NEED/OPPORTUNITY STATEMENT & OPTION SCREENING ASSESSMENT (NOSA)

Renewables development in the Mt Piper to Wellington area

NOSA- 000000001942 revision 2.0

Ellipse project no(s): P0013195
TRIM file: [TRIM No]

Project reason: Economic Efficiency - Network developments to achieve market benefits
Project category: Prescribed - Connection

Approvals

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Date submitted for approval	1 December 2017	

Change history

Revision	Date	Amendment
0	November 2017	Initial issue
1	December 2017	Project triggers updated

1. Background

TransGrid has received individual project proposals from renewable energy proponents seeking to connect to the network at Line 94B (Wellington to Beryl), Beryl 132/66 kV substation and Line 94M (Beryl to Mt Piper).

The project proposals received are summarised in Table 1.

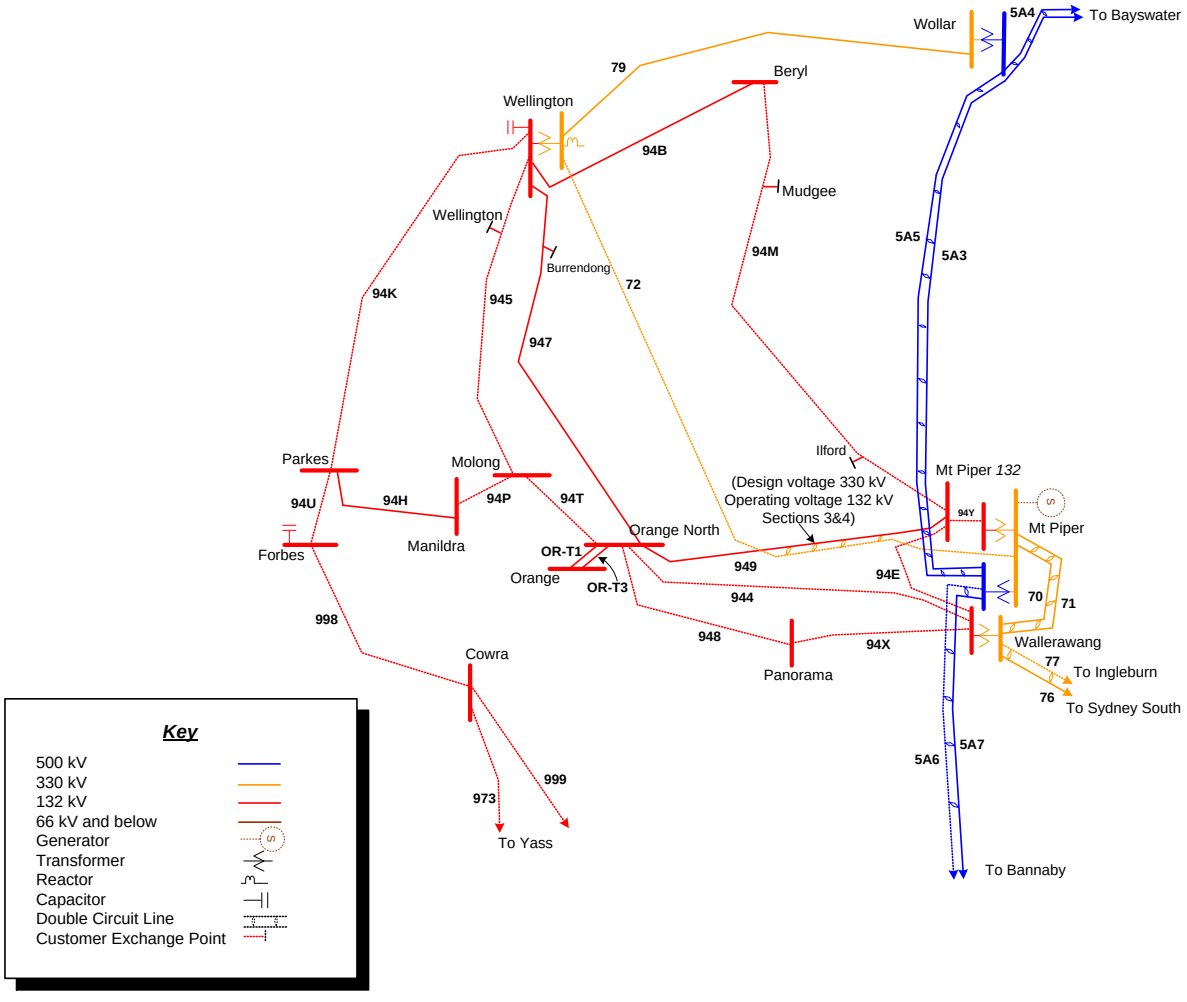
Table 1 — Renewable generation connections

Project	Capacity (MW)	Connection Point	Project Stage
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]

2. Need/opportunity

Beryl 132/66 kV Substation is supplied via 132 kV Line 94B from Wellington and Line 94M from Mt Piper via Ilford and Mudgee. Refer to Figure 1 for a network diagram of the Mt Piper to Wellington area within the existing central western NSW area.

Figure 1 – Central western NSW area network



Refer to Figure 2 for a network diagram of the Mt Piper to Wellington area within the existing central-west NSW area following connection of the aforementioned renewable generation connections.

Figure 2: Network diagram showing potential generator connections

If no network augmentations are undertaken and the three renewable generator developments become operational, constraint of generation will be required to manage system security. Constraint of renewable generation would result in higher prices in the National Electricity Market.

Preliminary market modelling has shown that network augmentation in addition to the connection of new generators in the Mt Piper to Wellington area of central western NSW may deliver market benefits if the operational constraints are removed. The market benefits would be from the following key sources:

- Lower costs to meet the supply reliability standard in New South Wales, through increased generation; and
- Lower market dispatch costs (and hence lower prices for consumers) resulting from the additional supply provided by these additional generator connections.

Subject to commitment of over 150 MW of generation development in the Mt Piper to Wellington area, there is an opportunity to expand the transmission network to realise the market and economic benefits of increased transmission capacity from the new generator connections for the NEM.

Connection of the generators at advanced planning stage and any additional new generation in the Mt Piper to Wellington area will continue to be monitored.

3. Related needs/opportunities

The Beryl area constraint Need 1316 is independent to this Need. Need 1316 is required due to new large loads in the Beryl to Mt Piper network, resulting in a voltage stability constraint at Beryl on contingent trip of line 94B. A re-assessment of both Needs will be completed should one of them proceed.

> Need 1316 - Beryl area constraint – Need date summer 2021/22

4. Options Summary

Table 2 — Options

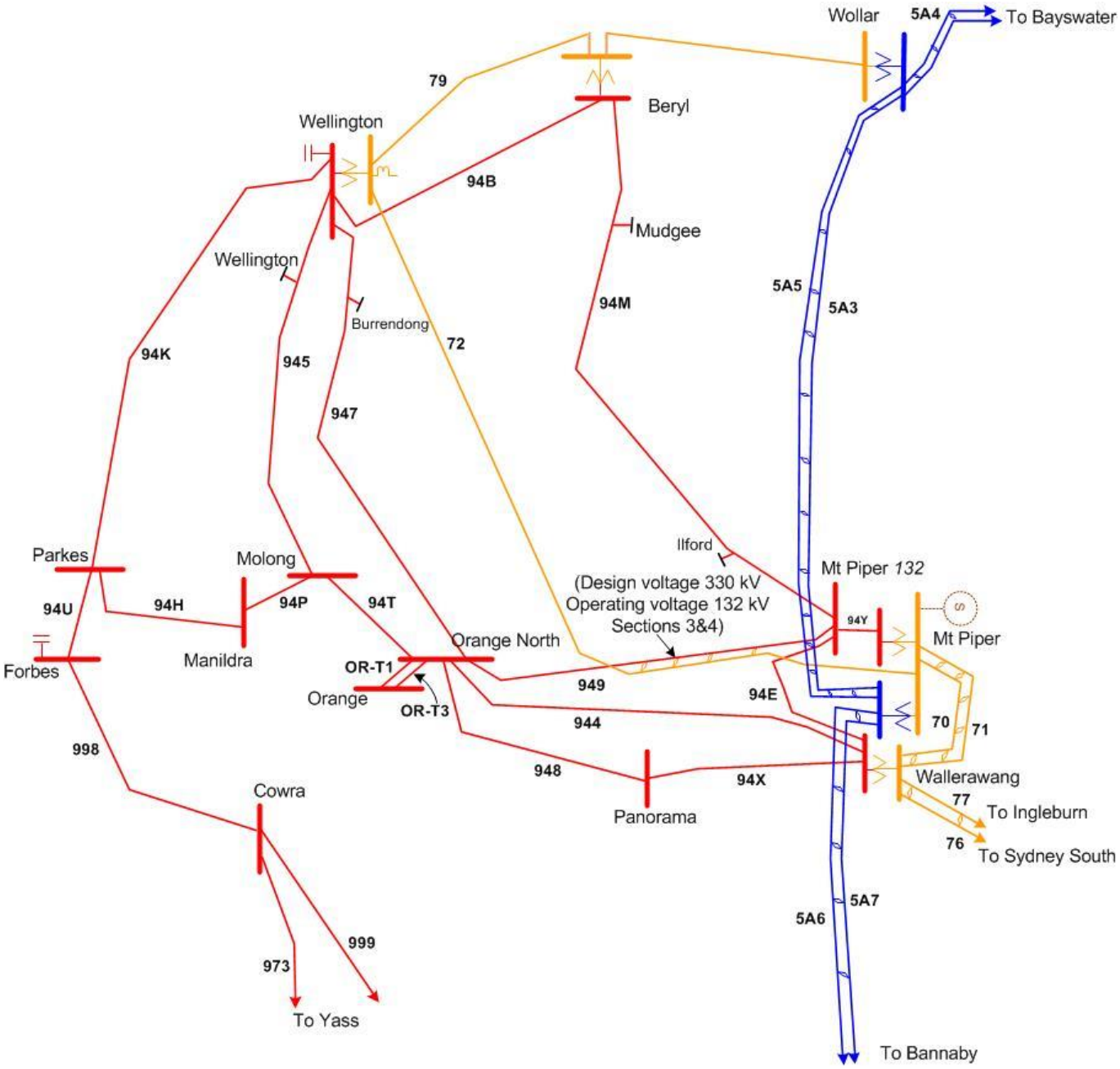
Option	Short description	OFS required	Technically feasible	Estimated cost in $2016-17	Program duration
A	Establish Beryl 330/132 kV Substation + associated works at Beryl	Yes	Yes	$35.3m	3 years
B	Generation runback schemes	No	No	NA	NA

NP&O/Project Development shall undertake Options Feasibility Studies for the options as indicated in Table 2 above. The assessments shall include consideration of the cost, timing of activities, risk analysis and practicality of being able to carry out the works.

The studies are required by 10 November 2017.

5. Options

Option A — Establish Beryl 330/132 kV Substation [OFS 1942A]

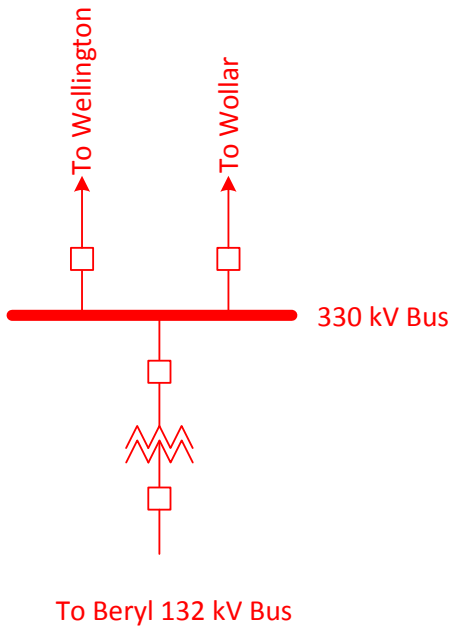


Transmission line works:

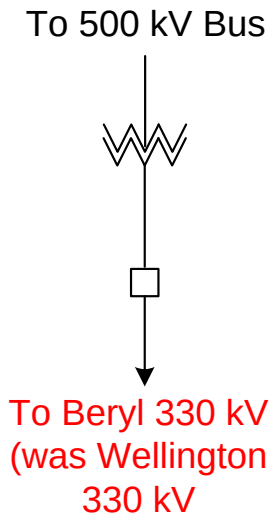
- 330 kV transmission line works: turn 79 line into new Beryl 330/132 kV Substation,
- Rearrange line connections at existing Beryl 132/66 kV Substation,
- Connection of new Beryl 330/132 kV Substation to existing 132/66 kV Substation.

Substation works:

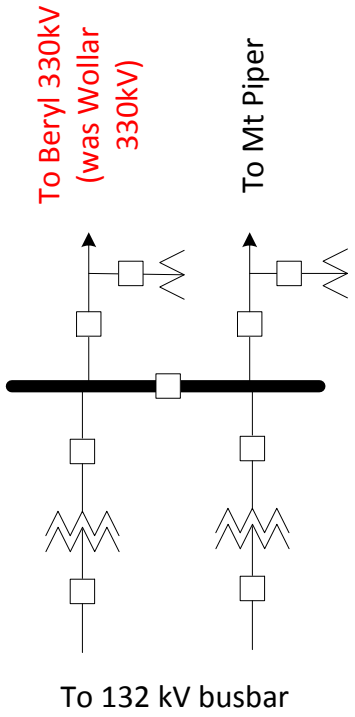
Beryl 330/132 kV Substation



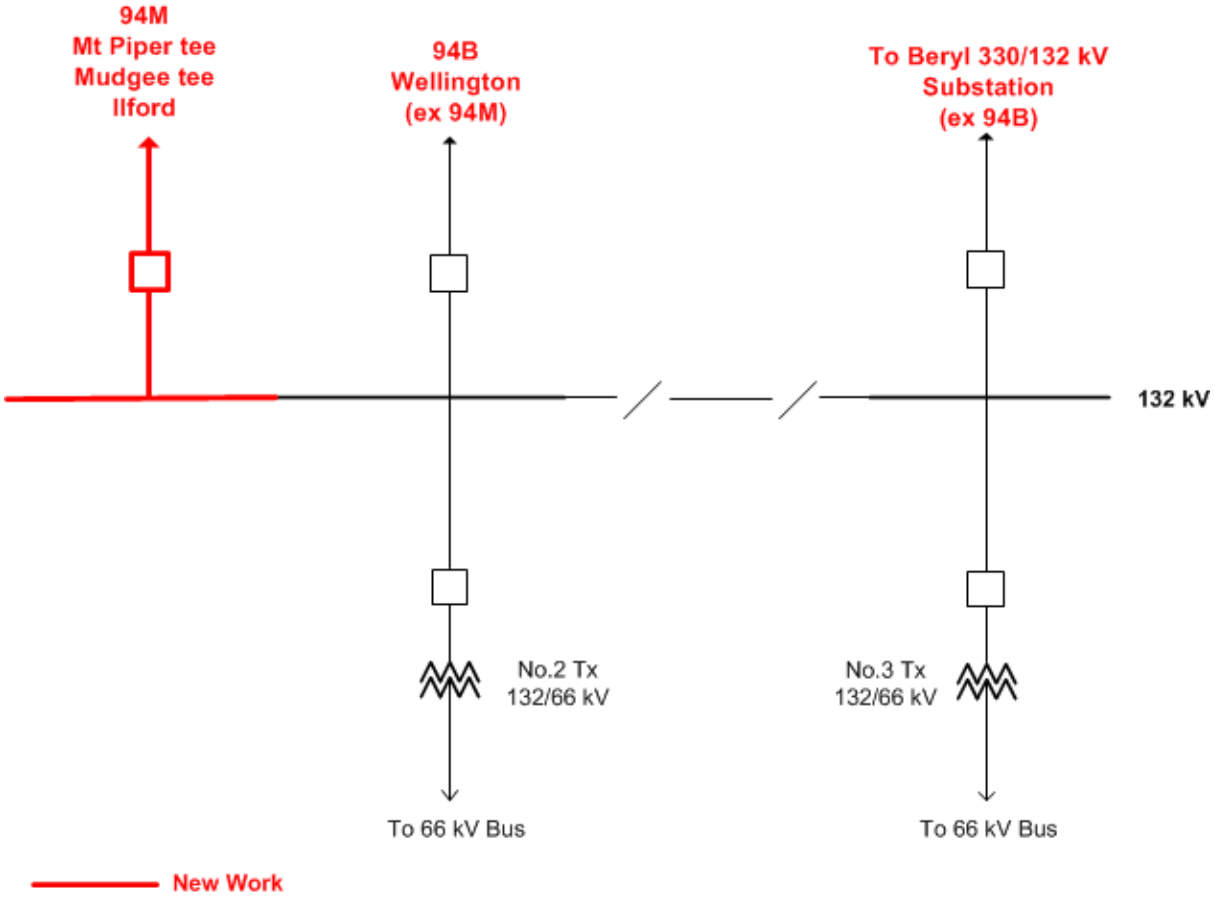
Wollar 500/330 kV Substation



Wellington 330/132 kV Substation



Beryl 132/66 kV Substation new switchbay



Option B — Generation Runback Schemes

Most of the generator proponents will have runback schemes. However, as generation is likely to be regularly constrained under “n” conditions, runback schemes for all generation interest are considered to be a less likely solution.

6. Recommendation

It is recommended that options be considered to address the identified need/opportunity and further progressed to undertake Option Feasibility Studies.

It is also recommended that TransGrid propose a contingent project in the revised revenue proposal for 2018-2023. The contingent project would have the following triggers:

(a) New generation more than 150 MW is committed in Mt Piper to Wellington area

(b) Successful completion of a RIT-T or alternate framework introduced in response to the recommendation of the Independent Review in to the Future Security of the National Electricity Market by Professor Alan Finkel and accepted by the COAG Energy Council (including comprehensive assessment of credible options) demonstrating that increasing capacity of the network between Mt Piper and Wellington at 132kV or other voltages used in future is the option that maximises the positive net economic benefits

(c) Determination by the AER that the proposed investment satisfies the RIT-T or above mentioned alternate framework

(d) TransGrid Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.

The trigger is specific and capable of objective verification, relates to a specific location or locations, and is probable but too uncertain to include the proposed contingent project in the forecast capital expenditure in this proposal.