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Via email: team@marinuslink.com.au

Dear TasNetworks,

MarinusLink Supplementary Analysis Report

TasNetworks' release of the Supplementary Analysis Report is an important contribution to discussion of the benefits and costs of Project Marinus. As the Report states, stakeholder feedback on the initial Project Assessment Draft Report (PADR) highlighted the importance of aligning scenarios, inputs and assumptions with AEMO's Integrated System Plan (ISP). The release of this supplementary analysis report will allow the Project Marinus RIT-T to make the strongest possible contribution to ongoing NEM-wide planning and analysis. The accompanying report provided by Ernst & Young is comprehensive and affords stakeholders the opportunity to closely examine the technical details of the underpinning modelling.

Key Points

- As the Supplementary Analysis notes, **the Federal Government remains strongly committed to Project Marinus** announcing in the October 2020 Budget that, *"further funding will be made available to support Marinus Link's activities to achieve a final investment decision by 2024. This is in addition to the \$56 million in grant funding that the Australian Government has already provided to the Tasmanian Government to progress early Design and Approvals phase activities."* The Federal Government has also included Marinus Link on a priority list for fast-track approvals processes.

- The **passing of the Tasmanian Renewable Energy Target (TRET) legislation through the Tasmanian Parliament** is an important factor in TasNetworks' analysis and for understanding the viability and importance of Project Marinus.
- As endorsed by AEMO's 2020 Final ISP, **Project Marinus should commence early works for 1500MW of interconnection as soon as possible**. This will ensure that all feasible commissioning dates remain available to the market.
- TasNetworks should **continue its Design and Approval work** and continue engaging with the Federal and Tasmanian Governments to allow an investment decision to be made by 2023/24.
 - o Given the dependence of Pumped Hydro Energy Storage (PHES) investment and the newly legislated TRET on Project Marinus, it is **critical that TasNetworks continue to progress an accelerated timeframe preserving the earliest feasible delivery date of 2027**.
- **Hydro Tasmania supports the use of modelling scenarios in ISP and RIT-T analysis.** Testing investments against a range of future outcomes and assumptions supports more robust regulatory tests and system planning. We note that AEMO run thorough stakeholder engagement sessions as part of their ISP processes with the aim of capturing an appropriate breadth and balance of scenarios and inputs.
 - o While overall system planning may remain relatively consistent between scenarios, it creates stark choices for individual projects. For investments such as MarinusLink it is not only the timing of commissioning that varies between scenarios, but also in some cases whether these assets are part of a least cost future transmission mix.
 - o We note that in AEMO's 2020 ISP, *"Marinus Link's first cable is on the least-cost development path in all scenarios except for Slow Change"*. However, the timing and viability of the second cable varies between scenarios.
 - o Given the substantial differences between the outcomes of scenarios, it is important to continually examine the probability of different scenarios eventuating. While termed the 'central' scenario, there is a weight of evidence that the Australian energy mix is transitioning at a faster pace than this. It is clear that Australian States and Territories are committing to ambitious decarbonisation goals and net-zero emission timeframes. This in combination with actual and forecasts renewable energy development data from the Clean Energy Regulator suggests that of the scenarios examined in the 2020 ISP, **the Australian energy sector may already be in a 'Step Change' scenario**. This has implications for the timing of several key

ISP actionable projects including Project Marinus and the importance of starting strategic projects early.

- The AER has done considerable work on rules to 'Action the ISP'. Hydro Tasmania's understanding is that **where projects are 'Actionable ISP Projects' they should be included in individual project's RIT-T analysis**. Given the interrelated nature of NEM transmission projects (mainly interconnectors), a key question facing any analysis is what energy resources and transmission infrastructure to include as 'committed'. Our reading of the TasNetworks analysis is that the modelling has included some development of interconnection that are not yet actionable ISP projects. Hydro Tasmania supports further consideration of which future investments to include in future TasNetworks analysis.

In conclusion, Hydro Tasmania strongly agrees that customers' best interests will be served by continuing to retain the flexibility for the earliest possible delivery of Project Marinus. This will be critical if the NEM continues to see renewable energy deployment at current rates. Continued flexibility to deliver to this timeline will capture the real 'option value' associated with enabling early delivery of the project.

Hydro Tasmania hopes that these key points and additional responses provided in Attachment A add to the valuable work undertaken by TasNetworks. For further information or follow-up, please contact Colin Wain (colin.wain@hydro.com.au).

Yours sincerely



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Executive GM Strategic Enablement

Attachment A – Additional responses to the Supplementary Analysis Report

Project Marinus and the Battery of the National projects are key elements of the Federal Government’s Energy and Climate Policy.

- The **Federal Government’s *Technology Investment Roadmap: First Low Emissions Technology Statement***, released September 2020, names Energy Storage as a Priority Low Emissions Technology. Further, it sets a Priority Technology Stretch Goal for energy storage of **“electricity from storage for firming under \$100 per MWh”**. As noted in the Technology Statement, pumped hydro will initially be the lowest cost storage option. Critical to achievement of this stretch goal (price target) is access to the best possible available resources. In the case of pumped hydro, this will be in Tasmania.
 - o Further, while the Federal Government’s ‘stretch goal’ is centred around new energy storage through pumped hydro and other resources, the cheapest long-duration energy storage will come from redeveloping and repurposing existing hydropower assets. Hydro Tasmania refers to this as the ‘latent capacity’ in the Tasmanian hydropower system and is best evidenced from redevelopment options and modernisation of existing stations such as Tarraleah Power Station and other Tasmanian power schemes that can maximise flexibility, capacity and energy storage.
- Hydro Tasmania strongly believes that a **portfolio of energy storage technologies** and durations will be needed for the future high renewables NEM. This includes a **critical role for longer-duration storage such as pumped hydro to underpin system resilience**. We have published a number of white papers on this issue at: <https://www.hydro.com.au/clean-energy/battery-of-the-nation/future-state>

Hydro Tasmania’s Pumped Hydro Energy Storage (PHES) feasibility

- Throughout 2020, **Hydro Tasmania has been undertaking feasibility into three PHES locations in Tasmania**. The outcome of this work is that we now have a significantly greater knowledge of the geological, social and environmental parameters of the potential PHES sites (than when providing our response to the Project Marinus PADR). Hydro Tasmania has been examining pumped hydro sites that are expected to have low social and environmental sensitivity. This is assisted in Tasmania through the use of existing reservoirs and proximity to established transmission and transport infrastructure.

- Progress of feasibility studies has allowed additional confidence in the cost estimates of PHES in Tasmania as well as a greater indication of the capacity and storage options available. Hydro Tasmania expects to announce a preferred ‘first-mover’ PHES site in coming weeks.
 - o **Our project cost estimate for the preferred project is \$1.6-\$2.0m/MW (in 2020\$). This applies to a 750MW installation with around 20 hours of storage duration and includes contingency costs.**
 - o Low project costs are made possible through accessing sites that would use short tunnels and existing infrastructure. Cost estimates are markedly lower than the cost of developing an equivalent site on the Australian mainland which reinforces and substantiates the origin of much of the market benefits found through the cost/benefit modelling done for TasNetworks.

- Hydro Tasmania **agrees with the TasNetworks decision to adopt the new ISP Rules** in relation to MarinusLink following the release of the Project Assessment Conclusions Report (PACR) in the first half of 2021. As stated, this can allow the project to be delivered in a staged manner and retain optionality. The use of the new ISP rules will also enable the application of specific scenarios and probabilities relevant to Project Marinus as nominated by AEMO.

- **Marinus Link is expected to provide security and reliability benefits to the mainland NEM** as the system continues to rapidly transition to a high proportion of renewable energy. Recently, load relief factors have changed in Tasmania, potentially increasing local FCAS requirements. This phenomenon could occur in other regions of the NEM and to this extent, **Hydro Tasmania suggests that TasNetworks update FCAS benefits analysis** to consider such possible changes to NEM operations.

Comparison of technology solutions and importance to a least cost energy mix

- The discussion in the Supplementary Analysis Report on the **cost/benefits of Project Marinus against battery technologies is a constructive addition to this debate**. In particular, it is prudent to model accelerated cost depreciations of other technologies to ensure that significant infrastructure investment is robust to a range of future possibilities. As the analysis notes, even with very low battery costs, the *“net market benefits [are] only negatively impacted by \$40 million”*. This demonstrates that the market need for long duration storage will not be easily

filled by other technologies and provides a grounding for investment in both transmission and PHES.

- To ensure modelling provides **even and fair comparison between technology options and development pathways**, the treatment of critical parameters should be the same wherever possible. An example of this is the inclusion of contingency costs. It is not clear that all technologies are being treated equally in this regard, as the assumed contingency with respect to pumped hydro projects is higher than for other technologies such as batteries.
- Section 8.4 of the Supplementary Analysis Report provides a strong assessment of the ***'Economic comparison between batteries and long duration pumped hydro'***. As noted, the present value cost of Tasmanian pumped hydro is less than half that of a comparable battery installation cost.
- **Tasmanian wind resources are expected to have a higher capacity factor** output than mainland options ([AEMO's 2020 Inputs & Assumptions Workbook](#)). In addition, Tasmanian wind output shows less correlation with the mainland than between other states and will therefore add system resilience and efficiency through access to distinct weather patterns and resources. Project Marinus will be essential to unlock this resource diversity and high-class wind resource.