

Frequently Asked Questions

16 February 2018

1. What is the Highbury Pumped Hydro Energy Storage Project proposal?

The proposed project involves the construction of pumped hydro energy storage facility, at the decommissioned Highbury quarry site. The pumped hydro facility would consist of an upper lake, which will be the existing water filled former dolomite quarry, a lower lake along the Halls Road edge of the site, two penstock pipes connecting the lakes and a powerhouse building on the eastern shore of the lower lake.

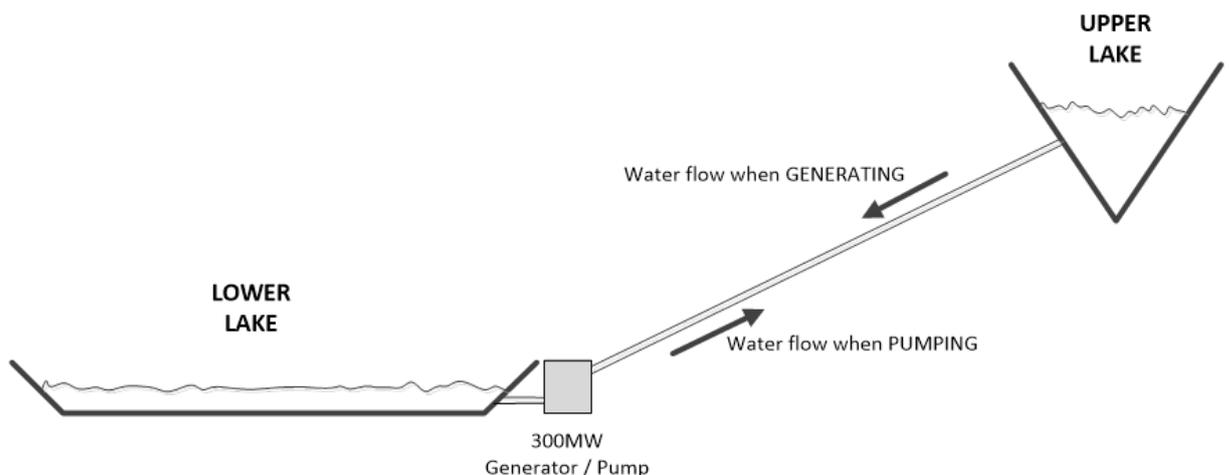
The project would substantially improve the existing state of the 350ha unused Highbury quarry site owned by Holcim Australia, (formerly Readymix) and there is potential to include public recreational facilities in the design, in particular associated with the lower lake area.

Tilt Renewables will consult with the community on the potential recreational elements, which could include picnic lawn areas, public amenities, BBQ areas or space for pop-up retail outlets to enable various events to be held. Bikeways and walking paths could also be integrated into the design specifically to link to similar facilities nearby.

2. How does Pumped Hydro work?

Pumped hydro is essentially an alternative to a battery for storing large volumes of energy in the form of gravitational potential energy of water, pumped from a lower level reservoir to a higher elevation. Once stored at the higher elevation it is then able to be released, driving a generator to create electricity as it flows to the lower reservoir.

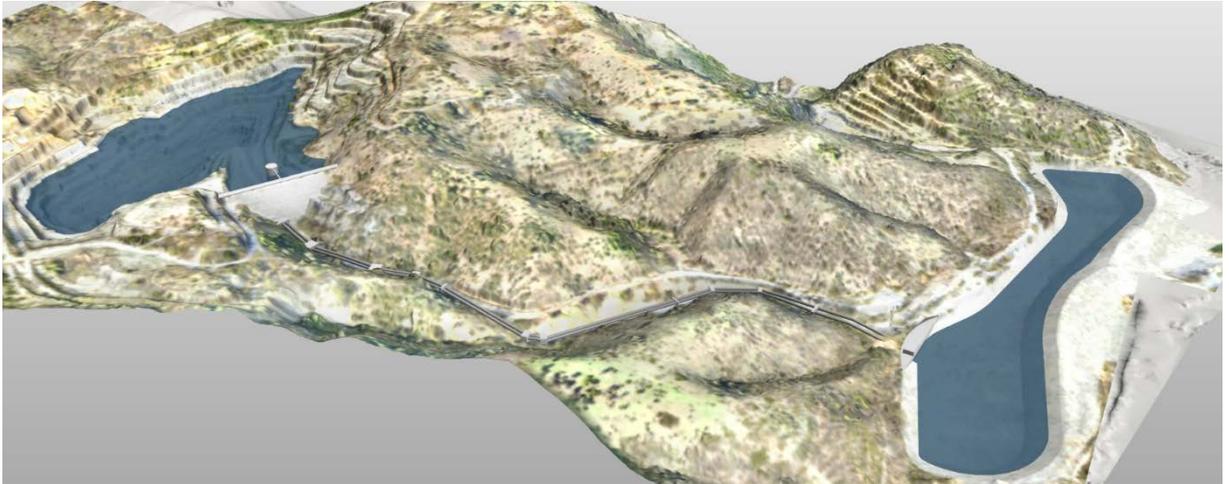
A pumped hydro facility uses electricity during periods of excess supply, generally when wind and solar farm outputs are high, and uses this electricity to pump water from the lower lake to the upper lake.



When the demand for electricity is high and supply is scarce, water would be released to generate electricity. This process allows the fully controllable pumped hydro facility to complement renewable energy supply and add security to a renewable rich electricity system. It can essentially be seen as a battery that has an operational life of greater than 50 years.

3. What will the project look like?

The “fly-through” video (link here) and artist’s impressions below provide an early visual interpretation of the project. Without having completed a detailed design at this early stage, the artist impressions are for indicative purposes only. Engineering, environmental and community inputs will be used to refine the design over time to reach a solution to best address all considerations.



4. How much energy will the plant produce?

When water is released from the top lake, the facility will be able to generate up to 300MW for around 4.5 hours. This storage capacity of 1350MWh is equivalent to more than 10 times that of the Tesla battery recently installed at the Hornsdale wind farm.

When refilling the top lake, the facility will consume up to 300MW and modern pumped hydro designs achieve a cycle efficiency of 85 – 90%.

5. Will this project reduce my electricity bill?

The security provided by a large energy storage facility is likely to reduce electricity market price volatility, especially the extremely high-priced events. Lower market volatility should be reflected in retail prices over time.

Importantly, a facility like this will add security to the electricity system supporting further renewable generation, which is clearly the lowest cost option for new generation capacity available today.

6. How will the local community benefit?

Subject to consultation with the local community, the project proposes to use some of the area around the lower lake to provide community recreational facilities such as lawn areas, BBQs, picnic tables etc. Additionally, it is likely that this area will also become a destination for the River Torrens – Linear Park bike path which currently ends on the southern edge of the quarry site.

Bikeways and walking paths could also feature as part of the site's rehabilitation connecting the site to the adjacent Anstey Hill Conservation Park, Blackhill Conservation Park, River Torrens Linear Park and the Highbury Aqueduct Reserve.

Considerations for public safety and provision ongoing maintenance and security are important for any proposed recreational facilities and these will all be factors for the consultation, design and planning approval processes.

7. How do I have a say in this proposal?

Tilt Renewables will hold public open day sessions prior to submitting the planning application for the project with the State Commission Assessment Panel (SCAP). Members of the community are welcome to provide feedback during these public information sessions.

Additionally, there will be an email address setup prior finalising the application where feedback to the proposal would be welcomed. Further information can be found at www.tiltrenewables.com.

Following submission of the planning application the public will be notified of the proposed development via newspaper advertisements published by SCAP. During the public notification period the application documents can be viewed and representations can be made by the public.

8. How is this a green renewable energy project?

The project would be complementary to wind and solar farms, enabling renewable energy to be stored for use at times of high demand. Hydro power is a renewable form of generation and the project does not involve the use of fossil fuels.

The project would also provide the grid with quick starting backup electricity that will support the continued deployment of renewable generation sources in S.A.

The project would also be complementary to batteries, which are more suited to fast response over shorter periods.

9. How will the view from my property be affected?

The project vision is to transform the decommissioned quarry into a visually appealing lake surrounded by lawn and bushland areas. The pumped hydro powerhouse will be located on the eastern shore of the lower lake and would be designed to complement the local area and environment.

The lower lake and the powerhouse building will be more visible, but below the protected area known as the 'Hills Face Zone', when looking from the east. The pipelines connecting the upper and lower lakes would follow the route of the existing quarry haul road and therefore would be largely concealed behind the hills and screened by existing vegetation.

It is anticipated that the upper lake area, the small saddle dam and intake tower structure would be mostly obscured by hills, as the area is now. These two features would mainly be visible when looking down from the cliffs at the northern end of the site.

The facility would connect into the South Australian high voltage transmission grid via the western 275kV overhead line that currently crosses the site and the design of that connection will endeavour to avoid highly visible additional tower structures.

Further visual assessment will be carried out during the preparation of the detailed design and planning application. This will include viewpoint analysis and visual simulations to be included as part of the application. The visual simulations will be presented to the public during the open days.

10. How frequently and when will the facility operate?

On average over a year it is anticipated the facility will operate around 40% of the time, either in pumping or generation mode. Operation will depend entirely upon South Australia's electricity supply and demand on any given day. Some days the facility will operate more than others.

11. How much noise will there be during the construction period?

Construction noise levels generated by the project will be subject to existing construction site noise limits, including times when work is not permitted.

During the preparation of the planning application, noise modelling will be carried out which will account for both the construction and operational noise generated by the development. Accurate noise modelling will ensure that the noise levels do not exceed that allowable during construction as stipulated by the Environmental Protection (Noise) Policy 2007, or other relevant guidelines.

12. How much noise will there be when the facility is operating?

The hydro turbines and pumps would be located deep underground within the powerhouse located on the eastern shore of the lower lake. Detailed noise modelling will be undertaken as part of the environmental approval process to confirm noise impacts during operation. The project design will ensure these levels meet appropriate standards in South Australia's Environmental Protection Act, or other relevant regulations.

13. How would this project affect my residential property value?

The proposal would see the former quarry site transformed into a more visually appealing lake surrounded by lawn, picnic and BBQ areas with no impact on the Hills Face Zone.

The project is expected on balance to enhance the visual amenity of the area and therefore is not considered to have an adverse impact on property valuations. Further evidence in support of this will be prepared as part of the environmental approval process.

14. Who are the project partners?

Tilt Renewables is working with partner Holcim Australia to develop the project.

Tilt Renewables is a leading developer, owner and operator of renewable energy generation assets in Australia and New Zealand. In South Australia Tilt Renewables operates the Snowtown Wind Farm which is the largest wind farm in S.A.

Holcim Australia is a leading supplier of aggregates, concrete (Readymix) and concrete pipe and products. Holcim Australia is part of the LafargeHolcim group that operates in 90 countries around the world.

15. How long would the project take to build?

It's estimated that the project will take 2½ years to build following the planning approval process and from when earthworks commence on the site.

16. Would the project provide local employment?

During construction the site workforce would average at approximately 200 people, peaking at 300 people. The project will involve significant earthmoving and civil structural works. Local labour and suppliers will be given full, fair and reasonable opportunity to participate.

Local content initiatives will be focused on local communities within the City of Tea Tree Gully and surrounding areas as a priority in order to encourage sustainable economic growth and to support a diverse range of local businesses and industries.

17. Can I provide any goods and/or services to the project?

Those who wish to register interest in providing local goods or services for the project are encouraged to submit their details via email to info@tiltrenewables.com with "Highbury Suppliers" in the subject.

Additionally, there will be a Goods & Services Register available on the project website as we get closer to construction.

18. Will there be any dust during construction?

As the project involves significant earthmoving activities, comprehensive dust suppression measures will be in force which would minimise any dust emanating from the site. Dust suppression guidelines and limits under the SA Environmental Protection Act, or other relevant guidelines, would be strictly adhered to as set out in a project planning approval.

19. Will local traffic conditions be affected during construction?

Disruption to local traffic flows during the construction period would be minimised where possible, with the movement of the site workforce in the morning and late afternoon likely to be the most disruptive on a daily basis.

All earthmoving activities will remain on site, that is, all spoil removed to form the lower lake will be deposited around the quarry site. Delivery of major project equipment and construction machinery will be timed to avoid local traffic disruption.

A comprehensive traffic impact assessment and associated traffic management plan will be developed as part of the planning approval process to ensure impact on local residents and infrastructure is appropriately managed.

20. Will local traffic conditions be affected once the facility is commissioned and in operation?

During operation the workforce will consist of two to three full time staff. This is expected to have no impact on existing local traffic conditions.

21. What is the site's history?

Holcim Australia (and its predecessors) began quarrying on the site in 1940s and ceased operations in 2009 with only 40 to 50ha of the 350ha site being used for quarrying.

On the eastern side of the site dolomite was quarried leaving a large pit now filled with water. On the Halls Road side of the site sand was mined leaving a number of pits with some now filled with water. To the south there is a former quartz quarry.

All buildings and equipment used in past quarrying activities has been removed from the site, although some concrete foundations still remain.

22. Is the government funding the Project?

No, the project has not received funding from either the State or Federal governments. It is a private enterprise project. The project does have Crown Sponsorship from the SA Government which means the government will help to facilitate the process of approvals.

23. Where is the water coming from to fill the old quarry?

The old quarry is self-filling, but if any extra water is needed it will be purchased from the state government and will likely be drawn from the River Torrens.



Artist's impression of how the picnic area at the lower lake could look.