

Secure supply and enable connections: Beveridge

BVE33 Distribution Feeder

Regulatory Investment Test for Distribution (RIT-D) Options Screening Report

Monday, 19 October 2026



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1. Executive summary

AusNet is a regulated Victorian Distribution Network Service Provider (DNSP) that supplies electrical distribution services to more than 845,000 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 under which we operate, AusNet aims to maintain service levels at the lowest possible cost to our customers. To achieve this, we develop 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).

The Regulatory Investment Test for Distribution (**RIT-D**) is an economic cost-benefit assessment and consultation process designed to identify the most credible option that addresses an identified need on the network, while maximising net economic benefits for stakeholders in the National Electricity Market (**NEM**) – the preferred option.

This RIT-D has been initiated by AusNet (the RIT-D proponent) to identify the preferred option to address the supply security limitations of the Beveridge supply area, a rapidly developing region covering northern greater metropolitan Melbourne.

Identified need

The Northern Growth Corridor¹ on the urban fringes of Melbourne's northern suburbs is a vast greenfield development area accommodating much of Melbourne's population and economic growth. There has been a significant increase in population in the Beveridge area. According to the 2016 census², there were 1,874 people living in Beveridge and by 2021³, the corresponding figure was 4,642. This represents an average annual growth rate of approximately 30%.

It is expected that growth is likely to continue with the most recent forecast produced by Victoria's Department of Transport and Planning (VIT2023)⁴ forecasting the population of the Mitchell local government area (LGA), which contains Beveridge, to grow from 49,460 to 69,600 from 2021 to 2026. This represents an overall annual growth rate for the whole LGA of 8.1% per annum.

The Beveridge area is currently supplied in part by AusNet's existing Kalkallo zone substation (KLO) through a rural network of 22 kV distribution feeders. Kalkallo zone substation (KLO) supplies over 17,439 AusNet customers (via five 22 kV distribution feeders), and over 13,448 Jemena Electricity Network (JEN) customers (via four 22 kV distribution feeders). AusNet has identified increasing energy at risk in parts of this network, including the Kalkallo zone substation, due to rapid demand growth in the Northern Growth Corridor. Of particular concern is the forecast growth on the two AusNet 22 kV distribution feeders - KLO14 and KLO24 - supplying the satellite suburbs of Beveridge, Wallan, parts of Wandong and Whittlesea, and their surrounds. Bushfire mitigation technology, specifically Remote REFCLs, has been deployed on both feeders.

To address the increasing energy at Risk Ausnet proposed a new ZSS at Beveridge (BVE ZSS) with two feeders (BVE31 & BVE32) which are currently on construction and the AIS is planned by mid Dec 2026. However, continued residential, commercial and industrial development within the Northern Growth Corridor is forecast to result in increasing feeder loading levels and reduced operational flexibility across the network.

The forecast demand growth specifically on KLO14, is expected to result in thermal constraints on KLO14. Consequently, additional feeder capacity is required to accommodate future load growth of KLO14 / BVE31 to maintain network reliability and provide operational flexibility under both normal and contingency conditions.

The identified need is to provide a reliable electricity supply to customers in the Beveridge area as forecasted demand is expected to exceed the available capacity of the existing KLO14 feeder (13.5 MVA) and the additional capacity of BVE31 (12.6MVA, available by mid Dec 2026) by FY 27.

Table 1 outlines the extent of overload on the existing KLO14 and KLO24 feeders under normal system operating conditions, including the impact of load transfers to the new BVE31 and BVE32 feeders and any available demand management measures applied on each feeder. Despite these mitigations, both feeders remain overloaded, KLO14 being the prominent, highlighting the **need for additional capacity to support the growing demand** in the Beveridge area.

¹ [Victorian Planning Authority – The North Growth Corridor Plan](#), Victorian Planning Authority (VPA).

² [2016 Beveridge, Census](#), Australian Bureau of Statistics (ABS), 2016

³ [2021 Beveridge, Census](#), Australian Bureau of Statistics (ABS), 2021.

⁴ [Victoria in Future](#), Victorian Department of Transport & Planning, 2023

Table 1 Do Nothing Base Case Forecast 10PoE Overload (MVA) -Summer (After implementing Stage 1 feeders; BVE31 & BVE32)

OVERLOAD	FY26	FY27	FY28	FY29	FY30	FY31	FY32
KLO14	-	3.6	7.9	19.6	24.0	29.7	37.1
KLO24	-	-	-	1.5	3.3	5.3	8.0
TOTAL (Feeder)	-	3.6	7.9	21.1	27.3	35.0	45.1
KLO (N)	0	0	0	0	0	0	5.3
KLO (N-1)	14.7*	23.8	29.7	39.4	45.3	44.4	53.7
TOTAL (ZSS) (N)	0	0	0	0	0	0	5.3
TOTAL (ZSS) (N-1)	14.7*	23.8	29.7	39.4	45.3	44.4	53.7

Until the commissioning of new feeder, AusNet will be managing the overload with temporary diesel generators.

A material level of expected unserved energy (EUE) is calculated for distribution feeders KLO14 and KLO24 from FY26 and KLO zone substation, after commissioning BVE ZSS and two feeders (BVE31 & BVE32 from FY26 as shown in Table 2. The calculated unserved energy is based on demand exceeding capacity with all assets in service and considers available load transfers + Demand Management. The EUE has been weighted using the industry practice of 30% of 10PoE and 70% of 50PoE maximum demand forecasts and monetised using a locational Value of Customer Reliability (VCR).

Table 2 Do Nothing Base Case Forecast Expected Unserved Energy (EUE) Summer (After implementing Stage 1 feeders; BVE31 & BVE32)

EUE	FY26	FY27	FY28	FY29	FY30	FY31	FY32
KLO14 (MWh pa)	-	18.42	462.43	12,648.44	28,523.65	53,520.46	86,612.54
KLO24 (MWh pa)	-	-	1.05	6.28	44.42	340.53	1,506.73
TOTAL (Feeder) (MWh pa)	-	18.42	463.48	12,654.72	28,568.07	53,861.00	88,119.27
TOTAL (Feeder) (\$m, 2024 pa)	-	0.84	21.14	577.20	1,303.03	2,456.55	4,018.61
KLO (MWh pa)	0.7	4.3	11.6	28.6	45.8	52.5	164.3
TOTAL (ZSS) (MWh pa)	0.7	4.3	11.6	28.6	45.8	52.5	164.3
TOTAL (ZSS) (\$m, 2024 pa)	0	0.2	0.5	1.3	2.0	2.3	7.2

AusNet is committed to supporting the achievement of Victoria Planning Authority's⁵ economic growth plans for the Northern Growth Corridor by planning the AusNet network to accommodate the growing needs of customers, communities, industry, and businesses. By FY32, the distribution feeders total expected unserved energy and its monetised supply risk on customers (even after the commissioning of 2 distribution feeders from BVE ZSS are forecast to be more than 88,000 MWh pa and \$4,018 million (real \$ 2024) respectively. Similarly, by FY32, the zone substation expected unserved energy and its monetised supply risk on customers are forecast to be more than 164 MWh pa and \$7.2 million (real \$2024) respectively.

AusNet has undertaken a probabilistic planning approach to assess the energy at risk (load not being supplied) if no mitigation action is undertaken after the commissioning of BVE ZSS and 2 feeders and whether it is economic to invest in risk mitigation action to reduce the forecast service level risk. With respect to distribution feeders, AusNet has identified that approximately 45 MVA of additional capacity or demand reduction is required by FY32 rising from a

⁵ [Victorian Planning Authority - VPA](#).

need of 3.6 MVA⁶ by 2027, through network augmentation or alternative non-network approaches such as demand management, embedded generation and/or storage to enable the ongoing reliable supply of electricity to the Beveridge area. With respect to the KLO zone substation, approximate additional capacity or demand reduction requirements are also provided in the table 2 above.

AusNet proposes to investigate and evaluate the following network options to address the identified need on the distribution feeders KLO14 and KLO24 and the zone substation KLO:

1. Build a new 22kV distribution feeder from BVE ZSS
2. Extend the existing KLO12 feeder along Donnybrook Rd & Merriang Rd (by drawing the second circuit along the existing KLO14 path) towards Beveridge area terminating at a remote REFCL.
3. Build a new 22kV distribution feeder from KMS ZSS

AusNet has evaluated the feasibility of following options and found those are not viable.

Option considered but didn't progress	Reasons for non-consideration
Inter feeder transfers	At peak demand, the transfer capacity between feeders KLO14, KLO24, BVE31 & BVE32 are effectively zero, due to the feeder operating in an overloaded state throughout the assessment period. The remaining adjacent tie options for KLO14 are DRN22 and BVE31 to KMS12. DRN22 is a non-REFCL feeder, rendering it unsuitable for transfer, particularly on Total Fire Ban (TFB) days when REFCL compliance is critical. KMS12, while technically available, is a constrained feeder. Forecasts indicate that its POE10 demand threshold will be exceeded by 2027.
Extension of KLO12 along Hume Freeway to Beveridge area (closest path)	This will effectively reduce the length of the feeder considered under option 2. However, objections from DTP for this proposal due to the future expansion plans of Hume Freeway deemed this proposal to be non-viable / route through a different path

The Regulatory Investment Test for Distribution (RIT-D) is an economic cost-benefit assessment designed to identify the most credible option that addresses an identified need while maximising net economic benefits for stakeholders in the National Electricity Market (NEM). This involves a probabilistic planning methodology to account for rare but possible scenarios, such as extreme demand or outages, ensuring all credible options are considered.

This Options Screening Report (OSR) marks the first step in the RIT-D process, in line with clause 5.17 of the National Electricity Rules (NER)⁷ version 235 published by the Australian Energy Market Commission (AEMC), and section 4.2 of the RIT-D Application Guidelines⁸, published by the Australian Energy Regulator (AER).

AusNet welcomes written submissions on the credible options presented in this OSR and invites proposals from proponents of potential non-network or Standalone Alone Power System (SAPS) options (stand-alone or in conjunction with a network solution) that meet the identified need. Any credible non-network options will be assessed alongside the network options at the next stage of the RIT-D.

Submissions should be emailed to ritdconsultations@ausnetservices.com.au on or before 11 January 2027. In the subject field, please reference 'RIT-D OSR BVE33 Distribution Feeder'. AusNet's preference is that these submissions would be published on its website and AEMO's website. If you do not want your submission to be made public, please clearly stipulate this at the time of lodgement.

Assessments of the options and responses to this OSR will be presented in the Draft Project Assessment Report (DPAR), which we expect to publish by end of this year.

⁶ Total overloads in Table 1.

⁷ [National Electricity Rules \(NER\)](#), Australian Energy Market Commission (AEMC), 2025

⁸ [Regulatory Investment Test for Distribution application guidelines](#), version 6, Australian Energy Regulator (AER), 2024

2. Introduction

The RIT-D is an economic cost-benefit test used to assess and rank potential investments capable of meeting the identified need. The purpose of the RIT-D is to identify the credible option that maximises the present value of net economic benefit to all those who produce, consume and transport electricity in the NEM (the preferred option).

The publication of this OSR represents the first step in the RIT-D process in accordance with clause 5.17 of the NER⁹ version 235, and section 4.2 of the AER's RIT-D Application Guidelines¹⁰. In accordance with those requirements, this document sets out:

- the identified need that AusNet is seeking to address, together with the assumptions used in identifying this need;
- a description of the potential credible network options that may address the identified need;
- the technical characteristics of each potential credible option;
- the estimated construction timetable and commissioning date;
- the total indicative capital and operating costs for each potential credible option and a high-level cost breakdown;
- the technical characteristics of the identified need that a non-network or SAPS option would be required to provide;
- information to assist non-network providers wishing to present alternative potential credible options including details of how to submit a proposal for consideration by the RIT-D proponent.

The appendix provides an overview of the RIT-D assessment and consultation process.

⁹ [National Electricity Rules \(NER\)](#), Australian Energy Market Commission - AEMC, 2025.

¹⁰ [Regulatory Investment Test for Distribution application guidelines](#), version 6, Australian Energy Regulator (AER), 2024.

3. Background

This OSR relates to supply limitations within the area served by AusNet's Kalkallo Zone Substation (KLO ZSS), specifically the 22 kV KLO14 and KLO24 distribution feeders that provide electricity supply to Beveridge and surrounding areas.

KLO ZSS supplies more than 17,400 AusNet customers through five 22 kV feeders (KLO11, KLO12, KLO13 (shared between Ausnet & Jemena) KLO14 and KLO24) and more than 13,400 Jemena Electricity Network (JEN) customers through four 22 kV feeders (KLO13, KLO21, KLO22 and KLO23). Bushfire mitigation technology, including Remote REFCLs, has been deployed on KLO14 and KLO24.

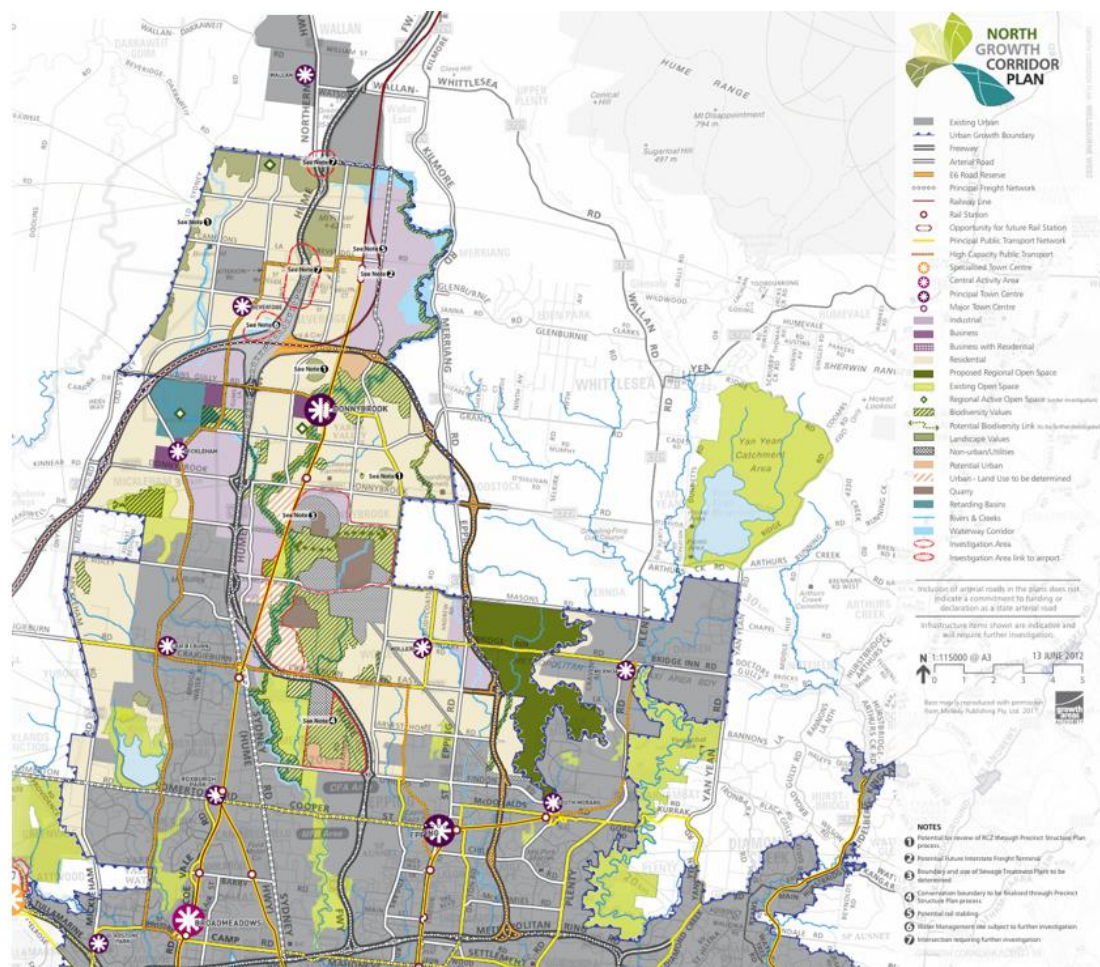
The feeders of relevance to this OSR are KLO14 and KLO24 (existing) & BVE31, BVE32 (Proposed to be in service mid Dec 2026), which supply Beveridge, Wallan, parts of Wandong and Whittlesea, and their surrounding areas within, or adjacent to, Melbourne's Northern Growth Corridor, as shown in Figure 2. These feeders were originally designed to service sparsely populated rural areas and therefore consist of long radial network configurations with limited adjacent tie points. However, the rapid urbanisation occurring across the region has transformed these feeders into key supply sources for a fast-growing urban network.

Population and Development Growth

Melbourne's northern growth areas are expected to accommodate a significant proportion of Victoria's future population growth. According to Victoria in Future 2023 (VIF2023), Victoria's population is projected to increase by approximately 3.8 million people between 2021 and 2051, reaching 10.3 million residents. This equates to average annual growth of approximately 126,000 people, or 1.5% per annum. Importantly, the Mitchell Shire, which includes Beveridge, is forecast to experience average annual population growth of 8.1% between 2021 and 2036, making it one of the fastest-growing local government areas in Victoria.

The area forms part of Melbourne's **Northern Growth Corridor**, a major greenfield development region identified by the Victorian Government to accommodate ongoing population and economic growth. The Victorian Planning Authority's development plans for the corridor are illustrated in Figure 1.

Figure 1 – Northern Growth Corridor



AusNet has already observed significant load growth across the Beveridge supply area, and this trend is expected to accelerate with several major residential, commercial and industrial developments now progressing. Of particular significance is the recently approved **Beveridge North West Precinct Structure Plan (PSP)**, which will deliver

approximately 15,000 new homes, housing around 47,000 residents, together with eight schools and four town centres. The development will establish a substantial new urban community immediately north-west of Beveridge.

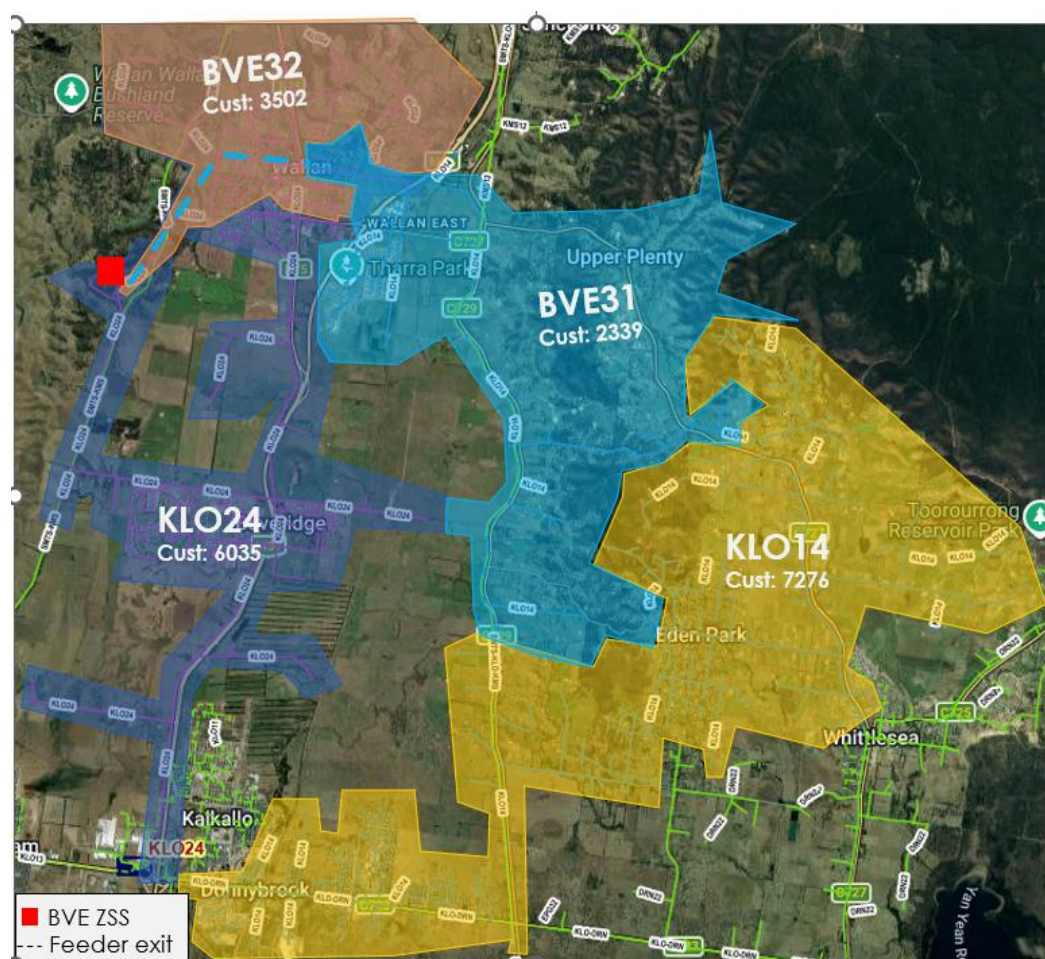
Further growth is expected from the **Beveridge Interstate Freight Terminal (BIFT)** project. In August 2025, the Victorian Government approved the BIFT Stage 1A Planning Scheme Amendment, enabling construction to commence. This development is expected to drive further industrial and commercial electricity demand within the region.

More broadly, Mitchell Shire's population is forecast to increase from approximately 49,000 people today to more than 170,000 by 2041. Together with the existing Beveridge Central PSP and other approved and proposed developments throughout the corridor, these projects form part of the Victorian Government's long-term greenfield development strategy to deliver more than 180,000 new homes over the coming decade.

Existing Network Augmentation and Residual Need

To address increasing load growth and energy-at-risk across the area, AusNet has initiated the construction of the new **Beveridge Zone Substation (BVE ZSS)**. The project includes the establishment of two new distribution feeders, **BVE31** and **BVE32**, and is currently under construction with an anticipated in-service date of **mid-December 2026**.

Figure 2 – KLO & BVE 22 kV network supplying Beveridge, Wallan, parts of Wandong and Whittlesea, and surrounds (Once BVE ZSS is commissioned)



While BVE ZSS will provide significant additional network capacity and improve supply reliability, forecast residential, commercial and industrial growth within the Northern Growth Corridor is expected to continue driving feeder loading increases following its commissioning. In particular, forecast demand is expected to result in thermal limitations emerging on **KLO14**.

Accordingly, additional feeder capacity is required to accommodate future load growth, maintain compliance with network reliability requirements, and preserve operational flexibility under both normal and contingency operating conditions. This OSR therefore considers network augmentation options to address the emerging capacity constraints on the KLO14/BVE31 supply area.

4. Identified need

4.1. Description of the identified need

The identified need is to maintain a reliable electricity supply to customers in the Beveridge area as forecasted demand is expected to exceed the available capacity of the existing KLO14 feeder (13.5 MVA) and the additional capacity of BVE31 (12.6MVA, available by Mid Dec 2026) by FY 27.

Table 3 outlines the forecast loading and extent of overload on the existing KLO14 and KLO24 feeders under normal system operating conditions, including the impact of load transfers to the new BVE31 and BVE32 feeders and any available demand management measures applied on each feeder. Despite these mitigations, both feeders remain overloaded, KLO14 being the prominent, highlighting the need for additional capacity to support the growing demand in the Beveridge area.

Table 3 Do Nothing Base Case Forecast Summer 10PoE Overload (MVA) - (After implementing Stage 1 feeders; BVE31 & BVE32)

OVERLOAD	FY26	FY27	FY28	FY29	FY30	FY31	FY32
KLO14	-	3.6	7.9	19.6	24.0	29.7	37.1
KLO24	-	-	-	1.5	3.3	5.3	8.0
TOTAL (Feeder)	-	3.6	7.9	21.1	27.3	35.0	45.1
KLO (N)	0	0	0	0	0	0	5.3
KLO (N-1)	14.7*	23.8	29.7	39.4	45.3	44.4	53.7
TOTAL (ZSS) (N)	0	0	0	0	0	0	5.3
TOTAL (ZSS) (N-1)	14.7*	23.8	29.7	39.4	45.3	44.4	53.7

*KLO (N-1) risk for FY26 is reduced to 14.7MVA due to Gen Support (~12MVA on KLO14 & KLO24) and Jemena load transfer to a different ZSS (3.8 MVA)

The forecasted demand in the Beveridge study area shows that there is currently no capacity available within the distribution feeder network (including new feeders being commissioned by Mid Dec 2026) with a shortfall of 3.6 MVA in FY27, forecast to rise above 45 MVA by FY32. In addition, the forecasted demand for the KLO zone substation with respect to its N and N-1 rating is also shown. All available load transfers have now been exhausted and there is no further opportunity to offload these feeders using the existing distribution network to remove the overload.

4.2. Quantification of the identified need

Under a Do-Nothing approach, the key cost to the community relates to the value of Expected Unserved Energy (EUE) multiplied by the Value of Customer Reliability (VCR).

We have calculated the EUE by determining the amount of energy that would not be able to be supplied by the KLO14, KLO24, BVE31 & BVE32 distribution feeders within the Beveridge area under system normal conditions with all assets in service.

We have calculated the EUE by using the maximum demand forecast of the feeder and the zone substation, by multiplying it by its normalised load duration curve to determine the energy at risk based on amount of time that the forecast load is above the system normal (N) rating of the feeder and the zone substation respectively, taking into account load transfer capacity. The total EUE is weighted according to a 30% weighting of the EUE calculated using a 10% PoE maximum demand, and a 70% weighting of the EUE calculated using a 50% PoE maximum demand.

We have calculated the locational VCR by adopting the AER's 2024 VCRs¹¹ and adjusting it to 2025 for the different customer groups, weighting them by the mix of customers' annual energy consumption in the Beveridge area.

A material level of EUE is calculated for the distribution feeders KLO14 and KLO24 & KLOZSS from FY26 as shown in Table 4.

Table 4 Do Nothing Base Case Forecast Expected Unserved Energy (EUE) (After implementing Stage 1 feeders; BVE31 & BVE32)

EUE	FY26	FY27	FY28	FY29	FY30	FY31	FY32
KLO14 (MWh pa)	-	18.42	462.43	12,648.44	28,523.65	53,520.46	86,612.54
KLO24 (MWh pa)	-	-	1.05	6.28	44.42	340.53	1,506.73
TOTAL (Feeder) (MWh pa)	-	18.42	463.48	12,654.72	28,568.07	53,861.00	88,119.27
TOTAL (Feeder) (\$m, 2024 pa)	-	0.84	21.14	577.20	1,303.03	2,456.55	4,018.61
KLO (MWh pa)	0.7	4.3	11.6	28.6	45.8	52.5	164.3
TOTAL (ZSS) (MWh pa)	0.7	4.3	11.6	28.6	45.8	52.5	164.3
TOTAL (ZSS) (\$m, 2024 pa)	0	0.2	0.5	1.3	2.0	2.3	7.2

By FY32, the distribution feeders total expected unserved energy and its monetised supply risk on customers (even after the commissioning of 2 distribution feeders from BVE ZSS are forecast to be more than 88,000 MWh pa and \$4,018 million (real \$ 2024) respectively. Similarly, by FY32, the zone substation expected unserved energy and its monetised supply risk on customers are forecast to be more than 164 MWh pa and \$7.2 million (real \$2024) respectively.

¹¹ [Values of Customer Reliability - Final report](#), Australian Energy Regulator (AER), 2024

4.3. Summary of identified network need

AusNet has undertaken a probabilistic planning approach to assess the energy at risk (load not being supplied) if no mitigation action is undertaken further after commissioning of BVE ZSS + two 22kV Distribution Feeders of BVE31 & BVE32 and whether it is economic to invest in risk mitigation action to reduce the forecast service level risk. With respect to distribution feeders, AusNet has identified that approximately of additional capacity or demand reduction of 45.1 MVA is required by FY32 rising from a need of 3.6 MVA starting from FY27. With respect to the KLO zone substation, approximately 5.3 MVA of additional capacity or demand reduction is required by FY32, through network augmentation or alternative non-network approaches such as demand management, embedded generation and/or storage to enable the ongoing reliable supply of electricity to the Beveridge area.¹² Addressing this identified capacity constraint will help to ensure that AusNet is able to prudently and efficiently meet forecast growth within the Beveridge area to:

- support economic growth anticipated for this region;
- support the electrification of homes, businesses and transport¹³; and
- meet our customers' expectations that AusNet should provide a reliable electricity supply and take prudent and efficient actions to minimise unplanned outages.

Feedback from our customer engagement has underscored the importance of ensuring that we provide a reliable electricity supply, with minimal unplanned disruptions. Customers have expressed concern regarding the impacts of poor reliability given customers' increasing reliance on electricity to meet a range of different needs such as transport, telecommunications, working from home, maintaining comfort during extreme weather conditions, and to meet health needs.

4.4. Factors underpinning the identified need

Key factors underpinning the quantification of the identified need include:

- Demand forecasts (which already account for customer growth, Electrification, EVs, BESS, Energy Efficiency etc.)
- Load duration curves;
- Asset ratings;
- Asset unavailability;
- Load transfer capacity;
- Demand management; and
- Network support (temporary generation)

In addition to the factors set out above that underpin the identified need, some assumptions will be required to quantify the costs and benefits of credible options that would address the identified need. These further assumptions will be provided in the DPAR, which will set out the cost-benefit analysis for each of the credible options.

4.4.1. Distribution Feeder Demand forecasts

The forecast maximum demands for the two 22 kV distribution feeders supplying the Beveridge area being KLO14 and KLO24, were developed by AusNet in 2025 and are summarised below in Table 5 and Table 6 respectively.

Table 5 Do Nothing Base Case Forecast KLO14 Overload (MVA) – After load transfer to BVE31

¹² Total overloads in Table 1.

¹³ Refer to [Victoria State Government, 'Gas Substitution Roadmap – Update: Victoria's Electrification Pathway.'](#)

KLO14	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer 10PoE	-	3.6	7.9	19.6	24.0	29.7	37.1
Summer 50PoE	-	-	3.1	13.8	17.6	24.0	31.1
Winter 10PoE	-	-	6.8	20.0	28.4	37.5	48.1
Winter 50PoE	-	-	1.0	14.0	21.5	30.7	41.1

Table 6 Do Nothing Base Case Forecast KLO24 Overload (MVA) – After load transfer to BVE32

KLO24	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer 10PoE	-	-	-	1.5	3.3	5.3	8.0
Summer 50PoE	-	-	-	-	-	1.5	3.7
Winter 10PoE	-	-	-	-	0.6	2.7	5.5
Winter 50PoE	-	-	-	-	-	1.0	3.6

The forecast maximum demand for the KLO zone substation was developed by AusNet in 2025 and is summarised below in Table 7.

Table 7 Do Nothing Base Case Forecast KLO Maximum Demand (MVA) – After load transfer to BVE

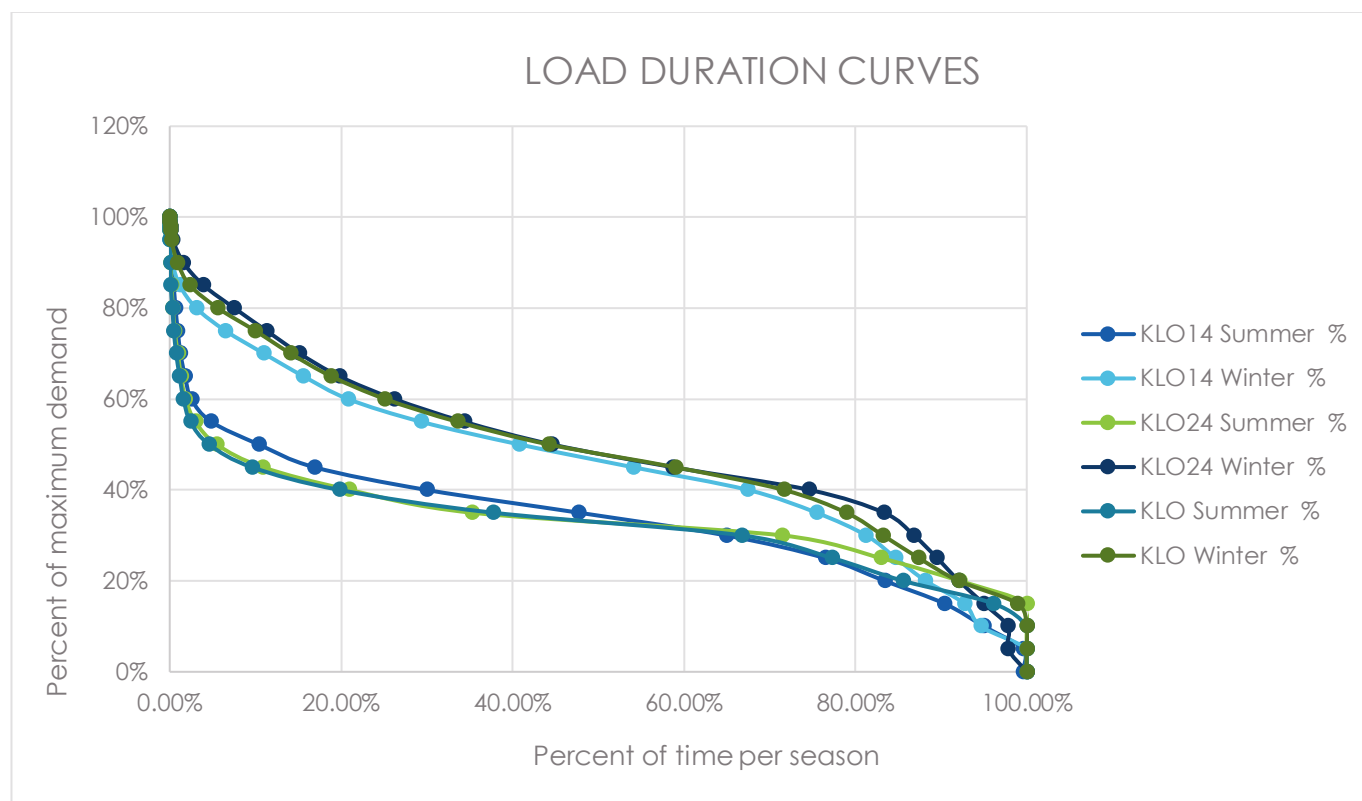
KLO	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Summer 10PoE	83.7	72.86	78.80	88.52	94.40	93.53	102.84
Summer 50PoE	68.3	59.10	63.87	73.51	79.20	79.24	87.14
Winter 10PoE	79.9	71.44	79.39	89.83	96.29	98.48	110.04
Winter 50PoE	72.3	64.19	71.23	81.07	87.36	88.28	97.68

4.4.2. Load-duration curves

Load-duration curves are plots of the demand (normalised as a percentage of the maximum demand for the season – (summer and winter) against the percentage of time for that season. The load values are plotted in the order of decreasing magnitude such that any point on the load-duration curve represents the total duration when load is expected to be greater than or equal to that load value. At times when the load-duration curve multiplied by the forecast maximum demand exceeds the rating for that season, the area above contributes to the EUE.

Figure 3 shows the load duration curves (summer and winter) for KLO14, KLO24 and KLO zone substation.

Figure 3 – KLO, KLO14 and KLO24 Load Duration Curves



4.4.3. Distribution Asset Ratings

The ratings of the two distribution feeders as well as KLO zone substation that supply the Beveridge area are presented in Table 8.

Table 8 Do Nothing (Base Case) Distribution Ratings (MVA)

ASSET	SUMMER	WINTER
KLO14	13.5	14
KLO24	14.7	15.2
BVE31	12.6	12.6
BVE32	12.6	12.6
KLO	97.5	97.5
BVE	97.5	97.5

4.4.4. Asset unavailability

AusNet only considers the EUE attributed to system normal operating conditions as material, that is when the asset demand exceeds the asset rating with all assets in service. By comparison, the magnitude of the EUE under single contingency conditions is considered immaterial due to the size of the asset overload under system normal conditions. Hence asset unavailability is not relevant to this RIT-D.

4.4.5. Load transfer capacity

The forecast load transfer capacity for the two 22 kV distribution feeders supplying the Beveridge area being KLO14 and KLO24, are summarised below in Table 9 and Table 10 respectively.

Table 9 Do Nothing (Base Case) Forecast KLO14 Load Transfer Capacity (MVA)

KLO14	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Transfer Capacity	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 10 Do Nothing (Base Case) Forecast KLO24 Load Transfer Capacity (MVA)

KLO24	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Transfer Capacity	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 11 Do Nothing (Base Case) Forecast BVE31 Load Transfer Capacity (MVA)

KLO14	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Transfer Capacity	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 12 Do Nothing (Base Case) Forecast BVE32 Load Transfer Capacity (MVA)

KLO24	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Transfer Capacity	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 13 Do Nothing (Base Case) Forecast KLO Load Transfer Capacity (MVA)

KLO	2026	2027	2028	2029	2030	2031	2032
Transfer Capacity	3.8	0.0	0.0	0.0	0.0	0.0	0.0

The transfer capacity of all four feeders at peak demand is zero, given all adjacent feeders are overloaded for the entire period providing no back up for each other. The only available transfer path is from KLO14 (REFCL) to DRN22 (Non-REFCL), which is permitted exclusively on non-Total Fire Ban (TFB) days. However, this transfer is prohibited during TFB days, which typically coincide with peak summer demand periods. At the zone substation level, transfer capacity is similarly constrained except for 2026 (3.8MVA), this includes transfers on Jemena feeders.

Potential credible options

This section describes the potential credible options that have been considered to address the identified need, including:

- the technical characteristics of each option;
- the estimated construction timetable and commissioning date; and
- the total indicative capital and operating and maintenance costs.

The purpose of this RIT-D is to identify the credible options for addressing the identified need that maximise the net market benefit. An important aspect of this task is to consider non-network and network options on an equal footing, so that the optimal solution can be identified.

AusNet proposes to investigate and evaluate the following credible network options to address the identified need:

1. Build a new 22kV distribution feeder from BVE ZSS
2. Extend the existing KLO12 feeder along Donnybrook Rd & Merriang Rd (by drawing the second circuit along the existing KLO14 path) towards Beveridge area.
3. Bring a new 22kV feeder from KMS ZSS

Furthermore, AusNet will consider and evaluate any alternative, non-network or SAPS proposals that are submitted by interested parties during this RIT-D consultation, that credibly address the identified need.

4.4.6. Existing Demand Management

The existing available demand management of the two distribution feeders that supply the Beveridge area as well as KLO zone substation are presented in Table 14.

Table 14 Do Nothing (Base Case) available asset demand management (MVA)

	KLO14	KLO24	KLO
Demand management	0.2	0.3	0.4

Although demand management can be contracted for the assets mentioned, customer participation is voluntary. As a result, the full existing demand management capacity may not be available during peak demand. However, for energy-at-risk modelling, we have assumed that the full existing demand management capacity is available.

4.5. Option 0: Do nothing

The Do Nothing option assumes that AusNet would not undertake any investment, outside of normal operational and planning processes for managing peak demand and thermal overloading. This option establishes the base level of risk (base case) and provides a basis for comparing other credible options.

While this option does not entail any upfront capital costs, it exposes customers to the continuing and increasing risk of network outages as it does not address the identified need, represented by the EUE in Table 4, as a result of demand exceeding the available network capacity.

This option does not meet our customers' expectations of a reliable electricity supply, which requires investment to avoid unplanned network outages. Furthermore, this option does not align with AusNet's asset management objectives of being future ready and meeting customer needs by maintaining the long-term reliability of our distribution network.

4.6. Option 1: New 22kV Distribution Feeder (BVE33) from Beveridge zone substation

This option is to install a new 22 kV distribution feeder to be connected into the existing 22 kV distribution network. Traversing south of BVE ZSS, along the old Sydney Rd and then traverse east along Camerons Lane, crosses Hume Freeway and then along Minton St & Beveridge Rd to connect with existing KLO14 network at Merriang Road. The expected commissioning time would be End of Q1, 2028.

This proposed option addresses the identified need by removing the existing overload on KLO14 which is the prominent out of two existing feeders and helps to transfer further loads off KLO ZSS eliminating the expected load at Risk at KLO ZSS.

Figure 4 below shows the possible feeder route of this proposed feeder.

Figure 4 – Proposed Feeder Route of new 22kV Distribution Feeder (BVE33)

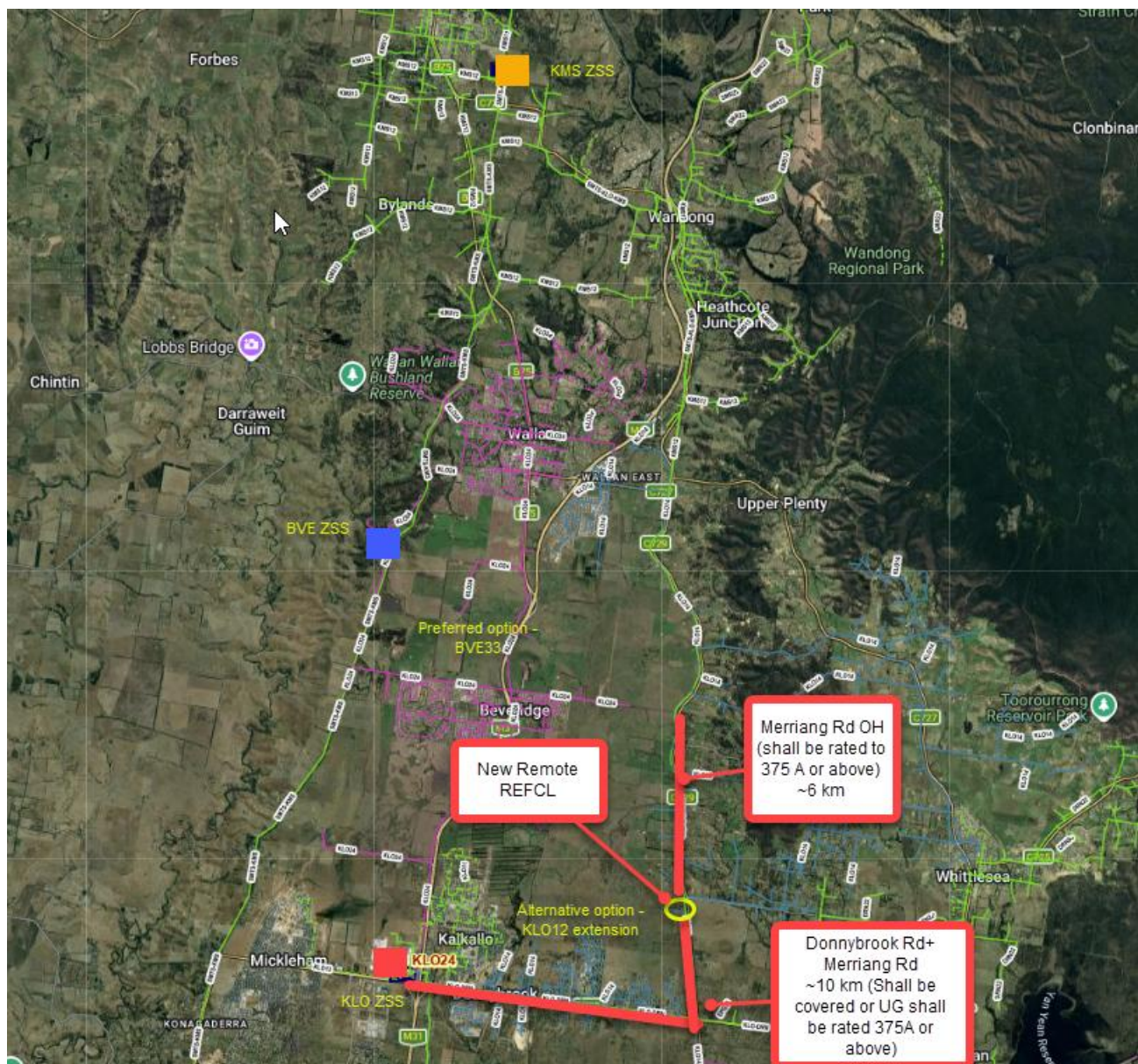


The estimated capital cost of this option is \$13.9 million (nominal)

4.7. Option 2: Extend the existing KLO12 feeder along Donnybrook Rd & Merriang Rd

This option involves extending the existing KLO12 22 kV feeder along Donnybrook Road and Merriang Road to provide additional capacity and support forecast load growth in the area. As both Donnybrook Road and Merriang Road are major arterial routes and are already serviced by an existing 22 kV distribution circuit; KLO14, the proposed augmentation would require the construction of a second circuit along these corridors to achieve the required network capacity and reliability outcomes.

Given the servicing area is a high bushfire risk area, the new feeder extension would need to be constructed using covered conductors or Underground cables terminating at a new remote REFL site possibly on Donnybrook Rd or Merriang Road in consistent with the design approach adopted for the KLO14 feeder.



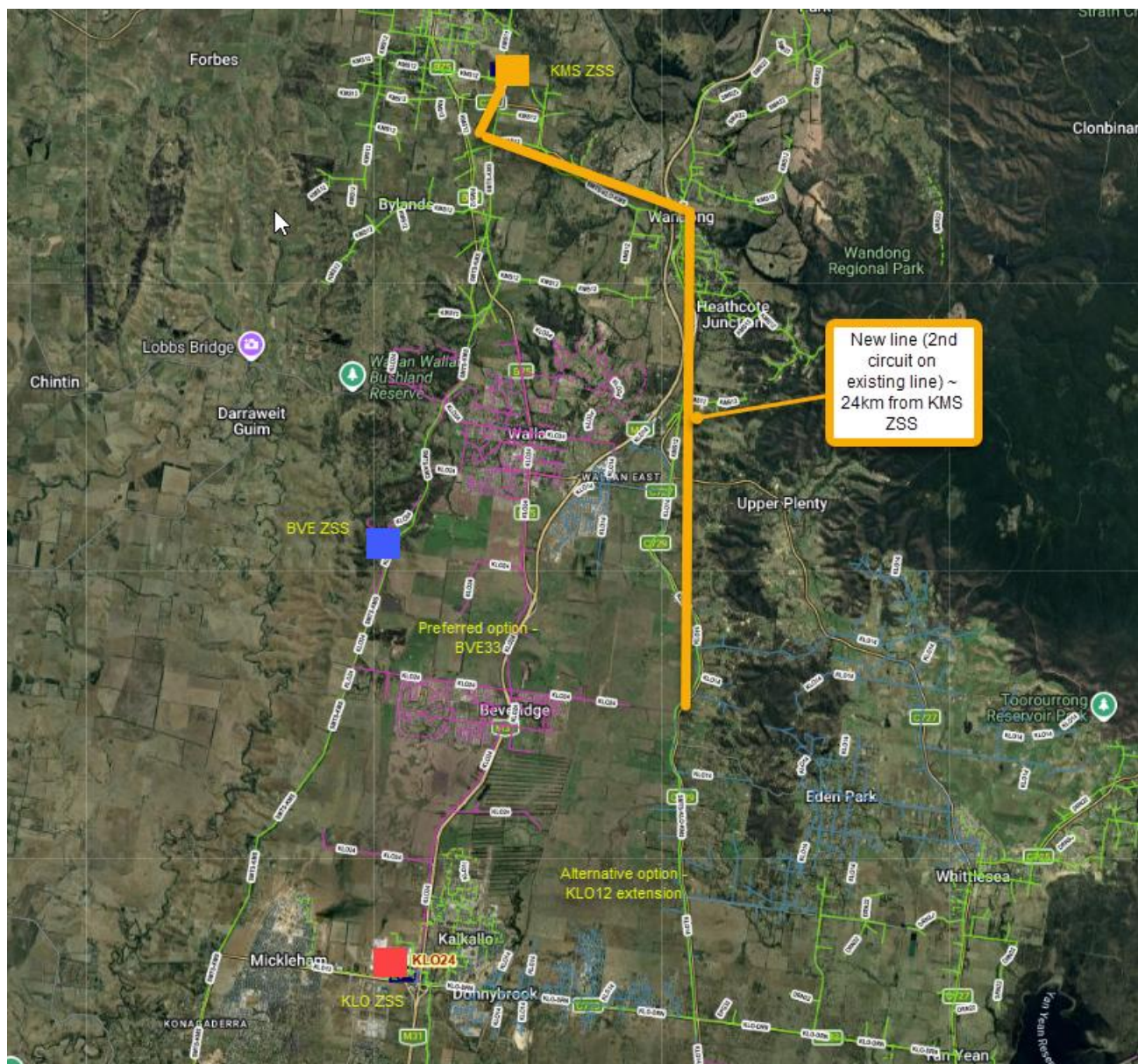
The estimated capital cost of this option is \$43 million (nominal)

4.8. Option 3: A new 22kV Distribution Feeder from KMS ZSS

This option involves bringing down a new 22kV feeder from KMS ZSS which is located ~20km north of Beveridge Area.

Given the servicing area is a high bushfire risk area, the new feeder extension would need to be constructed using covered conductors and /or Underground cables.

Approximate feeder path is shown in figure



Approximate cost of this option would be ~\$62 million (nominal)

4.9. Option 4: Non-network or SAPS solutions

For this option, AusNet will consider and evaluate any alternative, non-network or SAPS proposals that are submitted by interested parties during this RIT-D consultation, that credibly address the identified need.

AusNet will also identify whether a non-network solution can be combined with another solution to defer, reduce in scope, or address the EUE in the lead up to implementation of the credible network options being considered.

The following non-network solutions located at strategic locations within the Beveridge area are likely to be potentially feasible options to address the identified need (at least in part):

- New dispatchable generation;
- New renewable generation firmed up by energy storage systems;
- Demand management using customer standby generation and/or controllable load.

Without limiting the potential for non-network solutions, the following types of non-network options are unlikely to be feasible:

- Renewable generation not coupled with dispatchable generation, storage or controllable load;
- Behavioural demand response not coupled with dispatchable generation, storage or controllable load; and
- Unproven, experimental or undemonstrated technologies.

Details of the characteristics and requirements needed for a non-network or SAPS solution to address the identified need are described in the next section of this document.

5. Non-network or SAPS options

This section provides information regarding the non-network or SAPS services that would be required to address the identified need, including:

- The performance characteristics that a non-network or SAPS option would be required to deliver;
- The estimated maximum deferred augmentation charge that would be available to pay for the non-network service; and
- The information that a non-network proponent should provide to AusNet to explore the potential provision of a non-network service.

5.1. Required performance characteristics

Table 15 sets out the dispatchable load reduction/generation/storage capacity required from a non-network or SAPS option, located within the Beveridge area by year to address limitations due to feeders. This table provides an indication of the maximum number of operating hours per year, and the expected amount of energy needing to be supported by the option. This information (together with Figure 3) provides an indication of the required operating profile to address the identified need in its entirety, noting that prospective non-network service providers may not be able to exactly (or fully) match these requirements to be considered a credible solution.

Table 15 Performance requirements of a non-network solution (Feeders)

YEAR	BESS CAPACITY REQUIRED (MW)	SIZE OF THE BESS (MWH) TO CATER THE MAX DEMAND SCENARIO	SUPPORT REQUIRED PER YEAR (HRS)
FY26	-	-	-
FY27	3.6	3.76	41.5
FY28	7.9	17.53	1024.7
FY29	19.6	91.85	4630.8
FY30	24.0	161.02	5818.7
FY31	29.7	272.33	6725.0
FY32	37.1	418.08	7430.7

A non-network option must be capable of reliably supplying or managing load under a range of conditions and scenarios. The non-network solution will contribute to reliability to the extent that it addresses the EUE risks arising from the identified need.

If the non-network option is a generator operating in parallel with AusNet's network, the generator must comply with the requirements set out in document SOP 33-05 and other connection requirements which are set out in AusNet Services' [embedded generator connections page](#).

5.2. Information to be included in non-network solution proposals

Non-network service providers interested in alleviating the network limitations quantified in this report are advised to begin engagement with AusNet as soon as possible. A detailed proposal including the information listed below should be prepared and submitted by the requested date, during the RIT-D consultation period.

Details required include:

- Name, address and contact details of the person making the submission.
- Name, address and contact details of the person responsible for non-network support (if different to above).
- A detailed description of the services to be provided, including:
 - Size and capacity (MW/MVA/MWh).
 - Location(s).
 - Frequency and duration.
 - Type of action or technology proposed, including response / ramp rate information, where applicable.
 - Proposed dispatching arrangement (e.g. telephone, web-based trigger, automated means via RTU).
 - Availability and reliability performance details.
 - Period of notice required to enable dispatch of non-network support (e.g. to allow time for charging of energy storage solutions or market-based limitations).
 - Proposed contract period and staging (if applicable).
 - Proposed timing for delivery (including timeline to plan and implement the proposal).
- High-level electrical layout of the proposed site (if applicable).
- Evidence and track record proving capability and previous experience in implementing and completing projects of the same type as the proposal.
- Preliminary assessment of the proposal's impact on the network.
- Breakdown of the lifecycle costs for providing the service, including:
 - Capital costs (if applicable).
 - Annual operating (i.e. set up and dispatch fees) and maintenance costs.
 - Other costs (e.g. availability, project establishment, etc.).
 - Tariff assumptions.
 - Expected annual payment for providing the non-network solution
- A method outlining measurement and quantification of the agreed service, including integration of the proposed solution with the network.
- A statement outlining that the non-network service provider is prepared to enter into a Network Support Agreement (NSA) (subject to agreeing terms and conditions).
- Letters of support from partner organisations.
- Any special conditions to be included in an NSA.

All proposals must satisfy the requirements of any applicable laws, rules, and the requirements of any relevant regulatory authority, including following the normal network connection processes where applicable. Any network reinforcement costs required to accommodate the non-network solution will typically be borne by the proponent of the non-network solution.

For further details on AusNet's process for engaging and consulting with non-network service providers, and for investigating, developing, assessing and reporting on non-network options as alternatives to network augmentation, please refer to the Non-Network Solutions and Demand Management webpages, which contain the Industry Engagement Strategy and other relevant demand management documentation:

<https://www.ausnetservices.com.au/Electricity>.

5.3. Potential payments to non-network proponents

At this stage, the preferred network option has not yet been determined. However, the maximum annualised capital expenditure that could be deferred by contractually engaging a non-network solution is \$0.92 million per annum, assuming Option 1 is the preferred network option.

The payment for a non-network solution may vary according to availability, capacity, dispatch duration and firmness of the non-network service, its ability to address the identified need, and the responses received from other non-network proponents. The actual payment to a non-network proponent will also be subject to negotiation.

AusNet welcomes the submission of non-network and SAPS proposals for review of the potential payment amount on a case-by-case basis. For more information or enquiries regarding non-network solutions to address the identified need, please email ritdconsultations@ausnetservices.com.au. In the subject field, please reference 'RIT-D OSR Beveridge'.

6. Assessment of the requirement of Community Engagement

In accordance with the AER's RIT-D Application Guidelines, AusNet has considered the need to engage with customers and communities in the assessment of credible options.

AusNet considers that the credible options assessed under this RIT-D have the potential to impact:

- The local community, during construction, due to changes in traffic conditions.

As a result, early and targeted community engagement is considered necessary:

- for the purposes of option assessment under the RIT-D
- to help identify potentially impacted stakeholders and assess the level of likely impact.

Early project engagement approach and segments

Stakeholder group	Proposed engagement activity
City of Mitchell shire	Project briefing
Local community and road users (Indirectly impacted stakeholders)	Advertising in Northern Star Weekly providing the local community and road users with the opportunity to submit feedback

Clear and timely communication of design considerations, proposed construction activities, and potential impacts will be essential during each stage of this project.

The expected impacts of this project will be localised and manageable, and engagement will focus on targeted, practical communication and coordination with impacted stakeholders and the broader community to mitigate impacts wherever possible. Minimising disruption during construction will focus on managing traffic and site access particularly for local residents and associated traffic movements while addressing potential impacts such as noise, dust and general construction disturbance, especially for those residents living nearby. This engagement will be outlined in a detailed Community Engagement Plan (CEP) that will address engagement throughout each stage of the construction.

7. Assessment of greenhouse gas emissions

AusNet has assessed whether each credible option could deliver a market benefit through changes in Australia's greenhouse gas (GHG) emissions, in accordance with Clause 5.17.1(c)(4) of the National Electricity Rules (NER). The assessment considers both direct emissions associated with energy supplied and the impact of changes in network losses.

The greenhouse gas (GHG) assessment was undertaken by quantifying both the renewable energy benefits associated with additional PV hosting capacity and the emissions impacts resulting from changes in network losses. For each credible option, the additional PV generation was calculated from the incremental PV capacity and an assumed capacity factor. The resulting renewable energy output was converted to avoided emissions using the marginal emissions factor, representing the displacement of emissions-intensive generation.

Changes in network losses were separately evaluated and converted to emissions using the National Electricity Market (NEM) grid emission factor. The net annual GHG benefit was then determined as the difference between PV-related emissions avoided and additional loss-related emissions:

$$\text{Net GHG Benefit} = \text{PV Emissions Avoided} - \text{Loss Emissions}$$

To quantify the economic value of emissions reduction, the net annual GHG benefit was multiplied by VEV (Victoria Emission Values) published by the Victorian Government. Finally, the annual GHG value was discounted over the project assessment period to calculate the Net Present Value (NPV) of GHG benefits for each option. This enables environmental impacts to be consistently compared alongside other economic costs and benefits within the RIT-D assessment.

Option	PV emissions benefit - central (\$M)	PV emissions - VER low (-25%) (\$M)	PV emissions - VER high (+25%) (\$M)	Net change over period (t CO ₂ -e)	PV net economic benefit EXCLUDING emissions (\$M)	PV net economic benefit INCLUDING emissions (\$M)
Option 1	\$36	\$27	\$45	396,516	\$23,903	\$23,939
Option 2	\$16	\$12	\$19	195,555	\$14,811	\$14,826
Option 3	\$34	\$25	\$42	367,554	\$23,885	\$23,918

Based on the GHG emissions assessment, Option 1 results in the highest benefit followed by option 3. Option 2 brings the lowest benefit out of three options. Consistent with the AER's guidance, sensitivity testing was undertaken by varying the VER by ± 25 per cent. The results demonstrate that this variation does not alter the ranking of the credible options. AusNet therefore considers that changes in GHG emissions are not material to the selection of the preferred option.

8. Compliance with NER

In accordance with clause 5.17.4 of the NER, we certify that the screening for non-network and SAPS options satisfy the first stage of the RIT-D. Table 16 shows how each of these requirements have been met by the relevant section of this report.

Table 16 Compliance with regulatory requirements

REQUIREMENT	SECTION
Clause 5.17.4 of the NER, Non-network options report must include the following:	
(1) a description of the identified need;	Section 4.
(2) the assumptions used in identifying the identified need (including, in the case of proposed reliability corrective action, why the RIT-D proponent considers reliability corrective action is necessary);	Section 4.4
(3) if available, the relevant annual deferred augmentation charge associated with the identified need;	Section 5.3.
(4) the technical characteristics of the identified need that a non-network option or (in relation to a SAPS enabled network) a SAPS option would be required to deliver, such as:	Section 5.
(i) the size of load reduction or additional supply;	
(ii) location;	
(iii) contribution to power system security or reliability;	
(iv) contribution to power system fault levels as determined under clause 4.6.1; and	
(v) the operating profile;	
(5) a summary of potential credible options to address the identified need, as identified by the RIT-D proponent, including network options, non-network options and (in relation to a SAPS enabled network) SAPS options.	Section 0.
(6) for each potential credible option, the RIT-D proponent must provide information, to the extent practicable, on:	Section 0.
(i) a technical definition or characteristics of the option;	
(ii) the estimated construction timetable and commissioning date (where relevant); and	
(iii) the total indicative cost (including capital and operating costs); and	
(7) information to assist non-network providers wishing to present alternative potential credible options including details of how to submit a non-network proposal for consideration by the RIT-D proponent.	Section 9.

9. Submissions and next steps

9.1. Request for submissions

AusNet invites written submissions and any queries, on the matters set out in this OSR, from Registered Participants, AEMO, interested parties, non-network providers and persons registered on our industry engagement register. As explained in section 5.2, prospective non-network service providers interested in alleviating the network limitations outlined in this OSR are advised to begin engagement with AusNet as soon as possible.

All submissions and enquiries should be directed to:

Email: ritdconsultations@ausnetservices.com.au

Submissions are due on or before 11 January 2027 and should refer to 'RIT-D OSR BVE33 Distribution Feeder' in the subject heading.

Submissions will be published on AusNet's and AEMO's websites. If you do not wish to have your submission published, please clearly stipulate this at the time of lodging your submission.

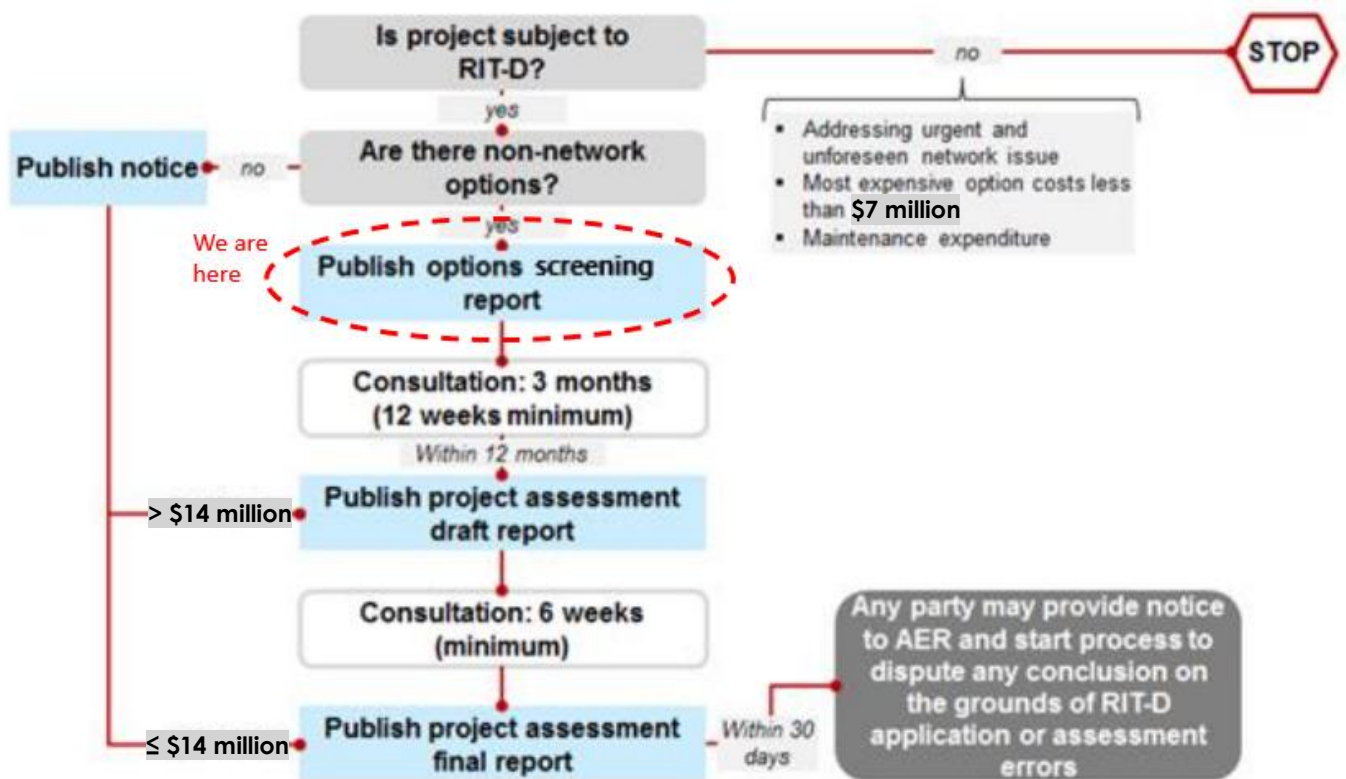
9.2. Next stage of RIT-D process

Following the conclusion of the consultation period for this OSR, AusNet will, having regard to any submissions received, prepare and publish the draft project assessment report (DPAR) which will include:

- A summary of, and commentary on, any submissions on this OSR.
- A detailed market benefit assessment of the proposed credible options to address the identified need.
- Identification of the proposed preferred option to meet the identified need.

AusNet expects to publish the DPAR shortly after consultation on this OSR closes.

Appendix – RIT-D assessment and consultation process¹⁴



¹⁴ [Regulatory investment test for distribution, Application guidelines](#), Section 4, Australian Energy Regulator (AER), November 2024.

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