Powerlink Queensland

Summary
Project Specification Consultation Report

2 December 2019

Addressing the secondary systems condition risks at Mt England

Summary

Ageing and obsolete secondary systems at Mt England Substation require Powerlink to take action

Mt England Substation is a 275kV switching station located approximately 39km north-west of the Brisbane Central Business District. It was established in 1983 to provide a connection point for Wivenhoe Power Station and facilitate the flow of energy from Tarong Power Station into the greater Brisbane transmission network via feeders to South Pine, Blackwall and Abermain Substations. Planning studies have confirmed there is a long-term requirement to continue to supply the existing electricity services provided by Mt England Substation.

The secondary systems at Mt England broadly perform the functions of transmission element protection, data collection, remote (and local) control and monitoring. Many of these 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, reliability and technical capability of these systems 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 for 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].

Powerlink has identified and presented in this Project Specification Consultation Report (PSCR) a credible network option to maintain the existing electricity services, ensuring an ongoing reliable, safe and cost effective supply to customers in the area. This network option 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[2], as the network 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 option is included for in the risk cost modelling and consequentially represented in the economic analysis of the option.

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

Consistent with the Australian Energy Regulator's (AER's) RIT-T Application Guidelines[3], the assessment undertaken in this PSCR compares the net present value (NPV) of the credible network option identified 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.

Proposed network option to address the identified need

Secondary systems have a very specific and important role in protecting, controlling and monitoring the transmission network, with the form and capabilities of much of these systems defined in the Rules and the AEMO standards and guidelines. Consequently, the only technically and economically prudent network option to address the secondary system condition risks and compliance obligations at Mt England Substation by October 2023 is to replace the secondary systems.

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[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 presented the least cost variant of this option that utilises spare floor space in the existing building, which simplifies the installation of the new equipment and outage requirements compared to a variant that rebuilds the secondary systems panels in their current location in the existing building. The presented option also minimises the capital costs over a variant where the secondary systems are installed in a new building.

The credible network option, along with its NPV relative to the Base Case is summarised in Table 1 below. The absolute NPVs of the Base Case and the credible network option are shown graphically in Figure 1.

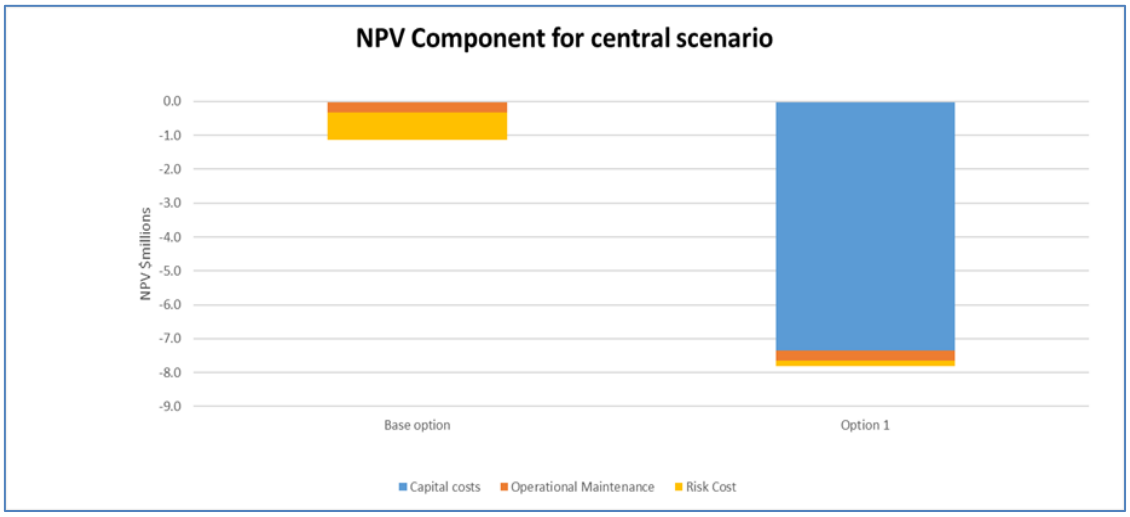
Table 1 illustrates that the credible network option has a negative NPV relative to the non-credible Base Case, as allowed for under the Rules for 'reliability corrective actions'.

Table 1: Summary of the credible network option

Option	Description	Total costs ($m) 2019/20	NPV relative to base case ($m) 2019/20
1	Replacement of selected 275kV secondary systems within the existing building by October 2023	10.26	-6.69

Figure 1 shows that the Base Case and the credible option both have a negative NPV, with the network option significantly reducing the risks arising from the condition of the ageing and obsolete secondary systems at Mt England when compared to the Base Case.

Figure 1: NPV of Base Case and Credible 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 proposed network option, Option 1, involves the replacement of selected 275kV secondary systems within the existing building at Mt England by October 2023, at an indicative capital cost of $10.26 million in 2019/20 prices. Powerlink is the proponent of this network option.

Under this option, design work will commence from mid-2020. Installation and commissioning of the new secondary system will be completed by October 2023.

Powerlink welcomes the potential for non-network options to form part or all of the solution

Due to the nature of secondary systems, Powerlink is of the view that it is unlikely for there to be an economically and technically feasible non-network option to meet the identified need. However, Powerlink welcomes submissions from proponents who consider they could offer a potential non-network solution by October 2023.

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 Mt England Substation delivers to customers in the area on a cost effective and ongoing basis.

Lodging a submission with Powerlink

Powerlink is seeking written submissions on this Project Specification Consultation Report on or before Monday, 2 March 2020, particularly on the credible option presented[4].

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.

Contact us

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