Powerlink Queensland

Summary of Project Assessment Conclusions Report

21 October 2019

Addressing the secondary systems condition risks at Kemmis

Disclaimer

While care was taken in preparation of the information in this document, and it is provided in good faith, Powerlink accepts no responsibility or liability (including without limitation, liability to any person by reason of negligence or negligent misstatement) for any loss or damage that may be incurred by any person acting in reliance on this information or assumptions drawn from it, except to the extent that liability under any applicable Queensland or Commonwealth of Australia statute cannot be excluded. Powerlink makes no representation or warranty as to the accuracy, reliability, completeness or suitability for particular purposes, of the information in this document.

Summary

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 must therefore address the emerging risks arising from the condition of the secondary systems at Kemmis Substation. As the identified need of 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].

This Project Assessment Conclusions Report (PACR) represents the final step in the RIT-T process prescribed under the Rules undertaken by Powerlink to address the condition risks arising from the secondary systems at Kemmis Substation. It contains the results of the planning investigation and the cost-benefit analysis of credible options compared to a non-credible Base Case where the emerging risks are left to increase over time. In accordance with the RIT-T, the credible option that minimises the net present value (NPV) of costs is recommended as the preferred option.

Credible options considered

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 major differences between the credible options relate to their capital costs and the timing of the replacement of the capacitor bank secondary systems.

By addressing the condition risks, both options allow Powerlink to meet the identified need and continue to meet the reliability and service standards specified within Powerlink's Transmission Authority, Schedule 5.1 of the Rules, AEMO guidelines and standards and applicable regulatory instruments.

Powerlink published a Project Specification Consultation Report (PSCR) in June 2019 to address the risks arising from the condition of the secondary systems at Kemmis Substation. No submissions were received in response to the PSCR that closed on 27 September 2019. As a result, no additional credible options have been identified as a part of this RIT-T consultation.

The two credible network options, along with their NPVs relative to the Base Case are summarised in Table 1. 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.

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

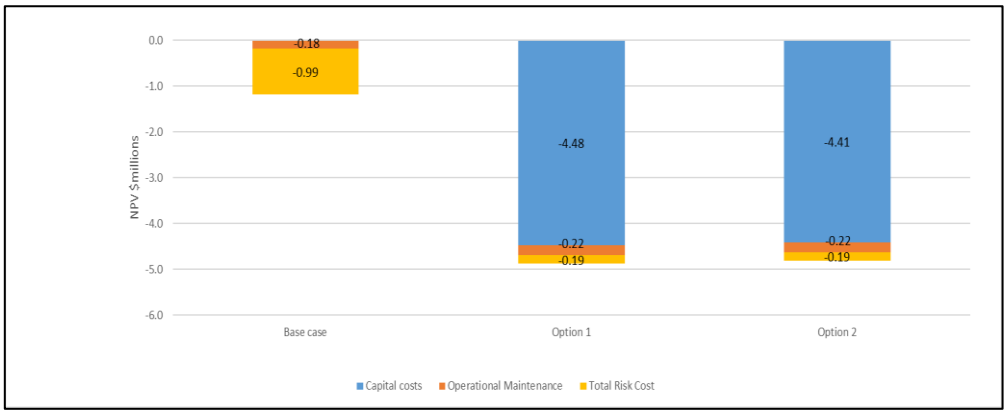
Table 1: Summary of credible network options

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

The absolute NPVs of the Base Case and the credible options are negative, shown graphically in Figure 1, with Option 2 being the least negative of the credible options. Both options significantly reduce the total risks arising from the condition of the ageing and obsolete secondary systems at Kemmis remaining in service. They also ensure ongoing compliance with Schedule 5.1 of the Rules and enable Powerlink to continue to meet the reliability and service standards specified within its Transmission Authority, as well as guidelines and standards published by the Australian Energy Market Operator (AEMO).

Figure 1: NPV of Base Case and Credible Network Options



Evaluation and Conclusion

The RIT-T requires that the proposed preferred option maximises the present value of net economic benefit, or minimises the net cost, to all those who produce, consume and transport electricity. The economic analysis demonstrates that Option 2 provides the lowest cost solution and is therefore the preferred option.

In accordance with the expedited process for the RIT-T, the PSCR made a draft recommendation to implement Option 2, which 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 is the proponent of the proposed network project.

As the outcomes of the economic analysis contained in this PACR remain unchanged from those published in the PSCR, the draft recommendation has been adopted without change as the final recommendation, and will now be implemented.

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