

Reliable Provision of Electricity to the Pialba (Hervey Bay) area



Notice of No Non Network Options

3/04/2020



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 condition assessment of PIALSS has identified assets that are recommended for replacement. These assets are forecast to reach retirement based on a combination of Condition Based Risk Management (CBRM) modelling and known issues with problematic plant, which are required to be replaced or decommissioned to manage the safety and network risks associated with unplanned failure.

The assessment identified that primary and secondary plant including the 66kV circuit breakers, the 11kV switchboard, and most protection relays require replacement. An assessment of the civil structures on site also identified the control building, several plant support structures and the 66kV galvanised water pipe bus require replacement due to being defective beyond repair.

Failure of the primary and secondary plant is a risk to network security which may lead to a breach of legislated Safety Net requirements. As the substation site is located nearby to a busy intersection and several residential developments, catastrophic failure of plant or structures also presents a safety risk to the general public as well as to our own staff.

The purpose of this project is to address the risk to safety and network security posed by poor condition and problematic assets.

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

Pialba 66/11kV substation (PIALSS) is a Zone Substation which supplies approximately 5200 customers and 16MVA of peak load. PIALSS is located near the centre of Hervey Bay town and supplies the CBD area, the Hervey Bay Hospital, and the main shopping centre. There is also an extensive distribution network that supplies residential customers in the surrounding suburbs.

PIALSS has three 66kV feeders connecting to Maryborough 132/66kV Bulk Supply Point (MARYSS), Torquay 66/11kV Zone Substation (TORQSS), and Point Vernon 66/11kV Zone Substation (POVESS) respectively. The feeders from MARYSS and TORQSS form part of the Hervey Bay 66kV ring, while POVESS is supplied radially.

The 11kV distribution network from PIALSS is supplied through six 11kV feeders with three feeders supplying predominantly the CBD, medical precinct, and Stocklands shopping centre. The remaining feeders supply predominantly residential customers. In addition, the distribution network of POVESS is also dependant on Pialba's reliability due to the radial 66kV supply.

PIALSS was constructed in 1967 and a condition assessment has identified several assets that require replacement due to their condition and associated risk. The purpose of this project is to address limitations on aged and poor condition assets.

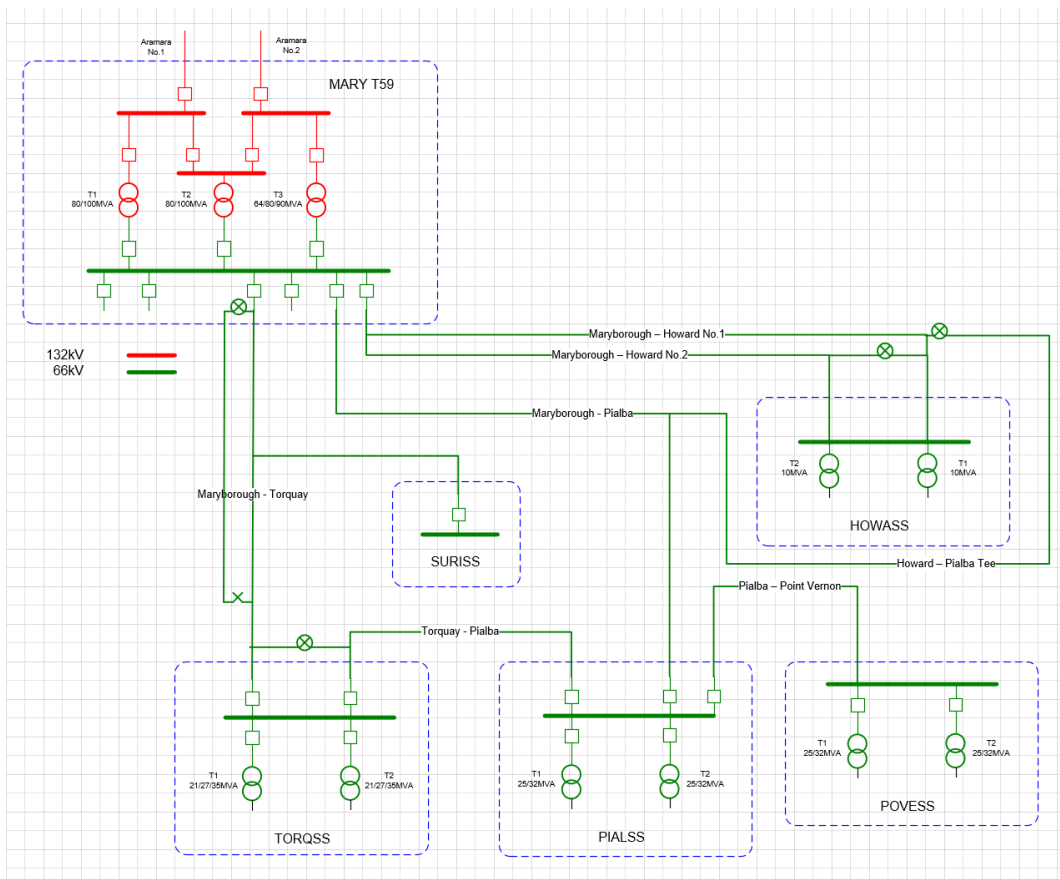


Figure 1 – Hervey Bay area Subtransmission Network

2 Identified Need

2.1. Asset Replacement

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Primary and secondary plant assets recommended for replacement are outlined in Table 1 and Table 2.

Table 1 - Primary plant recommended for replacement

Category	Plant No	Op. Number	Voltage	Make
Sw itchgear	CB92543578	A1224	11kV	EMAIL > S15
Sw itchgear	CB94755235	A452	11kV	EMAIL > S15
Sw itchgear	CB92807924	A752	11kV	EMAIL > S15
Sw itchgear	CB92831186	B452	11kV	EMAIL > S15
Sw itchgear	CB92940305	B752	11kV	EMAIL > S15
Sw itchgear	CB92938153	C452	11kV	EMAIL > S15
Sw itchgear	CB92410521	D452	11kV	EMAIL > S15
Sw itchgear	CB92802516	E452	11kV	EMAIL > S15
Sw itchgear	CB91840039	A352	66kV	ASEA > HLC 72.5/2000U
Sw itchgear	CB91742059	B352	66kV	ASEA > HLC 72.5/2000U

Table 2 - Secondary plant recommended for replacement

Protection Relay	Function	Make
PR93210996	EA51J01 TORQUAY - PIALBA 66KV R SCHEME	SCHNEIDER P543
PRxxxxxxxxx	EA51J01 TORQUAY - PIALBA 66KV R SCHEME	EMAIL 1T10/EL/3F
PR93319021	EA52J01 HOWARD - PIALBA 66KV SCHEME	SCHWEITZER 311C
PRxxxxxxxxx	EA52J01 HOWARD - PIALBA 66KV SCHEME	EMAIL 1T10/EL/3F

PR94302174	EA53J01 66KV POINT VERNON PROT SCHEME	SCHWEITZER 311C
PR94302175	EA53J01 66KV POINT VERNON PROT SCHEME	ALSTOM P142
PR94302172	EA54J01 EA54 66KV BUS PROT SCHEME	GEC CAG32
PR94302173	EA54J01 EA54 66KV BUS PROT SCHEME	GEC CAG34
PR94302171	EA54J01 EA54 66KV BUS PROT SCHEME	GEC VTTR11
PRxxxxxxxx	EA54J01 EA54 66KV BUS PROT SCHEME	Email 2HS10
PR93209395	TX51J01 TRANSF 1 66KV PROT SCHEME	SIEMENS 7UT61
PR93209958	TX51J01 TRANSF 1 66KV PROT SCHEME	ENGLISHELECTR IC CDG31
PRxxxxxxxx	TX51J01 TRANSF 1 66KV PROT SCHEME	AREVA MVAJ
PR93209193	TX51J02 TRANSF 1 66KV PROT SCHEME	AREVA P142
PR93209998	TX52J01 TRANSF 2 66KV PROT SCHEME	SIEMENS 7UT61
PR93209965	TX52J01 TRANSF 2 66KV PROT SCHEME	ENGLISHELECTR IC CDG31
PRxxxxxxxx	TX52J01 TRANSF 2 66KV PROT SCHEME	AREVA MVAJ
PR93208219	TX52J02 TRANSF 2 66KV PROT SCHEME	AREVA P142
PR93227384	FB51J03 11KV BUS 11KV PROT SCHEME	ENGLISHELECTR IC CAG32
PR93232249	FB51J03 11KV BUS 11KV PROT SCHEME	ENGLISHELECTR IC CAG12
PRxxxxxxxx	FB51J03 11KV BUS 11KV PROT SCHEME	ENGLISHELECTR IC VAJ
PRxxxxxxxx	FB51J03 11KV BUS 11KV PROT SCHEME	RELAYMONSYS 2HS519K23
PR93218016	FB52J01 SUSAN RIVER 11KV PROT SCHEME	SCHWEITZER 351S
PR93211382	FB53J01 BAY CENTRAL 11KV PROT SCHEME	ENGLISHELECTR IC CDG61
PR93212771 / PR93212189 / PR93210070	FB54J01 PIALBA 11KV PROT SCHEME	ENGLISHELECTR IC CDG61
PR93232732 / PR93233592 / PR93226004	FB55J01 DOOLONG SOUTH 11KV PROT SCHEME	ENGLISHELECTR IC CDG61
PR93210121 /PR93227749 / PR93225739	FB56J01 DUNDOWRAN 11KV PROT SCHEME	ENGLISHELECTR IC CDG61
PR94302170	FB57J01 URRAWEEEN ROAD 11KV PROT SCHEME	SCHNEIDER P142
PR93305800	MX51J01 CAPACITOR 1 11KV PROT SCHEME	ASEA RXIL
PR94764532	MX52J01 CAPACITOR 2 11KV PROT SCHEME	ABB SPAJ 140C
PR94764533	MX52J01 CAPACITOR 2 11KV PROT SCHEME	ABB SPAJ 160C
PR93221250	MX53J01 CAPACITOR 3 11KV PROT SCHEME	ABB SPAJ 140C
PR93232324	MX53J01 CAPACITOR 3 11KV PROT SCHEME	ABB SPAJ 160C

3 Network Options Considered

The preferred network option is to replace assets at Pialba Substation that have been identified as being in poor condition.

The estimated preferred project cost is \$8.7M.

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 also 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 Maryborough 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.

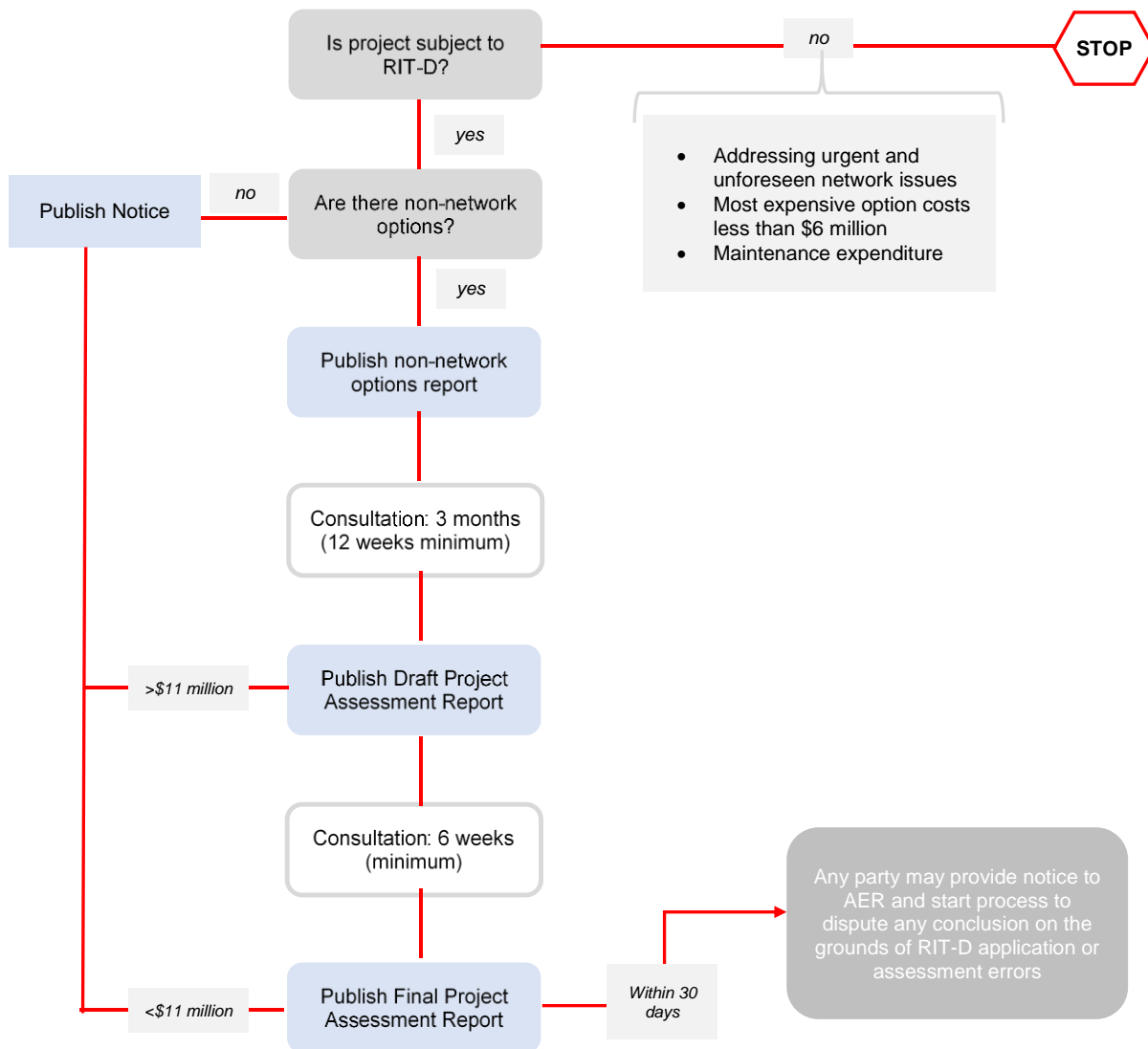
They have been assessed as not technically viable as they will not address the network risk associated with poor condition assets.

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 replace the assets in poor condition. 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 Final 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.