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Submission: Snowy 2.0 - Main Works EIS

Attn:

Date: 6-November-2019
Ref: ADG201911SPH01

Major Projects
NSW Department of Planning, Industry and Environment
GPO Box 39, Sydney NSW 2001
320 Pitt St, Sydney 2000
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Dear Sir/Madam

Re: Snowy 2.0 Pumped Hydro EIS (Application Number SSI-9687, EPBC ID Number 2018/8322)

Submission by David Gray, with a background as a Mining Engineer with a long-standing interest in pumped hydro from both a final void mine planning perspective and more generally as an enabler to decarbonising the energy sector.

Conceptually we view Snowy Hydro 2.0 as a necessity, providing significant energy storage and re-generation capacity which can be built within the timeframes needed to support the continued transitioning of the electricity sector (ie +40 GWh storage, 2 GW generation, <5yrs to commission).

Although the project is considered a necessity, delivering in terms of both scale and timing, there remains questions:

- Has the project has been optimally sized, maximising benefit and minimise cumulative environmental impact?
- Can the environmental impact on the Kosciusko National Park be reduced?

The key question is driven by the apparent disproportionate storage to generation ratio of the project and the apparent lack of options considered in the EIS and preceding Feasibility Study. We urge also that any issues from this or other submissions, should be addressed as a matter of urgency, given the need for rapid integration of +2 GW of storage generation (dispatchable power) into the national grid.

Considering key points in further detail:

It is not clear that the project has been optimised. The projects 2.0 GW nameplate generation capacity being viewed as small in comparison to its 350 GWh storage capacity. Although there is questions around the ability of the system to utilise it's maximum 350 GWh capacity in practice, even if half the capacity could be utilised, there would still be sufficient capacity to support generation capacity considerably larger than 2.0 GW. For example, 4.0 GW could be supported with 40 hrs of storage. 2.66 GW capacity has been noted by way of example in the 2017 Feasibility Study, without further discussion, discounting that option.

- Although "Station Output" is considered in Chapter Five of the "Snowy 2.0 Study Report – Option and valuation improvement" report 2017, optimisation of output has not been considered.

- The Snowy 2.0 “Appendix-C-Project-development-Options-and-Alternatives” examines development option for a 2.0 GW installation without considering the larger question of whether 2.0 GW is the optimal generation option
- It is acknowledged that some financial optimisation may be contained in the EIS appendices, though we have no visibility of this as it remains confidential. We consider it essential that optimisation considers environmental impacts as well as financial considerations, in view of:
    - Available storage capacity can support much greater generation capacities
    - Greater generation capacities may be supported by minimal increases in environmental impacts (Sect 4.2.2, Snowy 2.0 Feasibility Study, 2017)
    - Much greater “generation from storage” capacity will be required in the coming decades as coal fired generation is retired. Snowy 2.0 is of equivalent capacity to replace the retiring 2.0 GW Liddell station in 2022, though there are an additional 10.0 GW of retiring capacity that requires replacement by 2035. A proportion of the 10.0 GW of capacity is likely to need to be provided for by pumped hydro in combination with other technologies
    - If greater generation capacity from Snowy 2.0 is not provided, there will be environmental impacts from other pumped hydro installations required to provide the capacity shortfall. The incremental environmental impact from increased alternate generation capacity should be traded off against, potentially minimal, incremental environmental impacts from equivalent increased capacity from Snowy 2.0

The impact of the projects Round-Trip Efficiency (RTE) should be detailed and further discussed. It is apparent that the system RTE could be as low as 75% given the less than ideal (27km) tunnel requirement to link the reservoirs, while typical pumped hydro RTE is often quoted at 80%. In effect, the system will consume 1/3 more power than it generates, with a potential for alternate (or subsequent competing) installations to have a higher RTE and out-compete Snowy 2.0, in future, in terms of attracting storage energy. This may be considered in the confidential modelling and if so, it’s consideration should be noted as well as the project’s RTE.

Although it is accepted that the environmental impact of the project will be “relatively” small, given the use of existing storages, there remains a question as to whether it can be further minimised, particularly in view of the impact being on a National Park.

- Of note is the plan to emplace of tunnelling spoil, in respective reservoirs, with a significant exposed area designed to sit between MOL and FSL. Has consideration been given to design of emplacements extending above FSL, providing a smaller footprint, consuming less storage volume and avoiding the risk of cycling water levels (repeatedly exposing and inundating a significant exposed spoil area)
- We encourage consideration of minimising environmental impact with well designed, rehabilitated spoil emplacement options extending above FSL, noting that options that cap spoil just below FSL are likely to be exposed a significant proportion of the time and provide less options for rehabilitation

In summary, we support the proposal in principle, though question whether the system capacity has been optimised, there-by providing maximum benefit for the environmental impact that will be incurred. We further question whether the project environmental impact can be further reduced.