

Powerlink Queensland



Summary
Project Specification Consultation Report
23 May 2018
Maintaining power transfer capability and
reliability of supply at Lilyvale

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Summary

The condition of primary plant at Lilyvale Substation requires Powerlink to take action

Lilyvale Substation, located approximately 50km from Emerald, plays a critical role in the supply of electricity to customers in Queensland's Central West region, as well as the Blackwater and Bowen Basin mining areas. Planning studies have confirmed there is a long-term requirement to continue to supply the existing electricity services provided by Lilyvale Substation supporting a diverse range of customer needs in the area.

Commissioned over 38 years ago, much of the substation's primary plant, including two of the original three 132/66 kV transformers, are reaching the end of their technical service lives and are no longer supported by the manufacturer, with limited spares available to rectify a failure if one were to occur.

The increasing likelihood of faults arising from the condition of Lilyvale's ageing and obsolete primary plant and transformers remaining in service, exposes customers to the risks and consequences of an increasingly unreliable electricity supply.

There is a need for Powerlink to address this emerging risk under the reliability and service standards set out in its mandated jurisdictional and Rules' obligations.

This Project Specification Consultation Report (PSCR) discusses the potential credible network options, which incorporate cost effective measures over the long-term, to achieve the required service levels.

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

As the proposed investment is to meet reliability and service standards specified within applicable regulatory instruments, 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.

A non-credible Base Case has been developed against which to compare credible options

Consistent with the 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. The Base Case is then used as a benchmark against which to compare and rank the credible options designed to offset/mitigate the risks, and to ensure ongoing compliance with regulatory and jurisdictional obligations.

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 a reliable, safe and cost effective supply to customers in the area.

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

The two credible network options, along with their net present values (NPVs) relative to the Base Case are summarised in Table 1. The absolute NPVs of the Base Case and the Options are shown graphically in Figure 1.

Table 1: Summary of credible RIT-T network options

Option	Description	Total Cost (\$m) 2018/19	NPV relative to Base Case (\$m) 2018/19	Ranking
Option 1	Replacement of two 132/66kV 80MVA transformers with two 100MVA transformers and full-bay replacement of primary plant in selected bays by October 2022.	25.39*	35.65	2
	Replacement of remaining 80MVA transformer with 100MVA transformer by December 2027	8.13†		
	TOTAL	33.52		
Option 2	Replacement of two 132/66kV 80MVA transformers with two 160MVA transformers and full-bay replacement of primary plant in selected bays by October 2022.	26.27*	37.95	1
	Decommissioning of remaining 80MVA transformer by December 2027	1.96†		
	TOTAL	28.23		

*RIT-T Project

†Future modelled projects (operational and capital).

It should be noted that the options described in Table 1 result in different substation configurations by 2027, with the existing three 132/66kV 80MVA transformers being replaced by three 100MVA transformers in Option 1 and by two 160 MVA transformers in Option 2. Both options and their resulting substation configurations, continue to provide the required services to the Lilyvale area.

Figure 1: NPV of Base Case and Options (\$m, 2018/19)

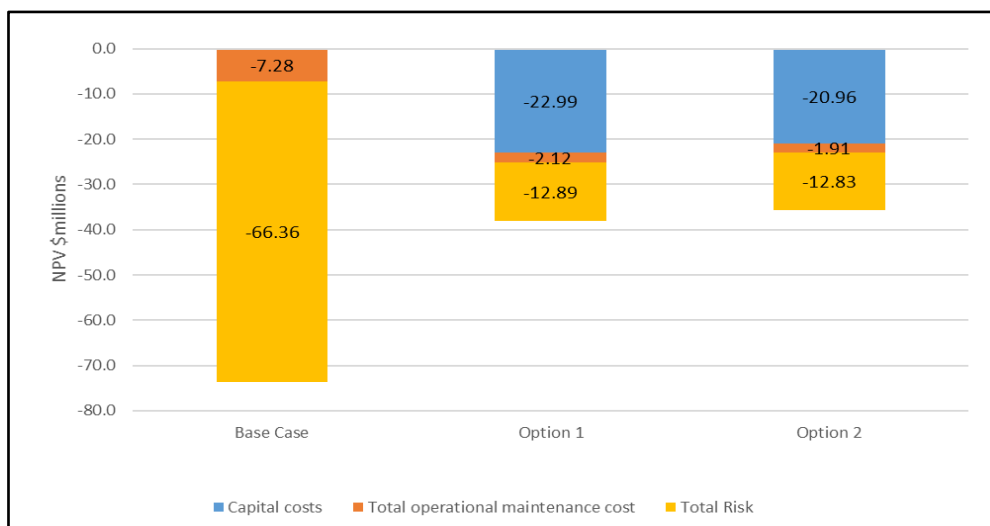


Figure 1 shows the breakdown of the absolute NPV of the Base Case and the two credible options. The Base Case and both options have a negative NPV. Both options reduce the total risks and maintenance costs arising from the ageing and obsolete assets at Lilyvale remaining in service (as in the Base Case) and hence reflect a net economic benefit when compared to the Base Case.

Taking into account capital, operational maintenance and risk costs, Option 2 delivers the greatest net economic benefit, providing a \$37.95 million reduction in the overall costs in NPV terms when compared to the Base Case.

[Option 2 has been identified as the preferred network option.](#)

Of the credible network options, Option 2 has been identified as the preferred option.

The RIT-T project for Option 2 involves the replacement of two 132/66kV 80MVA transformers with two 160MVA transformers and the full bay replacement of primary plant in selected bays by October 2022. The indicative capital cost of the RIT-T project for the preferred option is \$26.27 million in 2018/19 prices.

Under Option 2, design work would commence in 2020 with the installation of the new transformers and selected primary plant completed by October 2022.

[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 October 2022, on an ongoing basis.

A non-network option that avoids the proposed replacement of ageing primary plant and transformers would need to replicate, in part or full, the support that Lilyvale 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* by Wednesday, 21 August 2019 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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