



Maintaining reliability of supply to Kamerunga, Cairns and northern beaches area

Summary of Project Specification Consultation Report



Summary

Powerlink has identified the need to maintain reliability of supply to Kamerunga, Cairns and the northern beaches due to the deteriorating condition and obsolescence of key transmission network assets currently providing electricity services to these areas.

Key transmission network assets located in the Kamerunga, Cairns and northern beaches area

Kamerunga 132kV Substation

Located approximately 10 kilometres north-west of Cairns, Kamerunga Substation, established in 1976, is a major injection point into the Ergon Energy (part of the Energy Queensland Group) distribution network. Joint planning studies have confirmed there is an enduring need at Kamerunga to maintain the supply of electricity in the Cairns area and meet legislative requirements.

The primary plant, transformers and secondary systems at Kamerunga Substation are nearing the end of their technical service lives with identified condition and obsolescence issues. The substation is also susceptible to major flooding events which could result in damage to equipment leading to loss of supply. Much of the substation's primary plant and transformers – the equipment through which the electrical power passes – has reached the end of its technical service life, resulting in performance degradation increasing the risk to supply in the Cairns area. In addition, the site has inherent design issues, including insufficient electrical clearances (currently managed through temporary measures), poor drainage and a single 125V DC supply system.

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. Many of the secondary systems at Kamerunga Substation are nearing the end of their technical service lives and have become or are becoming obsolete, where they are no longer supported by the manufacturer and have only limited, or no, spares available. Under the National Electricity Rules (NER), Powerlink is required to provide sufficient secondary systems, including redundancies, to ensure the transmission system is adequately protected.

In the case of extreme weather events causing flooding such as cyclones, studies have shown the substation would be inundated with 1.25 metres of water during a 1 in 100 year flood event, and 1.6 metres for a 1 in 200 year event, resulting in extensive damage to its protection and control systems and loss of supply. This would result in a significant risk to supply in the area, while also leaving Powerlink operating Kamerunga Substation outside the recommended State Planning Policy guidelines for major substation infrastructure to allow the substation to service community needs during and immediately following a flood event.

In August 2019, Powerlink published a Project Assessment Conclusions Report (PACR) to address the emerging condition risks at Kamerunga Substation. Based on information received subsequent to the conclusion of the consultation process, Powerlink identified a material change in circumstances due to the identification of an additional credible option not included in that Regulatory Investment Test for Transmission (RIT-T), and significant cost increases across all credible options assessed in the cost-benefit analysis undertaken for that RIT-T. This has resulted in a change to the preferred option and construction schedule recommended in the PACR, requiring reapplication of the RIT-T.

The identified need to maintain reliability of supply to Kamerunga assessed under the previous RIT-T consultation has been captured within the broader identified need of this RIT-T, as Kamerunga Substation is a key transmission network asset located in the Far North Queensland zone, providing electricity services to the Cairns and northern beaches area.

Woree to Kamerunga 132kV transmission line

The Woree to Kamerunga 132kV transmission line was first established in 1963. It is a double circuit 132kV steel tower transmission line operating in an aggressive tropical environment. The line is nearing the end of its technical service life with the majority of structures exhibiting signs of degradation.

Joint planning studies have confirmed there is an enduring need to maintain the supply of electricity currently provided by these assets to Kamerunga, Cairns and northern beaches area, as well as connecting the Barron Gorge Hydro Power Station to the transmission network.

Maintaining reliability of supply to Kamerunga, Cairns and northern beaches area

The condition and obsolescence of key transmission network assets currently providing electricity services to Kamerunga, Cairns and northern beaches area present Powerlink with a range of reliability of supply, safety and compliance risks.

Powerlink must therefore take action to maintain existing electricity services, ensuring an ongoing reliable, safe and cost-effective supply to customers in the Kamerunga, Cairns and northern beaches area.

Powerlink's Transmission Annual Planning Reports (TAPRs) in 2023 and 2024 identified the key assets under consideration in this RIT-T were being addressed as a joint planning project.

Powerlink and Ergon Energy are required to apply the Regulatory Investment Test given the credible options under consideration

The estimated capital cost of the most expensive credible option to maintain reliability of supply to Kamerunga, Cairns and the northern beaches area meets the minimum threshold (currently \$7 million) to apply the RIT-T. In addition, given the credible options identified include potential works by Ergon Energy over the minimum cost threshold (currently \$6 million) for the Regulatory Investment Test for Distribution (RIT-D), this RIT-T is also being undertaken to discharge Ergon Energy from its obligation to undertake a RIT-D.

As the identified need for the proposed investment is to meet reliability and service standards specified within Powerlink's Transmission Authority, guidelines and standards published by the Australian Energy Market Operator (AEMO), and Powerlink's ongoing compliance with Schedule 5.1 of the NER, it is classified as a reliability corrective action under the NER. Similarly, Ergon Energy has obligations to comply with reliability performance standards specified in its Distribution Authority issued under the *Electricity Act 1994* (Qld).

The identified need is not discussed in AEMO's most recent Integrated System Plan (ISP) and is therefore subject to the application and consultation process for RIT-T projects that are not actionable ISP projects.

Powerlink has developed two credible network options to address the identified need

Summary of Credible Options

Option	Description	Breakdown of costs (\$m, 2024)	Total Cost of option (\$m, 2024)	Indicative annual O&M costs (\$m, 2024)
1	Rebuild of transmission line with Overhead/Underground Alignment by 2028 (Powerlink works).	103.2		
	Greenfield Air Insulated Switchgear (AIS) (new 22kV switchboard) at Kamerunga Substation by 2028.			
	Powerlink works include replacement of primary and secondary assets with AIS and land purchase.	78.0		
	Ergon Energy works include 22kV switchgear, building and cut-in works.	20.0		
			201.2	0.2
2	Rebuild of transmission line with Underground Alignment by 2028 (Powerlink works)	123.3		
	Greenfield AIS (new 22kV switchboard) at Kamerunga Substation by 2028.			
	Powerlink works include replacement of primary and secondary assets with AIS, and land purchase.	78.0		
	Ergon Energy works include 22kV switchgear, building and cut-in works.	20.0		
			221.3	0.2

Note: O&M denotes operations and maintenance.

Powerlink welcomes the potential for non-network options

To enhance engagement outcomes, Powerlink proactively applies an engagement strategy to each RIT-T consultation. The scope of engagement activities undertaken is dependent upon various considerations, such as the characteristics and complexity of the identified need and potential credible options outlined in the [RIT-T stakeholder engagement matrix](#).

A non-network option that avoids the proposed replacement of the ageing assets would need to provide supply to the 22kV network of up to a peak of 85MW, and up to a peak of 1,200MWh per day on a continuous basis. The transmission line also facilitates the Barron Gorge Hydro Power Station connection in the area. Powerlink welcomes submissions from proponents who consider they could offer a potential non-network option that is both economically and technically feasible, on an ongoing basis.

Lodging a submission with Powerlink

Powerlink is seeking written submissions on this Project Specification Consultation Report (PSCR), on or before **WEDNESDAY, 26 MARCH 2025**, particularly on the credible options presented in this PSCR.

Please address submissions to:

Deni Mauro
Manager Network and Alternate Solutions
Powerlink Queensland
PO Box 1193
VIRGINIA QLD 4014
Telephone: (07) 3860 2111
Email: networkassessments@powerlink.com.au

Maintaining reliability of supply to Kamerunga, Cairns and northern beaches area



Contact us

Registered office	33 Harold St Virginia Queensland 4014 ABN 82 078 849 233
Postal address	PO Box 1193 Virginia Queensland 4014
Telephone	+61 7 3860 2111 (during business hours)
Email	networkassessments@powerlink.com.au
Website	powerlink.com.au

Social

