

Powerlink Queensland



Summary
Project Specification Consultation Report
27 June 2019

Addressing the secondary systems
condition risks at Kemmis

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Summary

Ageing and obsolete secondary systems at Kemmis Substation require 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 point for the regional distribution network owned by Ergon Energy (part of the Energy Queensland Group).

Planning studies have confirmed there is a long-term requirement to continue to supply the existing electricity services provided by Kemmis Substation that support a diverse range of customer needs in the area.

The secondary systems at Kemmis Substation broadly perform the functions of transmission element protection, data collection, remote (and local) control and monitoring. Commissioned almost 20 years ago, most secondary systems at the Kemmis Substation are reaching the end of their technical service lives, and are no longer supported by the manufacturer, with limited spares available. Increasing failure rates, along with the increased time to rectify the faults due to the obsolescence of the equipment significantly affects the availability and reliability of these systems and hence their ability to continue to meet the requirements of the National Electricity Rules (the Rules).

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

As the proposed investment is to meet reliability and service standards specified within Powerlink's Transmission Authority and guidelines and standards published by the Australian Energy Market Operator (AEMO), and to ensure Powerlink's ongoing compliance with Schedule 5.1 of the Rules, it is classified as a 'reliability corrective action'¹.

The most expensive credible network option identified in this PSCR meets the capital expenditure cost threshold of \$6 million, initiating public consultation under the Rules. Powerlink has adopted the expedited process for this RIT-T², as the preferred option is below \$43 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 credible network options is catered for in the risk cost modelling and consequentially represented in the economic analysis of the options.

This Project Specification Consultation Report (PSCR) discusses the potential credible network options and identifies the preferred network option, which incorporates 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 Guidelines³, the assessment undertaken in this PSCR compares and ranks the net present value (NPV) of credible network options 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.

Two credible network options have been developed to address the identified need

Powerlink has developed two credible network options to maintain the existing electricity services, ensuring an ongoing reliable, safe and cost effective supply to customers in the area. The two credible network options, along with their NPVs relative to the Base Case are summarised in Table 1 below. The absolute NPVs of the Base Case and the credible network options are shown graphically in Figure 1.

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

² In accordance with clause 5.16.4(z1) of the Rules

³ AER, Application guidelines, Regulatory Investment Test for Transmission, December 2018

Table 1 shows that the both options have a negative NPV relative to the non-credible Base Case, as allowed for under the Rules for 'reliability corrective actions'. Of the two credible network options, Option 2 has the lowest cost in NPV terms.

Table 1: Summary of credible network options

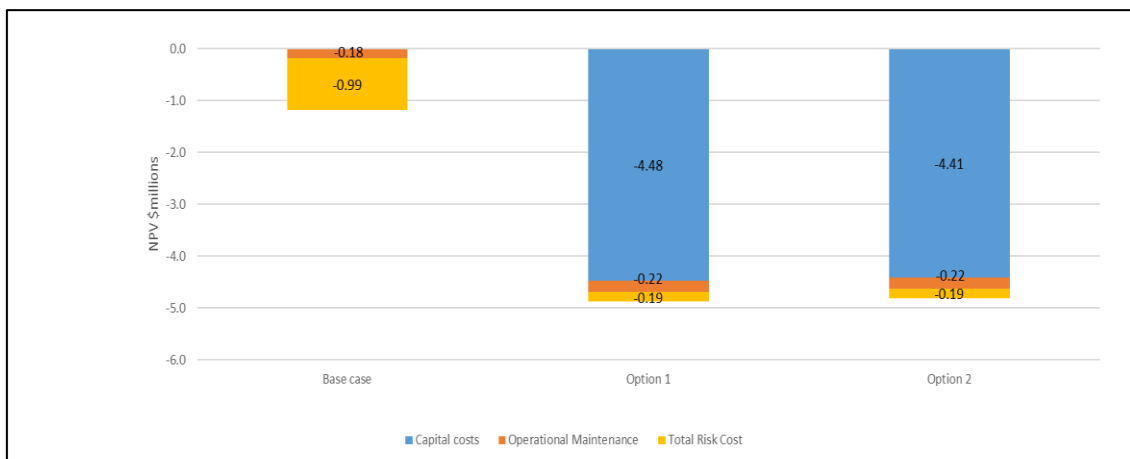
Option	Description	Total costs (\$m) 2018/19	NPV relative to base case (\$m) 2018/19	Ranking
1	Replacement of all secondary systems into a new building (excluding the capacitor bank secondary systems) by June 2023*	6.647*	-3.710	2
	Replacement of the capacitor bank secondary systems equipment by June 2028†	0.494†		
2	Full replacement of all secondary systems into a new building by June 2023*	6.834*	-3.642	1

*RIT-T Project

†Future modelled projects

Figure 1 shows that the Base Case and both options have a negative NPV, with Option 2 being the least negative of the two credible options. Both options significantly reduce the total risks arising from the condition of the ageing and obsolete secondary systems at Kemmis when compared to the Base Case.

Figure 1: NPV of Base Case and Credible Network Options



Option 2 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. As the investment is classified as a 'reliability corrective action' under the Rules, the purpose of the RIT-T is to identify the credible option that minimises the total cost to customers.

The major differences between the credible options relates to their capital costs and the timing of the replacement of the capacitor bank secondary systems. The economic analysis demonstrates that Option 2 provides the lowest cost solution and is therefore the preferred option.

Option 2 involves the full replacement of all secondary systems at Kemmis, including the capacitor bank secondary system, by June 2023. The indicative capital cost of this option is \$6.8 million in 2018/19 prices.

Under Option 2, design work will commence from mid-2020, and construction from 2021. Installation and commissioning of the new secondary system will be completed by June 2023.

[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 June 2023, on an ongoing basis.

A non-network option that avoids the proposed replacement of the ageing and obsolete secondary systems 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 on or before Friday, 27 September 2019, particularly on the credible options presented⁴.

Please address submissions to:

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[Submissions can be emailed to: networkassessments@powerlink.com.au](mailto:networkassessments@powerlink.com.au)

⁴ [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.



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