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Submitted electronically via projectmarinus@tasnetworks.com.au

Dear Stephen

Project Specification Consultation Report – Project Marinus

Thank you for the opportunity to comment on the *Project Specification Consultation Report* (PSCR) assessing the case for further interconnection between Tasmania and Victoria. Hydro Tasmania commends TasNetworks for their consultative and transparent approach in developing this component of the Regulatory Investment Test – Transmission (RIT-T) for Project Marinus. The research and analysis undertaken by TasNetworks has provided extensive insight into the costs and benefits associated with developing “MarinusLink”.

The National Energy Market (NEM) is undergoing unprecedented change through the rapid transformation of its generation mix. As ageing thermal generators reach the end of their economic life, these assets are predominantly being replaced with low-cost, variable renewable energy (VRE) sources. This transition is bringing forth a number of challenges and opportunities for the NEM, and has been the subject of significant industry debate. Reviews have been conducted by industry market bodies to ensure that the NEM’s investment framework is appropriately calibrated to deliver the necessary investment in energy, dispatchable capacity and transmission assets for the future energy system.

Hydro Tasmania believes that a 1,200 MW high-voltage direct current (HVDC) interconnector can capitalise on economies of scale and enable the realisation of a number of opportunities for Tasmania, Victoria and other NEM states. A larger interconnector will provide the best opportunities for the NEM to manage the transition of the energy sector and to efficiently utilise the energy resources in both states. Further, a larger interconnector will allow for the NEM to better realise the benefits identified throughout this submission, in addition to those already identified within the PSCR.

Since the release of the PSCR, the Energy Security Board (ESB) has been requested to develop advice on converting the Australian Energy Market Operator's (AEMO) *Integrated System Plan* (ISP) into an 'actionable' plan. This advice will be delivered to the Council of Australian Governments Energy Council (COAG EC) in December 2018. The inaugural ISP identified the need for a more holistic approach to network planning, significant opportunities to harness the value of diverse resources through an increasingly interconnected NEM, and the need for approximately 17 GW of utility-scale storage by 2040. Development of strategically and nationally significant transmission assets will be integral to achieving a least-cost transition of the Australian energy sector. We are confident that MarinusLink can make a strong contribution to meeting the objectives and needs identified in the ISP.

With extensive hydropower assets and world-class wind resources, Tasmania is well-placed to play a substantial role in the transformation of the NEM. Opportunities to amend the operation of the Tasmanian energy system to assist in the NEM's transition are currently being explored via the *Battery of the Nation* initiative. Specifically, *Battery of the Nation* is assessing the technical and economic feasibility of augmenting Tasmania's traditional hydropower fleet (such as increasing the capacity of the Tarraleah hydropower station), as well as developing pumped hydro energy storage (PHES). Hydro Tasmania has identified 14 potential locations for the development of PHES and is currently working to refine this list. The estimated costs of developing PHES at these locations are as low as \$1.1 million per MW, with the majority costing \$1.5 million per MW or less. These figures are highly cost-competitive (as part of a national solution), even when factoring in the cost of further interconnection. When comparing these costings with publically available data on other PHES opportunities in Australia, it is evident that the Tasmanian PHES being assessed via the *Battery of the Nation* program has a substantial advantage.

Hydro Tasmania's view is that the inaugural ISP did not comprehensively depict the unique Tasmanian storage opportunities identified through the *Battery of the Nation* project. However, we are pleased to note that AEMO have been proactively collaborating with Hydro Tasmania, TasNetworks and other Tasmanian stakeholders to ensure these opportunities are fully captured in future iterations of the ISP. With this ongoing collaboration, we are confident that Tasmanian PHES can demonstrate its credentials as a low-cost and efficient contributor to the NEM's future energy storage and dispatchable capacity needs.

AEMO's Electricity Statement of Opportunities (ESOO) 2018 highlights that there is a forecast risk of the reliability standard (0.002% unserved energy) being exceeded in Victoria across the forecast period to 2027-28.¹ Enabling increased transfer of energy between the Tasmanian and Victorian regions could make a significant contribution to address these supply shortfall concerns. Interestingly, approximately 40% of the NEM's existing 'flexible' generation (predominantly hydropower assets) are located in Tasmania.² The flexibility and dispatchability of hydropower assets have been proven in numerous contexts. However, due to the historical development of the Tasmanian energy system (prior to Basslink), as well as interconnection limitations, Tasmanian hydropower assets have predominantly been optimised to deliver 'baseload' services to meet Tasmanian demand. With further

¹ AEMO's Electricity Statement of Opportunities 2018, pg. 76.

² For the purpose of defining "flexible generation", this relates to open cycle gas, diesel, long-duration hydro, and biofuel assets connected in the NEM.

interconnection, Hydro Tasmania can amend the optimisation of the Tasmanian energy system to facilitate an increased contribution to meet the energy needs of the Victorian region. Hydro Tasmania considers that the development of MarinusLink will prove to be a highly cost-efficient option to address Victoria's forecast supply adequacy concerns, and we consider it vital that the MarinusLink RIT-T process can fully capture these potential NEM-benefits.

From a customer perspective, there are likely to be benefits in strategically managing the closure of existing plant. The level of uncertainty regarding the timing of station closures, the long lead times associated with the implementation of large scale transmission investments and the potentially higher cost of short term solutions provide challenges that the market may not easily or efficiently solve. This could be addressed through timely and proactive risk-based investments rather than reactive responses – even if this leads to short periods of excess capacity. Proactive risk management will allow for development of lower cost, but longer lead-time, projects. The long-term benefits of this approach should be explored noting the obvious challenges of commercialising or underwriting additional capacity before it is needed.

In addition to Tasmania's operational wind farms, there are also a significant number of new wind farms in various development stages, or already under construction in Tasmania. It is important to note that the ability for Tasmanian wind proponents to capitalise on Tasmania's extensive wind resources is, in the most part, reliant on the development of further interconnection. Tasmania's wind resources have a high capacity factor and a low correlation with other NEM region. This low correlation makes Tasmania's wind resources highly complementary to those located on mainland Australia. Further, additional wind generation, firming with Tasmanian hydropower could increase the resilience of the mainland grid to the future closure of ageing thermal generation.

Modern HVDC technology can also deliver significant benefits in transferring ancillary services to support and maintain system security in neighbouring regions. Maintaining system security will be an important factor to support an increased penetration of VRE in the Victorian region. The voltage source convertor (VSC) technology being proposed has good AC system fault ride-through. The power electronics that control the asset are also fundamentally similar to electrochemical battery control systems. This means that the HVDC can provide fast frequency response and black start capability, as well as independent active & reactive power control.

The Australian Competition and Consumer Commission's (ACCC) *Restoring Electricity Affordability & Australia's Competitive Advantage* report made numerous recommendations recently to address market concentration, and highlighted this as an integral factor to facilitating and enhancing market competition in the NEM. Developing further interconnection would more seamlessly link the Victorian and Tasmanian regions of the NEM. Hydro Tasmania believes that MarinusLink would bring additional and significant competition benefits to the NEM through facilitating more liquid contract markets. This would ultimately be to the benefit of energy consumers, as the free trade of energy would likely contribute to increasing competition.

Finally, Victorian policy-makers have established targets to achieve significant decarbonisation of the Victorian energy system. These policies are inclusive of, but not limited to:

1. *The Victorian Renewable Energy Target* (VRET) – The VRET is incentivising the uptake of VRE to achieve 25% of their energy generation being delivered by renewable sources by 2020, and 40% by 2025; and

2. *The Solar Homes Program* – This program will endeavour to incentivise the installation of solar panels on 650,000 homes across a ten year period.

Hydro Tasmania contends that these distinct yet interrelated policy objectives strongly support the business case for MarinusLink. Specifically, we believe there will be a heightened need for Victoria to have access to flexible and fast-ramping capacity. This will be particularly important as the penetration of solar increases in the Victorian region, which will require access to resources that can meet Victorian peak demand in the evening when solar output is rapidly declining. It is integral that MarinusLink, in conjunction with Tasmania’s generation assets, are appropriately recognised for the role they can play in meeting these policy objectives.

Noting these significant benefits to the Victorian region, as well as the flow-on benefits to other regions in the NEM, Hydro Tasmania considers that it would be prudent to reassess whether the current cost-allocation method is appropriately equitable or remains fit-for-purpose. As noted in our response to the Australian Energy Market Commission’s (AEMC) *Coordination of Generation and Transmission Investment* (CoGaTI) review, Hydro Tasmania considers that the allocation of interconnector transmission costs will likely require rethinking. The benefit to consumers of further interconnection and a more interconnected NEM will extend beyond the Tasmanian and Victorian regions. Price outcomes for customers within regions should reflect the market benefits that an investment provides to that region. Without an appropriate cost-allocation methodology, important interconnector investment decisions may be delayed.

Hydro Tasmania looks forward to continuing engagement with TasNetworks on the progression of the Project Marinus RIT-T process. Please contact Prajit Parameswar (03 6230 5471, prajit.parameswar@hydro.com.au) to discuss any aspects of this submission further.

Further comments on consultation questions raised in the PSCR are provided in Attachment A.

Yours sincerely



Steve Davy
Chief Executive Officer

Attachment I – Hydro Tasmania’s response to PSCR questions

1. Are there any other benefits that further interconnection will provide and/or are there benefits that we have presented that you disagree with?

Existing Tasmanian assets and operations

- The Project Specification Consultation Report (PSCR) for Project Marinus was released at a similar time to AEMO’s Integrated System Plan (ISP); The ISP identified MarinusLink as a Group 2 project, but noted that further work was required to better understand the opportunity. Hydro Tasmania is preparing to release a white paper on the latent and low cost options to increase capacity and flexibility that would be available with further interconnection. This research will feed into the ISP, but will also be complementary to the progression of TasNetworks RIT-T process.
- The Tamar Valley Power Station (205MW) combined cycle gas turbine is available for service on 3-months’ notice. This is consistent with AEMO reporting³ – although it is worth noting that it was treated as withdrawn in the ISP.

Basslink operations

- Previous modelling and analysis has shown that when Basslink is unavailable, costs and unserved energy on the mainland rise substantially. MarinusLink would have an insurance value in terms of interconnector redundancy. This could be quantified in terms of modelled benefits of cost reduction and reduction in unserved energy. It would also provide benefits in terms of market confidence that may be more difficult to quantify.

Ancillary service

- MarinusLink would allow the beneficial sharing of ancillary services between Tasmania and the mainland. The power electronics technology that operates the proposed HVDC link is very similar to that which operates electrochemical batteries and can offer many of the same services.
 - Currently Basslink is not able to transport FCAS services when: reversing, operating close to its limits (export or import), or when out-of-service.
 - The costs of FCAS and requirements in the Tasmanian system are both publicly available and may be reduced with the addition of further interconnection.
 - Tasmania presently provides 10-20% of the raise services in the NEM.⁴ When Basslink is out-of-service it has been observed that the cost of raise services increases substantially.

2. Do you agree with our assumptions and our proposed approach to analysing the net market benefits under the RIT-T?

³ <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Generation-information>

⁴ AEMO’s Quarterly Energy Dynamics – Q2, 2018 report, pg. 14

Other interconnection

- ElectraNet have recently released their Project Assessment Draft Report assessing the benefits of the proposed SA-NSW Riverlink interconnector. This assessment is showing a strongly positive RIT-T outcome. Riverlink should be included in the base case for Project Marinus and in place before the commissioning of MarinusLink.

Thermal generator retirements

- MarinusLink provides much stronger access to a large amount of cost-effective flexible generation – a good insurance against early thermal generation retirements. It is worth noting that the limited notice to the market and closure of the Hazelwood Power Station significantly increased the average Victorian price and changed Victoria from the largest exporter of energy to a net importer. It is important that the benefits (avoided costs) of having additional capacity to safeguard against the retirements of thermal generation are appropriately captured.

Pumped hydro build out

- The base case ISP includes substantial storage growth in a short period of time. There are questions about the feasibility and integrity of this analysis. We understand that AEMO will be examining these assumptions in further detail in the next iteration of the ISP. Where this detail has been updated, we encourage TasNetworks analysis to incorporate this new information.

3. Do you agree that we have identified the appropriate credible options to address the identified need?

Options identification

- We need to confirm that the existing network is fully utilised before suggesting new investments. E.g. Wind in the central highlands in Tasmania may result in a lower overall cost than wind plus transmission into the north-west of the state.
- The need to upgrade transmission is expected to depend heavily on the preferred routes and landing points. There may be options in both Victoria and Tasmania that may minimise the on-land transmission requirements by landing closer to load centres or well-connected locations.
- We need to ensure that any upgrades which are deferred or no longer required are valued as a benefit to this project. E.g. Going into the heart of Melbourne may defer a very expensive local upgrade – possibly even an undersea cable, much like in Sydney.

Timing

- The PSCR states that 2025 is the earliest commissioning date that would be possible. With a faster RIT-T process and financial investment decision through some kind of accelerated or de-risked approach, it is technically possible to enter earlier. It may be valuable to enter the market earlier to better align with the retirement of Liddell Power Station. This may prevent the need for more expensive generation or firming options on the mainland.