



Powerlink Queensland

Summary Project Specification Consultation Report

29 October 2018

Maintaining reliability of supply at Townsville South Substation

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Summary

Ageing and obsolete primary plant at Townsville South Substation require Powerlink to take action

Located approximately 11 kilometres south east of the Townsville CBD, Townsville South Substation is a major injection point into the Ergon Energy distribution network for southern and eastern Townsville, as well as a transfer point for enabling the flow of electricity between Clare to the south and Townsville to the north. Planning studies have confirmed there is an enduring need for the substation to maintain the supply of electricity in the Townsville area.

At over 40 years of age, much of the substation's primary plant is reaching the end of its technical service life and is no longer supported by the manufacturer, with few spares available.

The increasing likelihood of faults arising from Townsville South's ageing and obsolete primary plant remaining in service, places the network at risk of being unable to meet current and forecast energy demands.

Powerlink's obligations as a Transmission Network Service Provider (TNSP) require it to maintain (including repair and replace if necessary) its transmission grid to ensure the adequate, economic, reliable and safe transmission of electricity, including the ability to meet peak demand if a major element of the network was to fail.

This increased likelihood of faults combined with its TNSP obligations present Powerlink with a range of operational and safety risks, as well as compliance issues requiring resolution.

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

This investment is driven by an obligation under the Rules, and is classified as a 'reliability corrective action' under the RIT-T.

Three credible options have been formulated to address the identified need

The Base Option reflects a conventional or minimum like for like replacement strategy to ensure continued compliance with the Rules and serve as the basis of comparison between options. This approach involves replacement of selected primary plant on a like for like basis in three stages over a 24 year period.

This has then been compared with two other credible network options.

Option 1 involves the staged replacement of selected primary plant, with existing live tank circuit breakers being replaced with new dead tank circuit breakers by December 2022, with the balance of equipment requiring remedial action being replaced across two stages in 2030 and 2045.

Option 2 involves the replacement of selected primary plant in a single stage, including rebuilding all equipment in seven substation bays utilising dead tank circuit breakers, by December 2022.

All options are designed to provide the Townsville area with a reliable, cost effective supply and ensure the substation's switching capabilities are maintained on an ongoing basis.

A summary of the credible options is given in Table 1.

Table1: Summary of credible primary plant options

Option	Description	Indicative capital cost (\$million, 2018/19)	Indicative annual O&M costs* (\$million, 2018/19)
Base Option Staged replacement utilising live tank circuit breakers completed by 2045	Staged replacement of selected equipment in existing bays utilising live tank circuit breakers by: <ul style="list-style-type: none"> • December 2022* • December 2030† • December 2045† 	4.94* 0.99† 4.14†	0.101
Option 1 Staged replacement utilising dead tank circuit breakers completed by 2045	Staged replacement of selected equipment in existing bays utilising dead tank circuit breakers by: <ul style="list-style-type: none"> • December 2022* • December 2030† • December 2045† 	7.77* 1.09† 4.86†	0.084
Option 2 Upfront, single stage replacement utilising dead tank circuit breakers completed by 2022	Upfront, single stage replacement of selected equipment including all equipment in 7 bays utilising dead tank circuit breakers by December 2022*	10.96*	0.076

*Proposed RIT-T projects

†Modelled projects

Powerlink has also considered whether non-network options could address the identified need. A non-network option that avoids replacement of the ageing primary plant would need to replicate the support that Townsville South Substation provides Powerlink and Ergon Energy in meeting their reliability of supply obligations on an enduring basis at a cost that is lower than the network options under consideration.

Powerlink welcomes submissions from potential proponents who consider that they could offer a credible non-network option that is both economically and technically feasible.

[The Base Option has been identified as the preferred option.](#)

Due to the nature of the investment, none of the credible options considered are expected to give rise to material market benefits. The major differences between the options relate to their capital costs, the technology employed and timing.

The net present value (NPV) analysis demonstrates the Base Option provides the lowest cost solution.

Table 2: NPV of credible options (NPV, \$m 2018/19)

Option	NPV (\$m)	Ranking
Base option	-6.0	1
Option 1	-8.2	2
Option 2	-9.5	3

Powerlink recommends implementing the Base Option for the following reasons:

- lowest cost in NPV terms
- optimised life of existing plant.

The staged approach of this option also allows for a review of the condition of the plant prior to each stage to reassess the need for remedial action at that point in time.

Under the Base Option, design work for the RIT-T project will commence in early-2021, with preparatory construction activities commencing on-site in mid-2021. Installation of the new live tank circuit breakers and selected primary plant will then be completed by December 2022.

The indicative capital cost of the RIT-T project for the preferred option is \$4.94 million.

Powerlink will:

- review and refine the timing of subsequent stages as required at a later date based on future condition assessments of the risks arising from those assets remaining in service
- undertake any necessary additional regulatory consultations at the appropriate time for future investments if required.

Submissions

Powerlink welcomes written submissions on this *Project Specification Consultation Report*. Submissions are particularly sought on the credible options presented.

Submissions are due on or before Friday, 25 January 2019.

Please address submissions to:

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