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Submitted via email: regulatory.consultation@transgrid.com.au.

November 18, 2021

Dear Ms Kulbacka,

Project Assessment Draft Report Broken Hill reliability project

Energy Estate welcomes the opportunity to respond to TransGrid's RIT-T – Revised Project Assessment Draft Report (PADR) for Maintaining Reliable Supply to Broken Hill (published October 6, 2021).

Energy Estate is the co-developer of the Broken Hill Advanced Compressed Air Energy long duration storage project, in partnership with Hydrostor.

Background on Energy Estate

Energy Estate is a developer and accelerator and provides commercial, technical and strategic advisory services. Energy Estate's mission is to accelerate the transformation of the energy sector and decarbonisation of industry. We are an Australian based and owned company.

Our team has decades of experience and knowledge across the energy value chain coupled with broad and deep relationships globally with developers, traders, utilities, investors, contractors and suppliers, regulatory bodies, NGOs and other stakeholders. We have a particular focus on repurposing of industrial and mining sites such as the Muswellbrook coal mine in the Hunter Valley where we have partnered with Idemitsu to develop the Muswellbrook Energy, Training and Industrial Precinct.

We have successfully developed large scale renewable energy projects such as 120MW Bomen Solar Farm in NSW (in operation) and 300MW Rodds Bay Solar Farm in QLD (construction scheduled to commence Q4 2021).

Our pipeline of projects includes:

- **Walcha Energy Project, NSW:** The largest renewable energy project within the NEM which combines up to 4GW of wind and solar generation in the New England REZ with Dungowan PHES, large scale BESS and a private transmission line from Walcha to Liddell
- **Central Queensland Power, NSW:** A 3GW portfolio of wind, solar and storage projects located around the industrial hub of Gladstone in Queensland which is being co-developed with RES
- **Hydrogen Hydrogen Network, NSW:** Energy Estate is the developer of H2N, a large-scale hydrogen production, transportation and export project, developed in collaboration with key hydrogen users and exporters. Creating Australia's first Hydrogen Valley, its aim is to help unlock the renewable energy resources of the Central West, New England and Hunter Valley/Central Coast Renewable Energy Zones in New South Wales, to produce "green" hydrogen and associated green feedstock
- **Abbot Point Clean Energy Hub, QLD:** Abbot Point Clean Energy Hub is developed by Energy Estate and seeks to leverage the unique features of the Abbot Point Port to create a large hydrogen production and export project with extensive behind the meter solar PV and wind farm. This includes dedicated transmission from the wind and solar farms to the hub
- **Offshore wind:** Energy Estate has partnered with BlueFloat Energy to develop a portfolio of offshore wind farms in NSW, Vic and SA and New Zealand.

We have a particular focus on the development of long duration storage, and we are currently developing and advising on PHES, saltwater PHES, iron flow BESS, CSP, other thermal storage options and hydrogen storage such as LAVO and cavern-based solutions. I was on the original expert working group for the first edition of the Integrated System Plan.

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Broken Hill Long Duration Storage solution

Hydrostor's A-CAES technology is based on well-proven compressed air long duration storage technology. The viability of compressed air storage solutions has been validated by analysis by leading experts such as NREL and the Energy Estate technical team (x-Arup, KBR, John Holland) have undertaken our own extensive due diligence and assessment of the technology and its applicability to the Broken Hill site. Energy Estate has committed substantial resources to the development of the Broken Hill A-CAES project after becoming comfortable that it is the right technology for the Broken Hill consumers.

Energy Estate strongly believes that long duration storage a critical missing piece of Australia's National Electricity Market's (NEM) transition to net zero emissions while maintaining energy security and affordability. This is why we are developing a range of different long duration options and accelerating different technologies. We like the A-CAES solution because it is simple and can reliable long duration energy with a long asset life. In addition, we believe that it is solution which is well suited to Broken Hill and other parts of regional Australia where PHES is not a feasible option because of water pressures and/or unsuitable topography or geology.

Our solution for maintaining a reliable supply to Broken Hill involves the repurposing of an economically end of life mine located in Broken Hill, providing additional benefits to the region in terms of jobs and economic growth. The analysis prepared by ACIL Allen forecasts that the investment of ~\$500m in the Broken Hill region will create at least 750 direct and indirect jobs during construction and ongoing contribution of more than \$10m to the local economy for 40+ years operational lifetime. We seek to align all our projects to achievement of the Sustainable Development Goals and regional economic development. A key driver for Energy Estate is supporting the communities in which we operate and delivering enduring outcomes for all stakeholders including landowners, workers and indigenous/First Nations people. We believe in the reindustrialisation of industrial communities such as Broken Hill with low-carbon solutions and we are developing clean industrial precincts, manufacturing and green hydrogen/e-fuels projects in traditional industrial regions to support their diversification and resilience.

The Broken Hill A-CAES solution effectively establishes a large mini grid at Broken Hill that is connected to the NEM and can meet TransGrid's identified reliability concerns at Broken Hill over the long term. The technology chosen can provide services to the NEM which cannot be delivered by the existing diesel gas turbines. It is important to understand that the existing diesel generation cannot help to stabilise the local grid as it cannot run while the TransGrid system is connected at Broken Hill. The A-CAES solution will have a very significant positive impact on the well publicised MLF and curtailment issues facing the wind and solar farms currently operating in Broken Hill. The additional of a large-scale energy storage solution of this type at Broken Hill is also forecast to benefit many other generators in the West Murray Zone (and this was confirmed by analysis conducted for us by ACIL Allen). We are excited about the opportunities which will be unlocked to develop new renewable energy generation in Broken Hill due to the firming options which will be delivered by the A-CAES solution and deliver low-cost clean energy to new users such as Cobalt Blue and Hawson's Iron Ore.

Updated RIT-T guidelines

As highlighted in Hydrostor's submission, it is unclear to us why AER required TransGrid to adopt the 2020 RIT-T Guidelines when TransGrid released its PSCR in November 2019, especially as it has resulted in a different preferred option.

Long term operation of fossil fuel generation inconsistent with Transgrid Vision and all levels of Australian Government policy

TransGrid has noted its concerns in the revised PADR that "prolonging the use of fossil fuel technologies is inconsistent with Broken Hill's City Council's Sustainability Strategy and the general transition of the electricity sector to low emission technologies."

We believe that this concern does not reflect the reality of the current environment and the direction of energy markets in NSW and across Australia. It is inconsistent with NSW Government's Electricity Infrastructure Roadmap, NSW's Net Zero Plan, TransGrid's recently released vision, AER's commitment to the newly launched international Regulatory Energy Transition Accelerator and the Sustainability Strategy published by Broken Hill Council.

We agree that it is sensible that the diesel generators continue to provide an interim network support solution (until the long-term solution will be constructed and operational).

However, these diesel generators are near to the end of their life and we struggle to see how the right regulatory decision in this day and age is to incentivize their operation for decades to come when they will not be able to deliver the outcomes which are sought by consumers and investors let alone allow the Broken Hill region to grow and prosper in a net zero world.

EY Market Benefit Report out of date

EY undertook market modelling for TransGrid to assess the wholesale market benefits, allowed under the RITT guidelines, expected to arise under each of the credible options. The report was produced in August 2020 and was not updated for the revised PADR issued in October 2021.

Since the completion of the EY report there have been numerous material developments in the NEM which are likely to have impacted upon the market modelling. Energy Estate is an active participant in the Australian energy markets and we have received and reviewed updated market modelling from EY and other leading market modelling providers (such as ACIL Allen, Jacobs, Aurora and Baringa) since August 2020. These forecasts have changed materially to incorporate developments such as NSW's legislated Energy Roadmap and Queensland REZs. We have been actively engaged with the development of the 2022 ISP and together with Hydrostor made a submission on A-CAES as part of the IASR.

We expect the draft 2022 ISP to be released in December 2021 will include very material changes from the 2020 ISP and this has been heralded in the updated IASR and today AEMO mentioned in a Clean Energy Council presentation that significant additional volumes of long duration storage will be required in the coming years.

Diesel not a solution for consumers

The diesel-fired turbines in Broken Hill are 40 years old and we submit are not suitable to provide a long-term solution to consumers at the end of this line. Our reasons for this submission include:

- If the transmission line goes down mines are instructed by Essential Energy to reduce/curtail their demand as the old diesel plant cannot reliably meet total demand. This is clearly a sub-optimal outcome and undermines any opportunity to develop new loads in this region – such as the proposed Cobalt Blue mine – unless they install their own back-up generation. This in turn jeopardises a new mine's ability to raise funding from investors as it increases their capital costs and can result in them failing to meet their stated sustainability goals.
- We understand that the Aurecon report referred to in the revised PADR was conducted on a desktop basis and they were unable to inspect the turbines. We find it surprising that on the basis of a desktop analysis of 40-year-old turbines anyone is able to make an assertion that they will be able to continue operating for decades. In addition, the PADR has assumed that no material expenditure will be required or prudent in order to achieve this stated goal. Our team has decades of experience in relation to the operation of such diesel gensets in multiple markets here and globally. As the owners of such gensets we would not be comfortable making such assumptions and would include appropriate costs and contingencies if we were being required to ensure that such gensets remain available for years to come.

Lost opportunity for new investment – in storage, generation and regional growth

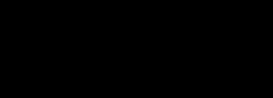
Energy Estate is delighted to have partnered with Hydrostor to bring their exciting technology to the Australian market. We are great believers in the efficacy of the A-CAES solution generally and the strong positive attributes of the Broken Hill site.

We have been working closely with key local stakeholders to understand their energy needs today and into the future. Traditional mining locations such as Broken Hill and Mt Isa need access to low cost reliable and **sustainable** energy sources to attract new investment into the opportunities which will sustain economic activity in such locations into the future. We are committed to developing a large-scale innovative project in Broken Hill. This project will deliver reliable affordable supply to Broken Hill for the long term and allow new economic activity such as additional large-scale wind and/or solar farms and new mines and processing facilities. It will also allow existing mines to transition away from their own back-up diesel generation and allow the Broken Hill community to

move to higher levels of electrification of transport over time. This is consistent with NSW's Net Zero vision and commitment.

Unfortunately, the other option which has now been preferred (on what we believe are questionable grounds) will not deliver any of these outcomes and risks leaving consumers with an uncertain and undesirable outcome.

We hope that this submission is helpful, and we would be happy to expand upon the points made in further detail.

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Simon Currie
Principal, Energy Estate