Planning Report Benalla (BN) Zone Substation

AMS – Electricity Distribution Network

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1 Executive Summary

AusNet Services is a regulated Victorian Distribution Network Service Provider (DNSP) that supplies electrical distribution services to more than 745,000 customers. Our electricity distribution network covers eastern rural Victoria and the fringe of the northern and eastern Melbourne metropolitan area.

As expected by our customers and required by the various regulatory instruments that we operate under, AusNet Services aims to maintain service levels at the lowest possible cost to our customers. To achieve this, we develop forward looking plans that aim to maximise the present value of economic benefit to all those who produce, consume and transport electricity in the National Electricity Market (NEM).

This report presents our forward looking investment plans to manage the existing and emerging service level constraints in the Benalla (BN) Zone Substation supply area to ensure that we maintain service levels to our customers over the short and long term. The report outlines how we quantify service risk, identifies and assesses the costs and benefits of potential options to mitigate the identified risks, and provides forward looking plans outlining the optimal service risk mitigation solutions, and timing of those solutions, to maintain service levels.

1.1 Identified Need

Benalla Zone Substation (BN) was first established in the 1940s and consists of three 10/13.5 MVA 66/22kV transformers supplied from two 66kV lines emanating from Glenrowan Terminal Station (GNTS). It has a third 66 kV line that radially supplies Mansfield (MSD) Zone Substation.

The station has mixture of bulk oil and vacuum circuit breakers and the physical and electrical condition of some assets has deteriorated and they are now presenting an increased failure risk.

The emerging service constraints at BN are:

- Security of supply risks presented by the increasing likelihood of asset failure due to the condition of the assets;
- Health and safety risks presented by a possible explosive failure of the bushings on a number of the assets;
- Plant collateral damage risks presented by a possible explosive failure of bushings on a number of assets;
- Environmental risks associated with insulating oil spill or fire; and
- Reactive asset replacement risks presented by the increasing likelihood of asset failure due to the deteriorating condition of the assets.

1.2 Proposed Preferred Option

The options analysis identifies that the preferred option, being the one that maximises the net economic benefit to all those that produce, consume and transport electricity in the NEM, is to:

- Replace the 66kV and 22kV circuit breakers by 2020, at an estimated capital cost of [C.I.C] (Real $2018).

Applying a discount rate of 6.44% per annum, this proposed preferred option has a net economic benefit of [C.I.C], relative to the Do Nothing Different option, over the forty-five-year assessment period.

While the optimal timing of the propsed preferred option is by 2020, to allow sufficient time to complete the regulatory investment test for distribution (RIT-D), and to smooth the overall network capital expenditure, AusNet Services plans to implement the proposed preferred option by 2022.

1.3 Next Steps

This planning report outlines the service level risk mitigation investment that AusNet Services has assessed as prudent, efficient and providing the optimal balance of supply reliability and cost.

While this report outlines AusNet Services' plans for maintaining service levels, and serves to support AusNet Services' revenue request for the 2022-26 EDPR period, the proposed investment is subject to the RIT-D.

As such, the proposed investment will be confirmed via the formal RIT-D process, which includes publication of three reports at the various RIT-D stages, and includes a formal consultation process where interested parties can make submissions that help identify the optimal solution.

2 Introduction

2.1 Purpose

This planning report outlines asset condition, asset failure risks and network development plans relevant to Benalla (BN) Zone Substation for the period 2022-26.

It provides an analysis of viable options to address the identified risks and maintain the efficient delivery of electrical energy from BN consistent with the National Electricity Rules (NER) and stakeholder's requirements.

It also summarizes the scope, delivery schedule and expenditures associated with the most economical solution to emerging constraints.

2.2 Scope

The scope of this planning report is limited to the equipment within Benalla (BN) Zone Substation.

It excludes sub-transmission and distribution feeders entering and exiting the zone substation.

2.3 Asset Management Objectives

As stated in *AMS 01-01 Asset Management System Overview*, the high-level asset management objectives are:

- Comply with legal and contractual obligations;
- Maintain safety;
- Be future ready;
- Maintain network performance at the lowest sustainable cost; and
- Meet customer needs.

As stated in *AMS 20-01 Electricity Distribution Network Asset Management Strategy*, the electricity distribution network objectives are:

- Improve efficiency of network investments
- Maintain long-term network reliability
- Implement REFCLs within prescribed timeframes
- Reduce risks in highest bushfire risk areas
- Achieve top quartile operational efficiency
- Prepare for changing network usage.

3 Background

3.1 Substation Description

Benalla (BN) is located approximately 212 km north-east of Melbourne and is the main source of supply for the rual towns of Benalla, Euroa, Lima South, Tatong, and Goormbat townships.

BN supplies approximately 12,100 AusNet Services' customers. The customer base supplied from BN is predominately made up of residential (66%) and farming (24%), with some commercial and industrial.

The Benalla zone substation suppply area is to the north-east of Melbourne, and is at an elevation of 170 m above sea level.

BN has typical Melbourne climate with summer average maximum temperatures of 30°C, winter average minimum temperatures of 4°C with extreme temperatures reaching 43.5°C in summer and -4.5°C in winter.

The average annual rainfall is 670mm in this area.

BN is supplied at 66kV via two 66kV circuits that originate from GlenrowanTerminal Station (GNTS).

The location of BN within the AusNet Services distribution network is as shown in Figure 1.

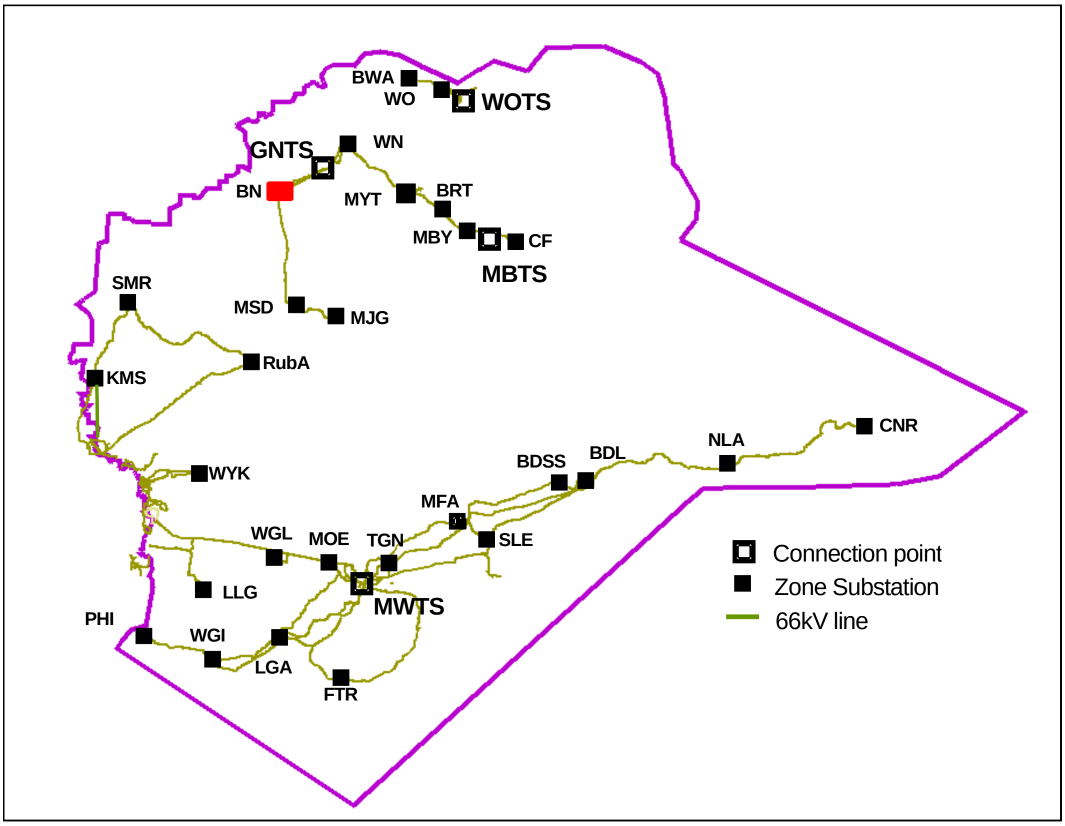

Figure 1: BN location within AusNet Services distribution network

The configuration of primary electrical circuits within BN is as shown in the single line diagram in Figure 2.

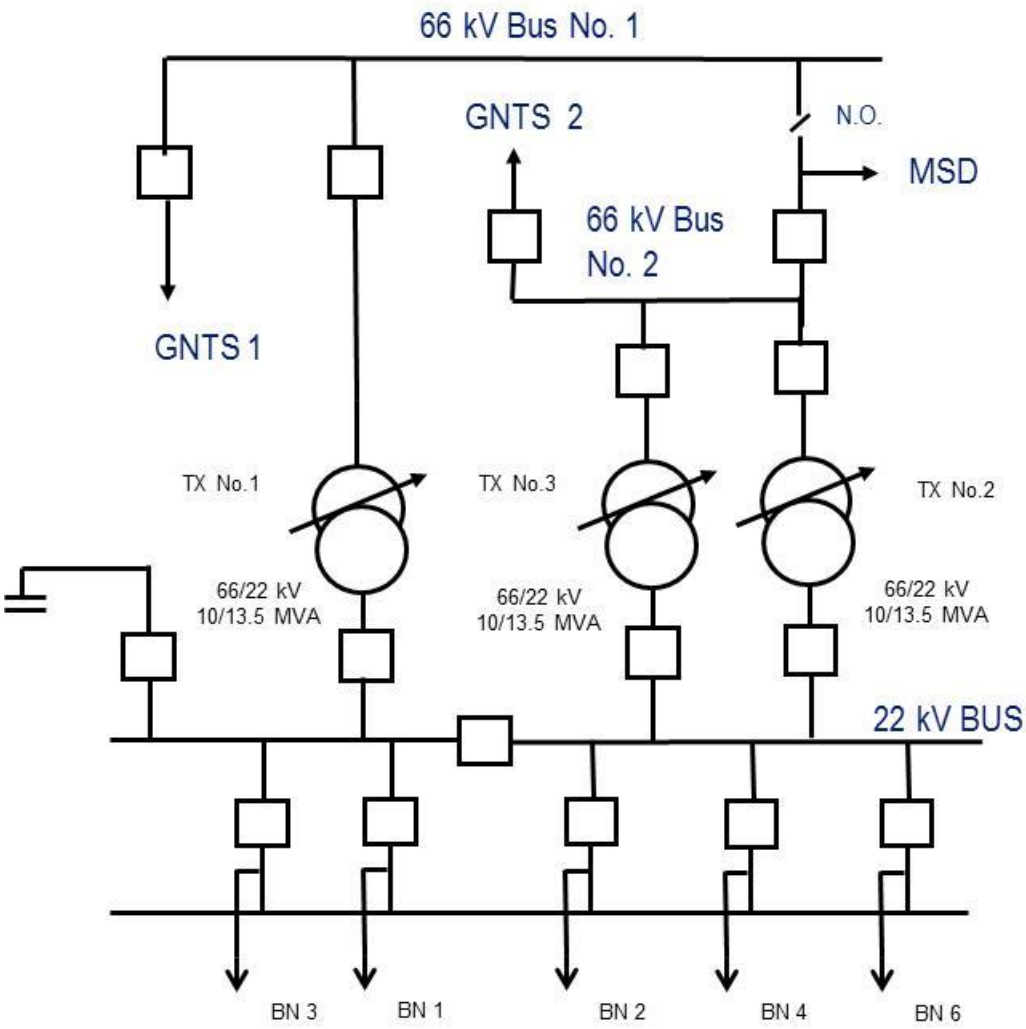

Figure 2: BN Single Line Diagram

3.2 Customer Composition

BN has five 22kV feeders of which supply into the AusNet Services supply area.

Table 1 provides details of the 22kV supply feeders.

Table 1: BN feeder information

Feeder	Feeder Length (km)	Feeder description	Number of Customers	Type of Customers
BN1	1206	Summer peaking, long rural feeder	4608	58.9% Residential 9.2% Commercial 1% Industrial 30.8% Farming
BN2	384	Summer peaking, long rural feeder	1084	47.5% Residential 14.2% Commercial 3.1% Industrial 35.2% Farming

Feeder	Feeder Length (km)	Feeder description	Number of Customers	Type of Customers
BN3	153	Summer peaking,Short rural feeder	662	71.9% Residential 3.9% Commercial 1.2% Industrial 23.0% Farming
BN4	19	Summer Peaking, urban, feeder	3381	87.6% Residential 11.6% Commercial 0.7% Industrial 0.1% Farming
BN6	506	Summer peaking, long rural feeder	2355	63.2% Residential 4.9% Commercial 0.8% Industrial 31.1% Farming

There is minimal inter-connecting 22kV feeders between Benella Zone Substation and its adjacent .

3.3 Zone Substation Equipment

3.3.1 Primary Equipment

BN includes an air-insulated 66kV switchyard with two 66kV buses separated by bus-tie circuit breakers connected to two incoming 66kV lines from GNTS and one outgoing to MSD ZS. The switching is done by six [C.I.C] bulk oil type 66 kV circuit breakers.

There are two 22kV air insulated busbars connected to one another with a bus-tie circuit breaker and connected to the three 66/22kV transformers via three transformer circuit breakers. Five 22kV feeders and one 6MVAr capacitor bank are connected to these 22kV busbars.

The 22kV switchyard currently has three [C.I.C] 22kV bulk oil circuit breakers and one [C.I.C] 22 kV bulk oil type circuit breaker, all of which are in C5 condition. There is also four 22 kV vacuum type circuit breakers, which have mechanical problems and are in C3 and C2 conditions.

Transformation comprises of three 10/13.5MVA 66/22kV transformers. The No.1 and No.2 units were manufactured by [C.I.C], and the No.3 unit was manufactured by [C.I.C]. All the transformers are in C3 condition and were installed at BN zone substation in the late 1960s to early 1970s.

3.3.2 Secondary Equipment

The three incoming 66kV lines and two buses are protected by current distance and remote trip send and directional overcurrent protection using modern [C.I.C] and [C.I.C] relays.

The No.1 and No.2 66/22kV transformer differential protection is provided by older [C.I.C] relays whilst the newer No.3 transformer differential protection is provided by modern

[C.I.C] relays.

The 22kV bus protection consists of distance bus protection and differential protection using

[C.I.C] and [C.I.C] relays.

The 22kV feeder circuit breakers have master earth fault and back up earth fault protection using [C.I.C] and [C.I.C] relays.

The 22kV capacitor bank protection has overcurrent, earth fault and voltage balance schemes using a [C.I.C] relay.

The station has duplicated 24V AC systems and battery chargers that supply a 250V DC system for protection relays and trip coils.

3.4 Asset Condition

AMS 10-13 Condition Monitoring describes AusNet Services' strategy and approach to monitoring the condition of assets.

Asset condition is measured with reference to an asset health index on a scale of C1 to C5. Table 2 provides a description of the asset condition scores.

Table 2: Asset condition Score and Remaining Service Potential

Condition Score	Condition	Condition Description
C1	Very Good	Initial service condition
C2	Good	Deterioration has minimal impact on asset performance. Minimal short term asset failure risk.
C3	Average	Functionally sound showing some wear with minor failures, but asset still functions safely at adequate level of service.
C4	Poor	Advanced deterioration – plant and components function but require a high level of maintenance to remain operational.
C5	Very Poor	Extreme deterioration approaching end of life with failure imminent.

The condition of the key assets at BN is discussed in the Asset Health Reports for the key asset classes such as power transformers, instrument transformers and switchgear with information on asset condition rankings, recommended risk mitigation options and replacement timeframes. A summary of the assets' conditions are provided in Table 3 and discussed in the following sections.

Table 3: BN Asset Condition Summary

Asset Type	Number of Assets				
	C1	C2	C3	C4	C5
66kV Circuit Breakers					6
66kV Current Transformers	3				
66kV Voltage Transformers				2	
66/22kV Power Transformers			3		
22kV Circuit Breakers		2	4		5
22kV Current Transformers					3
22kV Voltage Transformers	1			2	

These condition scores are then used to calculate the asset failure rates using the Weibull parameters determined for each asset class.

3.5 Zone Substation Supply Capacity

BN is a summer peaking station and the peak electrical demand reached 36.2MVA in summer 2018/19, and is forecast to grow slowly at approximely 0.3% per annum to 36.7MVA by 2024/25

Figure 3 shows the forecast maximum demand and supply capacities (cyclic ratings) for BN.

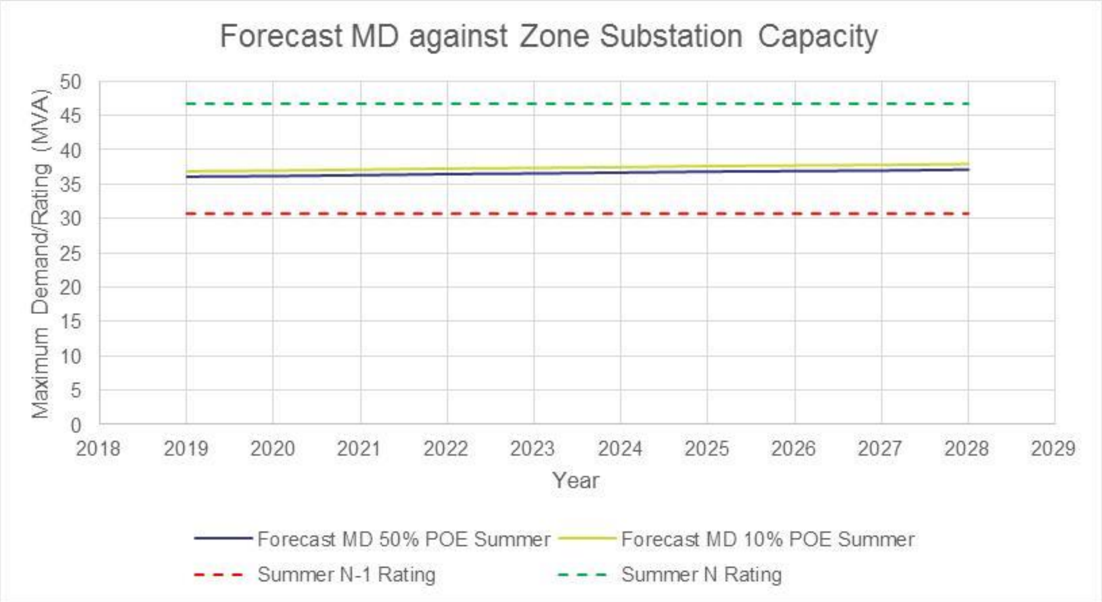

Figure 3: BN Forecast Maximum Demand against Zone Substation Capacity

3.6 Load Duration Curves

The zone substation load duration curves that feed into the risk-cost assessment model are derived from historical actual demands between:

- 1 October 2016 and 31 March 2017 for the summer 50% probability of exceedance (POE) curves;
- 1 April 2017 and 30 September 2017 for the winter 50% POE curves;
- 1 October 2013 and 31 March 2014 for the summer 10% POE curves; and
- 1 April 2017 and 30 September 2017 for the winter 10% POE curves.

The historical hourly demands are separated by season and unitised based on the recorded maximum demand within that season (summer and winter) and time period, which allows the load duration curve to be scaled according to the seasonal forecast maximum demand for each year of the assessment period.

The 50% POE unitised load duration for CLN zone substation is presented in Figure 4, and the 10% POE unitised load duration for CLN zone substation is presented in Figure 5.

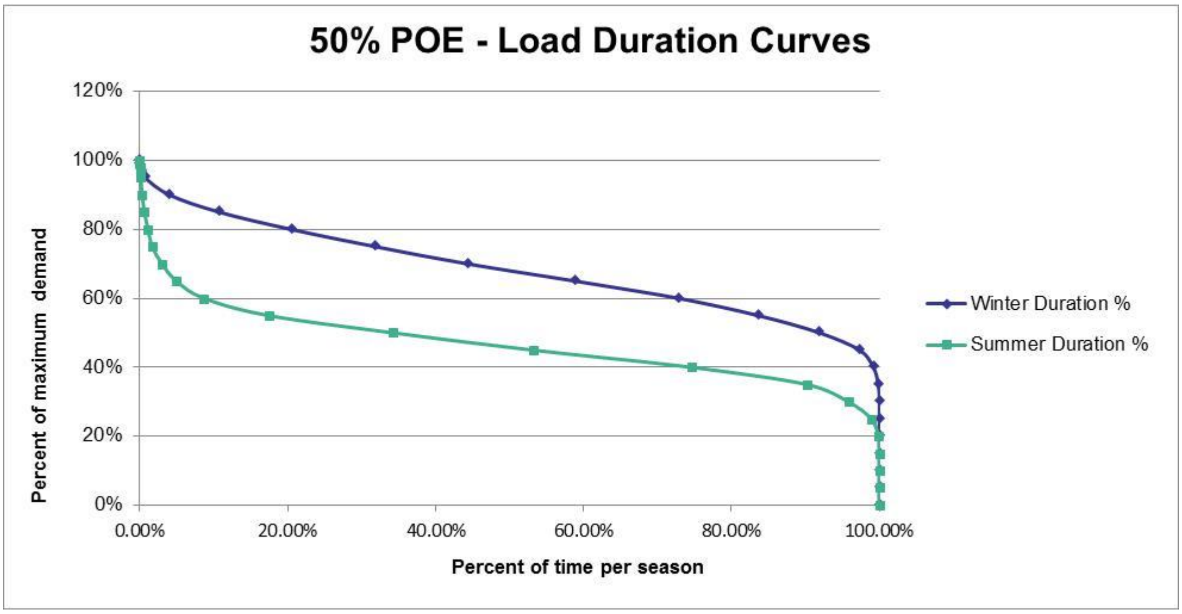

Figure 4: BN 50% Load Duration Curves

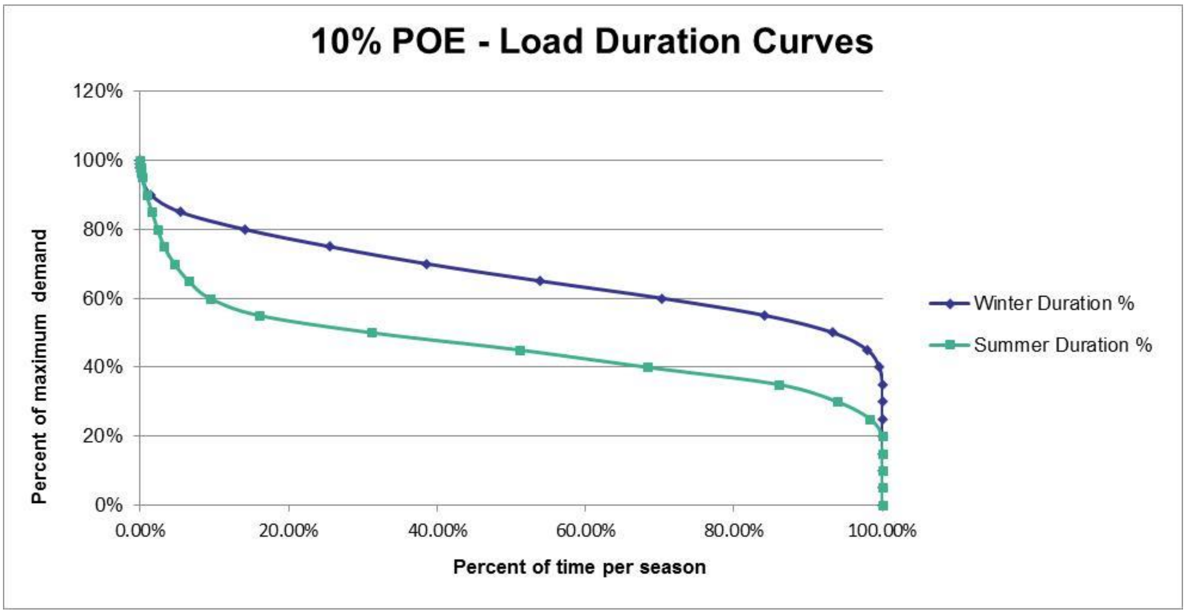

Figure 5: BN 10% POE Load Duration Curves

3.7 Feeder Circuit Supply Capacity

There is currently no requirement for additional feeders at BN due to the low load growth in the area.

3.8 Load Transfer Capability

The Distribution Annual Planning Report (DAPR) provides the load transfer capability (in MW) of the feeder interconnections between BN and its neighbouring zone substations.

This is then forecast forward in line with the forecast demand growth to give the forecast load transfer capability in Table 4.

Table 4: BN Load Transfer Capability

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Load Transfer Capability (MW)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6

4 Other Issues

4.1 Regulatory Obligations

This planning report acknowledges AusNet Services obligations as a Distribution Network Service Provider under the National Electricity Rules with particular emphasis on:

Clause 6.5.7 of the National Electricity Rules, which requires AusNet Services to only propose capital expenditure required in order to achieve each of the following:

(1) meet or manage the expected demand for standard control services over that period;

(2) comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;

(3) to the extent that there is no applicable regulatory obligation or requirement in relation to:

(i) quality, reliability or security of supply of standard control services; or

(ii) the reliability or security of the distribution system through the supply of standard control services

to the relevant extent:

(iii) maintain the quality, reliability and security of supply of standard control services, and

(iv) maintain the reliability and security of the distribution system through the supply of standard control services; and

(4) maintain the safety of the distribution system through the supply of standard control services.

Section 98(a) of the Electricity Safety Act, which requires AusNet Services to:

design, construct, operate, maintain and decommission its supply network to minimise as far as practicable –

(a) the hazards and risks to the safety of any person arising from the supply network; and

(b) the hazards and risks of damage to the property of any person arising from the supply network; and

(c) the bushfire danger arising from the supply network.

The Electricity Safety act, which defines ‘practicable’ to mean having regard to –

(a) severity of the hazard or risk in question; and

(b) state of knowledge about the hazard or risk and any ways of removing or mitigating the hazard or risk; and

(c) availability and suitability of ways to remove or mitigate the hazard or risk; and

(d) cost of removing or mitigating the hazard or risk.

Clause 3.1 of the Electricity Distribution Code, which requires AusNet Services to:

(b) develop and implement plans for the acquisition, creation, maintenance, operation, refurbishment, repair and disposal of its distribution system assets and plans for the establishment and augmentation of transmission connections:

(i) to comply with the laws and other performance obligations which apply to the provision of distribution services including those contained in this Code;

(ii) *to minimise the risks associated with the failure or reduced performance of assets; and*

(iii) *in a way which minimises costs to customers taking into account distribution losses.*

4.2 Station Configuration Supply Risk

Failure of some 22kV equipment will result in supply outages to customers as backup circuit breakers operate to isolate the failed equipment. These customer outages would be for an estimated duration of two hours, which is the typical time it takes operators to travel to site and manually re-configure circuits to isolate the failed equipment and sequentially restore supply to as many customers as possible.

Table 5 lists the estimated 22kV bus outage consequence factors for each major type of equipment based on the zone substation layout.

Table 5: BN Bus Outage Consequence Factors

Equipment	Estimated Bus Outage Consequence
Transformer	0%
22kV circuit breaker	55%
66kV circuit breaker	0%
22kV current transformer	55%
66kV current transformer	0%
22kV voltage transformer	50%
66kV voltage transformer	0%

5 Identified Need

Benalla Zone Substation (BN) commenced operation as a 66/22kV transformation station in the late 1960s with three power transformers. BN is supplied at 66kV via two 66kV circuits that originate from GlenrowanTerminal Station (GNTS). There is one outgoing 66 kV line to MSD Zone Substation.

The station has mixture of bulk oil and vacuum circuit breakers and the physical and electrical condition of some of these assets has deteriorated and they are now presenting an increasing failure risk

The emerging service constraints at BN are:

- Security of supply risks presented by the increasing likelihood of asset failure due to the condition of the assets;
- Health and safety risks presented by a possible explosive failure of the bushings on a number of the assets
- Plant collateral damage risks presented by a possible explosive failure of bushings on a number of assets
- Environmental risks associated with insulating oil spill or fire; and
- Reactive asset replacement risks presented by the increasing likelihood of asset failure due to the deteriorating condition of the assets.

6 Risk and Options Analysis

6.1 Risk-Cost Model Overview

AusNet Services' risk-cost model quantifies the benefits of potential investment options by comparing the service level risk of the Do Nothing Different (counterfactual) option with the reduced service level risk assuming the credible option is place.

The investment cost to implement the credible option is then subtracted from the monetised benefit to compare credible options and identify the option that maximises the net economic benefit (the proposed preferred option).

The areas of service level risk costs, and risk cost reduction benefits, that AusNet Services considers include:

- Supply risk;
- Safety risk;
- Collateral damage risk;
- Reactive replacement risk;
- Environment risk;
- Operations and maintenance costs; and
- Losses.

Further details on the model can be found in AusNet Services' Risk-Cost Assessment Model Methodology paper.

6.2 Risk Mitigation Options Considered

The following options have been identified to address the risk at BN:

1. Do nothing different
2. Retire one transformer
3. Retire one transformer and sure up supply capacity via network support
4. Network support to defer retirement and replacement
5. Replace 66kV circuit breakers and poor condition 22kV circuit breakers
6. Replace 66kV circuit breakers and all 22kV circuit breakers
7. Replace 66kV circuit breakers and form a ring bus and all 22kV circuit breakers

An economic cost-benefit assessment is used to assess and rank the economic efficiency of each option.

The following sections provide a brief summary of each of these options.

6.2.1 Option 1: Do Nothing Different

The Do Nothing Different (counterfactual) option assumes that AusNet Services would not undertake any investment, outside of the normal operational and maintenance processes.

Under this option, increasing supply risk would be managed by increased levels of involuntary load reduction.

Increased non-supply risks, such as those associated with safety, collateral damage, reactive replacement and environmental impacts, would be accepted as unmanaged rising risk costs.

The Do Nothing Different (counterfactual) option establishes the base level of risk, and provides a basis for comparing potential options.

Since this option assumes no investment outside of the normal operational and maintenance processes, this is a zero investment cost option.

6.2.2 Option 2: Retire one transformer

This option tests whether the current installed capacity of the substation is still required to meet customer demand and whether equipment could be retired rather than replaced.

The capital cost for this option is [C.I.C], for associated decommissiong works.

6.2.3 Option 3: Retire one transformer and sure up supply capacity via network support

This option tests whether the current installed capacity of the substation is still required to meet customer demand and whether equipment could be retired and network support used rather than replacing poor condition assets.

The capital cost for this option is [C.I.C], for associated decommissiong works and setup of a 10MW network support agreement.

In addition to the capital cost, there is ongoing operational costs associated with this option that represent the network support availability and activation costs, and which vary year-by-year based on the network support expected under this option, as outlined in Table 6.

Table 6: Network support services annualised costs ($ million)

2021	2022	2023	2024	2025
C.I.C				

6.2.4 Option 4: Network support to defer replacement

This option tests whether network support can be used to defer the replacement of poor condition assets. This option addresses the supply risks associated with poor condition assets, but does not address the safety, environmental or collateral damage risks as the assets remain in service.

The capital cost of this option is [C.I.C], for setup of a 10MW network support agreement.

In addition to the capital cost, there is ongoing operational costs associated with this option that represent the network support availability and activation costs, and which vary year-by-year based on the network support expected under this option, as outlined in Table 7.

Table 7: Network support services annualised costs ($ million)

2021	2022	2023	2024	2025
C.I.C				

6.2.5 Option 5: Replace 66kV circuit breakers and poor condition 22kV circuit breakers

This option replaces the six condition five 66kV circuit breakers, and five condition five 22 kV circuit breakers in situ.

This option has a capital cost of [C.I.C].

6.2.6 Option 6: Replace 66kV circuit breakers and all 22kV circuit breakers

This option replaces the six condition five 66kV circuit breakers in situ and replaces the existing 22kV switchgear with two new indoor 22kV switchboards.

This option has a capital cost of [C.I.C].

6.2.7 Option 7: Replace 66kV circuit breakers and form a ring bus and all 22kV circuit breakers

This option replaces the six condition five 66 kV circuit breakers, and rearranges the 66 kV switchyard to form a 66kV ring bus, and replaces the existing 22 kV switchgear with two new indoor 22kV switchboards.

This option has a capital cost of [C.I.C].

6.3 Risk Cost Model Results

6.3.1 Existing Service Level Risk

Figure 6 shows the existing service level risk. The risk costs pretty evenly split between supply risk and non-supply risks (safety, environment, collateral damage and reactive replacement). The escalation in the risk costs over time is driven by deterioration in the condition of the assets.

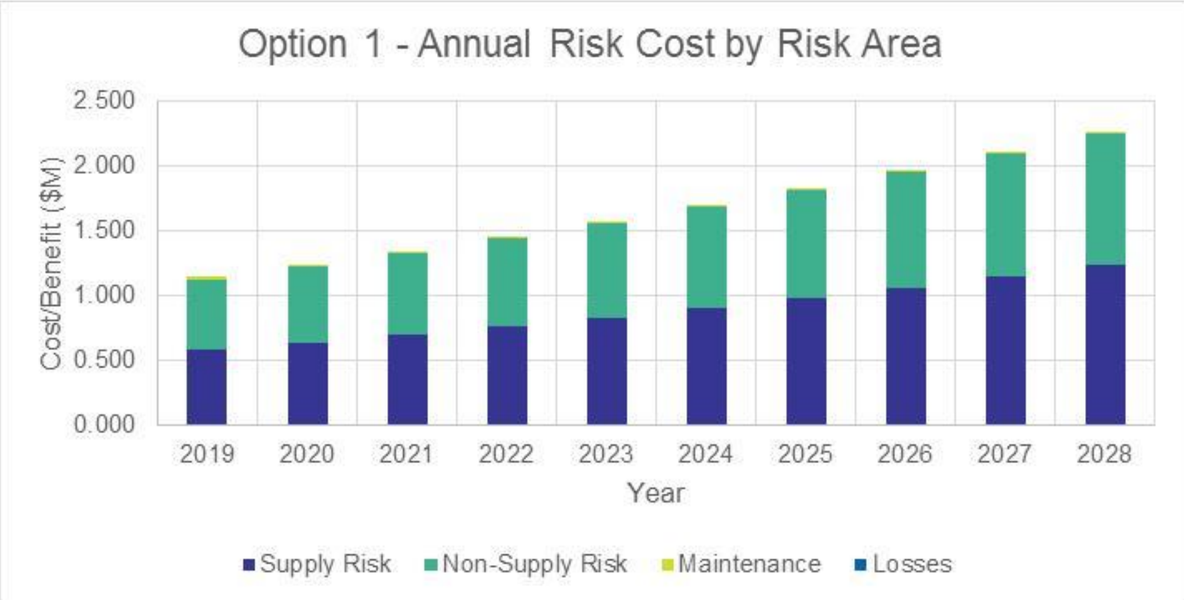

Figure 6: Do Nothing Different – Service Level Risk Cost

6.3.2 Economic Cost Benefit Analysis

The economic analysis allows comparison of the economic cost and benefits of each option to rank the options and to determine the economic timing of the preferred option.

It quantifies the capital, operational and maintenance costs along with service level risk reduction benefits for each option.

Table 8 lists the annualised net economic benefit of each option for each year, with the option that maximises this benefit highlighted.

Table 8: Annualised net economic benefit ($M)

	2020	2021	2022	2023	2024	2025	2026	2027	2028
Option 1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Option 2	C.I.C								
Option 3									
Option 4									

<table>
<tr><td>Option 5</td><td rowspan="3"></td></tr>
<tr><td>Option 6</td></tr>
<tr><td>Option 7</td></tr>
</table>

This indicates that Option 5 is the most economic option prior to 2021, with Option 6 becoming the most economic option in 2021.

6.3.3 Sensitivity Analysis

Table 9 presents the net present value of net economic benefits under a variety of sensitivities. The net economic benefit assessment takes account of each option's total capital, operating and maintenance costs, compared to the reduction in service level risk cost that option is expected to deliver.

The robustness of the economic assessment is tested for the following sensitivities:

- Asset failure rates, varied at ±50% of the base failure rate;
- Maximum demand forecasts, varied to ±5% of the base forecast;
- Value of customer reliability (VCR), varied to ±25% of the base VCR;
- Proposed option costs, varied to ±15% of the base option cost;
- Value of statistical life (VoSL) of [C.I.C], varied from a [C.I.C] low case, to a [C.I.C] high case; and
- Discount rate of 6.44%, varied to ±2% per annum of the base discount rate.

The preferred option under each sensitivity is highlighted, and the option that maximises net benefits under the majority of sensitivities is considered the proposed preferred option.

Table 9: NPV of Net Economic Benefit Analysis

<table>
<tr><th>Scenario</th><th>Option 1</th><th>Option 2</th><th>Option 3</th><th>Option 4</th><th>Option 5</th><th>Option 6</th><th>Option 7</th></tr>
<tr><td>Base Case</td><td>$0.00</td><td rowspan="13" colspan="6">C.I.C</td></tr>
<tr><td>High Asset Failure Rate</td><td>$0.00</td></tr>
<tr><td>Low Asset Failure Rate</td><td>$0.00</td></tr>
<tr><td>High Demand</td><td>$0.00</td></tr>
<tr><td>Low Demand</td><td>$0.00</td></tr>
<tr><td>High VCR</td><td>$0.00</td></tr>
<tr><td>Low VCR</td><td>$0.00</td></tr>
<tr><td>High Option Cost</td><td>$0.00</td></tr>
<tr><td>Low Option Cost</td><td>$0.00</td></tr>
<tr><td>High VoSL</td><td>$0.00</td></tr>
<tr><td>Low VoSL</td><td>$0.00</td></tr>
<tr><td>High Discount Rate</td><td>$0.00</td></tr>
<tr><td>Low Discount Rate</td><td>$0.00</td></tr>
</table>

The sensitivity analysis indicates the preferred option is Option 6, as it has the highest net benefit under the majority of sensitivities tested.

6.3.4 Economic Timing of Preferred Option

The annual benefit of implementing a credible alternative option to the Do Nothing Different (counterfactual) is the difference between total service level risk cost with a credible option in place, and the total service level risk cost of the Do Nothing Different option.

The optimal economic timing of the proposed option is the point in time when the annual benefit of implementing the proposed option outweighs the annualised cost to implement that option.

The optimal economic timing to implement the proposed preferred option is by 2020, as presented in Figure 7.

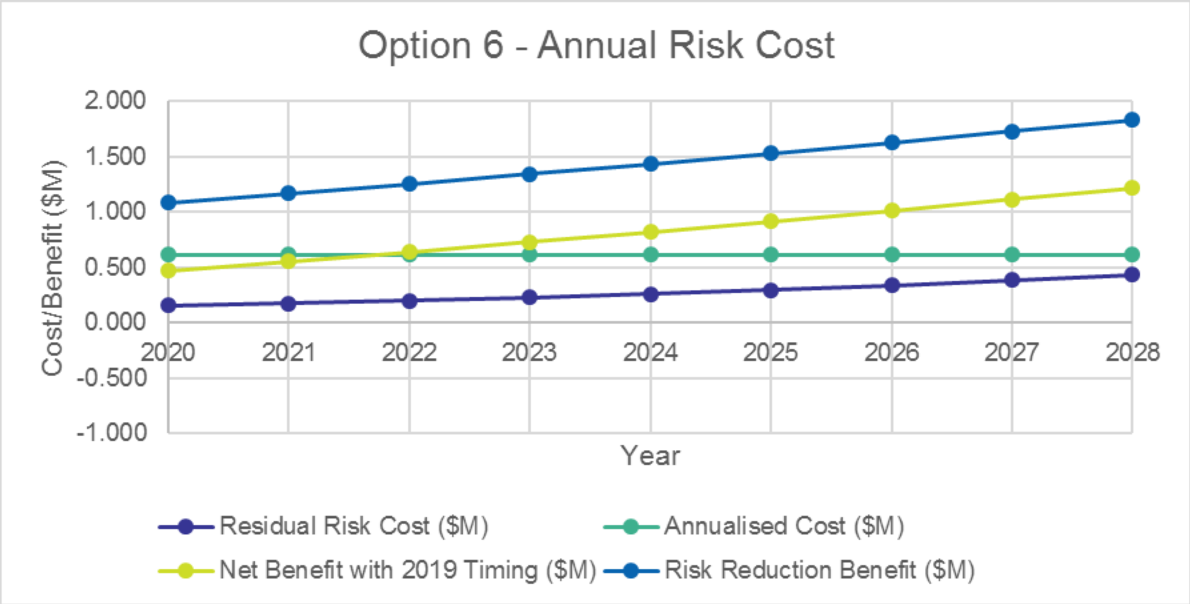

Figure 7: Economic timing of the proposed preferred option

7 Conclusion and Next Steps

The assessment outlined in this report shows that the service level risk to customers supplied from Benalla (BN) Zone Substation is forecast to grow to unacceptable levels within the 2022-26 EDPR period.

The forecast increase in service level risk is driven by increasing supply and non-supply (safety, environmental, collateral damage and reactive replacement) risk driven by deterioration in the condition of the zone substation assets, resulting in an increasing likelihood of asset failure.

7.1 Proposed Preferred Option

The options analysis identifies that the preferred option, being the one that maximises the net economic benefit to all those that produce, consume and transport electricity in the NEM, is to:

- Replace the 66kV and 22kV circuit breakers by 2020, at an estimated capital cost of [C.I.C] (Real $2018).

Applying a discount rate of 6.44% per annum, this proposed preferred option has a net economic benefit of [C.I.C], relative to the Do Nothing Different option, over the forty-five-year assessment period.

While the optimal timing of the proposed preferred option is by 2020, to manage the deliverability, allow sufficient time to complete the required regulatory investment test for disctrubition (RIT-D), and to spread the capital expenditure throughout the 2022-26 EDPR, AusNet Services plans to implement the proposed preferred option by 2022.

7.2 Next Steps

This planning report outlines the service level risk mitigation investment that AusNet Services has assessed as prudent, efficient and providing the optimal balance of supply reliability and cost.

While this report outlines AusNet Services' plans for maintaining service levels, and serves to support AusNet Services' revenue request for the 2022-26 EDPR period, the proposed investment is subject to the regulatory investment test for distribution (RIT-D). As such, the proposed investment will be confirmed via the formal RIT-D process, which includes publication of up to three reports at the various RIT-D stages, and includes a formal consultation process where interested parties can make submissions that help identify the optimal solution.

APPENDIX A PREFERRED OPTION DETAILS

A.1 Scope of Work

The high level scope of work for the proposed preferred solution includes:

- Replacing the five condition five 66kV circuit breakers
- Replacing the existing C5 condition 22 kV circuit breakers and switchgear with one new indoor 22kV modular switchboard
- Associated protection works
- New modular amenities building; asbestos removal from control building and the old amenities building

A.2 Project Cost Summary

Design	C.I.C
SPA internal costs	
Sub-contractor indirects	
66kV equipment	
22kV equipment	
Transformers	
Line works	
Infrastructure - civil works	
Infrastructure - building works	
Infrastructure - services	
Protection & control systems	
Land / easement purchase	
Metering cost	
Outages	
Spares	
Nominal risk allowance	
Project direct costs	
Management contingency	
Project direct costs plus contingency	
Overheads	
Finance charges	
Operating expenditure	
WDV (written down value) of assets to be retired	
Total	