

Battery of the Nation – Pumped Hydro Energy Storage Projects

Prefeasibility Studies
Summary Report –
Executive Summary

August 2019



Hydro Tasmania Standard			
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		Document owner:	Nick West
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1. Executive summary

Hydro Tasmania has completed prefeasibility studies into fourteen potential Tasmanian pumped hydro energy storage projects, as part of the *Battery of the Nation* initiative. The primary objective of the prefeasibility studies was to identify 2500 MW of pumped hydro capacity. This objective has been met and exceeded. Six projects have been identified that are suitable to progress to feasibility studies with a total installed capacity of 3400MW.

This activity received funding from the Australian Renewable Energy Agency (ARENA) as part of its Advancing Renewables Program.

The preceding concept study recommended sites for prefeasibility studies. Early in the prefeasibility stage, a preliminary assessment of potential sites was undertaken. This assessment led to groupings of potential sites based on a multi-criteria analysis. The multi-criteria analysis ranked sites using a number of technical, environmental, social and commercial criteria. The result of the analysis led to the 14 project options being divided into four groups based on three broad criteria:

- they are of sufficient scale to support the *Battery of the Nation* objectives
- they are relatively low cost (in \$/MW) and have a positive net present value (NPV) under a number of plausible market scenarios
- they balance risks across technical complexity, environmental and social risks and impacts on existing system operations.

The status of the groupings was verified through the remainder of the prefeasibility studies and these groups are summarised below. The groupings inform a staged approach to the prioritisation of feasibility studies in the next stage.

Group 1 projects

Three sites (Lake Cethana, Lake Rowallan and Tribute pumped hydro energy storage projects) were identified as the most promising sites based on multi-criteria analysis. Their status has been verified through the remainder of the prefeasibility studies and it is recommended that these three should proceed to feasibility studies.

Group 2 projects

Based on prefeasibility assessment, a further three sites are considered suitable to proceed to feasibility studies at the appropriate time, including the Margaret–Burbury, Parangana and Poatina sites. These projects are of sufficient scale to support the *Battery of the Nation* objectives and relatively low cost. However, there is a higher level of uncertainty at a prefeasibility level of assessment relating to technical complexity, environmental and/or system operation risks compared to Group 1 projects.

Group 3 projects

A further two sites – Lake Echo and Wilmot – are considered suitable to proceed to feasibility studies, but have higher overall costs. This makes them lower priorities for future assessment.

Group 4 projects

Six of the 14 identified projects are not considered suitable to progress to feasibility studies, due to a range of factors, including the smaller size of the projects, difficulty in accessing sufficient water depth in lower reservoirs, or no acceptable locations available for construction of an upper reservoir within environmental and other considerations.

In addition to this shortlist of 14 sites, other potential pumped hydro project sites in Tasmania do exist, but have not been assessed beyond concept stage to date.

The findings from the prefeasibility studies confirm the opportunity for Hydro Tasmania to provide low-cost, new dispatchable capacity through the development of pumped hydro energy storage.