

Reliable Provision of Electricity to the Point Vernon (Hervey Bay) area



Notice of No Non Network Options

10/06/2020



Executive Summary

ABOUT ERGON ENERGY

Ergon Energy Corporation Limited (Ergon Energy) is part of the Energy Queensland Group and manages an electricity distribution network which supplies electricity to more than 740,000 customers. Our vast operating area covers over one million square kilometres – around 97% of the state of Queensland – from the expanding coastal and rural population centres to the remote communities of outback Queensland and the Torres Strait.

Our electricity network consists of approximately 160,000 kilometres of powerlines and one million power poles, along with associated infrastructure such as major substations and power transformers.

We also own and operate 33 stand-alone power stations that provide supply to isolated communities across Queensland which are not connected to the main electricity grid.

IDENTIFIED NEED

A review of Safety Net compliance at Point Vernon 66/11kV Zone Substation (POVE) has identified that a credible failure would result in total loss of supply to the substation which is unable to be restored within Safety Net timeframes. Credible failures include the loss of the 66kV bus or bus section at Pialba, pole failure on the 66kV Point Vernon feeder (M023), or loss of the Point Vernon substation 66kV circuit breaker or bus section.

As a condition of its Distribution Authority (DA) Ergon Energy must ensure, to the extent reasonably practicable, that it achieves the Safety Net restoration targets as specified in the DA. The purpose of the Safety Net is to seek to effectively mitigate the risk of low probability high consequence network outages to avoid unexpected customer hardship and/or significant community or economic disruption.

The purpose of this project is to address compliance with the Safety Net provisions of the Distribution Authority.

APPROACH

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 Hervey Bay supply area in a reliable, safe and cost-effective manner. Accordingly, 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.

1 Background

Point Vernon 66/11kV Zone Substation (POVE) supplies 10,700 customers. POVE is energised radially from Pialba 66/11kV Zone Substation (PIAL) via a 5.1km single circuit concrete pole 66kV feeder (M023). Load at POVE peaked at 21MVA in February 2020 and is forecast to increase to approximately 23MVA by 2032. Proposed residential and commercial developments in the suburbs of Dundowran, Craignish, Toogoom and Eli Waters are continuing and may result in load growth in excess of the forecast.

The 11kV network from POVE is supplied through seven 11kV feeders which supply a mix of residential, commercial, and light industrial developments in Hervey Bay. Four feeders run towards the central area of Hervey Bay and supply major CBD loads such as several shopping centres, the university campus, and the main industrial zoned area. The remaining feeders supply mainly residential developments, including a significant area zoned as emerging community and currently under development.

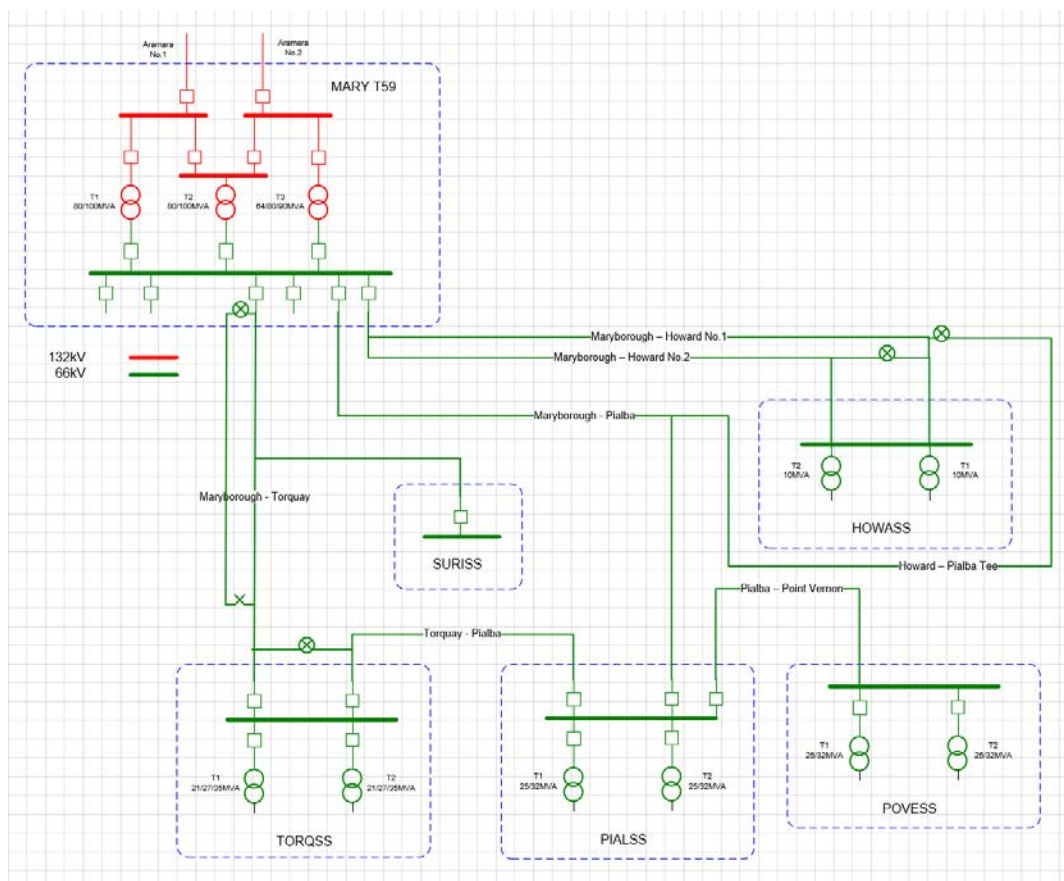


Figure 1 - Hervey Bay area Subtransmission Network

2 Identified Need

2.1. Reliability

As a condition of its Distribution Authority (DA) Ergon Energy must ensure, to the extent reasonably practicable, that it achieves the Safety Net restoration targets as specified in the DA. The purpose of the Safety Net is to seek to effectively mitigate the risk of low probability high consequence network outages to avoid unexpected customer hardship and/or significant community or economic disruption.

A review of POVE against Safety Net compliance has identified that in the event of loss of 66kV supply, restoration targets will not be met. Loss of 66kV supply can occur as a result of several credible events, including failures on the PIAL or POVE 66kV bus, or the 66kV PIAL-POVE feeder (M023).

Of greatest concern is the failure of a concrete pole on the 66kV feeder. Several poles have been identified as being within the clear zone of an adjacent roadway greatly increasing the possibility of vehicle assisted failure. The Point Vernon Contingency Management Plan developed in conjunction with Field Delivery has determined that a realistic restoration time following a concrete pole failure will exceed 20 hours and would result in a breach of legislated Safety Net requirements. This scenario is illustrated in Figure 2.

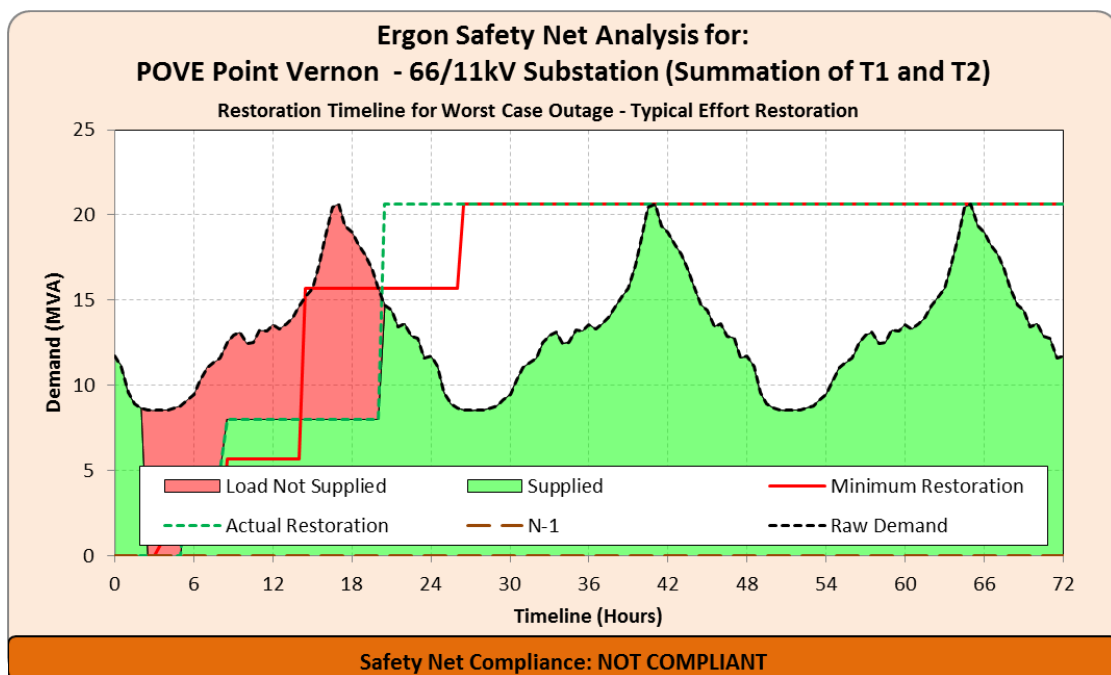


Figure 2 - POVE Safety Net Analysis

3 Network Options Considered

3.1. Preferred Network Option

The preferred network option is to extend a new 66kV feeder to POVE from the existing 66kV network and install the necessary equipment to energise the feeder.

The estimated preferred project cost is \$15.8M

4 Assessment of Non Network Solutions

Ergon Energy's Demand and Energy Management (DEM) 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, and ensure that the solution is technically and commercially viable and can be delivered within 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 Hervey Bay supply area:

- Demand Management (Demand Reduction) such as power factor correction, energy efficiency, load control.
- Demand Response through customer embedded generation, call off load and load curtailment contracts.

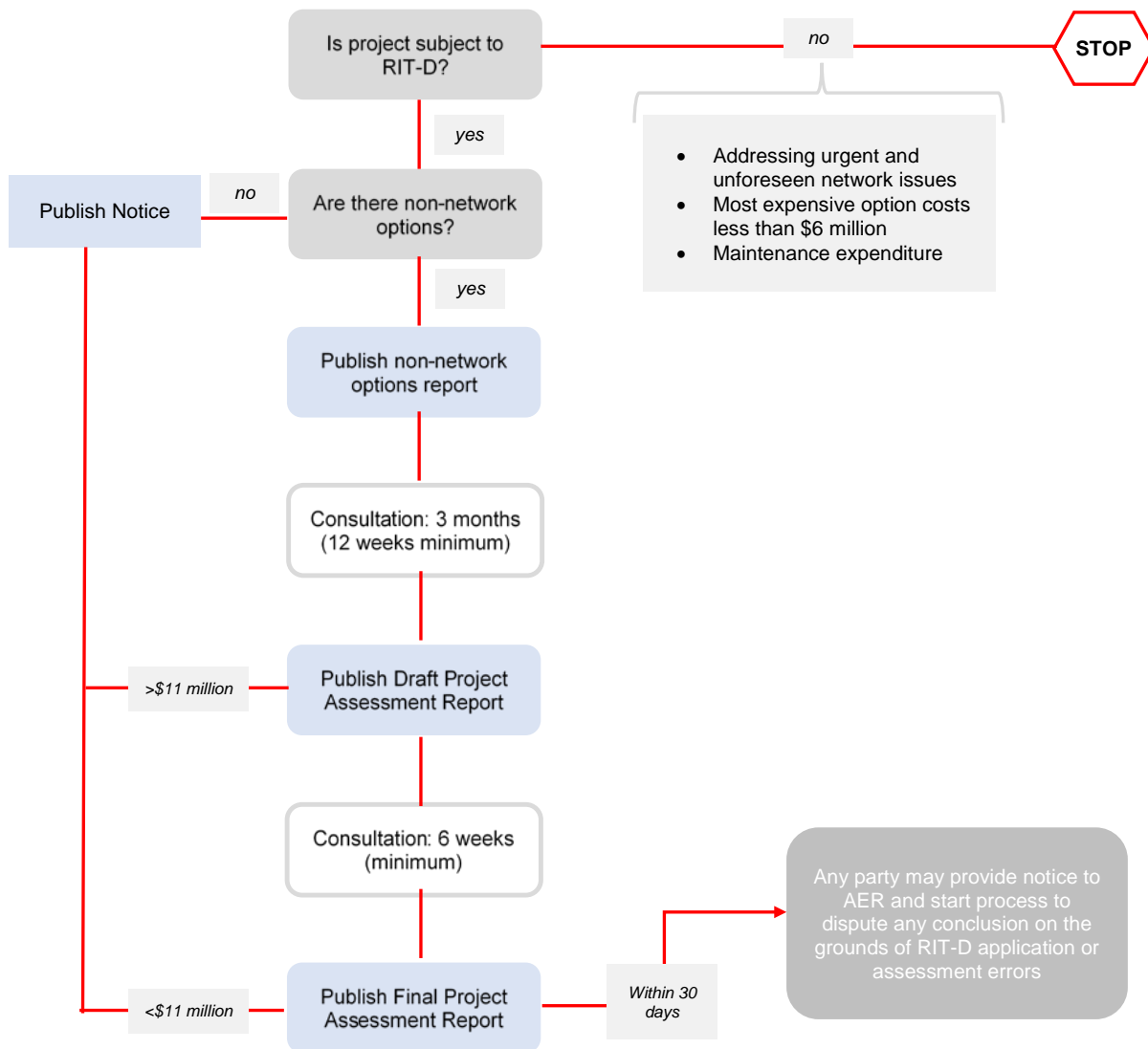
They have been assessed as not technically viable as the required demand reduction to address Safety Net compliance is of significant magnitude and duration and consequently will not be cost effective.

5 Conclusion and Next Steps

The internal investigations undertaken on the feasibility of the non-network solutions revealed that it is unlikely to find a complete non-network solution or a hybrid (combined network and non-network) solution to provide the magnitude of network support required in the Hervey Bay area to address the identified need.

The preferred network option is to extend a new 66kV feeder to POVE to address Safety Net requirements. This notice of no non-network options is therefore published in accordance with rule 5.17.4(d) of the National Electricity Rules. As the next step in the RIT-D process, Ergon Energy will now proceed to publish a Draft Project Assessment Report.

Appendix – The RIT-D Process



Source: AEMC, *Rule determination: National Electricity Amendment (Replacement expenditure planning arrangements) Rule 2017*, July 2017, p. 64.