

Qld solar-paired pumped hydro plant could reach 450MW

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A pumped storage hydropower project that is proposed for north Queensland, to be built alongside what could be Australia's largest solar farm, could be much bigger than first conceived, with new designs suggesting peak generation capacity at a maximum of 450MW over a 5-6 hour period.

The Kidston Pumped Storage Hydropower Project is being developed at the disused Kidston Gold Mine in north Queensland and is currently at the feasibility study phase, which has been supported by the Australian Renewable Energy Agency (ARENA).



The “world first” project – which is being developed by NSW-based Genex Power – aims to transform two adjacent pits left over from the disused mine into a large-scale hydroelectric power plant, that will store excess generation from a 150MW solar array, and then sell it to the grid at times of peak demand.

Pumped storage hydropower – there are currently only three examples of this in Australia – is a highly efficient form of large-scale energy storage

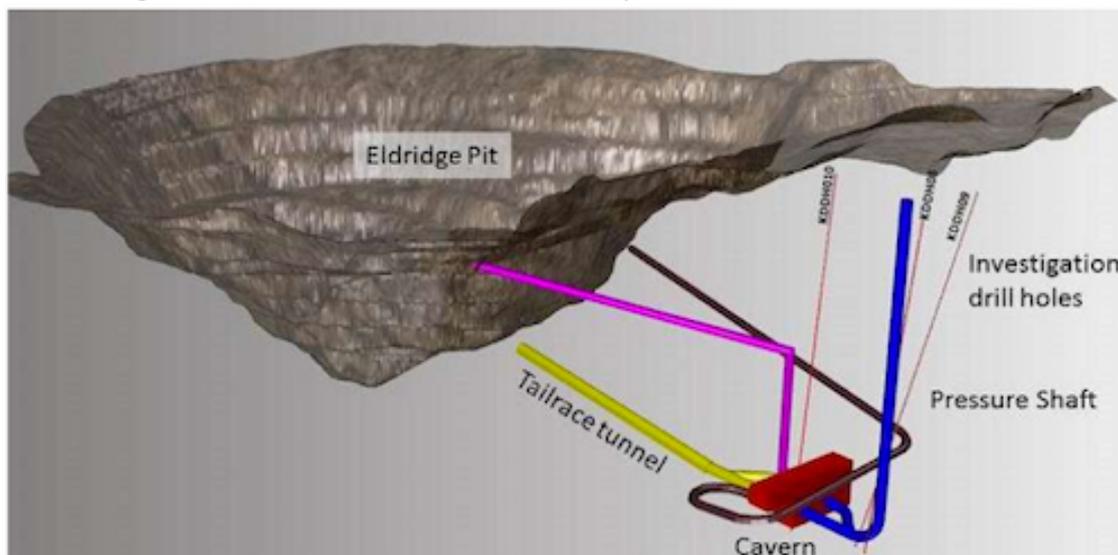
that would pair well with the introduction of more wind and solar power into the NEM.

It has the potential to generate rapid response, flexible power for delivery into the National Electricity Market (NEM).

Genex said last week that power and water consulting firm Entura, along with project partner HydroChina, had produced a new design (see image above) with the potential to increase the plant's head and peaking generation capacity, beating earlier expectations.

In a statement to the ASX on Thursday, Genex said the design layout of the Project had evolved substantially since the pre-feasibility study (PFS) concept was initially identified.

The new "optimal" design proposes a "Turkey's Nest" shallow dam design for the upper reservoir, which would incorporate a number of strategic advantages, and remove a number of previous constraints.



"Most significantly," the ASX report says, the design enables a significant increase in the installed capacity of the project, from the initial 330 MW to up to 450MW.

"Clever thinking and commercial focus has delivered an optimal design solution to maximise the potential of our project," said Genex managing director Michael Addison.

“The new design provides the lowest cost per MW of installed capacity and presents the lowest operating and environmental risk.”

Project Director and Principal Consultant, Civil Engineering at Entura, Richard Herweynen, said significant studies and investigations have been undertaken over the past months to provide confidence around this solution.

“Our new design, which provides for a low turkey’s nest dam design for the upper reservoir located on the top of an old waste rock dump, was developed through a detailed options assessment and optimisation process,” he explained.

Entura has worked with clients in more than 30 countries over the past few decades – including India, Laos, Malaysia, Papua New Guinea, South Africa and Tajikistan – assisting with developing, operating and maintaining hydropower assets of all sizes.