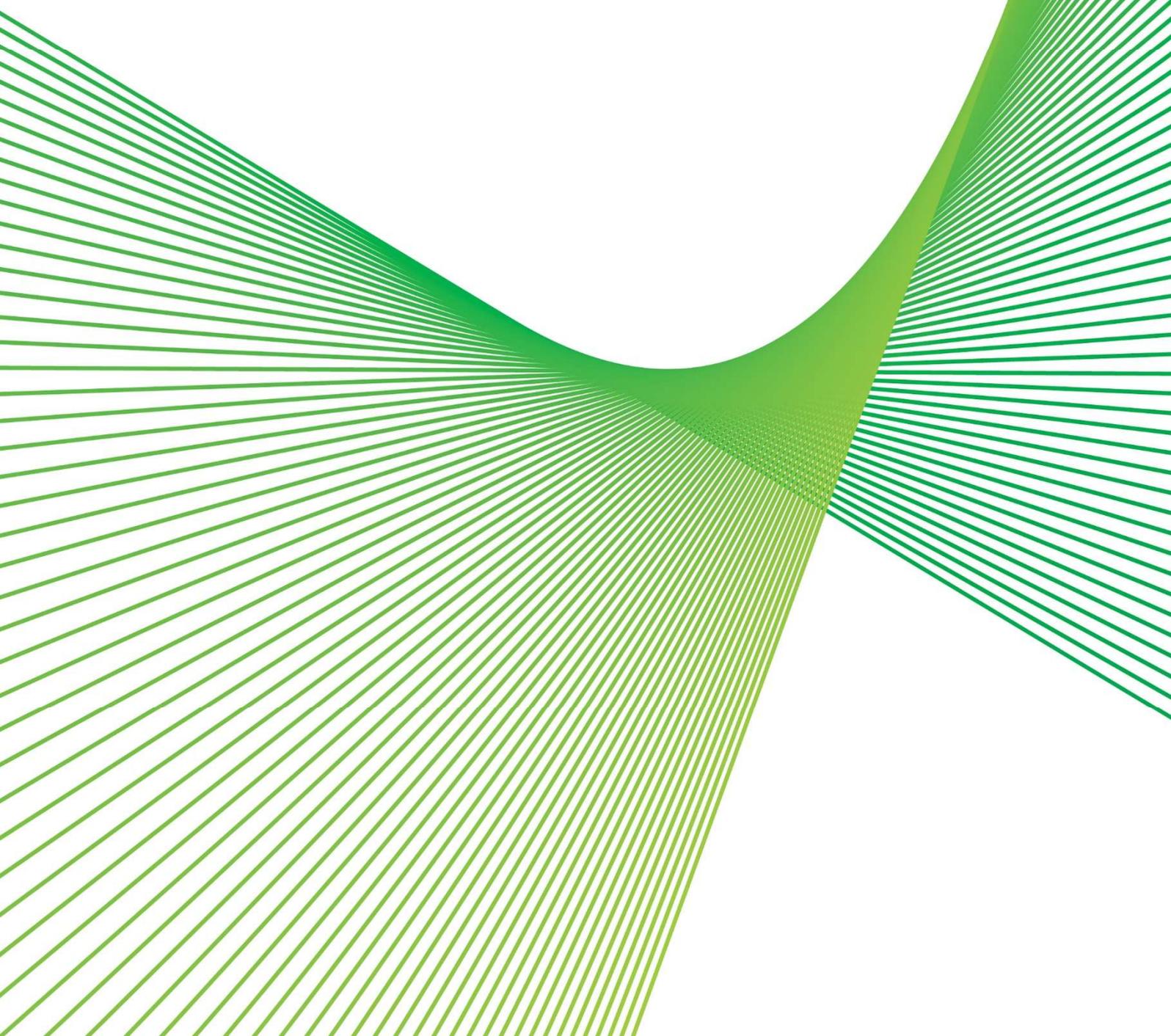


Summary: Managing risk on Line 16

RIT-T Project Assessment Conclusions Report

Issue date: 19 December 2023



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Summary

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 line running between the Marulan and Avon substations on the Southern NSW network ('Line 16'). Publication of this Project Assessment Conclusions Report (PACR) represents the final step in the RIT-T process.

Spanning a route of 71km, Line 16 is a single-circuit 330 kV, steel tower transmission line that runs between Marulan and Avon substations. Comprised of 159 structures, the transmission line forms a key link between Snowy Hydro and the Illawarra and Sydney metropolitan areas. It also links to the network south and west of Marulan, connecting approximately 810 MW¹ of wind generation to the region.

Condition assessment performed through our routine maintenance program between 2017 and 2021 identified several condition issues on Line 16. Laboratory testing has also identified that some insulators have reached end of serviceable life due to deteriorated insulation resistance. A significant proportion of the steel transmission structures are impacted by various levels of deterioration and corrosion. The affected components include conductor fittings, earthwire fittings and corona rings, foundations and tower steelwork, as well as components related to public safety such as climbing deterrents and signage.

Corrosion increases the likelihood of structure failure, which leads to conductor drop and presents consequent safety and bushfire risk to our personnel and the public, as well as resulting in reactive maintenance costs to repair the failed elements. While this is the case for any corroded elements of the transmission network, the bushfire risks are elevated for Line 16 as the line traverses substantial sections of bushland and rural agricultural areas between Marulan and Avon.

As asset conditions deteriorate over time, the likelihood of failure and subsequent risks will increase should these issues not be addressed.

Identified need: managing risks on Line 16

If action is not taken, the condition of Line 16 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 higher expected costs associated with reactive maintenance that may be required under emergency conditions ('financial risks').

The proposed investment will enable us to manage safety, environmental and financial risks on Line 16.

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.

Further condition deterioration of the affected assets due to corrosion would mean an increase in safety and bushfire risks as the likelihood of failure increases. If left untreated, corrosion of some of the vital components of the steel towers could result in incidents such as conductor drop and tower collapse. Such incidents could have considerable safety consequences for nearby residents and members of the public, as

¹ Summation of generation from Gullen Range, Crookwell 2, Collector, Bango 973 & 999, Cullerin Range, Gunning and Taralga Wind Farms.

well as our field crew who may be working on or near the assets. These incidents also pose environmental risks through potential bushfires.

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).²

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 recently submitted 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.

No submissions received in response to the Project Specification Consultation Report

We published a Project Specification Consultation Report (PSCR) on 16 June 2023 and invited written submissions on the material presented within the document. 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. The discount rate used has been updated to align with the Australian Energy Market Operator's (AEMO's) 2023 Inputs, Assumptions and Scenarios Report. No material developments have occurred since publication of the PSCR and Option 2 remains the preferred option at this stage of the RIT-T process.

We note that, since the PSCR was released, there has been a law change to introduce an emissions reduction objective into the national energy objectives³ and that the National Electricity Rules are currently being updated to add a new category of market benefit to the RIT-T reflecting changes in Australia's greenhouse gas emissions.⁴ While we acknowledge this important change to the RIT-T, we note that there is not expected to be a difference in greenhouse gas emission levels between the two options assessed in this PACR since there is no change in the conductor rating included in either of the credible options considered. This new category of market benefit is therefore not expected to be material for this RIT-T and so has not been estimated.

² Our ENSMS follows the International Organization for Standardization's ISO31000 risk management framework which requires following a hierarchy of hazard mitigation approach.

³ On 12 August 2022, Energy Ministers agreed to fast track the introduction of an emissions reduction objective into the national energy objectives, consisting of the National Electricity Objective (NEO), National Gas Objective and National Energy Retail Objective. On 21 September 2023, the *Statutes Amendment (National Energy Laws) (Emissions Reductions Objectives) Act 2023* (the Act) received Royal Assent.

⁴ AEMC, *Harmonising the electricity network planning and investment rules and AER guidelines with the updated energy objectives (electricity)*, draft determination, 26 October 2023, p. i.

Credible options considered

We consider there are two credible options that would meet the identified need from a technical, commercial, and project delivery perspective.⁵ These are summarised in Table E-1.

Table E-1 Summary of credible options, \$2021/22

Option	Description	Capital costs, \$m	Operating costs (per year), \$
Option 1	Remediate identified condition issues for line components that have priority condition issues and/or have reached end of serviceable life	8.6	22,970
Option 2	Remediate all identified condition issues on the line	9.4	22,970

Neither option is expected to affect annual routine operating costs (i.e., the amounts shown above are the same as under the base case) since they do not affect the frequency of inspections. They do however affect the reactive maintenance costs relative to the base case (which are reflected in reduced 'financial risk costs').

Non-network options are not expected to assist in this RIT-T

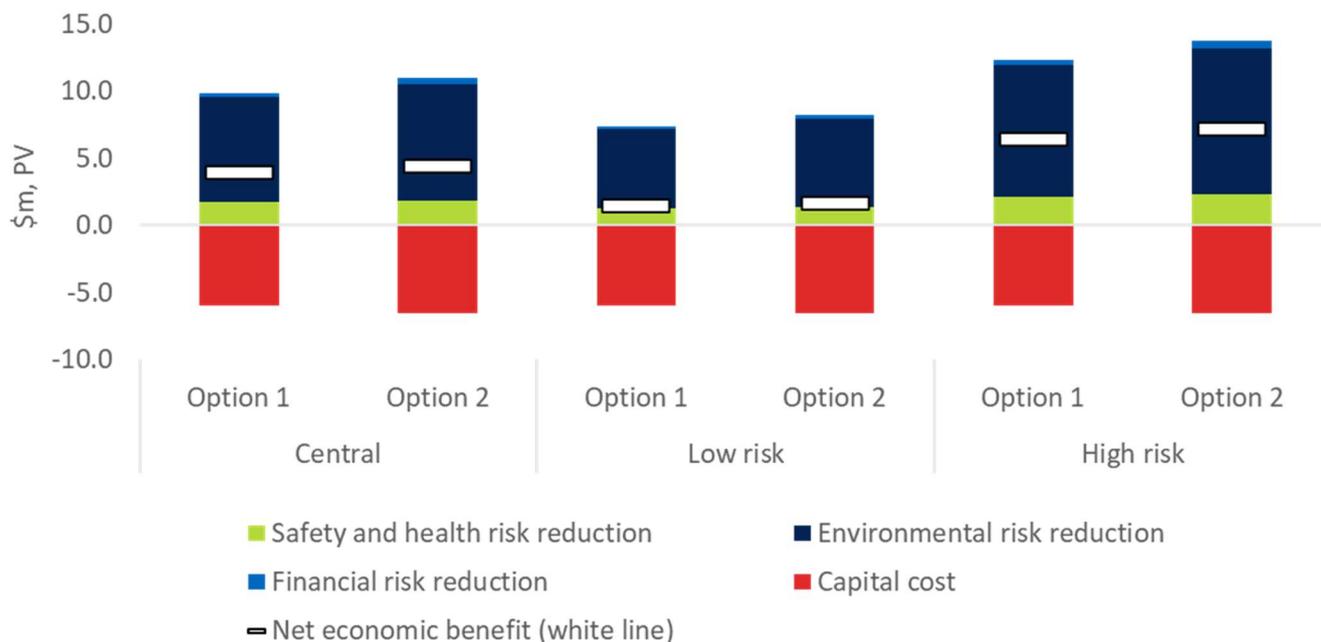
We do not consider non-network options to be commercially and technically feasible to assist with meeting the identified need for this RIT-T, as non-network options will not mitigate the safety and environment risk posed as a result of corrosion-related asset deterioration. In addition, we did not receive any submissions from proponents of these solutions in response to the PSCR.

Conclusion: remediating all identified condition issues on the line is optimal

Under all scenarios, the costs of mitigating the risks under both options are found to be significantly outweighed by the expected benefit of avoiding the risks. Option 2 provides the greatest estimated net benefit of the two options considered – with net benefits that are approximately 13 per cent greater than Option 1.

⁵ As per clause 5.15.2(a) of the NER.

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



Option 2 (remediating all identified condition issues on the line) is therefore the preferred option to meet the identified need for this 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 Network Management) Regulation 2014* and our Electricity Network Safety Management System (ENSMS) are met.

The estimated capital expenditure associated with this option is \$9.4 million +/- 25 per cent. Routine operating and maintenance costs relating to planned checks by our field crew are estimated at approximately \$22,970 per year (which is the same as under the base case and the other option considered). We calculate that the avoided risk cost by undertaking Option 2 ranges from approximately \$800,000 per year to \$2.5 million per year in real terms over the assessment period.

Option 2 is found to have positive net benefits under all scenarios investigated and, on a weighted basis, will deliver \$4.43 million in net economic benefits.

The required works for Option 2 would be undertaken between 2023/24 and 2025/26. All works will be completed in accordance with the relevant standards by 2025/26 with minimal modification to the wider transmission assets. Necessary outages of affected line(s) in service will 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 Regulatory Investment Test for Transmission (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 23 January 2024⁶ (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. In the subject field, please reference 'Line 16 PACR'.

⁶ Additional days have been added to cover public holidays