

Powerlink Queensland



Summary of Project Assessment Conclusions Report

10 April 2019

Addressing the secondary systems condition risks at Woree Substation

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Summary

Located 6km south of the Cairns Central Business District, Woree Substation is the major 132kV injection point into the Ergon Energy distribution network for Cairns. It also forms part of the far north zone transmission network, with direct connection to Chalumbin Substation. As part of its configuration and function, the substation contains a Static Var Compensator (SVC), which helps improve the transfer of electricity across the network by reducing transmission losses, smoothing voltage fluctuations and stabilising power flows.

The secondary systems associated with the SVC and most of the standard substation 132kV and 275kV secondary systems at Woree Substation are reaching the end of their technical service lives, and are no longer supported by the manufacturer, with few spares available.

This increased likelihood of faults arising from the ageing and obsolete secondary systems at Woree Substation remaining in service, combined with its TNSP obligations, present Powerlink with a range of operational risks and compliance issues requiring resolution. Since consideration for this investment is driven by an obligation in the National Electricity Rules (the Rules), it is a 'reliability corrective action' under the Regulatory Investment Test for Transmission (RIT-T).

This Project Assessment Conclusions Report (PACR) represents the final step of the RIT-T process prescribed under the Rules undertaken by Powerlink to address the condition risks arising from ageing and obsolete secondary systems at Woree Substation. It contains the results of the planning investigation and cost-benefit analysis of credible options. In accordance with the RIT-T, the credible option that maximises the present value of net economic benefits is recommended for implementation.

Credible options considered

Powerlink identified three credible network options to address the identified need, as presented in Table 1.

Table1: Summary of credible options

Option	Description	Indicative capital cost (\$million, 2018/19)	Indicative average annual operating and maintenance costs (\$million, 2018/19)
Base Option Replacement of all SVC secondary systems by December 2022 and staged replacement of substation secondary systems in one new building and existing buildings by December 2033	Replace all SVC panels by December 2022*	5.28*	
	Replace selected panels by December 2022*	6.01*	
	Replace selected panels by:		0.11
	December 2025†	3.43†	
	December 2028†	3.03†	
	December 2033†	0.96†	
Option 1 Replacement of all SVC secondary systems by December 2022 and staged replacement of substation	Replace all SVC panels by December 2022*	5.28*	
	Replace selected panels by December 2022*	9.41*	0.11

Option	Description	Indicative capital cost (\$million, 2018/19)	Indicative average annual operating and maintenance costs (\$million, 2018/19)
secondary systems in one new building and existing buildings by December 2028	Replace selected panels by: December 2028 [†]	3.95 [†]	
Option 2 Replacement of all SVC secondary systems by December 2022 and upfront replacement of all substation secondary systems into 2 new buildings and existing buildings by December 2022	Replace all SVC panels by December 2022* Replace all panels by December 2022*	5.28* 14.46*	0.07

*Proposed RIT-T projects

[†]Modelled projects

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 in the market. This RIT-T has been undertaken in accordance with the expedited process under the Rules as allowed for investments of this nature.

A Project Specification Consultation Report (PSCR) was originally published in October 2018 (subsequently re-issued in December 2018 as amended by an Addendum) containing a draft recommendation to implement the Base Option; replacement of all of the SVC secondary systems by December 2022 with the staged replacement of the substation secondary systems by December 2033.

The RIT-T project for the Base Option involves the full replacement of the SVC secondary systems and the replacement of selected substation secondary systems by December 2022 at an estimated capital cost of \$11.29 million in 2018/19 prices. Powerlink is the proponent of this network project.

Given the Addendum update to the PSCR, Powerlink extended the consultation period to receive submissions from 25 January 2019 to 15 March 2019. There were no submissions received in response to the PSCR.

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

In addition, Powerlink will:

- review and refine the timing of subsequent stages of this option, if required, based on the future condition assessments of the risks arising from the remaining substation secondary systems that were not replaced in the first stage
- undertake any necessary additional regulatory consultations at the appropriate time for future investments if required.



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