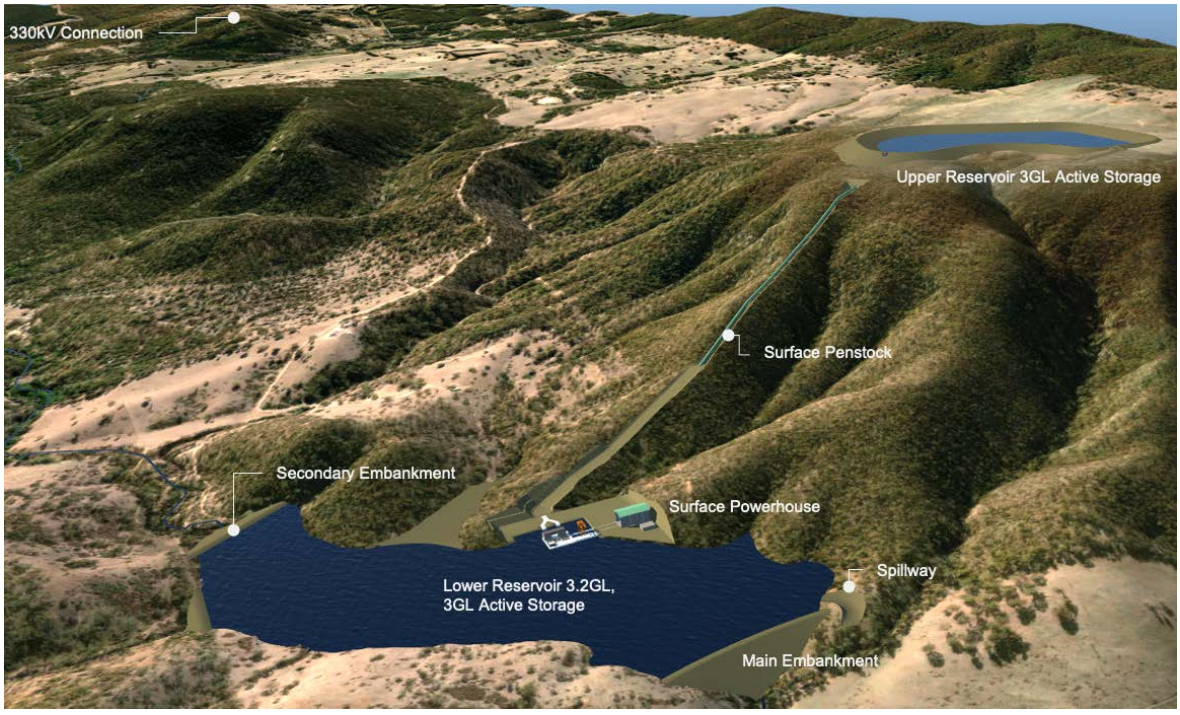
Central West Pumped Hydro

Project Snapshot

The Central West Pumped Hydro Project (the project) is a nominal 325MW pumped hydro facility with approximately eight hours of storage capacity.

The key elements of the permanent project infrastructure comprise of:

- "Turkeys nest" embankment dam forming an upper reservoir;
- A rock-filled embankment dam forming a lower reservoir;
- Penstock (or pipeline) connecting the upper and lower reservoir;
- Sub-surface powerhouse enclosing two pump-turbine units; and
- Transmission connection infrastructure including a new transmission line connecting to the nearby Transgrid 330kV system.



Project visualisation

The **Upper Reservoir** of approximately 25ha will be constructed by excavating material obtained from the site to create an earthen embankment dam around the perimeter. The reservoir will include an engineered liner to prevent seepage.

The **Lower Reservoir** of approximately 25ha will be constructed via a rock fill embankment dam. The dam will be operated as a 'throughflow/transparent' structure, allowing flows to pass through the reservoir and continue downstream.

The reservoirs have an elevation difference of approximately 360m and are connected by a 1,400m primarily surface **penstock** of approximately 5m diameter.

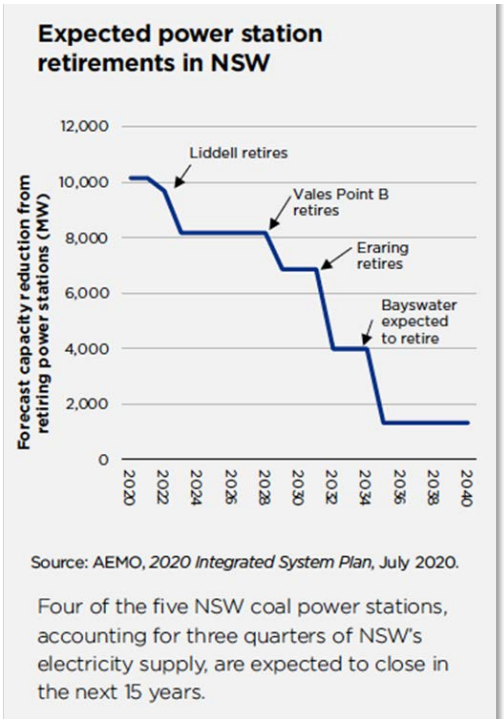
The **powerhouse** (approximately 70m deep) will be constructed from concrete and contain two pump-turbine units. The final structure will sit adjacent to the lower reservoir.

The project will connect into an existing Transgrid 330kv transmission line about 6.5km to the north by a 132kv **transmission line**, planned to be strung on single poles (as opposed to lattice towers) to minimise visual impacts. A local example of single poles can be seen on Timber Ridge Road in Yetholme. A new **substation** will be built at the point of connection to the electricity grid.

Why is pumped hydro needed?

The development the project is consistent with the Commonwealth and State government's climate change initiatives. The project facilitates and promotes energy and infrastructure strategies by further enabling and supporting the expansion of renewable energy generation. It does this by providing rapidly dispatchable energy storage capacity to respond to variable renewable energy generation, typically from wind and solar.

Importantly, by the mid-2030s, the New South Wales Government's 2020 Electricity Infrastructure Roadmap states we will need about 2.3 Gigawatts (GW) of energy storage with 4 -12 hours of duration to maintain system reliability and security. This is in addition to the new 2GW of capacity at Snowy 2.0 being developed by the Commonwealth. This need in part is driven by the progressive retirement of four of the five coal-fired power stations in NSW over the next 15 years, beginning with Liddell in 2023.



Summary timeline of coal fire power station closure in NSW

Source: NSW DPIE, 2020 - Electricity Infrastructure Roadmap Overview.

The NSW Government through its 2020 Electricity Infrastructure Roadmap has identified that it needs to facilitate investment in more pumped hydro infrastructure to deliver reliability in the energy system. The Central West Pumped Hydro Project will help to deliver this reliability.

This project is also well placed to support the State's new Central West Orana Renewable Energy Zone (REZ); a key element in the NSW Government's Electricity Strategy, building on the NSW Transmission Infrastructure Strategy and supporting the implementation of the Australian Energy Market Operator's Integrated System Plan.

Where does the water come from?

The project requires an *initial once-off fill* of about 3 gigalitres (GL) of water. In an ongoing sense the project may need small amounts of additional annual water over the life of the project, for any evaporation or seepage from the reservoirs.

The most appropriate water source for the Project is considered to be from the Fish River system. This would be delivered via an underground pipeline to the Project area, and can be staged to access water during higher flow events, or associated with dedicated releases from upstream water storages, and is expected to use only a small percentage of total flow.