Powerlink Queensland

Summary Project Specification Consultation Report

5 April 2022

Addressing the secondary systems condition risks at Chalumbin

Summary

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

Chalumbin Substation is located almost 100 kilometres to the south of Cairns in Far North Queensland (FNQ). The site was established in 1988 to help supply load into the Cairns and Atherton Tableland areas. Planning studies have confirmed there is a long-term requirement to continue to supply the existing electricity services provided by this substation.

The secondary systems at Chalumbin broadly perform the functions of transmission element protection, data collection, remote (and local) control and monitoring. The majority of Chalumbin's 275kV secondary systems will reach the end of their technical service lives between 2024-2026, with only limited manufacturer support and spares available at this time.

Increasing failure rates, along with the increased time to rectify 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 must therefore take action to ensure ongoing compliance with the Rules.

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

The estimated capital cost of the most expensive credible option to address the identified need meets the minimum threshold to apply the RIT-T.

As the proposed investment is to meet reliability and service standards specified within Powerlink's Transmission Authority, as well as 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 identified need is not discussed in the most recent Integrated System Plan (ISP) and is therefore subject to the application and consultation process for RIT-T projects not defined as *actionable ISP projects*[2].

Powerlink has adopted the expedited process for non-ISP projects for this RIT-T[3], as the preferred option is below $46 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 Australian Energy Regulator's (AER's) RIT-T Application Guidelines for non-ISP projects[4], the assessment undertaken in this Project Specification Consultation Report (PSCR) compares the net present value (NPV) of the credible network options identified to address the emerging risks with 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.

Four credible network options have been developed to address the identified need

Powerlink has developed four credible network options to maintain the existing electricity services, ensuring an ongoing reliable, safe and cost effective supply to customers in the area.

---

[1] The Rules clause 5.10.2, Definitions, reliability corrective action.
[2] Refer to Clause 5.16.2 of the NER.
[3] In accordance with clause 5.16.4(z1) of the Rules and S4.1 AER Regulatory investment test for transition application guidelines, August 2020
[4] AER, Regulatory investment test for transmission application guidelines, August 2020

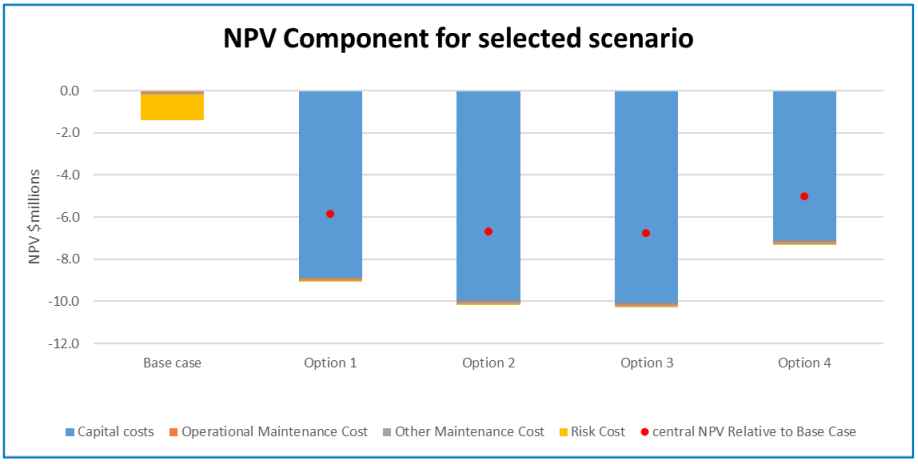
Table 1 details the credible network options and shows that all options have a negative NPV relative to the non-credible Base Case, as allowed for under the Rules for 'reliability corrective actions'. Of the credible network options, Option 4 has the highest NPV.

Table 1: Summary of credible network options

Option	Description	Total costs ($m, 2022)	NPV relative to Base Case ($m, 2022)	Ranking
1	Two stage replacement of selected 275kV secondary systems into new panels in the existing building with all works completed by December 2026	12.80	-7.67	2
2	Two stage replacement of selected 275kV secondary systems into a new demountable building with all works completed by December 2026	14.30	-8.77	3
3	Single stage replacement of selected 275kV secondary systems into a new demountable building by December 2025	13.72	-8.87	4
4	Single stage replacement of selected 275kV secondary systems into new panels in the existing building by December 2025	9.71	-5.93	1

Figure 1 shows that the Base Case and all credible options have negative NPVs, with Option 4 having a lower economic cost compared to the other options. All credible options reduce the risk cost arising from the condition of the ageing and obsolete secondary systems at Chalumbin, compared to the Base Case.

Figure 1: NPV of Base Case and Credible Network Options



Option 4 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 4 provides the lowest cost in net present terms of the four credible options and is therefore the preferred option.

Option 4 involves the single stage replacement of selected 275kV secondary systems into new panels in the existing building by December 2025. The indicative capital cost of this option is $9.71 million in 2021/22 prices. Powerlink is the proponent of this network option.

Design work would commence in 2022, with installation and commissioning of the new secondary systems completed by December 2025.

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 2025, 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 Chalumbin 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, 8 July 2022, particularly on the credible options presented[5].

Please address submissions to:

Roger Smith
Manager Network and Alternate Solutions
Powerlink Queensland
PO Box 1193
VIRGINIA QLD 4014

Tel: (07) 3860 2111

Email submissions to: networkassessments@powerlink.com.au

[5] 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

Registered office	33 Harold St Virginia Queensland 4014 Australia
Postal address:	GPO Box 1193 Virginia Queensland 4014 Australia
Contact:	Roger Smith Manager Network and Alternate Solutions
Telephone	(+617) 3860 2328 (during business hours)
Email	networkassessments@powerlink.com.au
Internet	www.powerlink.com.au