



Reliability and Capacity Reinforcement for the North Toowoomba Network

Notice of no non-network options

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Notice

This notice has been prepared under clause 5.17.4(d) of the National Electricity Rules (NER) and summarises Ergon Energy's determination that no non-network option is, or forms a significant part of, any potential credible option for this RIT-D. The reasons for Ergon Energy's determination, including the methodologies and assumptions are outlined below.

Background

Meringandan (MERN) 33/11kV substation is one of a number of substations located in the North of Toowoomba that supplies electricity to the residential developments in the area. MERN supplies approximately 3500 predominantly residential customers and recorded a peak load of 11.7MVA in the summer of 2017. Other substations in this area are Cawdor Skid (CAWD) 33/11kV and Highfields (HIGH) 33/11kV substations. The Northern suburbs of Toowoomba are highlighted in the Toowoomba Regional Council (TRC) Planning Scheme as a key growth area over the next 15 years. It is predicted that an additional 7000 residents will be living in the Highfields area by 2031, almost double the current population. This growth is resulting in increased loading on CAWD, MERN and HIGH substations.

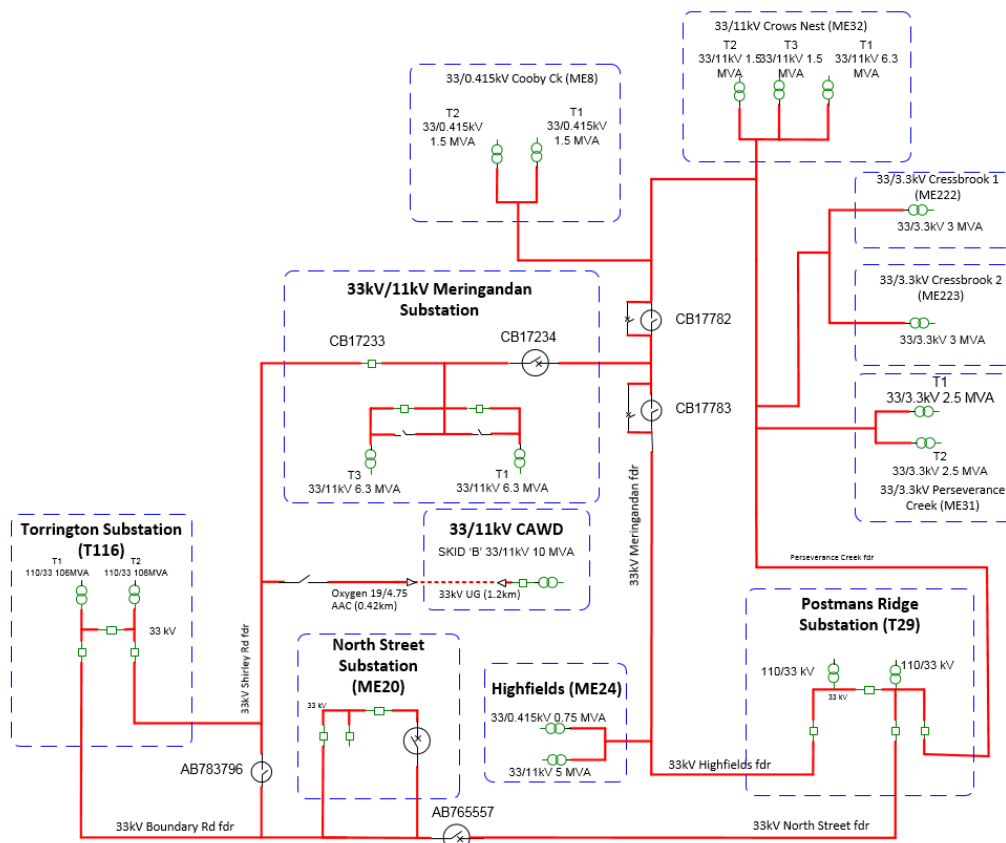


Figure 1: Single line representation of the existing 33kV North Toowoomba network

MERN substation was built in the 1960s with a number of key substation assets identified as being original vintage and deemed to be approaching end of service life. Ergon's Condition Based Risk Management (CBRM) modelling and a specific Substation Condition Assessment Report (SCAR) for the site has recommended that a number of assets, which are at a high risk of failure, be replaced in 2021 to ensure electricity continues to be supplied reliably and safely. Space in the existing MERN site is very limited for refurbishment or new developments. Ergon Energy owns the adjacent block of land on the eastern side of the MERN. This vacant block of land was purchased for a future Kleinton substation (KLEI).

HIGH substation is a similar vintage to MERN. A SCAR has recommended a number of aged assets be replaced by 2024.

Load growth in the supply area has resulted in CAWD skid substation to be loaded above the substation security of supply criteria. Based on the current load forecast, CAWD skid substation will not meet the substation security criteria by the year 2021.

In summary, there is a combination of reliability, safety and load growth considerations across the three substations in the North Toowoomba area that requires network investment in the 2020-25 timeframe.

The NER requires that, subject to certain exclusion criteria, network business investments for meeting service standards for a distribution business are subject to a Regulatory Investment Test for Distribution (RIT-D). Ergon Energy has determined that network investment is essential in this case for it to continue to provide electricity to the consumers in the Meringandan, Highfields and Cawdor supply areas in a reliable, safe and cost-effective manner. This investment is subject to a RIT-D. An internal assessment has been carried out and it has been determined that no non-network solutions can potentially meet the identified need or form a significant part of the solution. This Notice has hence been prepared by Ergon Energy in accordance with the requirements of clause 5.17.4(d) of the NER.

Assessment Methodologies

Ergon Energy's Intelligent Grid Systems Customer Interactions (IGSCI) Team assesses the potential non-network options that individually or jointly might constitute a credible option. Credible options must be able to either substitute or defer the network investment. It must also ensure that the solution is technically and commercially viable, and delivered within the required timeframe. Feasible non-network options must be able to be implemented in sufficient time to satisfy the identified risk to the public and/or the network due to the identified constraints.

Ergon Energy has considered a number of demand management technologies to determine their commercial and technical feasibility to assist with the identified need.

The following non-network solutions have been assessed for either deferring or replacing the network investment required in the North Toowoomba supply areas around Meringandan, Highfields and Cawdor.

Demand Management (Demand Reduction)

Energy efficiency and other demand reduction measures such as power factor correction, high efficiency lighting etc. have been assessed as not technically viable as:

- restoration times for the number of unmet load hours can be achieved more cost effectively through temporary load transfers.
- it is not considered as a sufficient measure to address the risk posed by the constant loading of the aged oil-type 33kV circuit breakers and other aged assets.
- it won't address community concerns of proximity of substation assets to residential homes.

Demand reduction activities may have an effect on customer demand growth over time and marginally positively impact issues that relate to load growth.

Demand response

Demand response through customer embedded generation, call off load and load curtailment contracts have been assessed as technically not viable as:

- with Safety Net concerns temporary losses of supply from failure of a 33kV oil-type circuit breaker can be temporarily restored by load transfers to other 11kV feeders more cost effectively than demand management.
- it does not address the risk posed by the constant loading of the aged oil-type 33kV circuit breakers and other aged assets.
- it will not address community concerns of proximity of substation assets to residential homes
- it will not address growth for more than short periods but could marginally assist with block load growth issues
- there is a lack of suitable customers with sufficient loads for viable contracts.

Customer solar power systems

Business customers with large solar arrays are deemed to present a significant future opportunity for targeted load control or load curtailment if coupled with a Battery Energy Storage System (BESS). Contracting such customers can be attractive as they represent a larger load across a fewer customers and therefore are cheaper and easier to engage and contract.

The Meringandan supply area is predominantly comprised of residential customers. Meringandan and Cawdor substations have 29% and 38% of customers respectively that have solar PV systems and as yet BESS ownership is low or non-existent. PV systems with BESS present a future portfolio opportunity for potential demand response but currently this supply area has a very limited BESS penetration. Solar customers without a BESS will not meet the technical needs of the demand reduction as their solar contribution may not be available when the network un-met need is required.

In terms of the unsupplied load at Meringandan, this form of load curtailment opportunity is not technically feasible.

Ergon Energy considers that the demand management options assessed above do not sufficiently address the identified need and could not be feasibly implemented to technically and economically defer or substitute for the network investment required. The options considered above are not readily available on-demand, not cost effective to be implemented permanently, or are only a short-term measure. Therefore the internal network option of replacing the assets is deemed to be the most cost-effective, reliable and safe solution to address the identified need.

Further information on these demand management options will be detailed in the Final Project Assessment Report which will be published shortly on the Ergon Energy RIT-D website and the Partner Portal.

<https://www.ergon.com.au/network/network-management/network-infrastructure/regulatory-test-consultations>