Powerlink Queensland

Summary of Project Specification Consultation Report

8 May 2018

Addressing the secondary systems condition risks at Dan Gleeson Substation

Summary

Aging and obsolete secondary systems at Dan Gleeson substation require Powerlink to take action

Located in south-west Townsville, Dan Gleeson Substation is a major injection point into the Ergon Energy distribution network. Planning studies have confirmed there is an enduring need for the substation to maintain the supply of electricity in the Townsville area.

Several secondary systems at the Dan Gleeson Substation are reaching the end of their technical life, and are increasingly at risk of failure. These secondary systems are also now facing obsolescence (i.e. they are no longer supported by the manufacturer and have no spares available).

Secondary systems are the control, protection and communications equipment that are necessary to operate the transmission network and prevent damage to primary systems when adverse events occur. Under the National Electricity Rules ('the Rules'), Transmission Network Service Providers (TNSPs) are required to provide sufficient secondary systems, including redundancies, to ensure the transmission system is protected.

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

Since this investment is driven by an obligation in the Rules, it is a 'reliability corrective action' under the RIT-T.

Three credible options have been identified to address the identified need

Powerlink has identified three credible network options to address the identified need, as presented in Table 1.

A base option reflecting a minimal conventional approach has been identified to serve as the basis of comparison between the options. This base option reflects a targeted replacement of obsolete secondary systems components *in situ*, completed in two stages.

This option has then been compared with an option in which the entire secondary systems are replaced by the end of 2020, and a third option in which an entire replacement of the secondary systems is staged.

Table 1: Summary of potential credible options

Option	Description	Indicative capital cost ($million, 2017/18)	Indicative average annual operating and maintenance costs ($million, 2017/18)
Base option: Staged in-situ replacement	Staged replacement of obsolete secondary system components within existing panels. Stages would be completed by the end of 2020 and the end of 2025	5.6	0.017
Option 1: Full replacement (by end 2020)	Replace all secondary systems using a modular prefabricated building with new secondary systems installed. Beginning early 2019 and completed by the end of 2020	5.4	0.016
Option 2: Staged full replacement (by 2020 and 2025)	Staged replacement of secondary systems using a modular prefabricated building with new secondary systems installed	6.0	0.017

A base option reflecting a conventional approach to ensuring continued compliance with the secondary systems obligations in the Rules has been identified to serve as the basis of comparison between options. Under this base option, only those secondary system components that are obsolete would be replaced, within the existing panels. This replacement would occur in two stages: one completed in 2020 and a second in 2025.

This option has then been compared with options in which all of the secondary systems are replaced with new panels within a new prefabricated building, which is built off site and then installed at Dan Gleeson. Two options have been considered: one in which the replacement is undertaken all at once between 2019 and 2020, and the second where the replacement is staged and completed in 2020 and then 2025.

Powerlink has also considered whether non-network options could address the identified need. A non-network option that avoids replacement of secondary systems would need to replicate the support that Dan Gleeson Substation provides Powerlink in meeting its reliability obligations on an enduring basis at a cost that is lower than the network options currently under consideration.

The nature of the underlying problem (i.e. aging and obsolete secondary systems) limits the number of possible solutions that can be adopted. Powerlink is not currently aware of other credible network or non-network options that could be adopted.

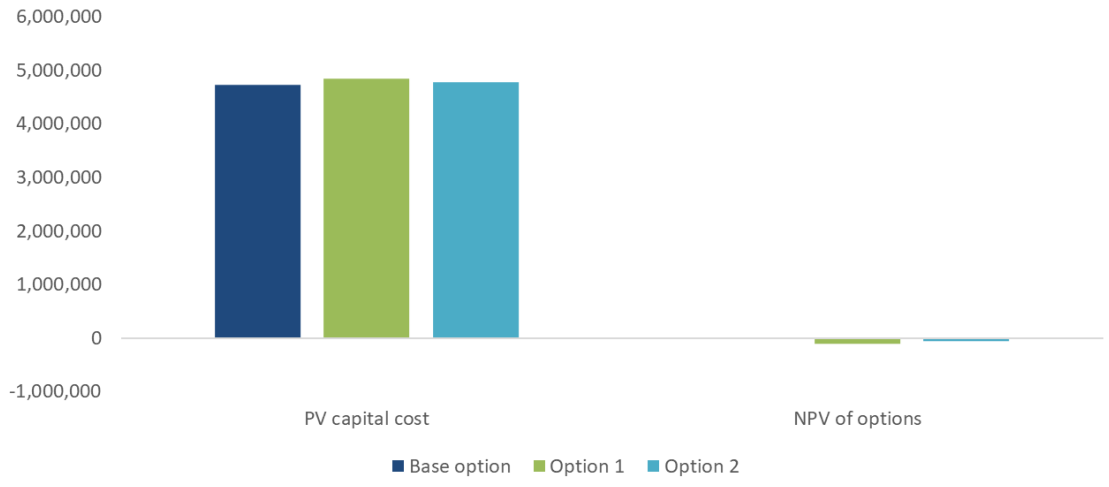
Notwithstanding, Powerlink welcomes submissions from potential proponents who consider that they could offer a credible non-network option that is both economically and technically feasible.

Option 1 has been identified as the preferred option

Due to the nature of the investment, none of the options considered, including the preferred option, are expected to give rise to market benefits. The difference between the options relates primarily to differences in capital costs, which are similar across all options. This is supported by the NPV analysis.

Figure 1 shows the PV of capital costs compared with the NPV of Options 1 and 2 (relative to the base option).

Figure 1: PV of capital costs compared to NPV of options (NPV, $ 2017/18)



Powerlink has elected to recommend Option 1 based on the following qualitative characteristics:

- the opportunity to resolve health and safety issues by avoiding the continued use of the existing secondary systems corridor panels at Dan Gleeson, which would be required under the base option;
- simplified planning, design and implementation as there is no need to work within the constraints of legacy secondary systems, which would be required under the base option; and
- simplified project delivery, by avoiding multiple mobilisations of specialist resources for staged projects, which would be required under both the base option and Option 2.

Under Option 1, work on prefabricating the secondary systems building will commence off site in early 2019, with preparatory construction activities occurring on-site later in 2019. Installation of

the prefabricated secondary systems building on site will take place in 2020 with completion of the project in December 2020.

The indicative capital cost of this option is $5.4 million in 2017/18 prices.

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, 3 August 2018.

Please address submissions to:

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