

Powerlink Queensland



Summary
Project Specification Consultation Report
26 September 2023
Maintaining power transfer capability and
reliability of supply at Kemmis

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Summary

The condition of Transformer 1 at Kemmis Substation requires Powerlink to take action

Kemmis substation, located approximately 32km north west of Nebo, was established in 2002 to support the load growth arising from the expansion of mining in the northern Bowen Basin and to provide a bulk-supply injection point to the Ergon distribution network (part of the Energy Queensland group).

Power transformer 1 (Transformer 1) was first assembled and energised at an alternate site in 1984 and was subsequently relocated to Kemmis substation in 2003 as part of the substation's original development. Having been in-service for almost forty years, a recent condition assessment found that Transformer 1 is displaying a number of condition-based issues, indicating it is nearing the end of its technical life and, with an increasing risk of failure. The failure of a transformer or associated primary plant can result in an extensive replacement timeframe increasing the risk of loss of supply to the local area, and in extreme cases, could present a risk to the safety of personnel.

Planning studies have confirmed there is a long-term requirement to continue to supply the existing electricity services provided by Kemmis Substation. Powerlink must therefore take action to avoid the increasing likelihood of unserved energy arising from failure of the ageing transformer at Kemmis, and ensure customers are provided with a reliable and safe supply of electricity.

Powerlink is required to apply the RIT-T to this investment

As the identified need of the proposed investment is to meet reliability and service standards specified in the Rules, Powerlink's Transmission Authority and applicable jurisdictional instruments, it is classified as a "reliability corrective action"¹.

The identified need is not discussed in the most recent Integrated System Plan (ISP), and is therefore subject to the application and consultation process for RIT-T projects not defined as *actionable ISP projects*².

Powerlink has adopted the expedited process for this RIT-T³, as the preferred option is below \$46 million and is unlikely to result in any material market benefits other than those arising from a reduction in involuntary load shedding. The reduction in involuntary load shedding under the credible⁴ network option presented is catered for in the risk cost modelling and consequentially represented in the economic analysis.

This Project Specification Consultation Report (PSCR) discusses and ranks the potential credible network options, which incorporate cost effective measures over the long-term, to achieve the required service levels.

A non-credible Base Case has been developed against which to compare credible options

Consistent with the Australian Energy Regulator's (AER's) RIT-T Application Guidelines⁵ the assessment undertaken in this PSCR compares and ranks the net present value (NPV) of the credible network option designed to address the emerging risks, relative to a Base Case.

The Base Case is modelled as a non-credible option where the existing condition issues associated with an asset are managed via operational maintenance only, resulting in an increase in risk levels as the condition of the asset deteriorates over time. These increasing risk levels are assigned a monetary value and added to the ongoing maintenance costs to form the Base Case. The Base Case is then used as a benchmark against which to compare and rank the credible options designed to offset/mitigate the risks, and to ensure ongoing compliance with regulatory and jurisdictional obligations.

Network options considered to address the identified need

Powerlink has developed one credible network option to address the identified need for maintaining power transfer capabilities and reliability of supply at Kemmis Substation. This

¹ The Rules clause 5.10.2, Definitions, reliability corrective action.

² Refer to Clause 5.16.1 of the Rules.

³ In accordance with clause 5.16.4(z1) of the Rules.

⁴ Clause 5.15.2(a) of the Rules.

⁵ AER, *Application guidelines, Regulatory investment test for transmission*, August 2020

option proposes a like for like replacement of Transformer 1 by 2026. The credible network option, along with its NPV relative to the Base Case is summarised in Table 1. The absolute NPVs of the Base Case and option 1 are shown graphically in Figure 1.

Table 1: Summary of credible RIT-T network options (\$m, real 2023)

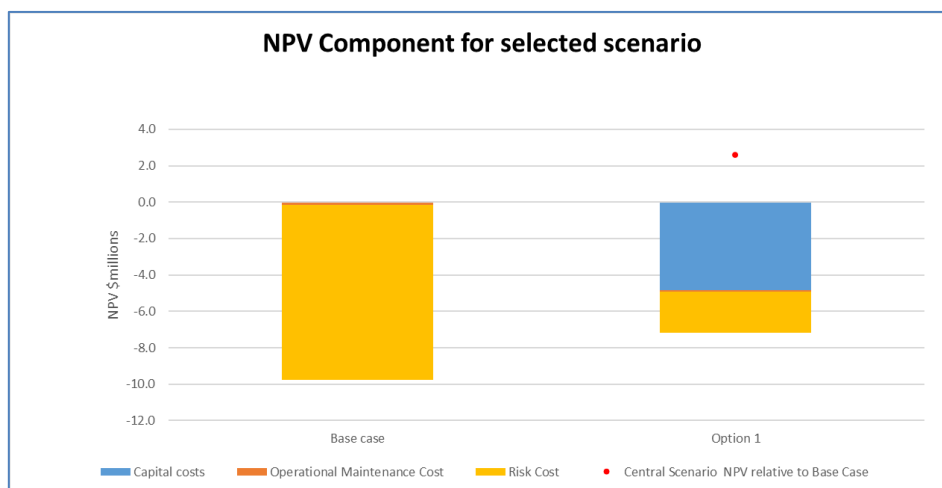
Option	Description	Total Cost (\$m)	Central NPV relative to Base Case (\$m)	Ranking
1	Replace 1 transformer by 2026	6.78*	2.56	1

*RIT-T Project

Option 1 is the only credible network option, which addresses the major risks resulting from the deteriorated condition of the ageing transformer at Kemmis Substation.

Figure 1 shows the breakdown of the NPV of the Base Case and option 1 for the central scenario. Option 1 reduces the total risk costs arising from the ageing transformer at Kemmis remaining in service and being managed via operational maintenance only (as in the Base Case), and hence reflects a net economic benefit when compared to the Base Case.

Figure 1: NPV component of Base Case and Options for central scenario (\$m, real 2023)



Option 1 has been identified as the preferred network option.

The Base Case is not a credible option, in that it does not allow Powerlink to continue to maintain compliance with relevant standards, applicable regulatory instruments and the Rules.

The economic analysis demonstrates that Option 1 provides a positive net economic benefit relative to the Base Case and is therefore the preferred option.

Option 1 involves the replacement of Transformer 1 by 2026. The indicative capital cost of the RIT-T project for the preferred option is \$6.78 million in 2022/23 prices.

Under Option 1, procurement of new equipment would commence in 2024, with replacement of the existing Transformer 1 completed by 2026.

Powerlink welcomes the potential for non-network options to form part or all of the solution

Powerlink welcomes submissions from proponents who consider that they could offer a credible non-network option that is both economically and technically feasible by November 2026, on an ongoing basis.

A non-network option that avoids the proposed replacement of the ageing transformer would need to replicate, in part or full, the support that Kemmis Substation delivers to customers in the area on a cost effective basis.

Lodging a submission with Powerlink

Powerlink is seeking written submissions on this *Project Specification Consultation Report* by Friday, 22 December 2023, particularly on the credible option presented⁶.

Please address submissions to:

Roger Smith
Manager Network and Alternate Solutions
Powerlink Queensland
PO Box 1193
VIRGINIA QLD 4014

Tel: (07) 3860 2111

Email submissions to: networkassessments@powerlink.com.au

⁶ [Powerlink's website](#) has detailed information on the types of engagement activities, which may be undertaken during the consultation process. These activities focus on enhancing the value and outcomes of the RIT-T engagement process for customers and non-network providers.



Contact us

Registered office	33 Harold St Virginia Queensland 4014 Australia
Postal address:	GPO Box 1193 Virginia Queensland 4014 Australia
Contact:	Roger Smith Manager Network and Alternate Solutions
Telephone	(+617) 3860 2328 (during business hours)
Email	networkassessments@powerlink.com.au
Internet	www.powerlink.com.au