

Powerlink Queensland



Summary Project Specification Consultation Report

25 February 2020

Addressing the secondary systems condition risks in the Gladstone South area

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Summary

Ageing and obsolete secondary systems at Gladstone South and QAL West Substations require Powerlink to take action

Gladstone South Substation, located approximately 5km southeast of the Gladstone CBD, was established in the early 1960s as a 132kV injection point for the 66kV regional distribution network owned by Ergon Energy (part of the Energy Queensland Group). A second interconnected 132kV substation was established on an adjacent site in 2002 to meet a growing demand for electricity in the local area.

The QAL West Substation, also established in 2002, is one of three injection points for the Queensland Aluminium (QAL) refinery in Gladstone.

Planning studies have confirmed there is a long-term requirement to continue to supply the existing electricity services provided by Gladstone South and QAL West Substations to support a diverse range of customer needs in the area.

The secondary systems at Gladstone South and QAL West Substations broadly perform the functions of transmission element protection, data collection, remote (and local) control and monitoring. Commissioned almost 20 years ago, most of these systems 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 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 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.

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 included in the risk cost modelling and consequently 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 maintain 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

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

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.

Table 1 shows the capital cost of the two credible network options, along with their NPVs relative to the Base Case. Of the two credible network options, Option 2 has the highest NPV.

Table 1: Summary of credible network options

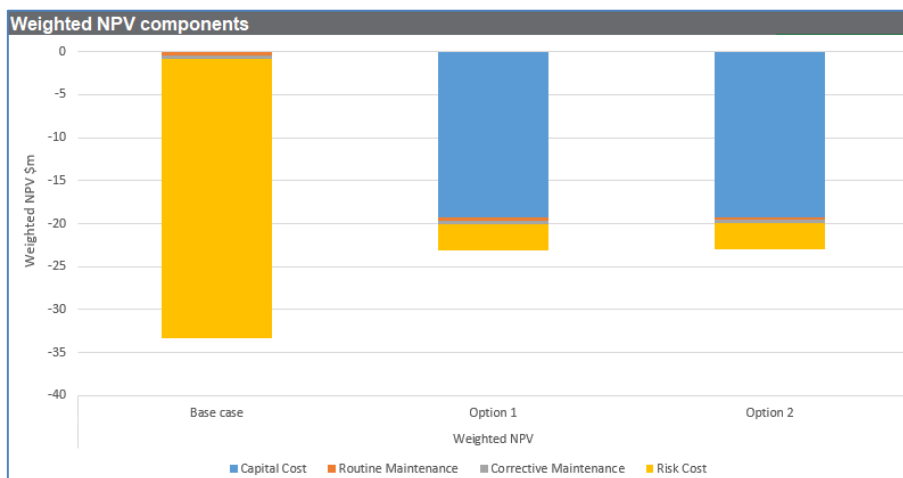
Option	Description	Capital costs (\$m) 2019/20	Weighted NPV relative to Base Case (\$m)	Ranking
1	Gladstone South: Partial replacement of secondary systems equipment using a new prefabricated building by April 2024*	15.9*	10.3	2
	Partial replacement of secondary systems equipment by October 2030†	2.3†		
	QAL West: Replace all secondary systems using existing building by April 2024*	6.8*		
2	Gladstone South: Full replacement of all secondary systems using a new prefabricated building by April 2024*	17.0*	10.4	1
	QAL West: Replace all secondary systems using existing building by April 2024*	6.8*		

*RIT-T Project

†Future modelled projects

Figure 1 shows the absolute NPVs of the Base Case and the credible network options. All credible options significantly reduce the total risks arising from the condition of the ageing and obsolete secondary systems at Gladstone South and QAL West Substations when compared to the Base Case. Option 2 has the highest NPV of the credible options.

Figure 1: Weighted 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 economic analysis demonstrates that Option 2 has the highest NPV of the two credible options and is therefore the preferred option.

Option 2 involves the full replacement of all secondary systems at both Gladstone South and QAL West substations by April 2024. The indicative capital cost of this option is \$23.8 million in 2019/20 prices. Powerlink is the proponent of this network option.

Design work will commence in 2020 and construction will commence in 2022. Installation and commissioning of the new secondary systems will be completed by April 2024.

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 April 2024, 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 Gladstone South and QAL Substations deliver 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, 22 May 2020, particularly on the credible options presented⁴.

Please address submissions to:

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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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