

NSW South Australia Interconnector Upgrade

1.1. Background

In South Australia, conventional synchronous generation capacity reserves are reducing, with withdrawals of over 1,000 MW announced to occur over the next ten years¹. At the same time, AEMO reports that there are a large number of project proposals for wind generation in South Australia, and installation of rooftop PV continues.

In addition, AEMO's 2016 Electricity Statement of Opportunities (ESOO) anticipates conditions where the available generation is not adequate to meet the demand in South Australia from the end of this decade under the medium and high demand growth scenarios. Under the low demand growth scenario the capacity shortfall is expected in the mid-2020s.

Furthermore, AEMO's 2016 National Transmission Network Development Plan (NTNDP) indicates system security issues in South Australia as a consequence of high penetration of renewable generation, especially rooftop PV. The NTNDP considers:

- Reductions in dispatchable generation associated with high levels of PV and battery storage
- Frequency stability issues as a result of low inertia systems and the importance of interconnection
- Low fault level impacts on protection schemes and voltage stability during disturbances.

An option which could help to manage low reserve conditions as well as the difficulties associated with the high penetration of renewable generation is to improve system diversity by increasing the capacity of interconnections to an adjacent state such as NSW.

ElectraNet has recently commenced investigation of options to increase the interconnection capacity between South Australia and NSW. They are undertaking a RIT-T on the options available to address the needs / opportunities due to energy transformation in South Australia. The Project Specification Consultation Report (PSCR)² identified a number of network options including an interconnection to the NSW South Western region³. According to the PSCR, ElectraNet is considering several configurations for this particular route, one of which is installing a new 275 kV or 330 kV AC transmission line between Robertstown and Buronga (see Figure 1 below), and reinforcing the NSW South West transmission network (west of Wagga).

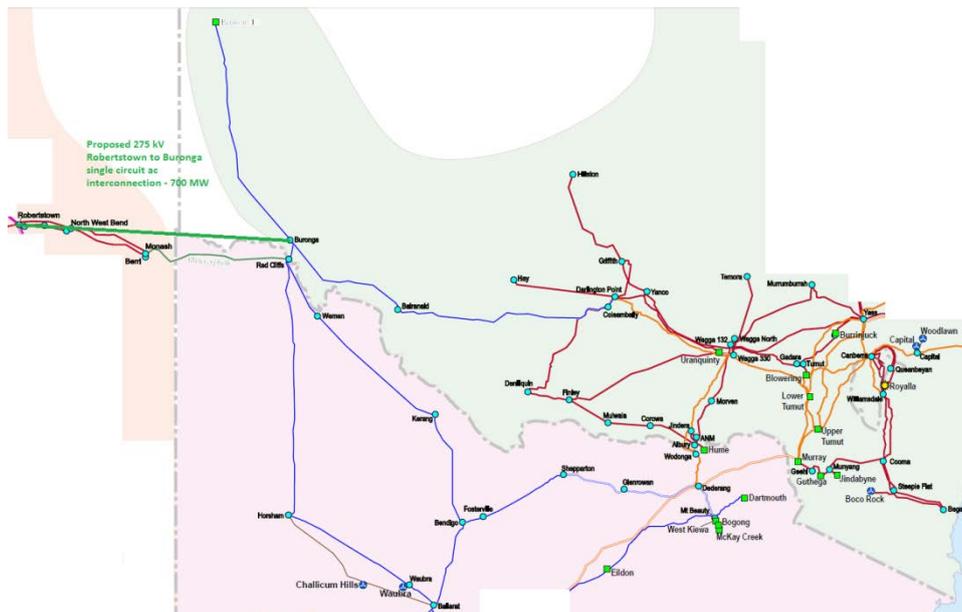
There would be significant market benefits to NSW as well as National Electricity Market (i.e. reduced energy cost by dispatch of lower cost generating plant, increased competition of generators etc.) as a result of reinforcing the NSW South West transmission network.

¹ AEMO 'Generator Information' webpage <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Generation-information>

² ElectraNet 2016, *South Australian Energy Transformation – RIT-T Project Specification Consultation Report* 7 November 2016, available online, < <https://www.electranet.com.au/wp-content/uploads/resource/2016/11/20161107-Report-SouthAustralianEnergyTransformationPSCR-1.pdf>>

³ There are interconnector options to Victoria, Queensland and non-network solutions that would be considered in the RIT-T as well

Figure 1: New interconnector from South Australia to NSW



1.2. Project Description

Given the uncertainties presently around generation developments and state forecast, it is difficult to predict what would be the most opportune time to commit to transmission capacity augmentation. However, it is probable that market benefits may be accrued from 2019 onwards.

TransGrid considers that the project should be accepted as a contingent project for the 2019-2023 regulatory period because of the uncertainty about the trigger events occurring and the scope and cost of the project.

1.3. Trigger Event

The proposed triggers for this contingent project are:

- Successful completion of the RIT-T for the South Australian Energy Transformation, with a NSW to South Australia interconnector identified as the preferred option or part of the preferred option:
 - demonstrating positive net market benefits; and/or
 - addressing system security issues.
- Determination by the AER under clause 5.16.6 of the NER that the proposed investment satisfies the RIT-T.
- TransGrid Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.

The triggers are specific and capable of objective verification, relate to a specific location or locations, and are probable but too uncertain to include the proposed contingent project in the ex-ante capital expenditure forecast.

1.4. Project Requirement

A range of transmission capacity augmentation options were identified and considered to address the needs. However, both the timing and scope of this project, and therefore the transmission requirements, are uncertain at this point in time and depend on the RIT-T conducted by ElectraNet.

TransGrid has identified the following range of options in the event the RIT-T outcome is to connect to the NSW network.

- Low capacity 275 kV single circuit connection from Darlington Point to Robertstown, with X5 line updated to 275 kV;
- Low – medium capacity 330 kV single circuit connection from Darlington Point to Robertstown via Buronga;
- High capacity 330 kV double circuit connection from Darlington Point to Robertstown via Buronga, new single circuit 330 kV line from Darlington Point to Wagga;
- High capacity 330 kV single circuit connection from Darlington Point to Robertstown, bypassing Buronga and Balranald;
- High capacity 330 kV double circuit connection from Darlington Point to Robertstown, bypassing Buronga and Balranald, new 330 kV line from Darlington Point to Wagga;
- Lower capacity 275 kV single circuit connection from Buronga to Robertstown, 220 kV remain from Buronga to Darlington Point.

1.5. Contingent Capital Expenditure

The preferred option will be identified based on the outcome of the ElectraNet RIT-T process. However, the likely preferred option will be the 330 kV double circuit connection from Darlington Point to Robertstown bypassing Buronga. This is based on the higher potential of this option to satisfy the identified need (in particular, addressing supply security issues in South Australia would require a high capacity double circuit interconnection option up to the range of 700 MW to cater for non-credible trip of Heywood interconnector), and increase in transfer capability per capital dollar investment.

Based on the above, total estimated cost will be \$887 million (June 2016) or **\$1,055 million (Nominal)**.

TransGrid notes that, by definition, it is generally not possible to accurately define the scope of a proposed contingent project at this early stage. Therefore, the estimated cost of the project is indicative only. In accordance with clause 6A.8.2(b)(3), a detailed project scope and cost estimate will be required before any amendment to the revenue determination is considered by the AER should the specified trigger event occur during the regulatory period.

Consistent with clause 6A.8.1(b)(iii) of the NER, the range of estimated contingent capital expenditure exceeds the applicable contingent project threshold of the larger of either \$30 million or \$40 million.⁴

This project is subject to a positive net economic benefit confirmed through RIT-T.

1.6. Demonstration of Rules Compliance

TransGrid considers that this project should be accepted as a contingent project for the forthcoming regulatory control period as it complies with the provisions set down in clause 6A.8.1(b) of the NER as:

- (a) it is reasonably required to achieve the capital expenditure objectives as set out in 1.4 above;
- (b) it is not otherwise provided for in the total forecast capital expenditure;
- (c) it reasonably reflects the capital expenditure criteria, noting that the costs are an estimate at this point;
- (d) it exceeds the contingent project threshold as set out in 1.5 above;
- (e) it complies with the requirements of the Submission Guidelines; and
- (f) it has an appropriately defined trigger event as set out in 1.3 above.

⁴ This represents 5% of the value of the maximum allowed revenue for the first year of the regulatory control period.