



Powerlink Queensland

# Summary Project Specification Consultation Report

27 June 2019

## Addressing the secondary systems condition risks at Mudgeeraba

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## Summary

### Ageing and obsolete secondary systems at Mudgeeraba Substation require Powerlink to take action

Located approximately 10km north of the Queensland-NSW border, Mudgeeraba Substation was established in 1970 as a 110kV switchyard. It was expanded in the late 1990s with the addition of a 275kV switchyard and now serves as the major injection point for the distribution networks supplying the southern Gold Coast in Queensland and north-eastern New South Wales (NSW), supporting a diverse range of customer needs in these areas.

Planning studies have confirmed there is an enduring need to continue to supply the existing electricity services provided by Mudgeeraba substation.

The 275kV secondary systems at Mudgeeraba Substation broadly perform the functions of transmission element protection, data collection, remote (and local) control, and monitoring. Commissioned approximately 20 years ago, these secondary systems are reaching the end of their technical service lives, and are increasingly no longer supported by their 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 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'<sup>1</sup>.

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-T<sup>2</sup>, 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.

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 achieve 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 Guidelines<sup>3</sup>, 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 due to deterioration of asset condition and rectification of failures taking longer due to obsolescence issues. 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

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.

<sup>1</sup> The Rules clause 5.10.2, Definitions, reliability corrective action.

<sup>2</sup> In accordance with clause 5.16.4(z1) of the Rules

<sup>3</sup> AER, Application guidelines, Regulatory Investment Test for Transmission, December 2018

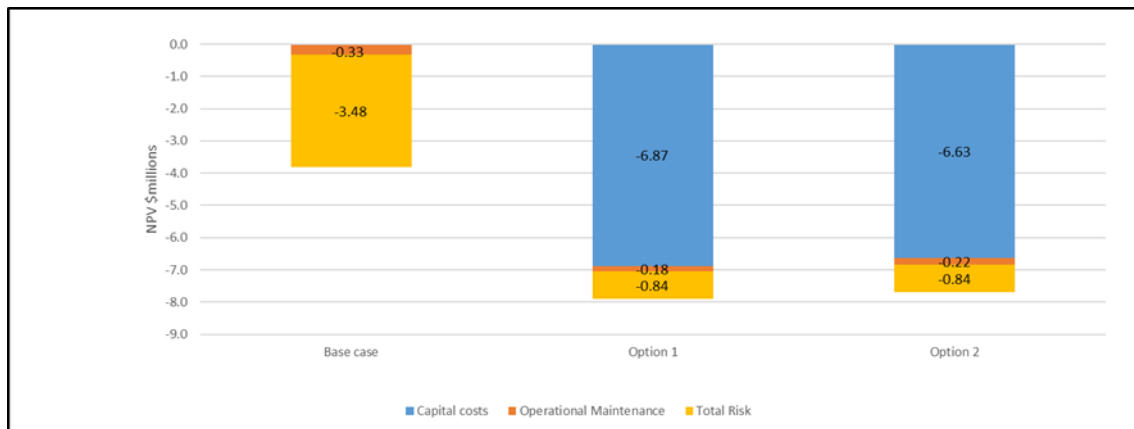
Table 1 details the two credible network options and shows that both options have a negative net present value (NPV) relative to the non-credible Base Case, as allowed for under the Rules for 'reliability corrective actions'. Of the two credible network options, Option 2 has the least negative NPV.

Option	Description	Total costs (\$m) 2018/19	NPV relative to base case (\$m) 2018/19	Ranking
Option 1 Replacement in existing building	In-situ replacement of the 275kV secondary systems in the existing building by December 2021	8.60	-4.09	2
Option 2 Replacement in new building	Replacement of the 275kV secondary systems into a new building by December 2021	8.30	-3.88	1

Table 1: Summary of credible network options

Figure 1 illustrates that the Base Case and both options return a negative NPV, with Option 2 being the least negative of the two credible options. Both credible options significantly reduce the total risks arising from the condition of the ageing and obsolete 275kV secondary systems at Mudgeeraba when compared to the Base Case.

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



### Option 2 has been identified as the preferred 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 provides the lowest cost solution and is therefore the preferred option.

Option 2 involves the replacement of the 275kV secondary systems at Mudgeeraba in a new building by December 2021. The indicative capital cost of this option is \$8.3 million in 2018/19 prices.

Under Option 2, design work will commence in 2019, followed by fabrication and installation of the new 275kV secondary systems in 2020 and 2021, with all works completed by December 2021.

### 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 December 2021, 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 Mudgeeraba 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, on or before Friday, 27 September 2019, particularly on the credible options presented<sup>4</sup>.

Please address submissions to:

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<sup>4</sup> [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.



## Contact us

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