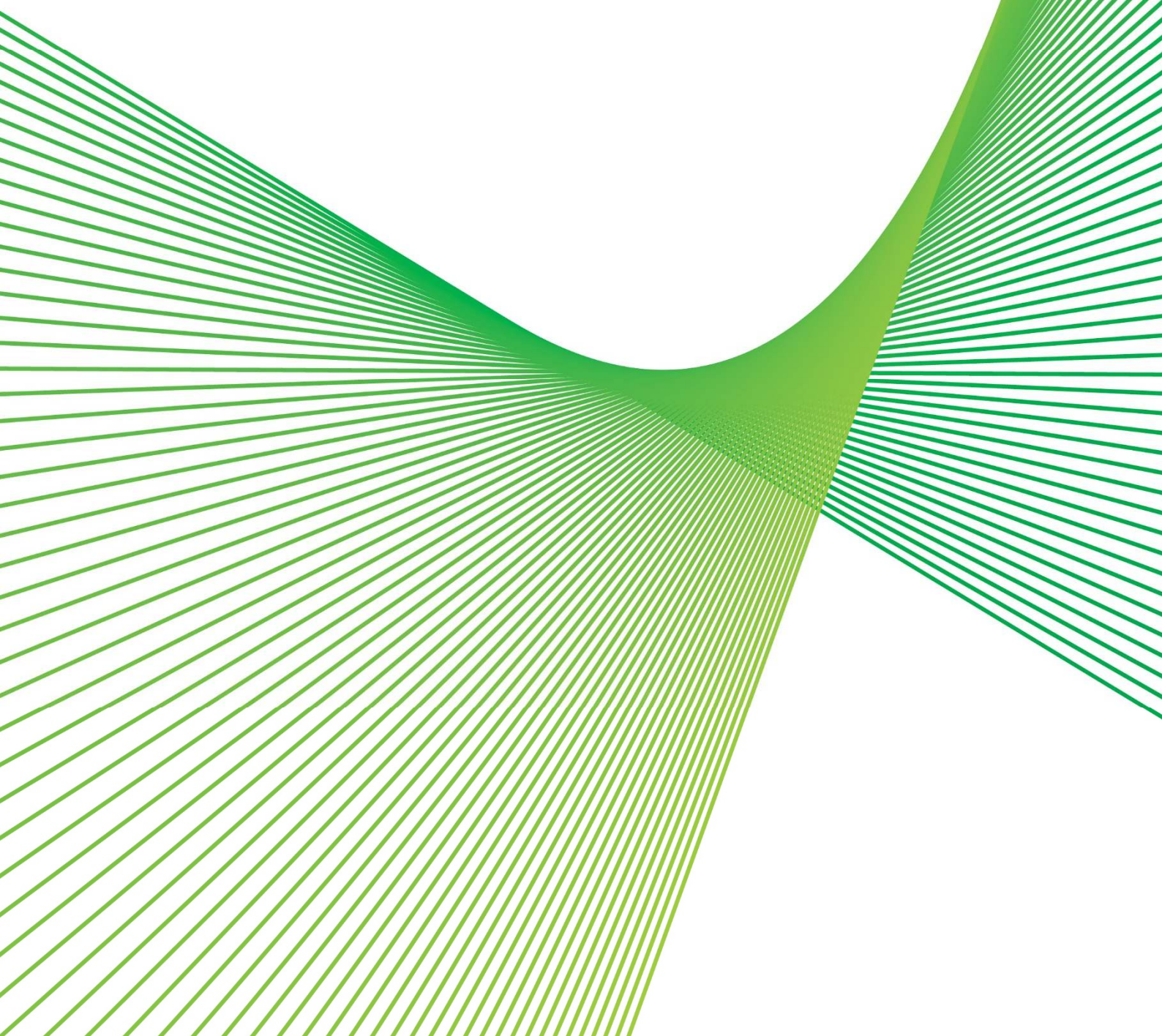


# Summary of Managing risk on Line 8C/8J and 8C/8E

RIT-T Project Specification Consultation Report

Issue date: 15 August 2024



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## Summary

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We are applying the Regulatory Investment Test for Transmission (RIT-T) to options for mitigating safety, environmental (bushfire) and financial (high reactive maintenance) risks caused by the deteriorating condition of certain components of the 330 kV transmission line linking Dumaresq, Sapphire, and Armidale substations ('Line 8C/8J and 8C/8E'). The transmission line is a key link in the east coast network and is on the QNI transmission path which links the NSW and QLD regions of the National Electricity Market (NEM). Publication of this Project Specification Consultation Report (PSCR) represents the first step in the RIT-T process.

The purpose of this PSCR is to set out the reasons we propose that action be taken, present the options that address the identified need, outline the technical characteristics of the identified need that a non-network option would be required to deliver, and allow interested parties to make submissions and provide input to the RIT-T assessment.

The two double circuit, steel tower 330 kV transmission lines covered by this RIT-T are:

- Line 8C/8J – spanning a route of 58.9km between Dumaresq and Sapphire substations; and
- Line 8C/8E – spanning a route of 113.5km between Sapphire and Armidale substations.

The lines were constructed in 2000 as part of the interconnector between New South Wales and Queensland transmission networks and consists of 427 structures across the two lines. They mainly traverses rural agricultural land, bushland areas, and crosses some waterways, minor roads, and highways (the Gwydir Highway south of Sapphire substation, the New England Highway, and Waterfall Way north of Armidale substation).

Lines 8C/8J and 8C/8E were amongst the first constructed utilising Non-Ceramic Insulators (NCI) within the Transgrid network, and these are now approaching the end of their service life. The sample test results have shown a large reduction in hydrophobicity (ie ability of the insulator to resist the ingress of moisture), reduction in rod to housing adhesion and corona activity at the end fitting to housing interface, due to degradation and older design of this interface, after 21 years in service.

Recent inspection data and detailed asset condition analysis has identified that 140 of the 143 structures on Line 8C/8J and 280 of the 284 structures on Line 8C/8E have condition issues which require refurbishment to address its health and maintain appropriate risk levels across the network.

### **Identified need: Managing risks on Line 8C/8J and 8C/8E**

If action is not taken, the condition of Line 8C/8J and 8C/8E is expected to expose us and our customers to increasing levels of risk going forward, as the likelihood of failure increases. There are safety and bushfire risks under the 'do nothing' base case, as well as replacement costs captured in the financial risk cost). The proposed investment will enable us to manage safety, environmental, reliability and financial risks on Line 8C/8J and 8C/8E.

Options considered under this RIT-T have been assessed relative to a base case. Under the base case, no proactive capital investment is made, and the condition of the lines will continue to deteriorate.

We manage and mitigate safety and bushfire risk to ensure they are below risk tolerance levels or 'As Low As Reasonably Practicable' ('ALARP'), in accordance with our obligations under the *New South Wales*

*Electricity Supply (Safety and Network Management) Regulation 2014* and our Electricity Network Safety Management System (ENSMS).<sup>1</sup>

The proposed investment will enable us to continue to manage and operate this part of the network to a safety and risk mitigation level consistent with ALARP. Consequently, it is considered a reliability corrective action under the RIT-T. A reliability corrective action differs from a ‘market benefits’-driven RIT-T in that the preferred option is permitted to have negative net economic benefits on account of it being required to meet an externally imposed obligation on the network business.

We note that the risk cost estimating methodology adopted for this RIT-T aligns with that used in our Revised Revenue Proposal for the 2023-28 period. It reflects feedback from the Australian Energy Regulator (AER) on the methodology initially proposed in our original revenue proposal.

### Credible options considered

In this PSCR, we have considered one credible option that would meet the identified need from a technical, commercial, and project delivery perspective.<sup>2</sup> This sole credible option is summarised in Table E-1.

Table E-1 Summary of credible options

| Option   | Description  | Capital costs (\$m, +/- 25%, Real 2023-24) |
|----------|--|--|
| Option 1 | Remediate all identified condition issues for line components which have experienced deterioration and/or reached the end of their technical lives | 31.35 (±25%)                               |

The preferred option is Option 1, as it has positive weighted NPV result of the technically and commercially feasible options which have been considered at this stage of the RIT-T.

Four other options were considered but not progressed including increased inspections, elimination of all associated risk, new transmission line and non-network solutions. The reasons these options were not progressed are outlined in section 3.3 of this PSCR.

### Non-network options are not expected to be able to assist with this RIT-T

We do not consider non-network options to be commercially and technically feasible to assist with meeting the identified need for this RIT-T, as non-network options will not mitigate the safety and environment risk posed as a result of deteriorating asset condition.

### The options have been assessed against three reasonable scenarios

The RIT-T is focused on identifying the top ranked credible option in terms of expected net benefits. However, uncertainty exists in terms of estimating future inputs and variables (termed future ‘states of the world’).

To deal with this uncertainty, the NER requires that costs and market benefits for each credible option are estimated under reasonable scenarios and then weighted based on the likelihood of each scenario to

<sup>1</sup> Our ENSMS follows the International Organization for Standardization’s ISO31000:2018 Risk Management framework which requires following a hierarchy of hazard mitigation approach.

<sup>2</sup> As per clause 5.15.2(a) of the NER.

determine a weighted ('expected') net benefit. It is this 'expected' net benefit that is used to rank credible options and identify the preferred option.

The credible options have been assessed under three scenarios as part of this PSCR assessment, which differ in terms of the key drivers of the estimated net market benefits (ie, the estimated risk costs avoided).

Given that wholesale market benefits are not relevant for this RIT-T, the three scenarios implicitly assume the most likely scenario from the 2024 ISP (ie, the 'Step Change' scenario). The scenarios differ by the assumed level of risk costs, given that these are key parameters that may affect the ranking of the credible options. Risk cost assumptions do not form part of AEMO's ISP assumptions, and have been based on Transgrid's analysis, as discussed in section 2.

We developed the Central Scenario around a static model of demand scenarios, described further in Section A.3 of our [Network Asset Criticality Framework](#). We consider that this approach is appropriate since it materially reduces the computational effort required, and since differences in demand forecasts will not materially affect the ranking of the credible options.

How the NPV results are affected by changes to other variables (including the discount rate and capital costs) has been investigated in the sensitivity analysis. We consider this is consistent with the latest AER guidance for RIT-Ts of this type (ie, where wholesale market benefits are not expected to be material).<sup>3, 4, 5</sup>

A summary of the key variables in each scenario is provided in the table below.

Table E-2 Summary of scenarios

| Variable / Scenario                               | Central       | Low risk cost scenario | High risk cost scenario risk |
|---|---------------|------------------------|------------------------------|
| Scenario weighting                                | 1/3           | 1/3                    | 1/3                          |
| Discount rate                                     | 7%            | 7%                     | 7%                           |
| Network capital costs                             | Base estimate | Base estimate          | Base estimate                |
| Operating and maintenance costs                   | Base estimate | Base estimate          | Base estimate                |
| Safety, environmental, and financial risk benefit | Base estimate | Base estimate – 25%    | Base estimate +25%           |

The sensitivity analysis has investigated how the NPV results are affected by changes to other variables, including the discount rate and capital costs.

## Draft conclusion

Option 1 (remediation of all identified condition issues for components of lines) is the preferred option to meet the identified need at this stage of the RIT-T. Moving forward with this option is the most prudent and economically efficient solution to manage and mitigate safety and environmental risk to ALARP. Consequently, it will ensure our obligations under the *New South Wales Electricity Supply (Safety and*

<sup>3</sup> AER, *Application Guidelines Regulatory Investment Test for Transmission*, October 2023, pp. 43-44.

<sup>4</sup> We consider the approach to scenarios and sensitivities to be consistent with the AER guidance provided in November 2022 in the context of the disputes of the North West Slopes and Bathurst, Orange and Parkes RIT-Ts. See: AER, *Decision: North West Slopes and Bathurst, Orange and Parkes Determination on dispute - Application of the regulatory investment test for transmission*, November 2022, pp. 18-20 & 31-32, as well as with the AER's RIT-T Guidelines.

<sup>5</sup> AEMO '2023 Inputs, Assumptions and Scenarios Report', July 2023, p 123-124

*Network Management) Regulation 2014* and our Electricity Network Safety Management System (ENSMS) are met.

The estimated capital expenditure associated with this option is \$31.35 million. Routine operating and maintenance costs relating to planned checks by our field crew are approximately \$40,096 per year. We calculate that the avoided risk cost by undertaking Option 1 ranges from approximately \$6.1 million per year to \$25.0 million per year in real terms over the assessment period.

Option 1 is found to have positive net benefits under all scenarios investigated and, on a weighted basis, will deliver \$89.22 million<sup>6</sup> in net economic benefits.

The works would be completed by 2026/27. All works would be completed in accordance with the relevant standards with minimal modification to the wider transmission assets. Necessary outages of affected line(s) in service would be planned appropriately in order to complete the works with minimal impact on the network.

## **Exemption from preparing a PADR**

Subject to additional credible options being identified during the consultation period, publication of a Project Assessment Draft Report (PADR) is not required for this RIT-T as we consider its investment in relation to the preferred option to be exempt from that part of the process under NER clause 5.16.4(z1). Production of a PADR is not required due to:

- the estimated capital cost of the proposed preferred option being less than \$46 million<sup>7</sup>;
- the PSCR states:
  - > the proposed preferred option, together with the reasons for the proposed preferred option;
  - > the RIT-T is exempt from producing a PADR; and
  - > the proposed preferred option and any other credible option will not have a material market benefit for the classes of market benefit specified in clause 5.15A.2(b)(4), with the exception of market benefits arising from changes in voluntary and involuntary load shedding;
- the RIT-T proponent considers that there were no PSCR submissions identifying additional credible options that could deliver a material market benefit; and
- the PACR must address any issues raised in relation to the proposed preferred option during the PSCR consultation.

We consider the investment in relation to Option 1 meets these criteria and therefore that we are exempt from producing a PADR under NER clause 5.16.4(z1).

In accordance with NER clause 5.16.4(z1)(4), the exemption from producing a PADR will no longer apply if we consider that an additional credible option that could deliver a material market benefit is identified during the consultation period.

Accordingly, if we consider that any additional credible options are identified, we will produce a PADR which includes an NPV assessment of the net market benefit of each additional credible option.

Should we consider that no additional credible options were identified during the consultation period, we intend to produce a PACR that addresses all submissions received, including any issues in relation to the

<sup>6</sup> The relative size of this net economic benefits is due to the reduction of bushfire risk of the circuits concerned.

<sup>7</sup> Varied from \$43m to \$46m based on the [AER Final Determination: Cost threshold review](#) November 2021.

proposed preferred option raised during the consultation period, and presents our conclusion on the preferred option for this RIT-T.

## Submissions and next steps

We welcome written submissions on materials contained in this PSCR. Submissions are due on 14 November 2024.<sup>8</sup>

Submissions should be emailed to our Regulation team via [regulatory.consultation@transgrid.com.au](mailto:regulatory.consultation@transgrid.com.au).<sup>9</sup> In the subject field, please reference 'Line 8C/8J and 8C/8E PSCR'.

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

Subject to additional credible options being identified during consultation, we anticipate publication of a PACR by January 2025.

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<sup>8</sup> Consultation period is for 12 weeks, additional days have been added to cover public holidays.

<sup>9</sup> We are bound by the *Privacy Act 1988 (Cth)*. In making submissions in response to this consultation process, we will collect and hold your personal information such as your name, email address, employer and phone number for the purpose of receiving and following up on your submissions. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement. See Privacy Notice within the Disclaimer for more details.