Powerlink Queensland

Summary
Project Specification Consultation Report
23 November 2018
Maintaining reliability of supply between Clare South and Townsville South

Summary

The 132kV network between Collinsville and Townsville was developed in the 1960s and 1970s to supply mining, commercial and residential loads. A parallel 275kV network was developed more than a decade later to reinforce supply into Townsville and far north Queensland.

The main function of the current 132kV infrastructure between Clare South and Townsville South is to provide connections to Invicta Mill and Clare South substations, and to support power transfers in the area, including from renewable generation. This infrastructure consists of two, 132kV single circuit transmission lines between Clare South Substation and Townsville South Substation, each traversing separate routes. The coastal circuit was established in 1963, and has a tee connection to Invicta Mill Substation. The inland circuit, established in 1967, carries critical telecommunications traffic for the transmission network via an optical ground wire (OPGW). Due to their condition, these 132kV transmission lines are now reaching the end of their technical service life.

Under the *Electricity Act 1994*, Powerlink is required to "operate, maintain (including repair and replace if necessary) and protect its transmission grid to ensure the adequate, economic, reliable and safe transmission of electricity". Both the coastal and inland single circuit lines between Townsville South and Clare South substations are exhibiting signs of advanced degradation on the majority of structures. The decay of the buried steel grillage foundations of the inland Townsville South to Clare South line and the tower leg/foundation interfaces on the coastal line pose an increasing risk of tower failure during storm events. The current insulator mounting arrangement on the lines do not satisfy revised standards for tower attachment which are being progressively implemented to reduce the likelihood of a conductor dropping during storm events.

The condition of these lines presents Powerlink with a range of safety, reliability of supply and compliance risks requiring resolution.

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

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

Four credible options have been developed to address the identified need

Credible options have been formulated under two themes; those that retain the existing network topology to meet the identified need and those that reconfigure the network by removing the inland line and substituting it with a new transformer at Strathmore Substation. The credible options, grouped under these themes, are given below.

Maintain existing network topology

Base Option: 10 year life extensions of coastal and inland lines.

Option 1: 20 year life extension of coastal and inland lines.

Reconfigure network topology

Option 2: 10 year life extensions of coastal line with network reconfiguration.

Option 3: 20 year life extension of coastal line with network reconfiguration.

All options extend the life of the 132kV network between Clare South and Townsville South through to 2040, at which time the area's 275kV lines are likely to have reached the end of their technical service life, thereby providing an opportunity to review the configuration of the complete network in the area.

Details of each option are summarised in Table 1.

Table 1: Summary of credible options

Option	Description	Indicative capital cost ($million, 2018/19)	Indicative annual O&M costs ($million, 2018/19)
Maintain existing network topology theme			
Base Option: 10 year life extensions of coastal and inland lines	Repair or replace selected components on coastal line by December 2020* and inland line by December 2022*****	40.83*	0.21
	Repair or replace selected components on inland line by December 2025**†**	9.10**†**	
	Repair or replace selected components on coastal line by December 2030**†** and inland line by December 2035†	17.04**†**	
Option 1: 20 year life extension of coastal and inland lines	Repair, replace and/or paint all at risk components on coastal line as well as repair/replace selected components on the inland line by December 2022*****	54.81*	0.11
	Repair, replace and/or paint selected components on inland line by December 2025**†**	24.87**†**	
Reconfigure network topology theme			
Option 2: 10 year life extension of coastal line with network reconfiguration	Repair or replace selected components on coastal line, and install new transformer at Strathmore by December 2020*	28.34*	0.14
	Decommission inland line by December 2022*	8.22*	
	Repair or replace selected components on coastal line by December 2030**†**	8.43**†**	
Option 3: 20 year life extension of coastal line with network reconfiguration	Repair, replace and/or paint all at risk components on coastal line and install new transformer at Strathmore by December 2020*****	42.32*	0.08
	Decommission inland line by December 2022*	8.22*	

***** Proposed RIT-T project
† 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 Townsville South to Clare South transmission lines would need to replicate the support that these lines provide 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.

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 15 March 2019.

Please address submissions to:

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