



# Expanding New South Wales Queensland Transmission Transfer Capacity

Project Specification Consultation Report Summary

November 2018



# The changing energy sector

The energy industry is undergoing significant change. This change, and the pace at which it is occurring, presents both challenges and opportunities for the sector. While we maintain our focus on delivering a safe and reliable supply of electricity, we must also look to the future energy landscape to ensure we continue to meet our customers' needs.

Transmission networks will play a critical role in the power system's transformation, with potential investment in existing networks being driven by the changing generation mix across the National Electricity Market (NEM).

**The Australian Energy Market Operator's (AEMO) inaugural Integrated System Plan (ISP)** provides a blueprint for delivering whole of system energy solutions for customers, and a stronger, more integrated NEM or 'interconnected energy highway'. The ISP highlights the importance of stronger interconnection to support generation diversity and the long-term interests of consumers at the lowest cost.

In line with this, the ISP identifies as a priority the need to provide additional transfer capacity via the Queensland to New South Wales Interconnector (QNI). The ISP recommended several investments, identified as Group 1 transmission developments, to be undertaken as soon as practicable, as well as Group 2 transmission investments in the early to mid 2020s.

TransGrid and Powerlink have undertaken joint planning relating to existing and forecast network congestion between Queensland and New South Wales. A Regulatory Investment Test for Transmission (RIT-T) process to consider investment options on the QNI has also now been initiated. This process includes consideration of the ISP recommended Group 1 and Group 2 investments.



## RIT-T process

Before progressing any significant transmission network investment, we need to be certain that it represents the best value to consumers. The RIT-T process is a cost benefit test applied to network investments forecast to be over \$6 million in expenditure.

This established process is set out in the National Electricity Rules, conducted under guidelines set by the Australian Energy Regulator (AER). The process requires TransGrid and Powerlink to consider and compare a range of network and non-network options to meet the identified need.

The first step in the RIT-T process is the publication of a Project Specification Consultation Report (PSCR). The PSCR investigates and compares a range of options to expand transmission transfer capacity on the QNI, including the projects already identified in AEMO's ISP. It also sets out the requirements for any non-network solutions to address the identified need and calls for parties who may be able to provide these services to come forward with options.

Throughout the RIT-T process, we will consult with a wide range of stakeholders, including consumer advocates, customer representatives, and market participants. A project will pass the RIT-T and proceed to construction if clear market benefits are identified, it represent the best value for consumers and appropriate funding is approved by the AER.

### Project Specification Consultation Report

Consultation Period: Minimum of 12 Weeks.

### Project Assessment Draft Report

Consultation Period: Minimum of 6 Weeks.

Where applicable, a Project Assessment Draft Report exemption may be applied as per the NER cost threshold.

### Project Assessment Conclusion Report

Published as soon as practicable after the Project Assessment Draft Report consultation period has ended.

## NEM and interconnectors

The National Electricity Market operates one of the world's longest interconnected power systems, from Port Douglas in Queensland to South Australia and across to Tasmania. An interconnector is infrastructure that connects the energy transmission systems of two regions, allowing energy to flow between them. The NEM is comprised of five interconnected states and currently includes six interconnectors. The NEM also incorporates 40,000 kilometres of transmission lines and cables, supplying approximately nine million customers.



## Benefits of stronger interconnection

Overall potential benefits of stronger interconnection include:

- An upgrade could open up further access to the NEM for existing and future renewable generation, helping to meet renewable energy targets more efficiently and support the transition to a lower carbon economy.
- There may be benefits to system security, which could further enable renewable generation development in Queensland and NSW.
- There is potential for reduced reliance on localised supplies for reserves, increased transfer capability between regions, and improved competition across regions.
- An upgrade may provide greater capacity for both states to import power to help respond to unplanned network outages and other network events.

## Options for consideration

The PSCR outlines a range of credible options to meet the identified network need. These are detailed below. Combinations of options will also be considered. Note: all figures are indicative only.

### Summary of potential credible options

Option description	Indicative total transfer capacity (MW) <sup>1</sup>		Estimated capex (\$m) <sup>2</sup>	Expected delivery time
	Northward	Southward		
<b>Incremental upgrades to the existing network to increase transfer capacity</b>				
Option 1A – Uprate Liddell to Tamworth Lines and install new dynamic reactive support at Tamworth and Dumaresq and shunt capacitor banks*	770	1,215	142	2–3 years
Option 1B – Uprate Liddell to Tamworth Lines only	535	1,030	28	2–3 years
Option 1C – Install new dynamic reactive support at Tamworth and Dumaresq and shunt capacitor banks	595	1,180	114	2–3 years
Option 1D – Sapphire substation cut into line 8C and a mid-point switching station between Dumaresq and Bulli Creek	535	1,165	45	1–2 years
<b>A new single-circuit line from NSW to Queensland</b>				
Option 2 – 330 kV single circuit between Braemar and Liddell	980	1,865	855	3–4 years
<b>A new double-circuit line from NSW to Queensland</b>				
Option 3A – 330 kV double circuit between Bulli Creek and Armidale*	770	1,593	560	3–4 years
Option 3B – 330 kV double circuit line between Braemar and Liddell via Uralla (and establishment of a Uralla 330 kV substation)	1,530	2,160	1,505	4–5 years
Option 3C – 330 kV double circuit line between Braemar and Uralla, 500 kV single circuits between Uralla and Wollar and between Uralla and Bayswater (and establishment of Uralla 500/330 kV substation)	1,695	2,540	2,039	5–6 years
<b>High Voltage Direct Current options</b>				
Option 4A – HVDC back-to-back	1,195	1,780	825	2–3 years
Option 4B – HVDC between Mudgeeraba and Lismore**	765	1,190	600	3–4 years
Option 4C – HVDC between Western Downs and Bayswater**	2,590	2,990	2,100	4–5 years
<b>A grid-connected battery system</b>				
Option 5 – Battery energy storage system	1,135	1,635	1,000	1–3 years

1. The transfer capacities shown in this table are indicative for one operating state only (daytime, medium demand) and serve to summarise the notional differences between options.

2. All cost estimates are to be treated as indicative at this stage and TransGrid and Powerlink will further refine these estimates as part of the PADR.

\* Option 1A is the ISP recommended Group 1 investment and Option 3A is the ISP recommended Group 2 investment. These are based on the ISP modelling assumptions. The capacity improvements and cost estimates for these options is continuing to be reviewed and will be revised in the PADR.

\*\* Power transfer capacities are defined for both the existing High Voltage Alternative Current (HVAC) interconnector and for the new HVDC option.

## Non-network options

TransGrid and Powerlink are also seeking input on non-network solutions to meet the identified need. Feasible non-network solutions may form part of an overall network strategy to reduce, replace or defer the need for transmission network investment.

As part of this consultation process, we are interested in hearing from non-network providers on potential options available.

## We'd like your feedback

The RIT-T process is focused on engaging the public, key stakeholders, and market participants on the range of options presented. We will be holding public forums in Brisbane and Sydney to provide further information on the PSCR options and seek input and feedback. Details about these forums will be advertised on the TransGrid and Powerlink websites.

TransGrid and Powerlink have also published an accompanying input and methodology consultation paper. This document provides greater detail in relation to the modelling approach and parameters to be adopted in the quantitative RIT-T analysis. This separate report is published to provide an opportunity to obtain earlier stakeholder feedback on the quantitative modelling proposed in the RIT-T process.

TransGrid and Powerlink welcome input and feedback on the PSCR and accompanying consultation paper, which are available at:

[www.powerlink.com.au/rit-t-consultations](http://www.powerlink.com.au/rit-t-consultations)

[www.transgrid.com.au/what-we-do/projects/current-projects/Pages/default.aspx](http://www.transgrid.com.au/what-we-do/projects/current-projects/Pages/default.aspx)

Submissions are due on or before 22 February 2019 and can be provided by emailing [regulatory.consultation@transgrid.com.au](mailto:regulatory.consultation@transgrid.com.au)

If you would like further information please contact TransGrid on (02) 9284 3000 and Powerlink on (07) 3866 1790.

The next stage of the process is preparation of a Project Assessment Draft Report (PADR), which will include full quantitative analysis of network and non-network options. It will also include a summary of submissions received in response to the PSCR, and is expected to be published during 2019.



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