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Summary: Managing risk on Line 86 (Tamworth – Armidale)

RIT-T – Project Specification Consultation Report

Region: Northern New South Wales

Date of issue: 1 December 2021

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Summary

We are applying the Regulatory Investment Test for Transmission (RIT-T) to options for mitigating the risks we, and ultimately our downstream consumers, face as a consequence of the condition of the transmission poles that form part of one of the two key 330 kV lines running between Tamworth and Armidale (Line 86). Specifically, many of the poles on Line 86 have wood rot that, if unaddressed, means they are more susceptible to failure (e.g., during high wind events), which creates significant risks in our network (primarily bushfire risk).

While all of the credible options considered in this assessment mitigate these risks, they also have the potential to provide varying levels of additional wider wholesale market benefits through increasing the network transfer capacity between Tamworth and Armidale, relative to if no action is taken. These expected wider wholesale market benefits are due to the interaction with the nearby Queensland to New South Wales Interconnector (QNI), which is currently being upgraded, as well as the New England Renewable Energy Zone (REZ) around Armidale, which is being progressed under the NSW Government's Electricity Infrastructure Roadmap.

Identified need: managing risks in our network, while providing the greatest overall net benefit to the market

Given the increasing rate of defect issues on Line 86's wooden poles, we consider it is likely that all the structures on Line 86 are exhibiting various forms of decay, which is only expected to worsen over time. In addressing the condition issues on Line 86, an opportunity exists to provide extra capacity in this region of our network and, in doing so, address potential future constraints in the network and facilitate conditions that enable market benefits to be derived, associated with new generation and storage within the NEM.

We have therefore commenced this RIT-T to assess options to address the asset condition issues identified on Line 86, while also providing the greatest overall net benefit to the market over the long-term through increasing the transfer capacity between Armidale and Tamworth, relative to if no action is taken.

We consider this a 'market benefits' driven RIT-T, as opposed to a 'reliability corrective action', and expect the ultimately preferred option to have significantly positive expected net market benefits.

We propose to assess three credible network options

We have identified three network options that we consider meet the identified need for this RIT-T, as summarised in Table 1 below.

Table 1 – Summary of the credible options

Option	Description	Estimated capex ($2020/21)	Expected build time	Expected transfer improvement (relative to the base case)
1	Replace Line 86 like for like in-situ utilising concrete or steel poles, keeping the existing twin lime conductor and single circuit configuration, while maintaining the overall design temperature at 100°C.	95.7	3 – 4 years	280 MW
2	Rebuild Line 86 as double circuit, strung on one side initially with twin olive conductors and a 120°C design temperature along a new easement parallel to the original Line 86 (which is then removed). The other side to be strung at a later date as needed.	267.4 for the initial build. 60.2 for stringing the second side, when needed.	3 – 4 years for the initial build. 1 year for stringing the second side.	280 MW for the initial build. An additional 350 MW once the second side is strung
3	Rebuild Line 86 as a double circuit with twin olive conductors and a 120°C design temperature along a new easement parallel to the original Line 86 (which is then removed).	315.4	3 – 4 years	630 MW

Non-network options may be able to be paired with network options to help address the identified need

We consider that non-network options may be able to assist with meeting the identified need in combination with Option 1 or Option 2 (ahead of the second circuit being strung). Specifically, we consider that non-network technologies may be able to be coupled with single-circuit network options to provide an increase in transfer capacity and avoid (or defer) the need to build a second circuit.

However, we note that the cost of the network options effectively bounds the scope for any non-network options to be considered commercially feasible under the RIT-T. Specifically, the cost difference between Option 1 (maintaining a single-circuit 330 kV line) and Option 3 (a new double-circuit 330 kV line) of approximately $220 million serves as an indicative cost threshold for the provision of 350 MW of additional transfer capacity (i.e., the additional transfer capacity Option 3 provides over Option 1). While we consider this an ambitious cost for the provision of approximately 350 MW of additional transfer capacity from non-network solutions (e.g., through the use of a Virtual Transmission Line (VTL)), we are interested in hearing from proponents on their individual solutions and costs (including for smaller sized options).

We do not consider that non-network solutions can address the identified need as standalone options, since a key focus of the identified need is to address the asset condition issues on Line 86 and the risk they pose (most relevantly bushfire risk). Moreover, standalone non-network options that result in the existing line being decommissioned, and no replacement line being built, would not meet the required 'N-1' level of reliability in this area of the network[1] and so are not considered technically feasible.

[1] IPART, *Electricity transmission reliability standards*, Final Report, August 2016, pp. 72-73.

Wholesale market modelling will be adopted for the PADR analysis

The options considered are expected to affect outcomes in the wholesale market, relative to the base case, particularly for those options that increase the operating capacity of the current Line 86. This additional capacity is expected to provide for more efficient outcomes in the wholesale market through increasing the output available from the nearby QNI and New England REZ.

We expect the following seven categories of market benefit to be estimated using wholesale market modelling as part of the PADR:

- changes in fuel consumption arising through different patterns of generation dispatch;
- changes in price-responsive voluntary load curtailment;
- changes in involuntary load shedding;
- avoided/deferred capital and operating expenditure associated with new generation/storage in the NEM;[2]
- differences in the timing of unrelated transmission expenditure (eg, intra-regional transmission investment associated with the development of REZs); and
- changes in network losses.

In addition, we may investigate 'competition benefits' under the RIT-T further as part of the PADR assessment and, specifically, if the expected impact on QNI/New England REZ capacity may affect the level of competition between generating centres in the NEM.

We note the importance of ensuring that the outcome of this RIT-T assessment is robust to different assumptions about how the energy sector may develop in the future. We are intending to model the market benefits of the credible options across different scenarios as part of the PADR. These scenarios will be based on those consulted on and summarized in the 2021 Inputs, Assumptions and Scenarios report (IASR) released by AEMO in July 2021, which are also to be used in the forthcoming 2022 Integrated System Plan (ISP). These scenarios reflect a broad range of potential outcomes across the key uncertainties that are expected to affect the future market benefits of the investment options being considered. We are also expecting to use the optimal development path identified by AEMO in the forthcoming draft 2022 ISP (expected to be released on 10 December 2022) as part of the PADR modelling.

Submissions and next steps

We welcome written submissions on materials contained in this PSCR. Submissions are particularly sought on the credible options presented and from potential proponents of non-network options that could meet the technical requirements set out in this PSCR. Submissions are due on 1 March 2022.

Submissions should be emailed to Transgrid's Regulation team via regulatory.consultation@transgrid.com.au.[3] In the subject field, please reference 'Line 86 PSCR.'

[2] Referred to as 'changes in costs for parties, other than for Transgrid, due to differences in the timing of new plant, capital costs and operating and maintenance costs' under the RIT-T.

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At the conclusion of the consultation process, all submissions received will be published on Transgrid's website. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement.

Subject to any additional credible options being identified, we anticipate publication of a PADR in early 2022.

To read the full Project Specification Consultation Report visit Transgrid's website.