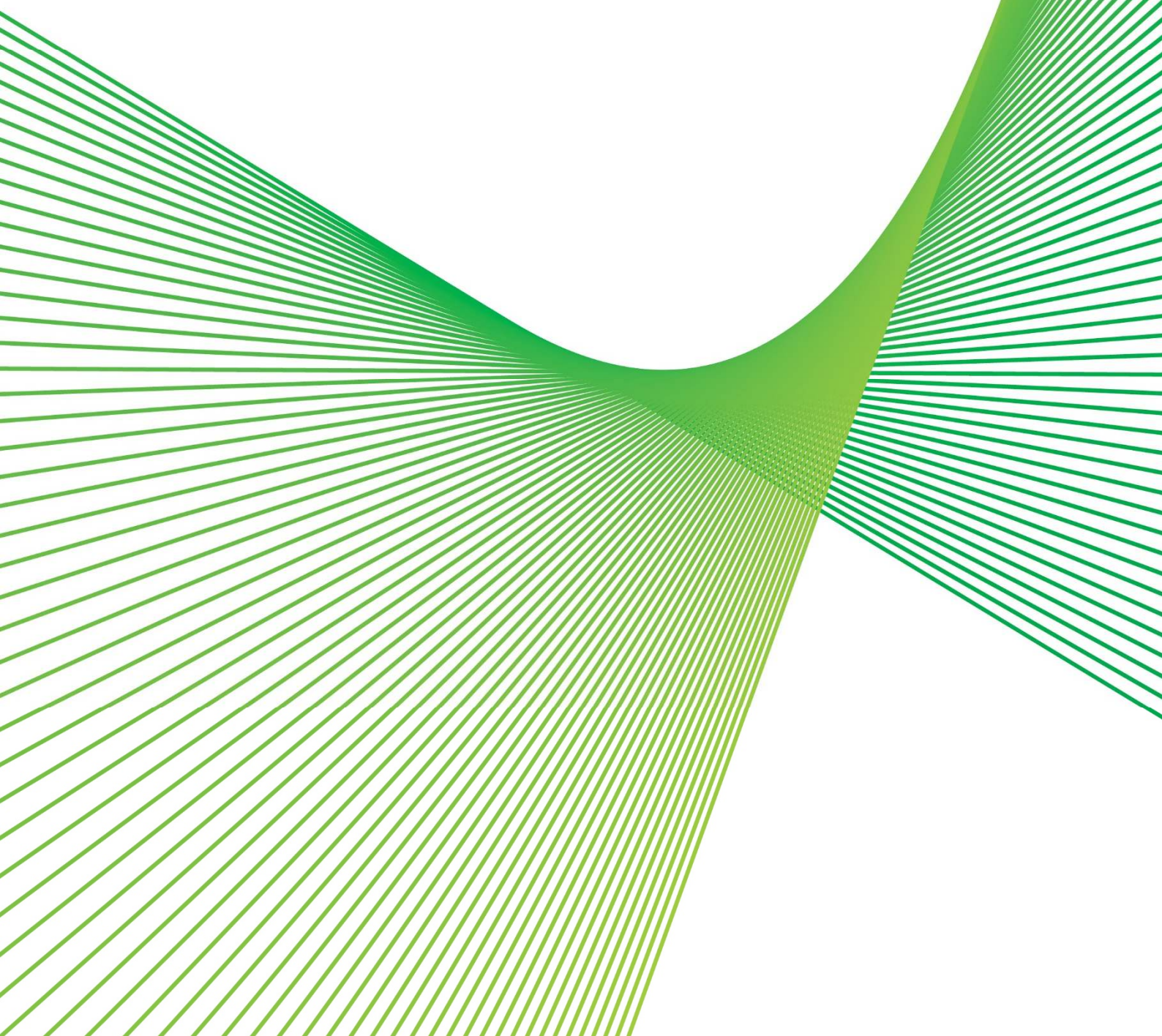


# Addressing low spans on Line 1, Line 2, and Line 973/9GL

RIT-T Project Assessment Conclusions Report

Issue date: 2 September 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 and financial risks caused by ‘low spans’ on three transmission lines in regional NSW, being:

- Line 1 – a 330 kV line that links Upper Tumut and Stockdill;
- Line 2 – a 330 kV line that links Ravine and Yass; and
- Line 973/9GL – a 132 kV line that links Yass and Cowra (via Bango).

Overhead transmission lines are designed and constructed to achieve standard minimum electrical clearances to the conductor, i.e., a minimum distance between the ‘wire’ and any land, vegetation or infrastructure around it. This ensures that safety and environmental risks from the lines are minimised.

Design of transmission lines considers a range of safety and environmental factors, including thermal expansion of the conductor (known as sag) and movement of the conductor position due to wind (known as blowout). Sag occurs where load on the conductor causes thermal expansion (i.e., the conductor stretches when it is hot), such that the conductor between two poles or towers of a transmission line hangs low. To account for sag, line design temperatures are set as the maximum temperature that a conductor may operate at while still achieving minimum electrical clearance. If the conductor at its lowest point exceeds the minimum electrical clearance specified in that line’s design, this is referred to as the line having ‘low span’.

There are a number of spans between towers on the above lines that do not currently meet the applicable design standards (i.e., exhibit ‘low spans’) and thus pose safety (and financial) risks if left unaddressed.

While these lines were identified as not meeting the original design standards, utilisation had historically been sufficiently low such that there was not a material safety or operational risk. However, as line utilisations have increased, operating temperatures on the lines have also increased causing line clearances from the ground to reduce.

The remediation of the lines has now been prioritised based on their utilisation rates and estimated risks in accordance with Low Span Risk Assessment Methodology.

### **Identified need: managing risks on Line 1, Line 2 and Line 973/9GL**

If action is not taken, there is a higher likelihood for the conductor to breach the minimum clearance requirement.

Under the ‘do nothing’ base case, incidents could occur that pose safety risks for members of the public. These incidents also have financial risks associated with litigation, investigation, and legislation breaches. We manage and mitigate environmental and safety 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 safety risk to ALARP, consistent with our obligations. Consequently, we consider this to be 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

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

negative net economic benefits on account of it being required to meet an externally imposed obligation on the network business.

### **No submissions were received in response to the PSCR**

We published a Project Specification Consultation Report (PSCR) on 7 May 2024 and invited written submissions on the material presented within the document by 5 August 2024. No submissions were received in response to the PSCR.

### **No material developments since publication of the PSCR**

No additional credible options were identified during the consultation period following publication of the PSCR. In addition, no material changes have occurred since the PSCR that have made an impact on the preferred option.

### **One credible option has been considered**

We consider that there is only one feasible option from a technical, commercial, and project delivery perspective that will meet the identified need.

Option 1 involves remediating the low spans on Lines 1, 2, and 973/9GL to the line design temperatures and will align all lines with AS/NZS 7000 (the current industry standard). Remediation is expected to involve mid-span structure installation, 'dummy strain' insulator arrangements and associated landscaping near the line.

All works are estimated to take place over a period of 36 months, with a commissioning date of 2025/26 for Line 2 and Line 973/9GL, and 2026/27 for Line 1.

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.

The estimated capital cost of this option is approximately \$19.16 million and there are not expected to be any additional annual routine operating costs (i.e., the cost under the option is the same as under the base case) since it does not affect the frequency of required inspections.

### **There is no expectation of needing to uprate the line at this point in time**

The proposed works under Option 1 are focused simply on raising the spans of the existing conductors. We do not expect the conductors included in this RIT-T need to be uprated at this point in time as we do not expect the line loadings to exceed their existing line ratings in the near future.

Specifically, we consider that uprating would cost significantly more than Option 1 and not add a commensurate increase in estimated market benefit. Uprating is therefore not considered commercially feasible at this point in time.

**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 or technically feasible to assist with meeting the identified need for this RIT-T, as non-network options will not mitigate the safety and financial risks posed as a result of the identified low spans.

**The option has been assessed against three reasonable scenarios**

The credible option has been assessed under three scenarios as part of this PACR assessment, which differ in terms of the key drivers of the estimated net market benefits (i.e., the estimated risk costs avoided)

Given that wholesale market benefits are not relevant for this RIT-T, the three scenarios implicitly assume the expected most likely scenario in the 2024 ISP (i.e., the 'Step Change' scenario). The scenarios differ by the assumed risk costs, given that this is the key parameter that may affect the benefits associated with this option.

Table E-1 Summary of scenarios

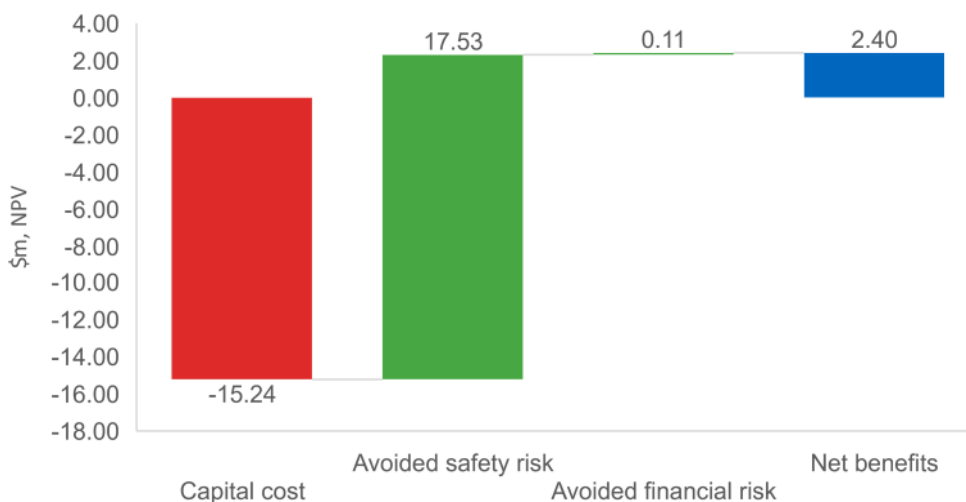
Variable / Scenario	Central	Low risk cost scenario	High risk cost scenario
Scenario weighting	1/3	1/3	1/3
Discount rate	7.0%	7.0%	7.0%
Network capital costs	Base estimate	Base estimate	Base estimate
Risk costs	Base estimate	Base estimate -25%	Base estimate +25%

We have weighted the three scenarios equally given there is nothing to suggest an alternate weighting would be more appropriate.

**Option 1 is delivers positive net benefits**

Option 1 is estimated to deliver net economic benefits of \$2.40 million on a weighted basis in present value terms. The benefits included in this assessment consist of avoided risk costs (i.e., a reduction in safety and financial risks) and are estimated to be between \$13.23 million and \$22.05 million across the three scenarios.

Figure E-1 Net economic benefits of Option 1 (\$m, PV) – weighted results



## Conclusion

This PACR has found that Option 1 is the preferred option to meet the identified need. Option 1 involves the remediation of low spans on Line 1, Line 2, and Line 973/9GL. Moving forward with this option is the most prudent and economically efficient solution to manage and mitigate safety risk to ALARP. Consequently, it will ensure our obligations under the New South Wales Electricity Supply (Safety and Network Management) Regulation 2014 and our Electricity Network Safety Management System (ENSMS) are met.

The estimated capital expenditure associated with Option 1 is \$19.16 million (in 2023/24 dollars), and the option will not affect annual routine operating costs (i.e., the cost is the same as under the base case) since it does not affect the frequency of inspections.

Option 1 is found to have positive net benefits under two of the three scenarios investigated and, on a weighted basis, will deliver \$2.40 million in net economic benefits (in present value terms). On balance, we consider the expected benefits of the investment to outweigh the costs.

The works to remediate the lines are estimated to take 36 months, with a final commissioning date expected in 2025/26. Planning, design, development and procurement (including completion of the RIT-T) will occur between 2023/24 and 2024/25, while project delivery and construction will occur in 2024/25. All works are expected to be completed by 2025/26.

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.

## Next steps

This PACR represents the final step of the consultation process in relation to the application of the RIT-T process undertaken by Transgrid.

The second step of the RIT-T process, production of a Project Assessment Draft Report (PADR), was not required as Transgrid considers its investment in relation to the preferred option to be exempt from that part of the RIT-T process under NER clause 5.16.4(z1). Production of a PADR is not required due to:

- the estimated capital cost of the preferred option being less than \$46 million;
- the PSCR stating:
  - 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 options 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;
- no PSCR submissions identifying additional credible options that could deliver a material market benefit; and
- the PACR addressing any issues raised in relation to the proposed preferred option during the PSCR consultation (noting that no issues have been raised).

Parties wishing to raise a dispute notice with the AER may do so prior to 8 October 2024 (30 days after publication of this PACR). Any dispute notices raised during this period will be addressed by the AER within 40 to 120 days, after which the formal RIT-T process will conclude.

Further details on the RIT-T can be obtained from Transgrid's Regulation team via [regulatory.consultation@transgrid.com.au](mailto:regulatory.consultation@transgrid.com.au). In the subject field, please reference 'low spans on Line 1, Line 2, and Line 973/9GL PACR'.