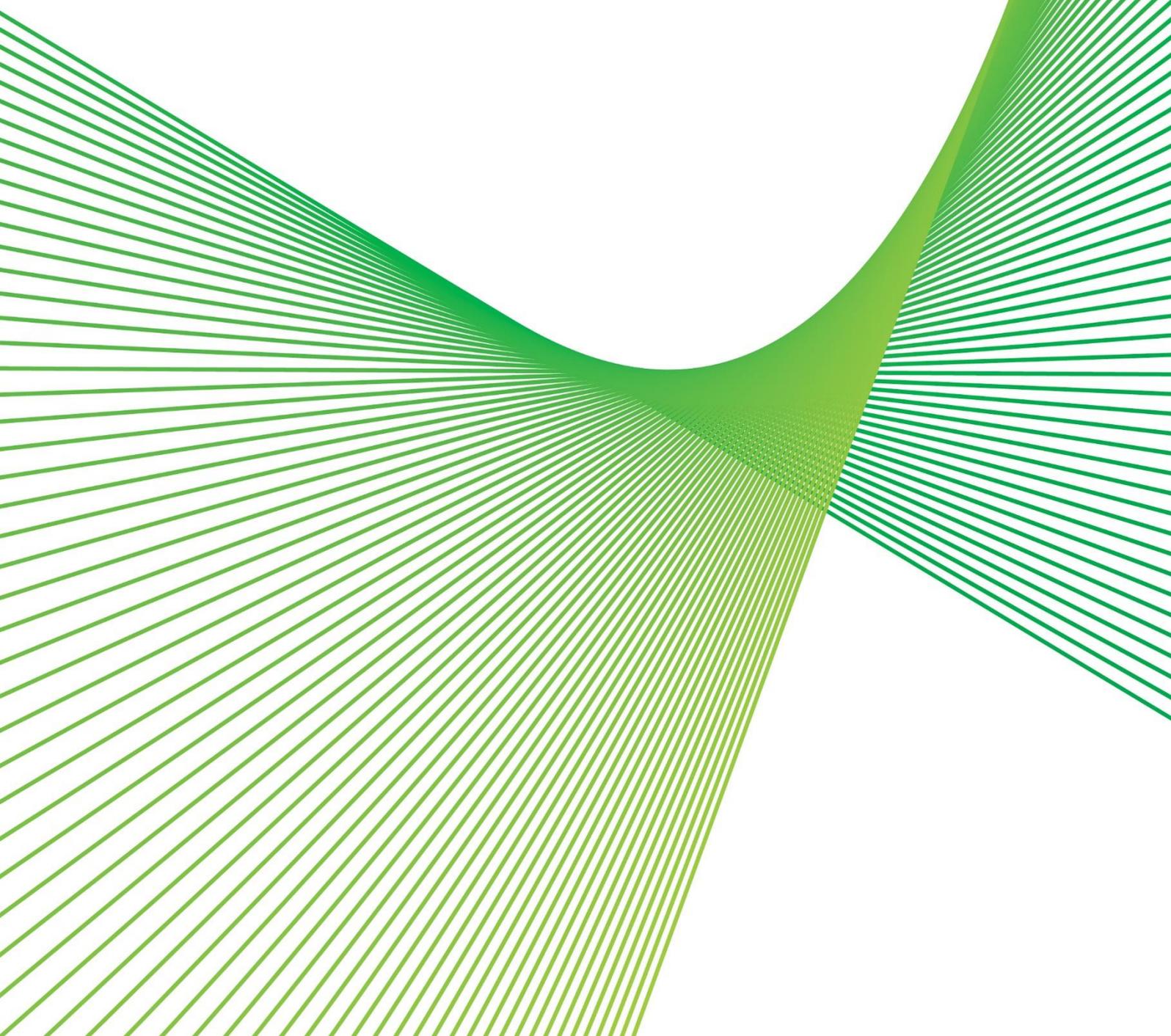


Managing risk on Line 966

RIT-T Project Specification Consultation Report

Issue date: 16 June 2023



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Summary

We are applying the Regulatory Investment Test for Transmission (RIT-T) to options for mitigating environmental (bushfire), safety and financial (reactive maintenance) risks caused by the deteriorating condition of certain components of the 132 kV line running between the Armidale and Koolkhan substations in northern NSW ('Line 966'). Publication of this Project Specification Consultation Report (PSCR) represents the first step in the RIT-T process.

Line 966 is a single-circuit 132 kV line with a route length of 176.5 km that was commissioned in 1961. Line 966 is comprised of 600 structures, 482 of which are wood pole structures.

The line is a key link in the Northern NSW transmission network and its route traverses through grazing land outside Armidale before crossing the Great Dividing Range and passing through the Nymboi-Binderay National Park and finally again through more grazing land south of Grafton. The sections on the outskirts of both Armidale and Grafton are considered to be of high consequence if affected by a bushfire.

Line 966 was impacted by both the Liberation Trail Andersons Creek Fire and the Guya Road Fire in November 2019. The fires fully burnt out six wood pole structures resulting in conductors on the ground and, in total, the fires impacted a total of 190 structures on Line 966. While the worst affected structures were addressed following the fires, subsequent inspections identified an additional 23 structures as burnt to the extent that the timber is charred (which affects the pole's structural integrity). Only three of those additional 23 structures had been identified as having condition issues in inspections prior to the fires.

Outside of direct fire damage, other identified condition issues on the line impact 390 of the 600 structures across multiple line components, including conductors, porcelain insulators, conductor and earthwire dampers and fittings, and earthwire bonding and structure earthing.

In total, there are currently 94 structures that are considered to be in urgent need of addressing (20 that were impacted by the bushfires and 74 due to general condition issues). The remaining structures identified as being damaged (either by the fires or just generally) are in a more secure state.

Asset deterioration greatly increases the likelihood of structure failure, which leads to conductor drops and presents consequent bushfire and safety risk to our personnel and the public, as well as resulting in reactive maintenance costs to repair the failed elements.

Identified need: managing risks on Line 966

If action is not taken, the condition of Line 966 will expose us and our customers to increasing levels of risk going forward, as deterioration increases the likelihood of failure. There are significant bushfire and safety risks under the 'do nothing' base case, as well as higher expected costs associated with reactive maintenance that may be required under emergency conditions ('financial risks').

The proposed investment will enable us to manage environmental, safety and financial risks on Line 966.

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).¹

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.

Credible options considered

In this PSCR, we have considered three credible options that meet the identified need from a technical, commercial, and project delivery perspective.² These are summarised in Table E-1.

Table E-1 Summary of credible options

Option	Description	Capital costs (\$M +/- 25%, Real \$2021-22)	Operating costs (per year), \$
Option 1	Replace only wood pole structures that are known to be degraded or bushfire impacted.	14.2	62,000
Option 2	Rebuild bushfire impacted sections of the line (with existing concrete poles to remain where practicable) and replace the existing conductor.	90.0	44,000
Option 3	Rebuild the entire line and replace the existing conductor and earthwire.	98.6	43,000

Each option has a different operating cost since each option leaves a different number of wooden poles remaining on the line that require annual maintenance.

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 environmental, safety and financial risks posed as a result of asset deterioration.

The options have been assessed against three reasonable scenarios

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 assume the most likely scenario from the 2022 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.

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

² As per clause 5.15.2(a) of the NER.

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	5.50%	5.50%	5.50%
Network capital costs	Base estimate	Base estimate	Base estimate
Operating and maintenance costs	Base estimate	Base estimate	Base estimate
Environmental, safety and financial risk benefit	Base estimate	Base estimate – 25%	Base estimate +25%

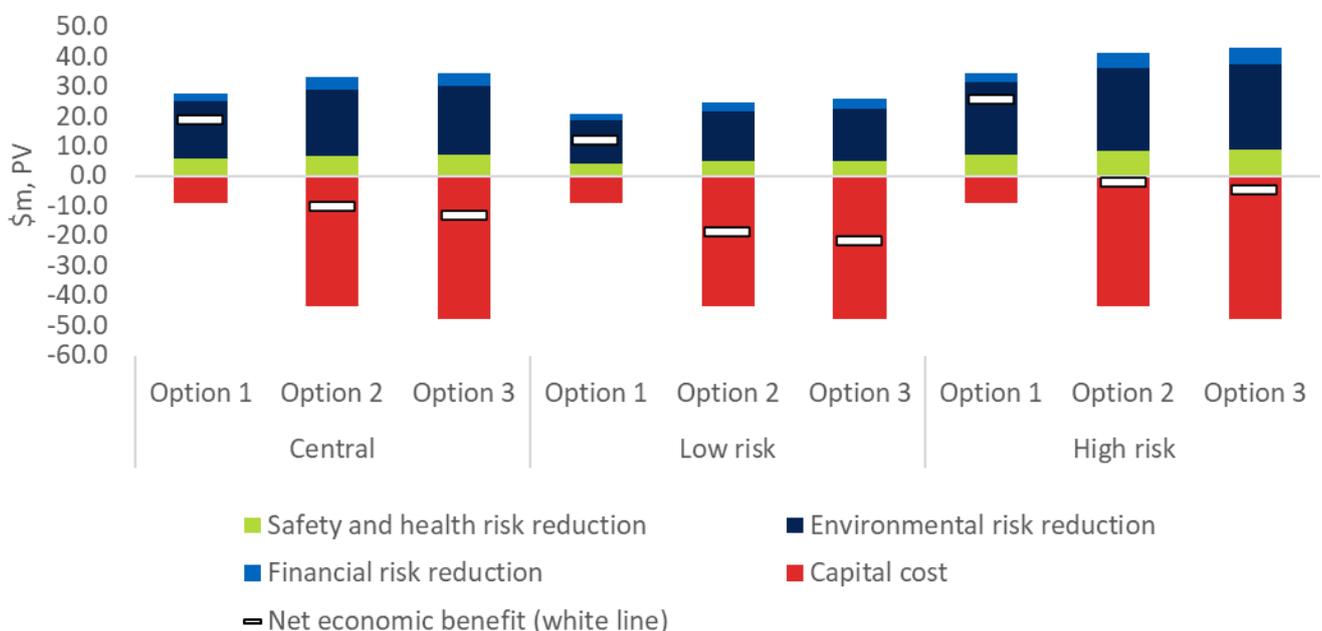
The sensitivity analysis has investigated how the NPV results are affected by changes to other variables, including the discount rate and capital costs.

Option 1 delivers the greatest net economic benefits

The costs under Option 1 are found to be significantly outweighed by the expected benefit of avoiding the risks in each scenario investigated. This is not true for Option 2 or Option 3, which are both found to have negative net benefits in all three scenarios.

On a weighted basis, Option 1 is found to deliver the greatest net economic benefit at approximately \$18.5 million.

Figure E-1 Net economic benefits (\$m, PV)



Draft conclusion

Option 1 (replacing only the wood pole structures that are known to be degraded or bushfire impacted) 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 bushfire 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 this option is \$14.2 million (2021/22 dollars). Routine operating and maintenance costs relating to planned checks by our field crew are approximately \$62,000 per year. We calculate that the avoided risk cost by undertaking Option 1 ranges from approximately \$2.1 million per year to \$8.8 million per year in real terms over the assessment period.

Option 1 is found to have positive net benefits under all three scenarios investigated and, on a weighted basis, will deliver \$18.5 million in net economic benefits (in present value terms).

The works would be undertaken between 2023/24 and 2024/25. All works would be completed in accordance with the relevant standards by 2025/25 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

NER clause 5.16.4(z1) provides for a TNSP to be exempt from producing a Project Assessment Draft Report (PADR) for a particular RIT-T application, in the following circumstances:

- if the estimated capital cost of the preferred option is less than \$46 million;
- if the TNSP identifies in its PSCR its proposed preferred option, together with its reasons for the preferred option and notes that the proposed investment has the benefit of the clause 5.16.4(z1) exemption; and
- if the TNSP considers that the proposed preferred option and any other credible options in respect of the identified need will not have a material market benefit for the classes of market benefit specified in clause 5.16.1(c)(4), with the exception of market benefits arising from changes in voluntary and involuntary load shedding.

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

Submissions and next steps

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 that non-network options will need to provide, and allow interested parties to make submissions and provide input to the RIT-T assessment.

We welcome written submissions on materials contained in this PSCR. Submissions are due on 13 September 2023.

Submissions should be emailed to our Regulation team via regulatory.consultation@transgrid.com.au.³ In the subject field, please reference 'Line 966 Transmission Line 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 in December 2023.

³ 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.