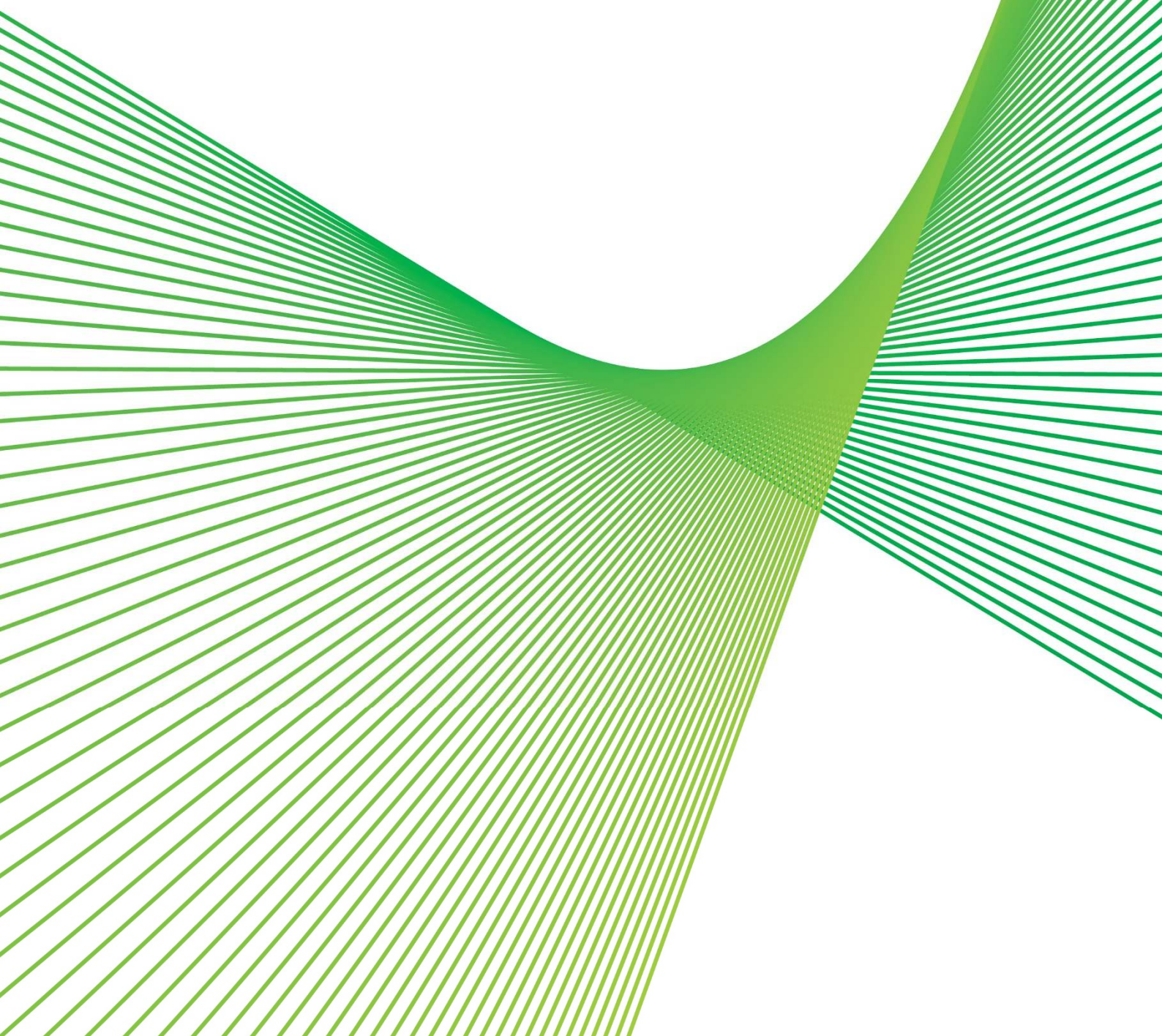


Summary: Managing the risk of disconnecter failure

RIT-T Project Specification Consultation Report

Issue date: 6 August 2024



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Executive summary

High voltage disconnectors and associated earth switches (henceforth collectively referred to as disconnectors) earth and provide visible isolation for sections of Transgrid's high voltage network. Disconnectors are required within the network to facilitate maintenance of other high voltage equipment such as circuit breakers and transformers.

The purpose of this PSCR is to examine and consult on options to address the deteriorating condition of the identified disconnectors to ensure the safe and secure operation of our network. We consider it prudent and cost effective to manage this risk through an asset replacement program during the 2023/24 and 2027/28 regulatory period.

Identified need: Ensure the safe and reliable operation of our transmission network by managing the risk of disconnector and earth switch failure

The identified need for this project is to ensure the safe and reliable operation of our transmission network by addressing the risk of failure of certain disconnectors that are approaching the end of their technical life.

There are 5180 disconnectors installed in Transgrid's network. Of this population, 30% will be over the nominal expected life of 40 years by 2027-28. With such a large ageing population, a strategic approach is required to plan investments over the coming years to manage these assets effectively and efficiently.

The disconnectors considered for replacement under this need are older disconnectors that have already reached their end of life (see Appendix C for further detail). The failure of a disconnector is expected to result in additional equipment outages to isolate the failed disconnector for repair. In case of bus disconnectors this additional outage is significant due to the isolation of all other services from the affective bus bar. The potential outages are expected to disrupt customer and distributor supplies and increase corrective maintenance costs.

Addressing the condition of the identified assets provides the economic benefit of avoided involuntary load shedding to the NEM. We have classified this RIT-T as a 'market benefits' driven RIT-T as the economic assessment is not being progressed specifically to meet a mandated reliability standard but by the net benefits that are expected to be generated for end-customers. This means that options assessed within this RIT-T must provide net economic benefits compared to the base case if they are to be pursued.

Credible options considered

We consider that there is one credible network option that can meet the identified need. This sole credible option is summarised below:

Table E-1 Summary of the credible options

Option	Description	Capital costs (\$m, 2023/24)
Option 1	This option fully addresses the identified need by replacing and refurbishing disconnectors.	21.2

See Appendix C for a full list of assets to be replaced and refurbished under Option 1.

Non-network options are not expected to be able 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. Non-network options are not able to mitigate the risks from disconnector assets having reached or approaching the end of their technical life.

Credible options are assessed against three reasonable scenarios

The credible options are assessed against three different scenarios within this Project Specification Consultation Report (PSCR). The scenarios differ by the assumed level of risk (involuntary load shedding) costs, given that these are the key parameters that may affect the ranking of the credible options. As wholesale market benefits are not relevant for this RIT-T, the three scenarios assume the most likely scenario from AEMO's Integrated System Plan (ISP, i.e. the 'Step Change' scenario). Risk cost assumptions do not form part of AEMO's ISP assumptions and have been based on Transgrid's analysis.

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%
VCR (\$2023/24)	51,086/MWh	51,086/MWh	51,086/MWh
Network capital costs	Base estimate	Base estimate	Base estimate
Avoided unserved energy	Base estimate	Base estimate – 25%	Base estimate + 25%

Draft Conclusion

Option 1 (disconnector replacement program) 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 the disconnector risks due to the assets having reached or are approaching the end of their technical life. The estimated capital expenditure associated with this option is \$21.2 million in \$2023/24 over the assessment period. Option 1 is found to have positive net benefits under all scenarios investigated and, on a weighted basis, will deliver \$1,377 million in net economic benefits¹. The works would be undertaken from 2024 to 2028.

All works will be completed in accordance with the relevant standards and components shall be replaced and refurbished to have minimal modification to the wider transmission network. Necessary outages of relevant assets in service will be planned appropriately to complete the works with minimal network impact.

¹ Reliability risk makes up 100 per cent of the total estimated risk cost in present value terms. The relative size of this risk is due to probability of someone experiencing a serious injury from a disconnector failure is very low and the potential of adverse impact on the environment is also very remote. In the event of a failure, the field personnel may be able to put stop gap measures to restore the continuity of supply, but these measures can take time to implement resulting in an extended period of outage than planned. Hence, the impact of a disconnector failure is mostly comprised of loss of service arising from higher reliability risk.

Exemption from preparing a Project Assessment Draft Report

Subject to the identification of additional credible options during the consultation period, publication of a Project Assessment Draft Report (PADR) is not required for this RIT-T as we consider that the conditions in clause 5.16.4(z1) of the NER exempting RIT-T proponents from providing a PADR have been met.

Specifically, production of a PADR is not required because:

- the estimated capital cost of the preferred option is less than \$46 million;²
- we have identified in this PSCR our preferred option and the reasons for that option, and noted that we will be exempt from publishing the PADR for our preferred option; and
- we consider that the preferred option and any other credible options do not have a material market benefit (other than benefits associated with changes in voluntary load curtailment and involuntary load shedding).

If an additional credible option that could deliver a material market benefit is identified during the consultation period, then we will produce a PADR that includes an assessment of the net economic benefit of each additional credible option.

If no additional credible options with material market benefits are identified during the consultation period, then the next step in this RIT-T will be the publication of a Project Assessment Conclusions Report (PACR) that addresses all submissions received, including any issues in relation to the proposed preferred option raised during the consultation period.³

Submissions and next steps

We welcome written submissions on materials contained in this PSCR.

Submissions are due on 6 November 2024⁴ and should be emailed to our Regulation team via regulatory.consultation@Transgrid.com.au.⁵ In the subject field, please reference 'Disconnecter Replacement Program 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.

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. Subject to additional credible options being identified, we anticipate publication of a PACR by December 2024.

² Varied from \$43m to \$46m based on the [AER Final Determination: Cost threshold review](#), November 2021.

³ In accordance with NER clause 5.16.4(z2).

⁴ Consultation period is for 12 weeks, additional days have been added to cover public holidays

⁵ Transgrid is bound by the Privacy Act 1988 (Cth). In making submissions in response to this consultation process, Transgrid 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.