



Powerlink Queensland

# Summary Project Assessment Conclusions Report

7 February 2024

## Maintaining power transfer capability and reliability of supply at Kemmis

### Disclaimer

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## Summary

Kemmis substation, located approximately 32km north west of Nebo, was established in 2002 to support the load growth arising from the expansion of mining in the northern Bowen Basin and to provide a bulk-supply injection point to the Ergon distribution network (part of the Energy Queensland group).

Power transformer 1 (Transformer 1) was first assembled and energised at an alternate site in 1984 and was subsequently relocated to Kemmis substation in 2003 as part of the substation's original development. Having been in-service for almost forty years, a recent condition assessment found that Transformer 1 is displaying a number of condition-based issues, indicating it is nearing the end of its technical life and, with an increasing risk of failure. The failure of a transformer 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 Kemmis Substation. Powerlink must therefore take action to avoid the increasing likelihood of unserved energy arising from failure of the ageing transformer at Kemmis, and 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'<sup>1</sup>.

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 transformer at Kemmis Substation. It contains the results of the planning investigation and the cost-benefit analysis of the credible option 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 net present value (NPV) 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.

By addressing the condition risks, the credible option 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 transformer at Kemmis 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.

The credible network option, along with its NPV relative to the Base Case is summarised in Table 1.

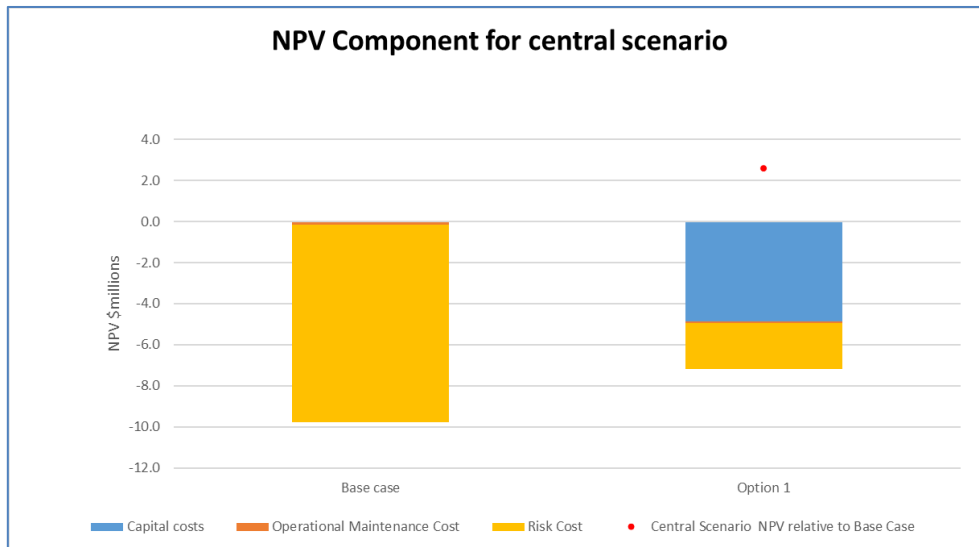
Table 1: Summary of credible network options (\$m, real 2023)

Option	Description	Total Cost (\$m)	NPV relative to Base Case (\$m)
1	Replace 1 transformer by 2026	6.78	2.57

<sup>1</sup> 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 transformer at Kemmis remaining in service and being managed via operational maintenance only (as in the Base Case), and hence reflects a net economic benefit when compared to the Base Case.

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



### Evaluation and Conclusion

The RIT-T requires that the preferred option maximises the NPV of net economic benefit, or minimises the net cost, to all those who produce, consume and transport electricity. The cost-benefit analysis demonstrates that Option 1 provides the greatest net economic benefit in NPV terms and is therefore the preferred option.

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 Transformer 1 by 2026. The indicative capital cost of the RIT-T project for the preferred option is \$6.78 million in 2022/23 prices.

Under Option 1, procurement of new equipment would commence in 2024, with replacement of the existing Transformer 1 completed by 2026. Powerlink 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.



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