

Powerlink Queensland



Summary
Project Assessment Conclusions Report
13 February 2019

Maintaining power transfer capability and
reliability of supply at Bouldercombe
Substation.

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Summary

Located approximately 19 kilometres south-west of Rockhampton and established in 1975, Bouldercombe Substation is a major transmission node for Central Queensland, marshalling a number of 275kV circuits from Nebo and Broadsound to the north, Stanwell in the west and Raglan and Calliope River to the south.

It also provides the sole 132kV injection source for the area, supplying Ergon Energy at Rockhampton, Egans Hill and Pandoin, as well as Stanwell Power Station's auxiliary supply and customers directly connected to Powerlink's network.

Transformers 1 and 2, along with the original circuit breakers, disconnectors, earth switches and instrument transformers at Bouldercombe Substation are nearing the end of their technical service lives, with manufacturers no longer providing technical support or carrying spares for many of the items.

Powerlink's obligations as a Transmission Network Supply Provider (TNSP)¹ require it to maintain (including repair and replace if necessary) its transmission grid to ensure the adequate, economic, reliable and safe transmission of electricity, including the ability to meet peak demand if a major element of the network was to fail.

The increasing likelihood of faults arising from the condition of ageing and obsolete plant at Bouldercombe Substation remaining in service, presents Powerlink with a range of operational and safety risks, as well as 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 primary plant at Bouldercombe 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 six credible network options to address the identified need, as presented in Table 1.

¹ Schedule 5.1a System Standards and 5.1.2 Network Reliability of the Rules, Electricity Act 1994 and Queensland Transmission Authority T01/98

Table 1: Summary of credible options

Option	Description	Indicative capital cost (\$million, 2018/19)	Indicative annual O&M costs (\$million, 2018/19)
Base Option Standard 250MVA transformer with staged replacement of primary plant by December 2031	Install a new 250MVA transformer Decommission Transformers 1 & 2 Life extend or replace selected primary plant by December 2021*	26.77*	0.14
	Replace balance of ageing plant by December 2031†	16.96†	
Option 1 Standard 250MVA transformer with staged replacement of primary plant by December 2041	Install a new 250MVA transformer, decommission transformers 1 & 2, life extend or replace selected primary plant by December 2021*	26.98*	0.14
	Replace balance of ageing plant by December 2041†	15.95†	
Option 2 Install standard 250MVA transformer with upfront replacement of all primary plant in selected bays by December 2021	Install a new 250MVA transformer, decommission transformers 1 & 2 and single stage replacement of all plant in selected bays by December 2021*	30.60*	0.12
Option 3 Standard 375MVA transformer with staged replacement of primary plant by December 2031	Install a new 375MVA transformer, decommission transformers 1 & 2 and life extend or replace selected primary plant by December 2021*	27.28*	0.14
	Replace balance of ageing plant by December 2031†	16.96†	
Option 4 Standard 375MVA transformer with staged replacement of primary plant by December 2041	Install a new 375MVA transformer, decommission transformers 1 & 2 and life extend or replace selected primary plant by December 2021*	27.49*	0.14
	Replace balance of ageing plant by December 2041†	15.95†	
Option 5 Standard 375MVA transformer with upfront replacement of all primary plant in selected bays by December 2021	Install a new 375MVA transformer, decommission transformers 1 & 2 and single stage replacement of all primary plant in selected bays by December 2021*	31.12*	0.12

*Proposed RIT-T project

†Modelled project

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.

In accordance with the expedited process for this RIT-T, the Project Specification Consultation Report (PSCR), published in October 2018, made a draft recommendation to implement Option 2. Option 2 involves the installation of a standard 250MVA transformer and the upfront replacement of all primary plant in selected bays by December 2021. The estimated capital cost of this option is \$30.6 million in 2018/19 prices. Powerlink is the proponent of the proposed network project.

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 published in the PSCR, the draft recommendation has been adopted without change as the final recommendation, and will now be implemented.



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