Lake Lyell
Pumped Hydro Energy Storage

Q&A

EnergyAustralia
LIGHT THE WAY

What are you doing?

- EnergyAustralia is currently exploring the possibility of using a section of Lake Lyell dam, which supplies water to Mt Piper power station, to develop a new pumped hydro energy storage facility.
- Situated on Wiradjuri country, the Lake Lyell pumped hydro facility would be capable of producing 335 MW of electricity with around eight hours of storage, enough to power over 150,000 households during peak demand.
- By using existing infrastructure, water, nearby transmission lines and EnergyAustralia land, the project has great potential to power homes in New South Wales, support more renewables entering the system and contribute economic benefits to the region.
- We are actively working with the community to understand views on the project and how it can be improved. Any project we do must be good for the environment and good for people.
- There's still a lot to do as we work through feasibility studies, planning approvals and the environmental impact assessments; however, we believe this project has immense promise in the development of a modern energy system and a key project for Lithgow.

Why do we need pumped hydro?

Energy storage is needed to help bring more renewables into the grid. Pumped hydro is like a giant battery, soaking up excess renewables during the day when there is lots of solar energy or at night when there is a lot of wind. That's why pumped hydro is a key technology being supported by the NSW government, to help the energy system reduce emissions by bringing on more renewables, helping us get to net zero.

Will there be an impact on the water level?

Based on the volume required to fill the proposed upper reservoir, our initial estimates suggest the water level may fluctuate by up to 1 - 2 metres when the pumped hydro is operating – noting that this is an estimate only until detailed assessments are undertaken. We acknowledge that water level fluctuation is very important to Lake Lyell users and the community. We'll have a more precise number once the design has been refined and modelling of lake level fluctuation has been completed. Following that, we'll be undertaking detailed investigations to assess the impacts of this water level change and any mitigation measures that may be required as part of the Environmental Impact Statement. We will continue to consult with the community once our modelling has been completed.

Will the project impact water quality?

Water quality should not be impacted by being passed through the pumped hydro facility. Water drawn into the intake and pumped to storage in the upper reservoir, and then being returned through the turbines will not change the water quality. Water movement within Lake Lyell resulting from the pumped hydro operations may cause a higher degree of mixing of water layers within the lake. This could change typical dissolved oxygen and temperature profiles and may alter biological factors such as propensity for algal growth. These biological impacts would be assessed as part of the Environmental Impact Statement process. We would note that deliberate mixing in water storages is often implemented to improve water quality in storages used for drinking water.

What will happen to the water level during drought?

The volume of water available in reservoirs that were originally constructed to support power generation at Wallerawang and Mount Piper has changed over the last five years. Demand for water has decreased with the closure of the Wallerawang power station. At the same time, supply of treated mine water from the Springvale Water Treatment Plant built at Mount Piper, has increased available water supply for power generation. Consequently, the volume of water used from Lake Lyell has reduced significantly. EnergyAustralia also owns and operates the Thompsons Creek reservoir, which helps us manage water levels across multiple storages increasing drought resilience. If the water level in Lake Lyell dropped below the intake for the pumped hydro project during an extreme drought event, then the plant would simply stop operating. We'll be doing more work to determine these operating levels as we develop the design further.

It's worth noting pumped hydro doesn't 'use' much water (other than some from evaporation), rather it moves it from one location to another.

What restrictions will be put on access to the Farmers Creek arm of the lake and river?

The Lake Lyell project will be developed entirely on EnergyAustralia owned land, which includes an intake for the facility to the north of the project where Farmers Creek flows into the lake. There will be an exclusion zone, within which access for the public on land or water will not be permitted for safety reasons, but this is an extremely small area of the overall lake. The project is still in its early development stages so we don't know the detail of access changes to Farmers Creek just yet; however, we will share all plans for access once we have designed them, likely in late 2022. These works will also be assessed as part of the Environmental Impact Statement.

What effects will there be on recreational use of the lake?

We know that Lake Lyell is a popular recreational location for the Lithgow community. As the owners of Lake Lyell, we've been able to make the lake available to the local community and co-exist with power station operations for many years. We'd like that to continue, so we are looking at ways to minimise environmental and social impacts as we refine the design and potentially enhance ongoing recreational resources. We welcome any ideas or suggestions from the community.

Can EnergyAustralia guarantee access will not be restricted?

During operation, access to some areas of Lake Lyell, primarily around the intake as described above, will be restricted. The rest of the lake will continue to be open to the public. Over the next 12 to 18 months, we will be working with our construction partners to determine how to build the various aspects of the project. We don't expect any additional access restrictions, but we'll communicate these details when they are available.

Will camping, boating and fishing remain safe?

People who enjoy camping, boating and fishing at Lake Lyell will be able to continue doing so. In the future, we'll want to keep Lake Lyell as full as possible so the hydro can operate year round. Initial estimates suggest the water level may fluctuate by around one to two meters in total over many hours when the facility is operating, which on average is one cycle daily, pumping between 7am to 5pm (during summer) or 10pm to 8am (during winter) and generating in-between

Will there still be access for 4WD users?

The Lake Lyell project will be developed entirely on EnergyAustralia owned land. Any 4WD tracks outside EnergyAustralia land, for example, through the national park won't be impacted by the project. We are looking at ways to improve access to the upper reservoir as we think it might be an exciting look out point. We will share plans for site access and roads once we have designed them, likely to be during 2022. These works will also be assessed as part of the Environmental Impact Statement.

What about fishing and fish stock in the dam?

The intake for the pumped hydro facility will occupy a very small area of Lake Lyell to the north of the project where Farmers Creek flows into the lake, so we expect the vast majority of Lake Lyell to still be used for fishing and boating. Potential impacts to fish stocks will need to be assessed in detail as part of the Environmental Impact Statement, which will be shared with the community through the planning exhibition process.

Will the project impact the ecology of food sources?

Potential impacts on the environment and biodiversity will need to be assessed in detail as part of the Environmental Impact Statement. This will be shared with the community through the planning exhibition process.

Will there be an impact on the trout and bass movements from Lake Lyell into the Farmers Creek, including when trout tend to move upstream for spawning?

It is possible that fish movement to upstream reaches in Farmers Creek passing the pumped hydro intake location will be impacted. As part of the intake design process, we'll be looking at intake designs and screening structures that minimise debris and fish entering the pumped hydro system. Again, potential impacts on the environment and biodiversity will need to be assessed in detail as part of the Environmental Impact Statement. This will be shared with the community through the planning exhibition process.

What screening measures will be put in place to prevent fish entering the hydro system?

We'll be looking at screening measures as we design the intake structure, however, we do note that it could be difficult to prevent all fish sizes entering the intake and being pumped to the upper reservoir. Impacts on fish and other reservoir biodiversity will be assessed in detail as part of the Environmental Impact Statement.

How will this impact tourism?

We expect recreational use of Lake Lyell to continue. In fact, the upper reservoir could provide a great viewing spot for tourists and locals alike. As we refine the project design, we'll have a better understanding of any potential impacts on recreational use, and how these can be managed.

This detail will be shared with the community through a thorough consultation process that will continue through 2022 and 2023. We welcome suggestions from the community on how to make the project something the Lithgow community can be proud of. All feedback will be considered during the ongoing design and assessment process.

Will the project impact the ability to fight fires?

We have initiated discussions with the fire service and expect to be able to work with them to ensure our activities do not impact their operations. We understand the upper reservoir may even be beneficial for firefighting operations which we are looking forward to exploring further.

What will the impact be to local roads (e.g. Sir Thomas Mitchell Drive)?

We are still investigating all available access routes to the project site. Sir Thomas Mitchell Drive looks to be the best option for long term access as it doesn't pass through national park and provides the nearest existing public road access to the EnergyAustralia land the project would be built on. However, access to the lake from Sir Thomas Mitchel Drive should not be impacted. Any other road to the proposed site would involve crossing national park or private land owned by others. As part of the feasibility and the Environmental Impact Statement, we will need to assess the impact of using this route and what mitigating measures we may need to put in place to ensure it is safe and minimises any inconvenience for other users.

How will the project impact the visual amenity of the area?

As part of the Environmental Impact Statement process, we will be doing a detailed assessment which will consider any visual amenity impacts, which will include looking at mitigating measures to address community feedback that's raised through the exhibition of detailed plans and the consultation process. Please let us know if you have any suggestions you'd like us to consider in the design process.

What will the noise impact be during construction and operations?

Noise levels during construction and operations will be assessed as part of the Environmental Impact Statement process. We will undertake background monitoring and then assess the impact of activities. Once we understand the impacts, we will develop mitigation measures in consultation with the community. It's worth noting that the state's Environmental Protection Authority (EPA) regulates major infrastructure projects to ensure the community and environment are protected from impacts, such as noise, emissions, and pollution. Our approvals will need to meet these requirements.

How many long-term jobs will there be?

The project is expected to generate around 600 jobs during the construction period, and support approximately 15 direct and many more indirect jobs over its anticipated 80 year design life. Lithgow has deep experience in the electricity generation sector, so we are committed to working with local businesses and suppliers as a priority when sourcing labour, materials, goods and services.

How big is the upper reservoir going to be?

The current concept design for the upper reservoir has a volume of 4.4 gigalitres, around one tenth the size of Lake Lyell. The wall height of the current concept is around 40 metres. We still need to do geotechnical investigations to confirm the best layout for the upper reservoir so this may change as we refine the design. We will be assessing impacts from the finalised design within the Environmental Impact Statement so there will be lots of opportunity for feedback as we share those designs with the community. We'd love to hear any early feedback the community might have to minimise any amenity impact.

How will property values be impacted?

It’s not our area of expertise to comment on future property prices. What we do know is our project will create jobs and support the local economy - we think that’s a good thing for the region. What we’re trying to do with Lake Lyell is carry on Lithgow’s strong legacy in power generation into the future.

When and how will the community be consulted?

We have already started to engage the community and key stakeholders on the project via EnergyAustralia’s Community Relations Lead. We will continue to do this over the next two years as the project design progresses, and through the Environmental Impact Statement process by continuing to hold public information sessions across the region. We will be sending out a regular newsletter via post or email to those who want to receive one and providing project updates on our website – www.energyaustralia.com.au. We will also present regular project updates to the Lithgow Council and the EnergyAustralia Lithgow Region Community Consultative Committee as the project progresses.

Please send any enquiries to community@energyaustralia.com.au