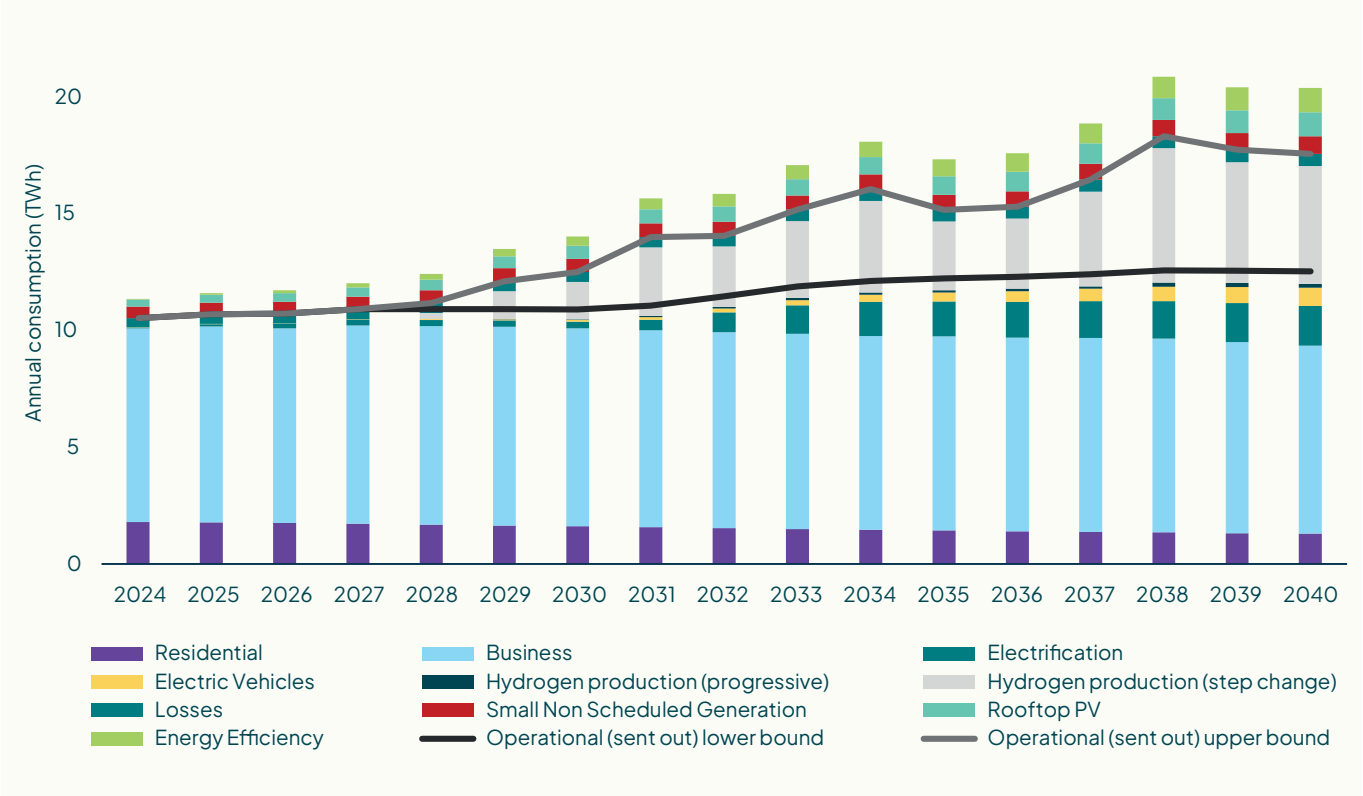


Figure 3: Projected growth in Tasmania's electricity consumption (AEMO Integrated System Plan 2024, Step Change Scenario)

Renewable energy for generations

Hydro Tasmania's purpose is to create renewable energy for generations and deliver sustainable value to Tasmania, communities, customers and clients. The Tarraleah Scheme is integral to achieving our purpose and helping to shape Tasmania's renewable energy future.

Hydro Tasmania strategic pillars

- Growing and adapting the business and assets to maximise value for Tasmania and support renewable generation
- Being a leading custodian of assets, water, environment and heritage in a changing climate
- Enabling the energy transition through innovation, partnerships, and community-driven solutions

Strategic objectives

The following objectives align with our purpose and define the intended outcomes of addressing the problems presented by the ageing Tarraleah Scheme.

1. Reduce the risk of asset failure

- Ensure the risks associated with ageing infrastructure are mitigated, keeping the inherent risk of asset failure within tolerable levels over the planning, delivery and operation period.
- Protect the TWWHA which holds significant cultural, environmental and ecological value for generations.

2. Maintain system reliability

- Maintain secure energy supply by avoiding disruptions caused by planned and unplanned shutdowns, maintenance and repairs.
- Improve system security by proving critical system strength services.
- Maintain Tasmanian system balance within tolerable range (average inflows and wind and solar output).

3. Help future-proof Hydro Tasmania's portfolio

- Improve commercial resilience by providing flexibility to respond to price volatility and realise opportunities from future market reforms / new products.
- Improve economic resilience by supporting future on-island wind and solar development.
- Help to meet growing Tasmanian demand, including from new industry.

The proposed redevelopment

The Tarraleah Redevelopment proposes the full replacement of key elements of the existing Tarraleah Scheme to deliver a modern, efficient and flexible generation asset capable of supporting Tasmania's future energy needs.

- A new modern power station will replace the existing Tarraleah, Butlers Gorge and Nieterana power stations. The new station will deliver a peak generation capacity of up to 190 megawatts, double the existing peak capacity.
- A new pressurised water conveyance system will replace the existing conveyances. The higher efficiency of the pressurised conveyance will support the generation of approximately 30% more energy annually from the same water.
- Transmission infrastructure will be upgraded to connect the new power station to the existing network at Liapootah, ensuring efficient delivery of electricity into the Tasmanian power system.

Redevelopment at a glance

- Building a new, higher capacity power station next to the old one.
- Replacing the canals and penstocks with a new pressurised pipeline to carry water.
- Connecting a new intake at Lake King William.
- Upgrading transmission infrastructure from the new station to the existing network at Liapootah.
- Preserving the historic power station in its original location.

Upgrade works underway

In late 2022, Hydro Tasmania started a staged program of upgrade works, designed to provide flexibility for the Scheme's future, including the proposed Tarraleah Redevelopment if a positive investment decision is made.

The upgrade works include:

- intake tower excavation works
- an intake tower to be constructed on the shores of Lake King William. The tower will house the mechanical components that control water flow into the main waterway for a potential future new water conveyance
- a 950–metre tunnel connecting the new Lake King William intake to a future new water conveyance
- Dam safety improvements at Mossy Marsh Dam and provision of a new emergency spillway (now completed).

The works are supported by a $65 million grant funding commitment announced by the Federal Government in April 2022.

Key works

The schematic in Figure 4 illustrates the layout of the Tarraleah Scheme and depicts the location of key works that are proposed to be undertaken for the Tarraleah Redevelopment.

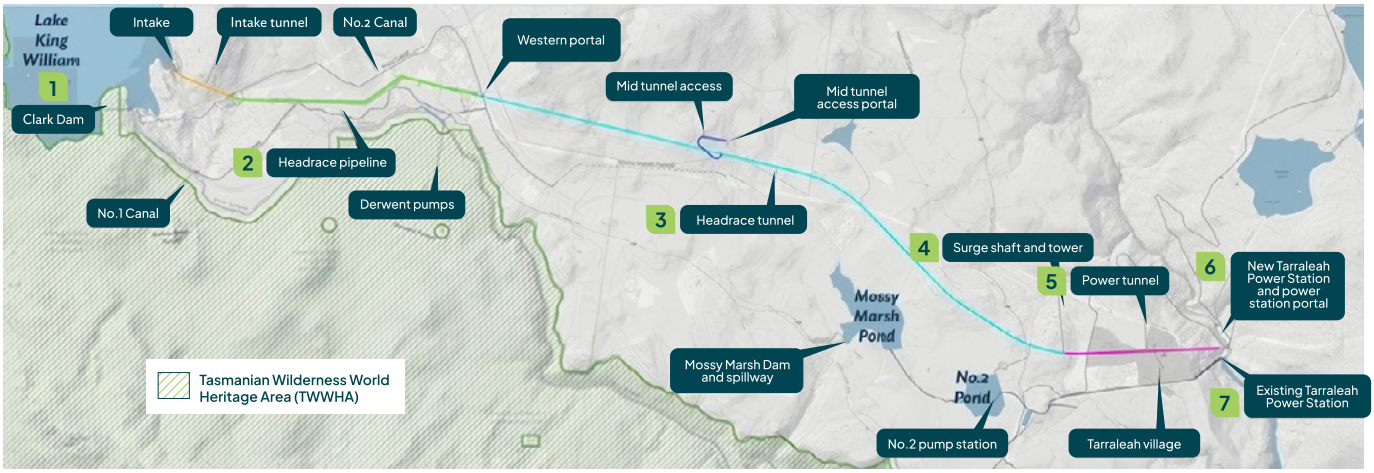


Figure 4: Tarraleah Redevelopment schematic

1 Upgrade works

The upgrade works commenced in late 2022 and include a new intake tower and tunnel to be constructed at Lake King William.

2 Headrace pipeline

Construction of a new 4.2 km long surface level headrace pipeline from the intake at Lake King William to the headrace tunnel.

3 Headrace tunnel

Development of a 9 km long headrace tunnel connecting to the 2.5 km long power tunnel.

4 Surge shaft

Construction of a surge shaft (to protect against sudden changes in water flow) between the intersection of the headrace and power tunnels, connected to a 70 m high surge tower.

5 Power tunnel

Construction of a 2.5 km long power tunnel, connecting the headrace tunnel to the new power station. Upgraded transmission infrastructure is required to convey the power from the new station to the existing transmission network.

6 New Tarraleah Power Station

Construction of a new single power station, to replace the Tarraleah, Butlers Gorge and Nieterana power stations. The new station will be equipped with modern turbines and mechanical systems.

7 Transmission corridor

About 15 km of new transmission line is needed to connect the new power station to an existing TasNetworks' substation.

Options recap

Published in 2023, the Preliminary Business Case involved a comprehensive appraisal of options for the future of the Tarraleah Scheme. The analysis of benefits, risks and commercial outcomes identified a full redevelopment with a pressurised conveyance as the preferred option.

Redevelopment is the only option that delivers:

- Mitigated risk of an environmental incident
- Increased peak capacity
- Greatest value to Tasmania with enhanced operation flexibility and dispatchable generation

	Addresses environment risk (problem 1)	Addresses scheme inflexibility (problem 2)	Addresses reliability risk (problem 3)	Revenue potential	Peak capacity	Storage duration
Status Quo	Does not address	Does not address	Partially addresses	Limited	~90 MW	N/A
1. Decommissioning	Fully addresses	Does not address	Does not address	None	~12 MW	N/A
2. Minimum Refurbishment	Fully addresses	Partially addresses	Fully addresses	Limited	~100 MW	2 hours
3. Refurbish with BESS	Fully addresses	Partially addresses	Fully addresses	Limited	~200 MW	2 hours
4. Redevelopment with Headponds	Fully addresses	Partially addresses	Fully addresses	Limited	~160 MW	20 hours
5. Redevelopment with Pressurised Conveyance	Fully addresses	Fully addresses	Fully addresses	Highest	~190 MW	Months

Status Quo: represents the current Tarraleah Scheme and is the scenario that all options are compared against.

1. **Decommissioning –** decommissioning the existing scheme once asset condition is assessed as untenable.
2. **Minimum Refurbishment –** refurbishing the existing station and replacing the canals.
3. **Refurbishment with Battery Energy Storage System (BESS) –** equivalent to Option 2 but with additional capacity by implementing a two-hour BESS in the portfolio.
4. **Redevelopment with Headponds –** replace the power station and provide additional generation capacity with increased headpond storage.
5. **Redevelopment with Pressurised Conveyance –** replace the power station and construct a new pressurised conveyance to bypass the existing canals. This is the preferred option that has been taken forward.

Table 1: **Overview of project options analysed**

Validating the preferred option

As part of the latest business case, Hydro Tasmania validated earlier analysis of the options. It considered the impacts of the inflationary cost environment, additional detailed engineering assessments, and evolving market dynamics.

Phase 1: First validation phase confirmed that despite the higher cost estimate for Option 5 since the completion of the PBC, it remained the preferred option to maximise value for investment, relative to other options considered.

Phase 2: Further analysis was undertaken to compare Option 5: Redevelopment with Pressurised Conveyance (now renamed Tarraleah Redevelopment) to alternative lower cost options that could prolong the life of existing assets, and/or either stage or delay further investments.

Phase 3: The final phase assessed the Tarraleah Redevelopment relative to alternative technology options that could be deployed elsewhere in Tasmania. The objective was to determine the most cost-effective and reliable energy solution that could replace the existing Tarraleah Scheme while ensuring sufficient future generation for grid stability and long-term sustainability. This involved comparing the breakeven price required to achieve the desired project Internal Rate of Return (IRR).

1 Revisiting the PBC options

- Option 1: Decommissioning of the current Tarraleah Scheme
- Option 2: Minimum Refurbishment
- Option 3: Refurbishment with BESS
- Option 4: Redevelopment with Headponds
- Option 5: Redevelopment with Pressurised Conveyance

2 Comparison of Tarraleah Redevelopment to lower cost alternatives

- Option 1: Decommissioning of the current Tarraleah Scheme
- Option 5: Redevelopment with Pressurised Conveyance (renamed Tarraleah Redevelopment)

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- Option 2a: Staged Refurbishment[1]
- Option 6: Extended operations

3 Considered Tarraleah Redevelopment compared with alternative technology options

- Tarraleah Redevelopment

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- Replace Tarraleah Scheme with 190MW Wind
- Replace Tarraleah Scheme with 190MW Wind + 8–hr 190MW BESS
- Replace Tarraleah Scheme with 190 MW open cycle gas turbines

Kept as base case for comparison purposes

Highest ranking option

Figure 5: Analysis conducted to confirm Tarraleah Redevelopment is the preferred option

The analysis confirmed that Tarraleah Redevelopment has the strongest financial metrics of all options considered and therefore the greatest opportunity to deliver value for money. This option most fully mitigates the risk of asset failure and delivers the greatest benefits to Tasmania through greater flexibility, capacity and additional energy generation.

1| Option 2a: Staged Refurbishment. This option stages delivery of Option 2 in the PBC which delays expenditure. This would involve operating No. 1 canal until 2035 with 6 refurbished power station units. Butlers Gorge Power Station would be decommissioned in 2032. A new No. 3 conveyance would be built by 2035 to replace the No. 1 canal. Replacement of the penstocks and pipelines would be delayed, with works undertaken between 2045 and 2048. Option 6: Extended Operations. This option aims to provide optionality for different investment or decommissioning pathways in the future. It involves refurbishing between 2 and 4 machines with some additional mitigation controls for No.1 canal. Any major investment or decommissioning would be delayed to approximately 2045, subject to further feasibility analysis.

Benefits to Tasmania

The Tarraleah Redevelopment is well positioned to deliver lasting benefits. Increased efficiency, capacity and flexibility will help meet growing Tasmanian demand, including from new industrial growth and renewable energy investments. Greater operational flexibility and peak capacity will also help to provide stability in the energy market as wind and solar become more dominant, while generating revenue for Hydro Tasmania and delivering value to Tasmanians.

Generating long-term value for Tasmanians

The Tarraleah Redevelopment is a transformational investment that will:

- **Improve revenue potential and maximise value,** by creating more flexibility to control electricity dispatch during higher price periods
- **Strengthen energy security** while supporting economic growth and the development of new industries
- **Create up to 250 jobs during construction,** boost regional economic activity and help drive investment in Tasmania's renewable energy sector
- **Deliver increased energy and capacity** to Tasmania over the next 100 years through a full reset of the Scheme's operational life
- **Addresses critical infrastructure risks,** fully mitigating the potential for canal failure and associated risk of environmental incidents
- **Enhance energy reliability** by improving asset performance and reducing risk of planned and unplanned disruptions
- **Support inter-seasonal flexibility –** stop generating during periods of low demand and generate at full capacity when wind and solar are limited
- **Support Tasmania's renewable energy policy** ambitions, including the Tasmanian Renewable Energy Target and Net Zero goals

As well as delivering substantial benefits to Tasmania, Hydro Tasmania is committed to ensuring that the benefits of the redevelopment are experienced by, and shared with, local communities.

Hydro Tasmania is developing a local benefits sharing strategy and action plan designed with local communities and stakeholders, to outline how we will generate economic and social benefits.

The benefits to the local community will be primarily derived through the following mechanisms:

- **Project design and implementation:** Creating long-term legacy infrastructure that generates economic and social benefits.
- **Local procurement and local content:** Identify ways to boost regional economic activity and building local capacity through strategic procurement decisions.
- **Community benefit fund:** Funding initiatives originated from within, and benefiting, the community.

Project cost estimate

Hydro Tasmania has formulated robust cost estimates, building on work undertaken for the Preliminary Business Case (PBC) and incorporating significant new analysis. While the estimated cost of Redevelopment has increased since the PBC, revenue projections have also improved, maintaining the Project's financial viability.

Since finalisation of the PBC, we have undertaken additional work to refine the cost estimate for the preferred option to a class 3 estimate, which is aligned with the level of maturity and accuracy required for a business case. This included more robust and detailed assessments compared to earlier evaluations, offering greater confidence in the expected cost and financial outlook for the Project.

The estimated cost of Redevelopment is $1.96 billion (2024 dollars). This represents our central cost estimate. Although cost estimates have increased, revenue projections have also improved from the PBC, maintaining the Project's financial viability.

Cost increases were driven by:

- inflation
- design changes in response to further geotechnical work
- enhanced tunnelling design
- greater detail on construction planning and sequencing.

The revised analysis confirmed that even with the higher cost estimate, the Tarraleah Redevelopment remained the preferred option. Relative to the other options, it most effectively addresses the identified issues, has the strongest financial metrics, and delivers the greatest benefits to Tasmania in alignment with Hydro Tasmania's Ministerial Charter.

1 | A class 3 estimate is a cost estimate classification aligned to American Association of Cost Engineers (AACE) cost estimate classification system.

Revenue

The Tarraleah Redevelopment significantly increases flexibility, enabling Hydro Tasmania to strategically control its electricity dispatch. This flexibility improves our ability to optimise the overall portfolio, driving both operational efficiency and revenue potential, and therefore value to Tasmania.

A variety of revenue sources will form part of Hydro Tasmania's revenue strategy, which is designed to balance revenue certainty and upside potential. Leveraging multiple revenue sources will optimise commercial outcomes and ensure resilience and flexibility in an evolving energy market.

For the analysis, it is assumed that Hydro Tasmania will generate wholesale market revenue from three revenue sources:

1. **Spot market trading:** leveraging the Project's ability to strategically release stored water, generating power during higher value periods in the spot market.
2. **Capacity contract sales:** risk management products sold to NEM participants.
3. **Renewable energy certificate sales:** certificates to verify renewable energy generation, supporting compliance obligations and voluntary sustainability commitments.

Figure 6 shows that spot market revenue contributes an average of approximately 80% of total projected revenue through to 2048.

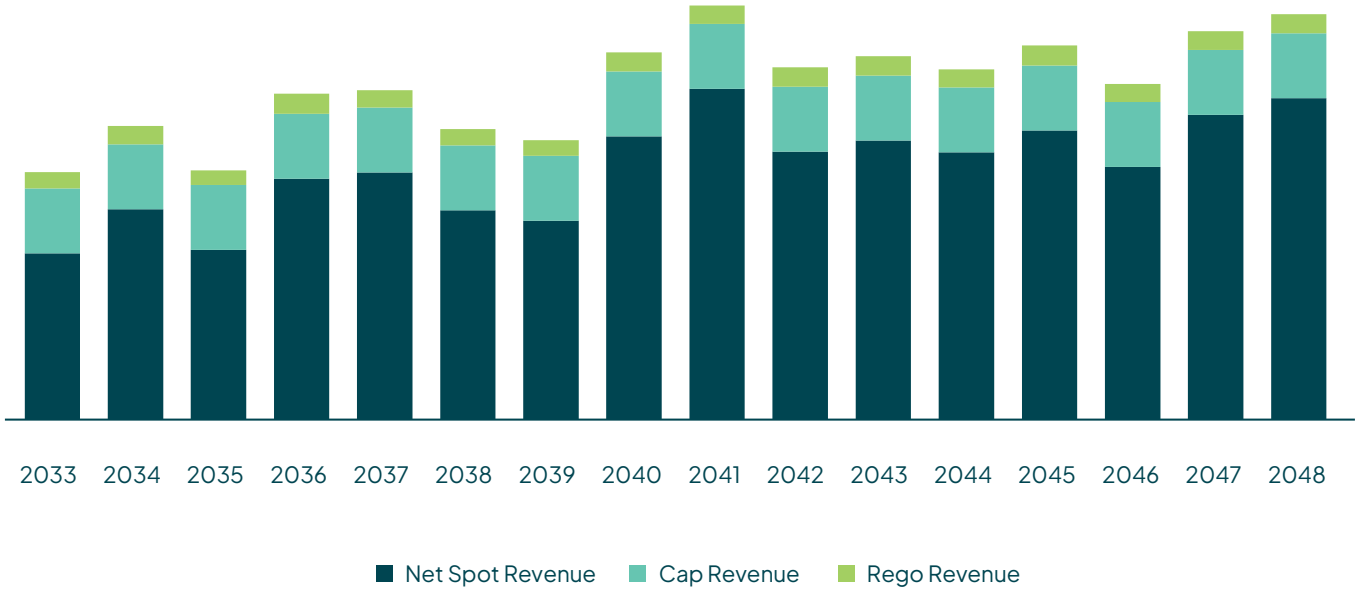

Figure 6: Sample revenue distribution of operation through to 2048 (financial years)

Higher returns are due to dispatchability. Hydro Tasmania can strategically release stored water and generate power during higher value periods in the spot market to maximise returns. The redeveloped scheme will be able to operate at full capacity nearly 40% of the time, allowing generation to align with high price periods and optimise spot market revenue.

Providing more reliable on-demand supply for the Tarraleah Scheme will result in generation during higher price periods (relative to average Victorian prices). The blue shaded area shown in Figure 7 indicates the potential for additional returns from strategically shifting generation to high value periods.

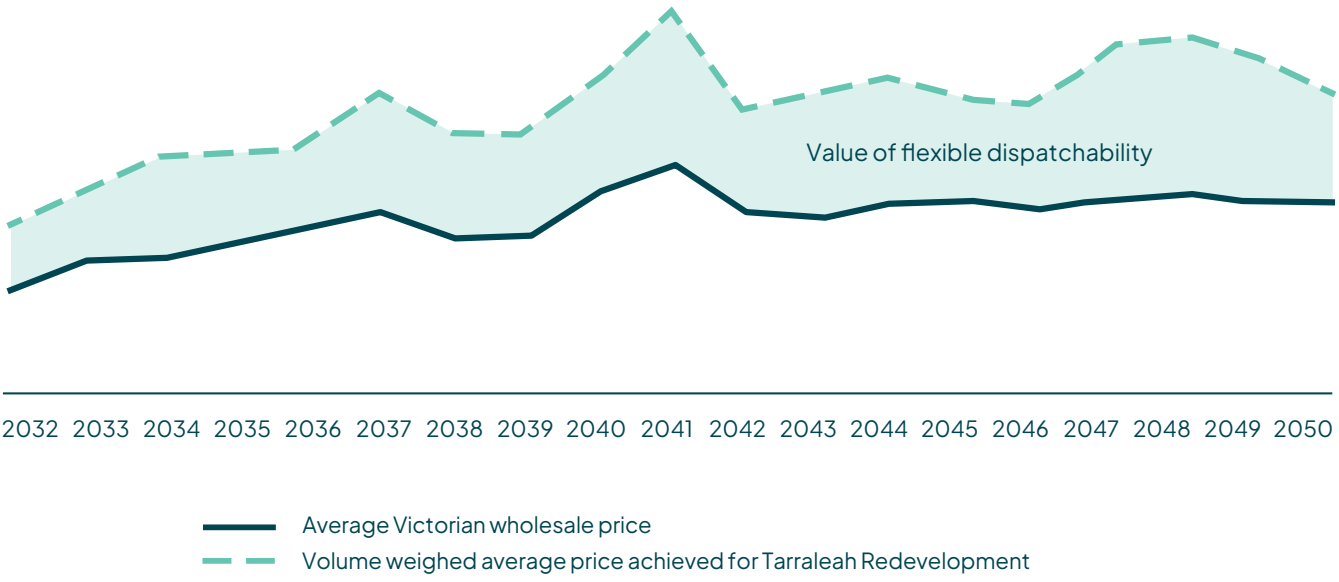

Figure 7: Victorian wholesale price and net spot price (volume weighted average) achieved for Tarraleah Redevelopment

Financial analysis

Hydro Tasmania's financial assessments show that the financial returns from the Tarraleah Redevelopment are more favourable than for all alternative project options. Our analyses confirm the Project's commercial viability under most market scenarios and project conditions, reinforcing its selection as the preferred investment option. The Project is well-positioned to deliver positive returns even when faced with varying operational conditions.

We developed a range of scenarios to account for potential future energy market conditions, including internal and external projections, and tested the impact on net present value (NPV) and internal rate of return (IRR) across each scenario.

- Internal scenarios represent Hydro Tasmania's perspective on future market developments and the key sensitivities unique to the Tasmanian market.
- External scenarios provide an independent benchmark to validate internal assumptions. They are essential for understanding how the project might perform under industry recognised projections in the NEM.

The commercial analysis results remain robust across most scenarios, demonstrating the Project maintains a positive NPV against a wide range of energy market conditions, operating limitations and financing conditions.

As seen in Figure 8, the Project delivers returns in excess of the Weighted Average cost of capital (WACC) against a range of revenue sensitivities. This highlights that the Project is well-positioned to deliver positive returns even when faced with varying operational conditions.[1]

The commercial performance will continue to be closely monitored as the Project progresses, with the analysis updated at the end of the planned procurement process, utilising market informed costings and latest revenue strategy as basis for the FID decision.

Sensitivities tested

- Market dynamics (such as timing of coal retirements and pricing events)
- Interconnector timing
- System flexibility
- Supply and demand dynamics within the Tasmanian region
- Water inflows
- Interest rates
- Project capacity

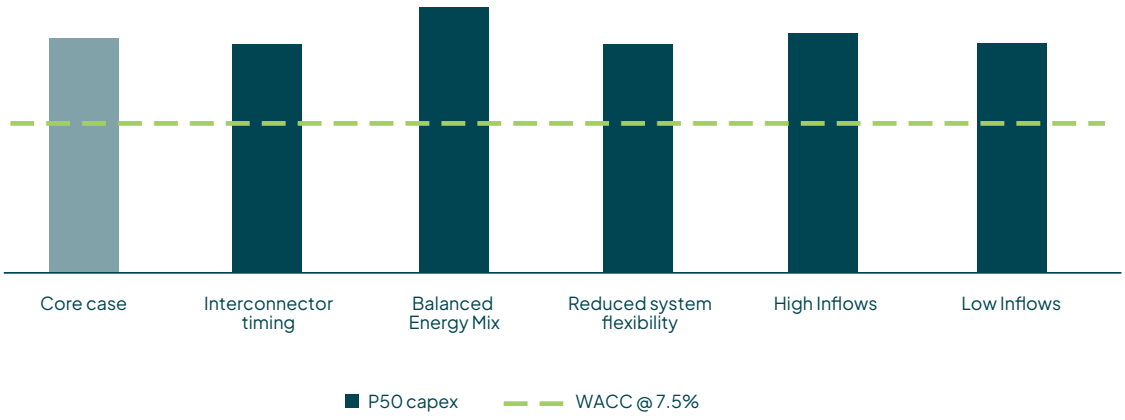

Figure 8: Internal Rate of Return (IRR) Projections Under Various Scenarios

1 | The Central market scenario represents Hydro Tasmania's central view on the likely future market developments. It represents current market conditions, energy infrastructure plans, investment needs and policy settings, considering real challenges faced by market participants. It provides a realistic outlook on ability to scale up the sector for future transition, ensuring timely replacement of any plant retirements with the lowest cost generation technology or a mix of solutions. The Weighted Average cost of capital (WACC) is Hydro Tasmania's average corporate cost of capital (considers both the cost of debt and the cost of equity).

Financing strategy

Hydro Tasmania has undertaken a detailed review to understand the impacts of the financing strategy on its ongoing balance sheet strength and financial sustainability.

Hydro Tasmania proposes to finance the Tarraleah Redevelopment by leveraging its balance sheet capacity, accessing financing from:

- **Internally generated cash flows**
- **Tasmanian Public Finance Corporation,** through an increase in existing corporate loan facilities
- **Equity contributions and grants**
- **Concessional financing** provided by the Clean Energy Finance Corporation

Hydro Tasmania is in the process of negotiating concessional financing with the Clean Energy Finance Corporation (CEFC) as part of the Australian Government's Rewiring the Nation initiative. This is an Australian Government program to modernise the electricity grid and deliver new and upgraded transmission infrastructure. The CEFC is administering $19 billion to deliver the program.

While the project investment increases Hydro Tasmania's gearing levels (debt to enterprise value) and impacts credit metrics in the short term, gearing levels are expected to return to the target capital structure level over the medium term. Hydro Tasmania's credit metrics are also forecast to return to the target level over the medium term.

Procurement

The procurement approach is a single Engineering, Procurement and Construction (EPC) model with a competitive Early Contractor Involvement (ECI) phase involving two contractors. Hydro Tasmania has determined that this model will deliver best value for money and cost certainty.

Hydro Tasmania undertook a rigorous process to determine the preferred procurement strategy for the Tarraleah Redevelopment, engaging a specialist advisor to support delivery of a procurement strategy. It considered 17 procurement models, adopting a 3–step process to identify a shortlist of the most appropriate delivery models and to determine the preferred delivery model.

The objectives of procurement are:

- deliver value for money and cost certainty
- collaborative, with fair allocation of risks
- attractive to the market
- within Hydro Tasmania's capability and capacity to manage
- supports a timely Final Investment Decision
- supports contractor's ability to influence design.

Recommended delivery model

The recommended delivery model is a single EPC model with a competitive ECI phase involving two contractors. A single EPC contract is the preferred packaging approach, with a separate electrical and mechanical (E&M) supplier integrated into the single package. This reduces interface risk and enables Hydro Tasmania to select the E&M supplier with consideration of the specialist nature of the works and Hydro Tasmania's knowledge of the market.

This strategy aligns with Infrastructure Australia's recommended approach, considering market characteristics, procurement objectives and key procurement risks. The strategy also implements lessons learned from other major infrastructure projects and insights from a structured market sounding process.

Relative to the other delivery models considered, the proposed approach best aligns with Hydro Tasmania's procurement objectives, striking a balance between providing market competitiveness, facilitating a collaborative environment, and supporting prudent cost control measures and value for money for Hydro Tasmania.

Key benefits of the preferred delivery model

Provides the optimal risk allocation approach: The opportunity to work with the two shortlisted EPC contractors to focus on a collective understanding of the key delivery risks and assess capabilities to make informed decisions on sharing or transferring risks to the party best placed to manage them.

Expected to be supported by the market: The EPC model offers contractors a sufficiently large contract scope, which should help drive market interest. The collaborative approach to design development and risk identification through ECI prior to submitting a bid price will likely also be attractive to contractors.

Improves cost certainty: Selecting two contractors for the ECI maintains competitive tension and ensures submission of informed prices, improving cost certainty before contract award. The ECI process achieves timely cost certainty for the Final Investment Decision.

Ensures contractors can influence the design: The ECI process enables contractors to influence the Project design at an early stage. This reduces the risk of the contractor re-scoping the Project later where it is more expensive to change the design.

Governance and assurance

Hydro Tasmania has implemented a robust and clear governance structure to underpin successful delivery of the Tarraleah Project.

In particular, the governance structure:

- provides systems and frameworks to identify and support effective decision making
- ensures clear and transparent lines of accountability and communication
- ensures all stakeholders are informed on the progress of key decisions.

Hydro Tasmania has a dedicated Major Projects team, led by the Executive General Manager Construction. Management oversight is provided through the Executive Leadership team, Steering Committee and a dedicated Major Projects Committee of the Board.

The governance structure includes:

- **Assurance framework:** Independent expert assessments across all key phases of the Project provide stakeholders with confidence that the appropriate steps have been undertaken. Refer page 24 for more details.
- **Project gating framework:** As part of the assurance framework, gate reviews are undertaken prior to commencing to the next project milestone, assisting with early risk identification that may threaten successful delivery of the Project. The framework was developed based on the Infrastructure Tasmania Project Assurance Framework.
- **Parliamentary approval:** The process follows a structured, multi-stage approach, involving engaging with government departments, submitting the Project for endorsement from shareholder ministers, and seeking parliamentary approval for the project.
- **Environmental, Social and Governance (ESG) Framework:** Aligned to Hydro Tasmania's policies, international standards and national ESG guidelines for major energy infrastructure projects, the framework will ensure the Project is delivered sustainably.
- **Stakeholder engagement:** Regular engagement with stakeholders fosters feedback opportunities and early identification of concerns, enabling the Project to meet both operational and community expectations.
- **Risk management framework:** Live risk registers are used to continually identify, manage and monitor potential risks, ensuring that the Project is well-prepared to navigate challenges throughout its lifecycle.
- **A benefits realisation framework** with defined key performance indicators (KPIs) linked to strategic objectives of the redevelopment (see below).

Key Performance Indicators

Preliminary strategic KPIs have been developed to align with the Project objectives. These will be reviewed and refined as part of a broader Tarraleah Redevelopment Benefits Management Plan. Where possible, KPIs are specific to the Tarraleah Project, however, where objectives and benefits can only be measured at a portfolio level, Project specific KPIs were not adopted

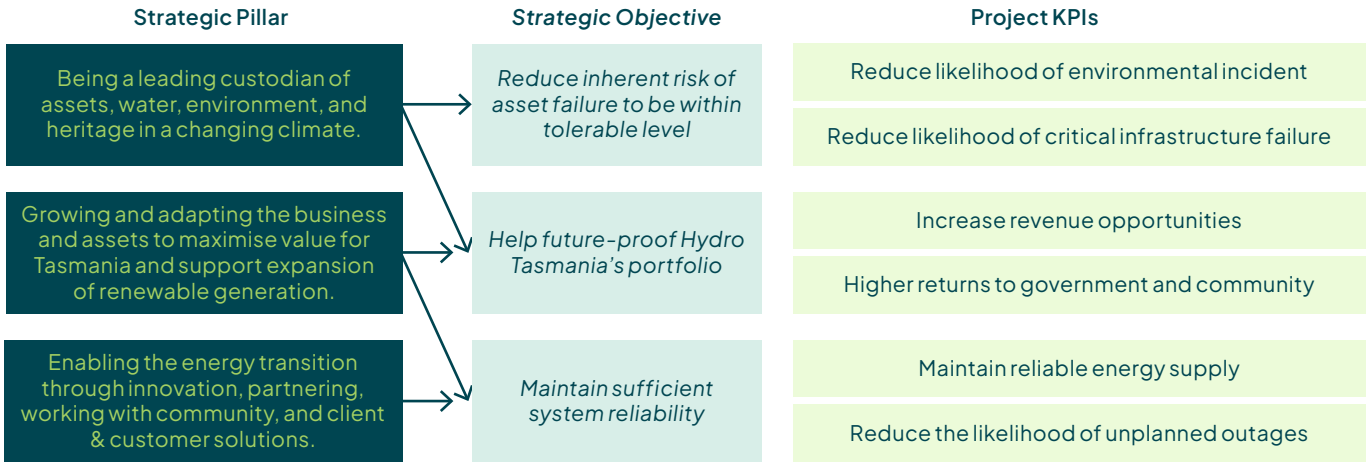

Figure 9: Key Performance Indicator overview

Assurance activities

The Project Assurance Framework provides an independent expert assessment of the health and viability of the Tarraleah Project across the project lifecycle. The framework is intended to manage risks and improve delivery confidence within the Hydro Tasmania Project Gating Framework. Expert reviews will be undertaken to inform key decisions before progressing to the next stage of the project lifecycle.

Within the Project Assurance Framework, the key assurance activities are mapped against the project stages in Figure 10 and include the following:

Project Phase	Project Stage		Gate Reviews	
ASSESS *Frame the opportunity*	Strategic analysis		Gate 0: Project initiation decision	
DEVELOP *Evaluate & select the development option*	Feasibility study	Concept development	Gate 1: Concept selection	Gate 2: Concept approval
DEFINE *Fully define the development option*	Project specification & Basis of Design	Competitive procurement & FID	Gate 3: Ready for market	Gate 4: Final investment decision (FID)
EXECUTE *Deliver the development option*	Award contract & delivery project		Gate 5: Handover decision	
HANDOVER *Realise the opportunity*	Commission, energise, handover to operations and close		Gate 6: Project close	

Functional reviews	Required ahead of the gate reviews to assess the readiness of the project to progress into the gating review process, as per the defined Terms of References [ToR). Functional review reports are provided to the Gate Reviewers as evidence that the project deliverables are suitably mature, and content/ process has been qualified.
Health checks	Discretionary and can be undertaken at any point in the project lifecycle, as planned in the Project Assurance Plan or in response to issues being raised
Deep dives	Discretionary and can be undertaken any point in the project lifecycle, often in response to issues being identified
Technical reviews	Regular and ongoing reviews conducted as defined in the Terms of Reference
Probity reviews	Regular and ongoing reviews to ensure probity requirements are met
Construction health & safety reviews	Regular and ongoing reviews conducted as defined in the ToR

Figure 10: Key assurance activities across the project lifecycle

Risk management

Effective risk management is integral to the successful delivery of the Tarraleah Redevelopment Project.

Hydro Tasmania has completed detailed risk assessments and quantification processes, and established risk registers covering strategic, project delivery, cost and timing risks. These are continuously monitored and updated as the Project progresses.

Risk management of the Project is governed and actively managed through Hydro Tasmania's established Integrated Business Risk Management (IBRM) framework. The IBRM framework, along with associated policy and procedures, provides Hydro Tasmania with structured processes for assessing and managing risk within set boundaries.

The framework, policy and procedures are aligned to the international standard on risk management, Infrastructure Australia guidelines and AS ISO 31000:2018 Risk Management – Principles and Guidelines.

Enterprise-wide controls in place for successful project delivery:

Governance framework

The Major Projects Program has a dedicated board sub-committee, the Major Projects Committee (MPC), to oversee the Project's risk management processes.

Independent Technical Review Panel

This panel provides an independent technical review and ensures that any risks related to the Project's design and delivery are managed according to Hydro Tasmania's established standards.

Dedicated project oversight

Specialised teams within Hydro Tasmania provide ongoing risk management support. These teams focus on specific areas, such as financial oversight, environmental compliance, safety and procurement.

Project resourcing and capability

Hydro Tasmania has dedicated teams with expertise in human resources, project management, legal, engineering, and environmental, to ensure that each risk is managed with the appropriate level of expertise.

Integrated frameworks and processes

Hydro Tasmania's existing frameworks – such as work health and safety systems and business risk management systems – provide the foundation for managing residual risks.

Environment, Social & Governance (ESG)

Hydro Tasmania is committed to sustainable development, balancing the need for increased renewable energy capacity with environmental stewardship.

We have developed an ESG framework and objectives for major projects, including the Tarraleah Redevelopment. The ESG framework is aligned to Hydro Tasmania's policies and principles and international standards and national ESG guidelines for major energy infrastructure projects.

Community and stakeholder engagement

The ESG activities include early, proactive and ongoing engagement with impacted landowners, community, Tasmanian Aboriginal people and stakeholders across Government, business and interest groups.

A Stakeholder Engagement Plan has been developed to support engagement up to a Final Investment Decision. The key objectives are to:

- Build awareness of the Project, keep communities and stakeholders informed about progress and provide opportunities for feedback.
- Ensure we understand perceptions and any potential concerns about the Project through participatory dialogue and engagement. This will enable early identification of potential measures to avoid or mitigate concerns.
- Enable community and stakeholders to evaluate the value proposition of the Project, and other Hydro Tasmania major projects more broadly, for Tasmania.
- Gain insights to support the development of assessments and plans. This includes our Social Impact Assessment (SIA), Social Impact Management Plan and Local Benefit Sharing Plan. Some of these plans (e.g. SIA) are key inputs to achieve the regulatory approvals required.

Technical assessments

We are undertaking an extensive range of technical studies to assess the potential environmental, heritage and social impacts during the construction and operation of the Project. These include:

- **Traffic:** to determine the increase in vehicle movements on Butlers Gorge Road and the Lyell Highway associated with the transport of materials, equipment and workforce during the construction period.
- **Ecology:** to determine the risk of increased roadkill of threatened species from increased traffic during construction.
- **Cultural heritage:** to understand impacts of ground disturbance on artefacts and plan for management of cultural artefacts.
- **Wastewater:** to assess the generation of wastewater during construction from both surface and underground works and any potential surface water and groundwater impacts.
- **Emissions:** to assess the noise, air and greenhouse gas emissions generated during the tunnel construction as well as the operation of construction plant and equipment.
- **Hydrology:** to determine the changes to the flow regime in associated reaches of the Nive River and River Derwent as well as Mossy Marsh Pond and No. 2 Pond from the increased flexibility and capacity of the Project.

To date, the Project has broad local community support. It is seen as creating the potential for employment, social procurement and tourism activities. The key areas important to the community are minimising disruptions to recreational activities (including fishing, boating, camping), preserving the heritage of Tarraleah, employing local residents and businesses, and minimising traffic impacts during the construction phase.

Approvals process

Hydro Tasmania is responsible for obtaining the primary Commonwealth, State and Local Government (Council) approvals for the Project.

Legislation	Approving authority	Relevance and status
Hydro-electric Corporation (HEC) Act	Tasmanian Parliament	• The construction of a major new non-VRE power facility with a capacity exceeding 40 MW requires approval from the Tasmanian Parliament. • Request for approval will be submitted once funding is confirmed.
Environment Protection and Biodiversity Conservation (EPBC) Act	Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW)	• The EPBC Act regulates impacts on matters of national environmental significance (MNES). Where an action will have, or is likely to result in, a significant impact on MNES, the action must be referred to the Commonwealth Minister for the Environment for assessment. • Initial referral submitted in February 2023; deemed a controlled action in May 2023. Design changes have necessitated a new referral, planned for mid 2025.
Land Use Planning and Approvals (LUPA) Act	Central Highlands Council (CHC)	• The use and development of land in Tasmania is primarily regulated through the LUPA Act and given effect through planning schemes administered by local Government. • Application submitted in April 2024, validated in June 2024. Additional information requested and being processed; final submission due June 2025. Separate approval needed for workforce accommodation and this will be the responsibility of the EPC contractor.
Environmental Management and Pollution Control (EMPC) Act	Environment Protection Authority (EPA)	• The EMPC Act regulates prescribed activities that have the potential to cause environmental harm and nuisance. Where the Board of the EPA determines the need for assessment, they will determine both a level of assessment and issue guidelines requiring the preparation of an Environmental Impact Statement (EIS). • The planning permit application was referred to the EPA by CHC in June 2024 and guidelines were issued in August 2024. Hydro Tasmania is well prepared to finalise the draft EIS in mid 2025.
National Park and Reserve Management (NPRM) Act	Tasmanian Parks and Wildlife Services (PWS)	• Parts of the project are in the Tarraleah Conservation Area. This requires the completion of a Reserve Activity Assessment (RAA). • RAA completed and approved in January 2024 for surge tower, pipeline and access road development that are in the Tarraleah Conservation Area.

Conclusion

The proposed Tarraleah Redevelopment creates a once-in-a-generation opportunity to reimagine the Tarraleah Scheme to support Hydro Tasmania's strategic objectives and Ministerial Charter, maximise value for investment, deliver significant benefits to Tasmania and reinforce the state's leadership in the evolving NEM.

The proposed Tarraleah Redevelopment:

- fully mitigates the potential for canal failure and associated environmental incidents
- enhances energy reliability, adding additional firming capacity with the flexibility to respond to evolving market conditions, while also increasing annual energy generation by up to 30%
- strengthens system stability, providing firming capacity to enable the uptake of wind and solar required to meet Tasmania's and Australia's decarbonisation objectives and support Tasmanian industry growth
- enables inter-seasonal flexibility, generating at full capacity (peak output of up to 190 MW) for extended periods, subject to Lake King William storage levels and environmental considerations
- enhances revenue potential as Hydro Tasmania has more flexibility to strategically control its electricity dispatch into periods of high electricity prices.

Current status

Based on the current cost estimate and revenue projections, the Tarraleah Project is expected to make a financial return under most scenarios tested and the NPV remains positive against a wide range of energy market conditions, operating limitations and financing conditions.

Gate 2 (project business case) has been approved, which further validates the Project's readiness. The potential commercial benefits combined with benefits in supporting energy reliability and economic growth in Tasmania demonstrates there is good reason to progress to the next stage. Hydro Tasmania is now at Gate 3 – Ready for Market, where procurement documentation is ready to be released to the market.

The next stage, once procurement commences, will enable Hydro Tasmania to receive market informed costings for the Project, to provide more certainty about the financial returns proceeding to FID.

To provide optionality and to mitigate the risk of market pricing for the Project being higher than anticipated, Hydro Tasmania will assess the feasibility of an alternative option to extend operation of the current scheme (Option 6 as outlined on page 15) .

The next steps to continue progressing the Project are detailed on page 29.

Next steps

A series of next steps focuses on key workstreams and preparatory activities critical for the successful execution of the Project. Providing commercial viability can be maintained with the final cost estimates, the Project could proceed to a Final Investment Decision (FID).

Key actions to advance to the next stage are:

Technical and procurement:

- Finalisation of procurement documentation and preparation for competitive ECI phase
- Commencing procurement activities and market testing of cost estimates

Commercial:

- Ongoing monitoring and assessment of commercial viability

Project delivery:

- Progressing planning, environment and heritage assessments and environmental approvals
- Updates to Project Execution Plan and management plans
- Refinement of project goals and Key Performance Indicators

Funding strategy:

- Validation of the funding strategy and preparation for project execution

Approvals and engagement:

- Engagement with approving parties and financing partners
- Seeking approval from the Tasmanian Parliament
- Ongoing community and stakeholder engagement
- Finalise local benefit sharing action plan

Risk mitigations through the next stage:

Further analysis of a potential alternative (Option 6: Extended Operations) will continue to ensure there is sufficient detail available on design, cost and asset risks to evaluate it against the Tarraleah Redevelopment when market pricing is received.

Prior to a Final Investment Decision, Hydro Tasmania will confirm the merits of the Tarraleah Redevelopment against an alternative option, considering the most recent information and market context.

Hydro Tasmania