



Powerlink Queensland

Summary Project Assessment Conclusions Report

7 February 2024

Addressing the reliability of supply to Nebo local area

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Summary

Nebo Substation was established in the late 1970s as a major 275kV injection point in the state-wide transmission network, connecting North and South Queensland whilst providing bulk supplies to several key areas, including Mackay and Pioneer Valley. Two 132/11kV transformers and associated primary plant connect the Powerlink substation to the Ergon Energy (part of the Energy Queensland Group) network at Nebo supplying the local area.

The 132/11kV power transformers (Transformer 3 and Transformer 4) and associated 11kV primary plant are nearing the end of their technical lives, with an increasing risk of failure. The failure of a transformer or associated primary plant can result in an extensive replacement timeframe increasing the risk of loss of supply to the local area, and in extreme cases, could present a risk to the safety of personnel.

Planning studies have confirmed there is a long-term requirement to continue to supply the existing electricity services provided by Nebo Substation. Powerlink must therefore take action to avoid the increasing likelihood of unserved energy and the emerging risks arising from failure of the ageing transformers and primary plant at Nebo, to ensure customers are provided with a reliable and safe supply of electricity.

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 National Electricity Rules (Rules), it is classified as a 'reliability corrective action'¹.

This Project Assessment Conclusions Report (PACR) represents the final step in the Regulatory Investment Test for Transmission (RIT-T) process prescribed under the Rules undertaken by Powerlink to address the condition risk of the transformers and primary plant at Nebo Substation. It contains the results of the planning investigation and the cost-benefit analysis of credible options compared to a non-credible Base Case where the emerging risks are left to increase over time. In accordance with the Rules, the credible option that maximises the present value of net economic benefits is recommended as the preferred option.

Credible options considered

Powerlink has developed one credible network option to maintain the existing electricity services, ensuring a reliable, safe and cost effective supply to customers in the area. Option 1 is the only credible network option that addresses the major risks resulting from the deteriorated condition of the ageing transformers and primary plant at Nebo Substation. This option proposes a like for like replacement of both transformers and associated 11kV primary plant by 2025. It allows Powerlink to meet the identified need and continue to meet the reliability and service standards specified within Powerlink's Transmission Authority, Schedule 5.1 of the Rules, AEMO guidelines and standards and applicable regulatory instruments.

Powerlink published a Project Specification Consultation Report (PSCR) in September 2023 to address the condition risks of the transformers and primary plant at Nebo Substation. No submissions were received in response to the PSCR that closed on 22 December 2023. As a result, no additional credible options have been identified as a part of this RIT-T consultation.

Option 1, along with its net present value (NPV) relative to the Base Case, is summarised in Table 1.

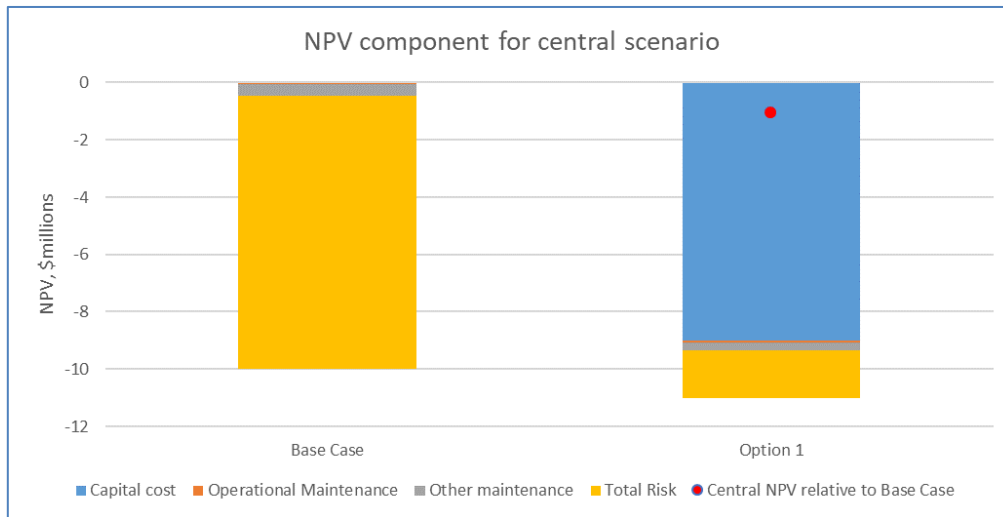
Table 1: Summary of credible network options (\$m, real 2023)

Option	Description	Total Cost (\$m)	Central NPV relative to Base Case (\$m)
1	Replace Transformers 3 and 4 and associated 11kV primary plant by 2025	11.50	-1.05

¹ The Rules clause 5.10.2, Definitions, reliability corrective action.

Figure 1 shows the breakdown of the NPV of the Base Case and Option 1 for the central scenario. Option 1 reduces the total risk costs arising from the ageing transformers and primary plant at Nebo remaining in service and being managed via operational maintenance only (as in the Base Case).

Figure 1: Central scenario NPV components of Base Case and credible network options (\$m, real 2023)



Evaluation and Conclusion

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. Option 1 is the only credible network option, which addresses the major risks resulting from the deteriorated condition of the ageing transformers and primary plant at Nebo Substation.

In accordance with the expedited process for the RIT-T, the PSCR made a draft recommendation to implement Option 1, which involves the replacement of both transformers and associated primary plant by 2025. The indicative capital cost of the RIT-T project for the preferred option is \$11.5 million in 2022/23 prices.

Powerlink plans to complete the replacement of both transformers and the associated primary plant by 2025 and is the proponent of this network project.

As the outcomes of the cost-benefit analysis contained in this PACR remain unchanged from those published in the PSCR, the draft recommendation has been adopted as the final recommendation, and will now be implemented.

Dispute Resolution

In accordance with clause 5.16B(a) of the Rules, Registered Participants, the Australian Energy Market Commission, Connection Applicants, Intending Participants, AEMO and interested parties may, by notice to the Australian Energy Regulator (AER), dispute conclusions in this report in relation to:

- the application of the RIT-T,
- the basis upon which the preferred option was classified as a reliability corrective action, or
- the assessment of whether the preferred option has a *material inter-regional impact* or not.

Notice of a dispute must be given to the AER within 30 days of the publication date of this report. Any parties raising a dispute are also required to simultaneously provide a copy of the dispute notice to Powerlink, as the RIT-T proponent.



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 2111 (during business hours)
Email	networkassessments@powerlink.com.au
Website	www.powerlink.com.au
Social media	